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**BANDIRMA ONYEDİ EYLUL UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS**

Master's Thesis

**THE RELATIONSHIP BETWEEN EXPORT, IMPORT AND
ECONOMIC GROWTH: THE MALIAN CASE**

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Supervisor:

Assoc.Prof .Dr. ERDEM BAĞCI

BANDIRMA 2025

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APPROVAL OF THE THESIS

The thesis submitted by **IDRISSA KALIL CAMARA** under the supervision of **Assoc. Prof. Dr. ERDEM BAĞCI** and entitled “The relationship between export, import and economic growth: The Malian Case” at Bandırma Onyedi Eylül University, Institute of Social Sciences, Department of Economics, Master’s in Economics has been approved unanimously by majority as **Master’s Degree** thesis by the examining committee during the defense on the 8th May 2025.

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Upon this document, I declare that all the information in this thesis has been obtained and presented according to academic rules and ethical conduct. As required by these rules and conduct, I also declare that all the data, ideas and results that do not belong to me have been fully cited and referenced (08/05/2025).

Idrissa Kalil Camara

ABSTRACT

“THE RELATIONSHIP BETWEEN EXPORT, IMPORT AND ECONOMIC GROWTH: MALIAN CASE”

Idrissa Kalil Camara

This study aims to investigate the relationship between export, import and economic growth. As determinant of GDP, the variable final consumption expenditure has been added in this study to analysis and interpret the result.

This paper employed unit root test to check the stationarity between the variables. The diagnostic and stability test were used to verify the authenticity of the variable by using different test like serial correction, heteroskedascity, linearity and normality. The autoregressive distributed lag (ARDL) model has been used to confirm the long and short run relationship between the variables. The econometric software Eview12 was used to analyze data from 1972 to 2023.

The finding result in unit root test indicated that, all the variables were stationary at $I(0)$ by using ADF, PP, KPSS and NG-Perron test. The serial correction test showed a no evidence of serial correlation. The heteroskedascity test indicated that, the test has no heteroskedascity problem. However, the normality test revealed a residual normality distributed by using Jarques-Bera model. Furthermore, the linearity test indicated a linear relationship between variables.

In ARDL model from bound test procedure, the finding result indicated a long run relationship between export and final consumption expenditure on economic growth and import has negative impact on GDP. In short error correction model, it appeared that, import and final consumption expenditure influence positively economic growth. Empirically, both variables, exports and final consumption expenditure contribute significantly to raising the GDP level in this analysis. Given that economic policy is a key factor that might encourage investment, this suggest that raising GDP is essential for diversifying exports.

Keywords: Export, Import, Economic growth, final consumption expenditure Mali, ARDL model.

ÖZET

“İHRACAT, İTHALAT VE EKONOMİK BÜYÜME ARASINDAKİ İLİŞKİ: MALİ ÖRNEĞİ”

Idrissa Kalil Camara

Bu tez ihracat, ithalat ve ekonomik büyüme arasındaki ilişkiyi analiz eder. GSYİH'nin belirleyicisi olarak, değişken nihai tüketim harcamaları bu çalışmada analize eklenmiş ve sonuç yorumlanmıştır.

Bu çalışmada, seri düzeltme, heteroskedascity, doğrusallık ve normallik gibi farklı testler kullanılarak değişkenler arasındaki durağanlık, tanı ve kararlılık kontrol etmek için birim kök testi kullanılmıştır. Değişkenler arasındaki uzun ve kısa vadeli ilişkiyi belirlemek için otoregresif dağıtılmış gecikme (ARDL) modeli kullanılmıştır. 1972'den 2023'e kadar olan verileri analiz etmek için ekonometrik yazılım Eview12 kullanılmıştır.

Birim kök testindeki bulgu sonucu, ADF, PP, KPSS ve NG-Perron testi kullanılarak tüm değişkenlerin I (0)'da durağan olduğunu. Seri düzeltme testi, seri korelasyonuna dair bir kanıt. Heteroskedascity testi, testin heteroskedascity sorunu olmadığını. Ancak, normallik testi, Jarques-Bera modeli kullanılarak dağıtılmış bir kalıntı normallliği ortaya koydu. Ayrıca, doğrusallık testi, değişkenler arasında doğrusal bir ilişki olduğunu gösterdi.

Sınır testi prosedüründen ARDL modelinde, bulgu sonucu ihracat ile nihai tüketim harcamaları arasında ekonomik büyüme üzerinde uzun vadeli bir ilişki olduğunu ve ithalatın GSYİH üzerinde negatif bir etkiye sahip olduğunu gösterdi. Kısa hata düzeltme modelinde, ithalat ve nihai tüketim harcamalarının ekonomik büyümeyi pozitif etkilediği ortaya çıktı. Ampirik olarak, her iki değişken, ihracat ve nihai tüketim harcamaları bu analizde GSYİH düzeyini yükseltmeye önemli ölçüde katkıda bulunur. Ekonomik politikanın yatırımı teşvik edebilecek önemli bir faktör olduğu göz önüne alındığında, bu, GSYİH'yi yükseltmenin ihracatı çeşitlendirmek için gerekli olduğunu göstermektedir.

Anahtar kelimeler: İhracat, İthalat, Ekonomik büyüme, Mali, nihai tüketim harcamaları ARDL modeli.

PREFACE

This thesis is the final validation of the master's degree in economics at Bandirma onyedi Eylül University. It was supervised under the direction of **Assoc. Prof. Dr. ERDEM BAĞCI** professor at the institute of social/economic sciences.

The primary objective of this research is to examine the relationship between export, import, final consumption expenditure and economic growth in Mali. The Macroeconomic performance of a country is judged by the evolution of economic growth. In reality, the elaboration of GDP requires several macroeconomic determinants. In the analysis of this thesis, our study was focused on the relationship between exports, imports, and economic growth. The data used was extracted from the World indicator Bank from 1972 to 2023.

First of all, I thank God for giving me the mental and physical health to complete this work. I also thank my family for their moral, material, and financial support for the success of this thesis.

Secondly, my deepest gratitude goes to my supervisor **Assoc. Prof. Dr. ERDEM BAĞCI** for his efforts and guidance during this academic research. I would like to thank all the professors in Economics department at Bandirma University for their assistance during the course periods.

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ACRONYMS

AD	: Aggregate Demand
ADF	: Augmented Dickey Fuller
AGOA	: African and Opportunity Act
AIC	: Akaike Info Criteria
ARDL	: Auto Regressive Distributed Lag
BCEAO	: Central Bank of West African States
BRICS	: Brazil-Russia – India -China – South Africa
CointEq (-1)	: Coefficient of Error Correction Model
COVID19	: Corona Virus
CMDT	: Malian Textile Development Company
ECM	: Error Correction Model
ECOWAS	: Economic Community of West African Sates
FCE	: Final Consumption Expenditure
FCFA	: Franc from French Colonies in Africa
FDI	: Foreign Direct Investment
FMOLS	: Fully Modify Ordinary Least Square
GDP	: Gross Domestic Product
IMF	: International Monetary Fund
K	: Number of Independent Variable
KG	: Kilogram
KPSS	: Kwiatwaski Philip Schimd-Shin
LRAS	: Long Rung Aggregate Supply
NAFTA	: North American Free Trade Agreement
OPAM	: Mali Agricultural Products Office

OLS	: Ordinary Least Square
ORTM	: Office, Radio, Television of Mali
PP	: Philips Peron
RFI	: Radio France International
SIC	: Schwarz Info Criterion
SOMIE	: Malian Import and Export Company
SSA	: Social Security Administration
SWIFT	: Society for Worldwide Interbank Financial Telecom
TL	: Turkish Lira
TPP	: Trans-Pacific Partnership Agreement
UAE	: United Arab Emirates
USD	: United State Dollar
VAR	: Vector Auto-Regressive
VAT	: Value Tax Add
VEC	: Vector Error Correction
X	: Export
WAEMU	: West Africa Economic and Monetary Union
ZLEC	: Free zone of Continental Exchange

INTRODUCTION

Sustainable economic growth is the primary goal of all nations. Exports and imports are the key factors in shaping economic growth. According to Mehta (2015) export and import are potential weapons of development. The relationship between exports, imports and GDP has become a concern in economic debates. Government planners focus on revenue from exports and imports to calculate annual economic growth. The resilience of industrializing countries is the ability to increase trading partners to export manufactured products while developing countries need to import machinery and other waste goods for industrialization. So international trade is an essential part of a country's development process.

Economic growth and international trade (export and import) have attracted the attention of policymakers and academic. The reason is simple, the primary objective of every nation is to raise GDP and enhance the standard of living for its citizens (Turan and Karamanay, 2014). The development of trade and the acquisition of foreign currencies are one of the major objectives of a country's economic decision-makers. The export volume of a country's goods and services leads to an increase in the gross national product, an increase the number of jobs for young people in the various sectors of activities. In modern economy, the number of international business has a direct relationship with it level of development (Taghavi , Goudarzi , Masoudi, and Gashti, 2012).

Numerous researchers and economist assert that a nation's import and export capacity lead to an increase in state revenue and others believe that supporting local businesses in the expansion of their activities can encourage the population to be creative, these thoughts depend on the economic and geographical environment of the country. Foreign trade is crucial for developing nations that cannot create good or service or have extremely high production cost (Mohsen, 2015).

Imports of durable goods that fit into the process of industrialization of the country such as machines and computer tools can be relevant elements for increasing the productivity of companies to meet the needs of the population. The more a country imports goods and

services, the more it industrializes through the creation of companies to reduce the unemployment rate, and the more a country exports it earns foreign currency and increases state revenue.

Exports of products and services are viewed as an engine for social and economic advancement for a number of reasons, including the fact that they force businesses to innovate and improve in order to preserve market share and guarantee higher sales and profits. Exports of goods and services to external partners are one of the strategies that countries have adopted to increase production capacity and increase economic growth (Bakari and Mabrouki, 2017).

Export is the most significant source of foreign exchange that may be utilized to reduce strain on the balance of payment and create much-needed job opportunities (Jordan and Eita 2007). The nation power in the international market is the expansion or the acquisition of new contracts with other countries in order to achieve a level of economy on the scale. Exports can help a country to boost its economy, it is also the engine of growth in terms of development. According to Okyere and Jilu (2020), a country may choose to import goods from others countries in addition to relying on its own local production.

The analysis of imports on economic growth seems relevant insofar as imports are considered as the acquisition of foreign goods and knowledge, this knowledge could be beneficial to workers and in other economic recovery services. Imports play a central role in countries in the process of industrialization and construction. Imports of raw materials for the manufacture of consumer goods for the population are key factors in the success of a country. Imports are the source of capital goods and technologies that increase the economy's potential for production, as well as raw materials that are not available domestically. Developing countries must increase the import rate of machines and other materials to ensure sustainable growth (Mishra, 2012).

Mali is a country located in West Africa with a population of 24.478,595 million (World Bank 2024). The history of trade in Mali dates to colonial times when the country was considered as the hub of commercial transactions in sub-Saharan Africa, it was considered the place where all neighboring countries came for commercial exchanges.

After the proclamation of independence in 1960 by France, Mali left the barter system to the detriment of the monetary system with the creation of a national currency in 1962. A few years, state companies such as: Malian import and Export Company (SOMIE), Mali Agricultural Products Office (OPAM) were created to facilitate imports and exports. Over time, the Malian government has developed a process of liberalization and economic integration by joining International Trade Organization in 1995 with the support of the International Monetary Fund (IMF) and the World Bank. Others trade agreements such as AGOA (African and opportunity Act), ZLEC (Free Zone of continental exchange), ECOWAS, WAEMU etc.. have been signed to create an environment conducive to development of trade. The liberalization of its economic system and the development of trade with external partners to improve the living conditions of the population has pushed the Malian government to reduce import and export taxes on certain goods (Bakary Sanogo, 1993).

However, developing countries need to increase the import rate of machinery and other devices to ensure sustainable growth. Mali has strong import, and export relations with the world. The five (5) main export partners according to market share: are Switzerland (30.4%), India (12.2%) Ukraine (5.1%) China (5.1%) Burkina Faso (4, 9%) and others. Exports earnings were at 3.036 billion dollars (2017) (world bank) which corresponds to an increase compared to previous years. On other hand imports amount were 3.891 billion dollars. Import partners are: Senegal (12.2%), China (12.2%) France (10.3%), Benin (8.6%), Ivory Coast (8.4%) and others 48.3 % (World Bank, 2017).

Exports contribute to the growth's economy; they allow for balancing the national and created expenses of new jobs. In Mali, exports play a major role in local development. Malian exports are divided into two groups that is to say, traditional, and non -traditional exports. Traditional exports relate to the first material products, which are: gold, copper,

cobalt ores and concentrated, iron, diamonds, cotton, fertilizers, aluminum, woods, coconut, fish, etc ... Other craft products such as leathers and textiles can also be added to the list of traditional exports. As for non -traditional exports, they are sources of income from the local population and a means of reduction of poverty in rural areas, it concerns agricultural and semi-agricultural products such as peanuts, pineapples, onions, mango confusion, corn, grain sorghum, rice, coconut, bananas arachnids, melons, beasts, etc. ...(Ouere, 2022).

The literature on economic development places a lot of emphasis on the relationship between export, import, and economic growth (as measure by GDP) which is a major policy concern for government planner and policymakers (El Alaoui, 2015).

- **Statement of the problem**

For this thesis, Mali's economy is fragile and dependent on international trade. A country's performance on a global scale is judged by the assessment of its economic growth and the quality of life of its population. Economic growth is the positive evolution of the production of goods and services in an economy over a long period. In practice, the indicator mostly used to measure is the gross domestic product.

Since the liberalization of the Malian economy, the government has developed a consolidation program in 1992 to improve the rate of economic growth and to make financial information reliable. The restoration of a favorable macroeconomic environment, the progress of the private sector, and the quality of management of public resources were the key factors of economic recovery. The performance indicators set in 1993 were: a real GDP growth rate of 4%, an inflation rate equal to 3%, a current balance of payments deficit, excluding public transfers at most equal to 12.8% of the GDP, (Sylvie and Nachtigal, 1995).

After the major reforms introduced by the government in 1992 to reduce the poverty rate and maintain stable and sustainable economic growth, financial partners such as the World Bank, and the International Monetary Fund helped Mali.

Implement the structural adjustment to maintain macroeconomic balances and cancel part of the economic debts. The revival of economic activities in 1996 made it possible to achieve growth of 7.05% against a forecast estimate of 6.5%. The progressive evolution of the Malian economy was spread out until 1999 with an average of 5% annual growth rate.

The year 2000 stands out as one of the most difficult years with slightly negative economic growth (-0.1%). It was marked by a decline in domestic demand, in particular final household consumption with a negative contribution of 1.3 points to growth (Traore, 2015).

Low growth of less than 5% per year was observed for the years 2002, 2004, 2006, 2007, 2008 and 2009. Growth reached a peak of 15.37% in 2001 and 9.11% in 2003, these performances are linked to the effects the increase in domestic demand and the strong growth in exports (Traore, 2015: 4).

Over the period from 2010 to 2011, growth was relatively weak with a rate of 5.31% in 2010 and 3.21% in 2011, this decline can be attributed to a drop in agricultural production, the political, and social crises of Ivory Coast, which is considered as one of the focal points of imports, and exports. From 2013 to 2019, Malian economic growth varies between 2.29% to 7.08% on average thanks to the good results of mining revenues.

The Coronavirus crisis in December 2019 affected the world economy, increased inflation rates, and decreased trade. The economic growth of most countries was at a low level during this period. In Mali, a large economic depreciation was observed in 2020 as part of the coronavirus crisis. The growth rate has relatively decreased to (-1.23%) following the effect of the pandemic. The government's economic forecasts have not been realized; the inflation rate stood at 0.5% in 2020 against (-3.0%) in 2019 and Cotton production fell by 4.8% in 2019. Poor performance achieved in the primary sector was also one of the causes of the economic recession of 2020. The effects of the coronavirus crisis have influenced Mali's macroeconomic outlook for a year. Economic growth in 2021 was supported by cotton exports and the acceleration of gold activities, of which Mali is the 3rd largest producer in Africa after South Africa and Ghana. The growth rate was at 3.05% in 2021 with an estimation of 4% in upcoming years. This low growth rate is due to the various economic sanctions imposed by ECOWAS in Mali and a drop in tax revenue (Ouere, 2022: 2615-2617).

Economic research shows that the economic growth of countries are influenced by many factors. The analysis of this thesis is based on the variables of exports and imports. The main questions to be addressed in this study are:

- Does trade (export, import) and final consumption expenditure can have an impact on Mali's economic growth?
- Are there long and short-term relationships between import, export, final consumption expenditure and GDP for the Malian economy?
- Can trade (export, import) sustain economic growth?

Importing goods, and services are important for countries that are in the process of industrialization and construction, and which cannot produce their goods like Mali. As for the export, it allows the accumulation of foreign currencies and the valuation of national products on the international market.

This study provided necessary information on the social, economic, and political life of Mali. In addition, it also allowed the students and professionals to have a view of the Malian economy and to set in order to increase economic growth and facilitate import, and export.

The information's of this study were collected from national and international institutions such as the World Bank, the International Monetary Fund, the direction of economic and statistical studies of Mali, non-governmental organizations, and the econometric analysis of certain authors who have already studied the same topic.

The in-depth study of this thesis was to help the student to know the economic realities in which Mali is confronted. It will also allow the student to examine the relationship between exports, import on economic growth to give recommendations that can help economic decision markers.

The objectives of this thesis are divided into two main parts. The main objective is to analyze the relationship between exports, imports and final consumption expenditure on economic growth

The Specific objectives are

- Identify the effect of imports, exports and final consumption expenditure on economic growth.
- Analyze the short and long-run relationship between imports, exports and final consumption expenditure on economic growth.

- Recommend economic measures to Malian leaders in order to guarantee a sustainable economy, and accelerate the process of Mali's development.

Economic growth is the national wealth created by a country on its territory at a specific time. The analysis of other macroeconomic variables like final consumption expenditure can have impacts on growth. The study of this thesis covers the periods from 1972-2023. It uses one dependent variable (GDP) and three independent variables (import, export and final consumption expenditure). The data discrepancies provided by the Ministry of Finance and that of the National Directorate of Economic, and Statistical Studies have been problems in knowing the real rates of import, export, final consumption expenditure and economic growth of Mali. The research on the data from the World Indicator Bank was a satisfaction for the elaboration of this thesis. The econometric software Eview12 was used to analyze data and interpreted the result.

The primary goal is to investigate the impact of exports, imports and final consumption expenditure on economic growth. Economic decision-makers assume that the volume of trade (import, export) must be optimized and that foreign exchange must come from export earnings.

The study of this thesis is composed of five major chapters divided into sections and sub-sections. The first chapter concerns the conceptual framework, it explains the definition of economic growth, the types of growth, and the determinants of GDP. It also explains international trade (export, import) and environmental concepts related to export and import movements. The second chapter analyzes the world and Mali's economies; it explains the different economic crises and their consequences on the world economy. It retraces a chronogram study of the Malian economy from 1972 to 2023. The third chapter studies the economic theories and the literature reviews. Chapter four focuses on the data and the econometric methods used. Chapter five concerns the empirical study and the different results obtained. At the end of this thesis, a general conclusion and various recommendations are given.

FIRST CHAPTER

1.CONCEPTUAL FRAMEWORK

Today, political discourses are based on general economic issues and economic growth. The major policy challenge is to ensure stable and sustainable growth and reduce the unemployment rate. The country's development is essentially achieved through the increase of economic growth and the factors of production (labor and capital). The gross domestic product (GDP) is used to know the standard of living of the population of a country. This growth may depend on the number of populations residing in the territory.

Economic growth can occasionally occur quickly due to catch up growth in which comparatively poorer countries raise their real GDP per capita by utilizing the knowledge and technologies previously developed. A country can have high growth, but a large part of the population remains poor, as seen in Nigeria and India. In addition, the demography of a country can be high, and the GDP remains appreciable, this is the case of the USA with a population of 340.1 million (2024) and a GDP of 29,177.32 trillion USD (2024). Demography does not exactly define the national wealth of a country (Daron , Laibson and List, 2018: 558).

1.1. DEFINITION OF ECONOMIC GROWTH

The concept of economic growth has emerged as a vital instrument for researchers and policymakers to assess a nation's productive capacity. Unlike many others economic concepts, economic growth lacks a universal definition, and its interpretation often varies among scholars .Typically, researchers define it as the national wealth generated by a country over a specific period, usually annually. As noted by De la Croix and Baudin (2015), economic growth catalyzes for enhancing the living conditions of humanity, reflecting the interplay between the quality of life and the resources a country can generate.

Additionally, economic growth can be quantified as the increase in the real value of all economic activities conducted within a country during a given year. This growth can show positive or negative trends over different periods. Economic growth is an economic success

during a given period of time, usually a year or quarter (Daron, Laibson, and List , 2018 : 483).

The classical economics group composed by Karl Max, David Ricardo, Adam Smith, etc ... focused their research on issues of the production of goods and national wealth, but after in-depth analysis, classical economics understood that the question of economic growth was the known point of the various research. So, the main concern was how to increase economic growth and what are the necessary elements that can guarantee growth.

David Ricardo (1772-1823) argued that the concept of comparative advantage and international trade are the main drivers of economic progress and production specialization. A country should focus on producing goods and services where its opportunity cost is lower than that of other countries, according to the idea of comparative advantage. By specializing and trading with one another, countries can achieve higher levels of productivity and overall output, leading to economic growth. Ricardo's ideas emphasized the importance of free trade and the benefits of international specialization, which he believed would lead to economic growth and prosperity for all participating nations. Through his theory of comparative advantage, Ricardo showed that, even if one country is more efficient in producing all goods than another, both countries can still benefit from trade (Lanza, 2012: 28-29).

Schumpeter (1883-1950), Schumpeter's theory is based on how innovation, entrepreneurship, and technological advancement driving economic growth. Schumpeter argued that entrepreneurial activities such as introducing new product processes or business models are the primary drivers of economic growth. Entrepreneurs are the central figures in economic growth. Schumpeter's ideas stressed that sustained economic growth is not merely a result of incremental changes in production, but rather than a consequence of radical innovations that create new industries and transform existing ones (Swedberg, 2006: 30-33).

However, Robert Barro (1944) contributed to the theory of long-term economic growth by focusing on technical progress and capital accumulation. Barro's theories will be used throughout this thesis. It will deepen the understanding of the determinants of growth. Much of Barro's theory centers on the impact of public debt on economic growth. Barro explains how a country's debt level can influence interest rates (Fournier, 2001).

Regarding the annual result of growth, it is explained that the results of economic growth depend on the management of economic activities. Countries that industrialize and export goods and services often have positive growth. The classical schools define economic growth as the increase in the wealth of nations. They identify two essential elements that determine economic growth. The first is the increase in the means of production which combines capital and technology, the second is the division of labor, the specialization of international trade which is considered as a lever for growth.

Neoclassicals defined economic growth as the reinvestment of profits generated by economic activity. Neoclassical think that the return on capital is decreasing, so you have to invest more and more to get the same profit. For them, growth requires an increase in employment. This means, that if growth increases, new jobs will be created and will also cause population growth. The neoclassical school believes that growth depends on technical progress, demographics, and exogenous system variables (Dimand and Spencer, 2009).

John Maynard Keynes (1883-1946) emphasized short-term economic fluctuation and government policies to stimulate demand and promote economic growth. According to Keynes, economic growth is defined as the sustained expansion of economic activity in an economy. This expansion does not necessarily occur constantly but can be influenced by various factors including aggregate demand, investment, consumption, and economic policy. Keynes argues that investment is a key factor in economic growth. When companies invest in new factories, equipment, and technology, it can boost production and long-term growth (Hansen, 1946: 182-185).

1.2. The Type of Economic Growth

Economic growth can be categorized in various ways based on different criteria and perspectives. Here are some common types of economic growth.

1.2.1. Aggregate Economic Growth:

Aggregate economic is the number of goods and services, as well as the amount of real production that domestic consumers, businesses, the government and international buyer may collectively buy at each price point are displayed in a timetable or curve (Mc Connell and Brue, 1998: 211). On the other hand, aggregate economic is a general increase in a country's

overall production of goods and services. Macroeconomic studies the economy as a whole and its aggregate phenomena increase in the cost of living or the annual growth rate of a nation's total economic output. Aggregate economy helps us to analyze how economic policies impact the overall health of an economy, including factors like employment rates, inflations and economic growth. It's a crucial tool for policymakers, businesses and individuals to make informed decisions (Daron, Laibson and List, 2013:480-483).

1.2.2. Sustainable Economic Growth:

Sustainable economic growth refers to a continued increase in a nation's economic activity that is balanced, environmentally friendly and socially responsible. This involves creating wealth and prosperity without compromising future resources, while taking into account social and environmental dimensions (Barrier, 2017).

1.2.3. Inclusive Economic Growth:

According to (Munir and Ullah, 2018:2), the notion of inclusive economic growth addresses the ideas that unless the benefits of growth are distributed equitably among individuals and social group, economic growth alone will not result in a sustainable improvement in a sustained improvement in well-being.

The goal of inclusive economic growth is to guarantee that everyone in society without exception or marginalization shares fairly in the advantages of economic expansion. It is known as growth inclusivity because it permits all members of society to engage and contribute to the process of growth on an equal basis, irrespective of their unique circumstances this means that everyone, regardless of their social origin, gender, age, or geographic location, should have the opportunity to participate in, contribute to, and benefit from economic growth. It is often seen as a means of reducing poverty, strengthening social stability, and promoting long-term sustainable development (Ali and Son, 2007).

1.2.4. Job-Driven Growth:

Many scholars have defined job driven growth as an economic scenario where job creation is a main factor in the economic growth of a country. According to (Ogunlana, 2018: 5), job driven growth or entrepreneurship is the engine of economic growth that drive the socio economic transformation of any country, especially in a developing country. It also

indicated that a rise in the number of job creation leads to increase in economic growth. The job creation is often external demand. Sector that benefit from growth are often export-oriented industries such as manufacture, technology, services, agriculture etc....

Job-driven economic growth is characterized as a contribution to economic development through four primary categories: growth, productivity, innovation and employment creation. In this context, Job-Driven Growth occurs when the expansion of the economy is largely driven by job creation in various sectors. This generally means more people find work, thereby reducing unemployment and increasing disposable income for households (Van Praag and Versloot, 2007: 351).

1.2.5. Productivity-Driven Growth:

The productivity driven growth has been the primary driver of a nation's development. It often seen as essential to supporting long term sustainable economic growth. The Productivity-Driven growth refers to an increase in the economic activity of a nation or business that is primarily attributable to improvements in efficiency and productivity. This form of growth emphasizes the more efficient use of available resources, such as technology improved production process, innovation, automation and improvement main to increase the production of goods and services without proportionally increasing the number of workers needed to produce them (Mc Connell and Brue, 2014: 373-374).

1.2.6. Export-Led Growth:

Export-led growth occurs when a country's economic expansion is primarily driven by increasing exports of goods and services to international markets. It can lead to foreign exchange earnings and improved trade balances. This form of economic growth is often associated with increased sales abroad, which can boost domestic production to meet this external demand. Sectors that benefit from this growth are often export-oriented industries such as manufacturing, technology, services, agriculture, etc. The benefits of this growth can be multiple, including increased revenues from foreign sales, job creation in sectors that produce goods or services for export, and increased competitiveness companies in the global market. The goal of export-led growth is to increase production capacity by concentrating on

international markets. The benefits of economic openness have gained traction and this is part of emerging consensus among economist (Palley, 2012: 141-142).

1.2.7. Investment-Driven Growth:

In developing nation, investment-driven growth has long been recognized as a crucial development approach (Sing, Cagas, Quising and He, 2006: 2). It refers to an economic expansion that is primarily driven by increased investment in different sectors of the economy. According to (Kadagali and Tapsoba , 2024: 38) technology and capital accumulation are the result of both public and private investment economic progress .It increase the research and development leads to the creation of innovative that can boost economic growth. Investment can take many forms, such as business investment in new equipment, infrastructure construction, research and development spending, education and training or even foreign direct investment.

1.2.8. Resource-Based Growth:

Resource-based growth refers to an economic model where development and expansion is primarily based on the exploitation of natural resources. Globally natural resources constitute a significant source of national wealth. This economic model is often seen in countries or regions rich in natural resources such as oil, gas, minerals, agriculture, forests, etc. Natural resources can play a crucial role in the economy by providing raw materials for various sectors, creating jobs, generating export revenues, and driving economic growth (Gylfason and Zoega, 2001: 4).

1.2.9. Regional Growth:

This type of growth focuses on specific regions or sectors within a country that experience above-average expansion. It can result from specific factors, such as industry clusters or regional advantages. In order word, regional and sectorial growth refers to the expansion and development of specific geographic regions or economic sectors within a country or globally. The regional growth is analyze as the economic expansion or improvement in a specific geographic area or regions. It involves the rise in local production, employment, infrastructure and standards of living while sectorial growth refers to the growth

or development of specific sectors within the economy such as manufacture, technology, agriculture or services (Wagner, 2000).

1.3. Determinant of GDP

The determinants of economic growth are made up of all the elements that enter into the calculation of a country's GDP. In the analysis of this part, we defined economic growth as the rise in an economy's real GDP brought on by either an increase in long-run aggregate supply (LRAS) or an increase in aggregate demand (AD).

Analysis of GDP determinants at this step is based on aggregate demand calculations. By definition, an economy's aggregate demand (AD) is the collection of products and services available at a given moment. In order to determine the GDP at market prices, aggregate demand uses a variety of expenditures made by four (4) sectors on goods and services. Thus, the determination of GDP by aggregate demand method is materialized as follows:

$$\text{GDP} = C + I + G + (X - M) \quad (1.1)$$

Where: C: consumer; I: Investment; G: Government expenditure; X: export; M: Import.

1.3.1. Consumption Expenditure by Household (C)

It represents all the goods and services consumed on the territory, it is constituted by:

- **Durable Goods:** Goods that are not directly intended for consumption, e.g. Car, Furniture...
- **Semi-Durable Goods:** These are goods that are used for periods of time, Ex: shoes, clothes.
- **Non-Durable Goods:** These are goods that are directly used in the economic process, Ex: Food, Petrol...

1.3.2. Government Expenditure

These are salaries and other expenses incurred by the government as part of the functioning of the state. The construction of schools, roads, hospitals, and administrative infrastructure is part of the government expenditure which constitutes the GDP. Payment

transfers consisting of social security, pensioners' salaries and interest on debts are excluded from government expenditure because they represent the receipts of other economic agents. These amounts will be used by the beneficiary agent for the purchase of goods, and services. Economists exclude these expenses to avoid their double use in the calculation of GDP.

- **Gross Capital Formation (I):** It is known as investment expenditure.

Macroeconomists view investment as the purchase of new physical capital and not purchases of inventory in warehouses. The difference between these concepts seems to be confusing among users, but to better understand this part, we focused on some necessary elements. In macroeconomics, investments are constituted as follows:

- **Gross Fixed Capital Formation:** (GFCF) is a crucial economic indicator that measures the total amount of investment made in an economy during a specific period, focusing especially on fixed assets. It includes new capital goods from the private as in public sectors.

- **Change in Inventories:** In macroeconomic terms, a change in inventory can be a leading indicator of economic activity. An increase in inventory suggests that businesses are anticipating increased demand, while a decrease may signal a slowdown. In accounting, change Inventory refers to the difference between the value of a company inventory at the beginning of a period and its value at the end of that period. This change can be positive (an increase in inventory) or negative (a decrease in inventory).

1.3.3. Export (X),and Import (M)

Exports and Imports represent the trade balance in the development of GDP.

- **Export:** The goods and services produced domestically by local companies and sold to trading partners. They (exports) are measured in monetary value. We illustrated this part by analyzing two importing and exporting countries. If Mali exports to China, the value of these exportations are the prices Malian companies will receive from these sales and not the value that Chinese companies will benefit from its final consumers. The amounts collected are considered in macroeconomics as a gross domestic product which increases the country's wealth.

• **Import (M):** Imports are purchases of goods and services by a company or a country from its trading partners. Since imported goods and services are not produced on the national territory, their values are deductible from the GDP. The difference is called trade balance. It can be positive or negative. If imports are greater than exports, the trade balance will be in deficit; otherwise, it will be a trade surplus.

$$AD = C + I + G + (X - M) \quad (1.2)$$

AD: Aggregate Demand of GDP

The figure above represents the composition of the GDP, it shows the elements necessary to determine economic growth. GDP calculation is carried out between two (2) consecutive years (Y_t and Y_{t+1}). The GDP per capital between these two (2) dates is defined as follows.

$$GDP_{t, t+1} = \left[\frac{Y_{t+1} - Y_t}{Y_t} \right] \times 100 \quad (1.3)$$

Let's focus on annual GDP to determine the growth between two dates, which it is explained by taking an example.

For instance : Mali economy had \$ 10.51 in 2000 and \$ 12.40 in 2001. So, the growth between 2000 and 2001 is determined as:

$$GDP_{2000-2001} = \left[\frac{GDP_{2001} - GDP_{2000}}{GDP_{2000}} \right] = 0.179828$$

Economic growth is determined in nominal or real value, but to explain analyzes and comparisons, in relation to progress, economists more generally use GDP as a percentage.

The calculation of the GDP in percentage is done in the same way as that of the nominal but the latter is multiplied by one hundred to know the growth rate. Economic growth rate measures the variation of gross domestic product which corresponds to the sum of all the added values produced in the country. The calculation of the GDP is annual and quarterly, but to better understand the economic situation, developed countries use the quarterly data, as for the countries with weak economies the annual data are much more used to be reassured of the economic situation.

By using nominal and real value of GDP, we can determine the growth rate as follows:

$$\text{Growth rate } t, t+1 = \left[\frac{Y_{t+1} - Y_t}{Y_t} \right] \times 100 \quad (1.4)$$

The economic growth rate can be positive or negative. If the growth rate is negative, it is known as of economic recession which corresponds to a slowdown in economic growth. In other words, the economic recession is define as a general decline in economic activities. If the rate is positive, it means that the economy is doing well.

1.4. NOMINAL AND REAL GDP

Nominal and real GDP are economic statistics that refer to the prices of goods and services. The first analyzes the current price situation on the market while the second deals with the current values but takes into account inflation in the market. The annual base in the calculation of real GDP is an essential element that allows us to know the difference in prices. The study of this part will tell us the difference between these two elements. Practical cases will also be drawn up to understand nominal and real GDP.

1.4.1. Nominal GDP

Nominal GDP is the production of goods and services measured at current prices which determines the value of each unit produced. It varies according to time and the current price. We illustrated a more explicit example that will detail the elements of the calculation of nominal GDP. As mentioned above, we defined GDP as all the wealth created by a country

for a specific period. But this GDP can be nominal or real. Generally, economists use real GDP as an indicator of growth.

For example, suppose an industrial company that manufactures 15 machines in the year 2000 at \$2000 and another 15 in 2001 at \$2500. It notice that the quantity produced by the machine has not changed from one year to another, but the prices have increased from \$2000 to \$2500. This price change is due to inflation.

In this case, the calculation of nominal GDP can be summarized as follows:

$$\text{GDP nominal}_{2000} = \left[\frac{GDP_{2001} - GDP_{2000}}{GDP_{2000}} \right]$$

$$\text{GDP}_{2000} = [15 \times 20.000\$] = 300.000\$$$

$$\text{GDP}_{2001} = [15 \times 25.000\$] = 375.000\$$$

$$\text{GDP nominal} = \left[\frac{375.000 - 300.000}{300.000} \right] = 0.25; \text{ So GDP nominal is: } 25\%$$

Here the production of this company between the years 2000 and 2001 remains constant at 15 machines, it is means 0% increase.

Therefore, the change in the price of machinery between the years 2000 to 2001 increased the nominal GDP by 25%

1.4.2. Real GDP:

Real GDP is the total value of output (final goods and services) by using market prices from a certain base year to calculate the value of each unit generated. On the other hand, real GDP is measured output at a constant price. Real GDP is calculated in the same way as nominal GDP. In this method, it is important to consider a base year. It means a year where there was no inflation. In this year, nominal GDP is equal to real GDP (Daron, Laibson and John, 2018: 499).

To illustrate this idea, let's take the year 2000 as the base year. In this example, the unit price of the machine is \$2000. To calculate the real GDP, we take \$20.000 as the price in the years 2000 and 2001.

$$\text{Therefore; GDP}_{2000} = [15 \times 20.000\$] = 300.000\$$$

And
$$\mathbf{GDP}_{2001} = [15 \times 20.000 \$] = 300.000\$$$

$$\mathbf{Real\ GDP} = \left[\frac{300.000\$ - 300.000\$}{300.000\$} \right] = 0.00 = 0 \%$$

Therefore, since there was no price change during the years 2000 and 2001, real GDP remained constant at 0%.

1.4.3. Deflator GDP

GDP deflator measures the price variation between the base years. Otherwise, the deflator tells us the share of variation in nominal GDP attributable to a variation in quantities. The GDP deflator is the ratio between nominal GDP and real GDP likewise year and multiply the result obtained by one hundred.

Thus, the GDP deflator formula is:

$$\mathbf{Deflator\ GDP} = \left[\frac{\mathbf{NOMINAL\ GDP}}{\mathbf{REAL\ GDP}} \right] \times 100 \quad (1.5)$$

This formula shows us that the price of goods and services produced domestically must be its lowest during the year to avoid inflation or economic fluctuation of the price.

2. EXPORT AND IMPORT

The world is interconnected and facilitates trade between countries, continents, and regions through exports and imports. Trade is one of the essential elements in determining economic growth. It represents the balance of a country. According to (Okyere and Jilu 2020), International trade (export and import) is a cross-border exchange of goods and services. It is the most common form of activity and played an important role in modifying the history of the world.

The continuation of this part will explain the role of exports and imports in an economy. The Situation and evolution of Malian trade over recent years will be relevant elements in the analysis of this sub-chapter. The environmental and ecological problems which are important elements in the transport of goods will also be explained in this part.

2.1. Export

International trade is seen as the economic globalization of countries with large economies and industrialization. For years, large companies and multinationals have been looking for economic partners in the context of the promotion and sale of their products in other countries. This practice of exchanging goods and services is known as (export and import).

Nowadays, the economies of countries are interdependent thanks to international trade. Exports are considered as one of the key factors of growth. According to (Ali, Hasan, and Oudat, 2021), one of the most important components of sustainable economic growth whether in industrialized or developing nation is export. On the other hand, export is the set of goods and services produced by a country and sold outside its borders. In countries with an open or liberal economy, exports are the main source of domestic job creation and economic growth. Exports allow nations to increase the productivity of goods and services to earn foreign currency.

Like any economic practice, the export of certain goods and services are regulated by laws adopted by the World Trade Organization (WTO). Exports of certain products are subject to permits and licenses to the exporting country. Pharmaceutical, military, and technological products require shipping licenses from the manufacturer to the customer. This export control allows the government to regularize and enforce the companies producing these goods with the various legislations of the World Trade Organization. However, export control legislation varies between countries and regions. It is therefore important for exporters to know which country to cooperate in order to sell their products, and which country to transit before the final destination of the goods (Das, 1999: 17-30).

Each country has its own policy for exporting and taxing goods. The rules for exporting raw materials are different from those for finished products. The nations that have signed the same trade agreement can freely exercise their trade without taxing goods, this is particularly the case for European Union countries (UE), ECOWAS, etc. Exports of goods to other countries that are not signatories to the agreement are subject to the rules. Exported products must be declared to the competent authorities to be subject to customs formalities.

The export of high-value goods such as oil, gold, diamonds, and iron are often negotiated between the countries and the exporting companies. Customs formalities are carried out at export and import. Generally, the customs clearance of goods for export is not applicable to the (VAT) regime but it is necessary to check the exit of the goods for non-invoicing of the tax (Das, 1999: 252-2453).

Given the problem of industrialization and electrification, most African countries are not able to transform their raw materials on-site to sell finished products outside the continent. Goods and services exported by these countries are sometimes sold at low prices. Mali is a country with a weak economy, whose economic growth is supported by the export of raw materials and other goods. Malian's exports are mainly based on the production of cotton and gold. Other manufactured products can also add to the list of goods exported by Mali. Given the profitability of exports in the Malian economy, the government decided to remove taxes on cotton exports. This allowed local producers to increase their productivity in this sector.

Exports of cattle to Ivory Coast, Guinea, and Senegal include low taxes given their prices. A tax of 3% of the purchase price of cattle is sometimes applicable for those destined to Ivory cost. For control reasons, the government of Mali requires export certificates for these cattle. More than 107 billion FCFA were collected by livestock exports from Mali in 2020, it means 21.19% of the amount of exports (World Bank, 2020). The main destinations for those exports are the ECOWAS countries. The authorities want to ensure the long-term development of this sector and improve the income of producers in order to increase the value added to the national economy. The livestock sub-sector alone represents income source, for more than 30% of the population. In 2018, the amount of animal, especially cattle export was estimated at more than 139 billion FCFA. Despite this potential, meat production is confronted with quality problems. In terms of animal production and industry, Mali is ranked first in the UEMOA area and second place in the ECOWAS area after Nigeria (Ouere, 2022).

Gold production and exportation constitute one of the main sources of Malian economy in terms of generous resources, they represent the key to economic growth. It represents 1/4 of economic resources. In 2007, the gold export increased from 46.5 tons to

more than 60 tons in 2018. In 2020, Mali exported 69.3 tons against a forecast of 63.91 tons. 8.4% of exportation in 2022 has been noted by statistical studies. Gold exports represent 7% of Mali's GDP and 75% of all export earnings come from the sale of gold. Despite all the revenues generated by this sector, illegal artisanal mining in northern Mali escapes government control (Ouere, 2022: 2617).

The United Arab Emirates (UAE) is the flagship destination for artisanal gold minerals illegally extracted in Mali. In 2019, the government claimed that 500kg/year of gold was exported from Mali to the UAE, but this information remains to be verified because the United Arab Emirates claims that the same year 80 tons of gold was imported from Mali. Illegal gold exportation from Mali cost the government thousands of dollars per year (RTM New, 2019).

Cotton production is a strategic and vital sector of the Malian's economy. Its exportations realize growth potential each year given the quality of the market. It is the main source of income for farmers living in these areas. Cotton production is Mali's predominant industrial crop and strongly influences the national economy. The use of cotton fibers is very limited in the artisanal textile industries. Thus, 98% of national production is exported to international markets. (Cissé, 2016).

Mali's economy could have received \$1.6 billion in 2018 if the authorities had a processing and industrialization unit to add value to the national economy. The country is a leading cotton producer in Africa, but the lack of investment in this sector is a problem for local farmers. Mali recorded 700,000 tons during its last agricultural campaign. Facing numerous challenges in this sector, producers want the processing of this product on-site. Cotton exports represent 15% of GDP, so marketing requires support from the authorities (RTM New, 2018).

2.2. Import

Over the past two decades, the African continent has seen a steady rise in the import of goods and services from around the globe. At the same time, Africa is recognized as the key supplier of raw materials to developed countries. This kind of economic interaction is

referred as international trade. The analysis of this part is based on imports of goods and services in general and those of Mali in particular.

Before starting, import is defined as any commercial activity that has for interest the acquisition of goods and services coming from outside. Lee (1995) defines import as the contribution and the development of industrial sectors, he considers that the import of new technology goods can improve the production of companies and increase the economic growth of nations.

Businesses across the globe are developing, which may necessitate the need for goods and services that are not always offered close by the availability of these goods at reasonable prices can be increased with the aid of importation. The capability of obtaining less expensive raw materials from foreign seller than those accessible in local markets or placing large purchases to cut prices is also called import.

Access to new technologies or manufacturing methods created overseas - Importers may quickly introduce innovative technology into their own countries, making it easier for them to keep up with changes within their own industries. Imports often depend on exports of the basic products which constitute the raw materials of the companies. Imports can bring competition into a country if there is monopoly on a certain product. The consumer will be benefit from this competition.

Imports play a major role in the Malian economy. It brings local production into competition with that imported by companies or traders. Imports to Mali are dominated by petroleum products and their derivatives. Manufactured products are imported as part of the basic needs of the population.

During the first quarter of 2021, imports of goods and services were divided into the product division. 174.777 billion FCFA of petroleum and its related products were imported, which made up 21.38% of total imports and 66.966 billion FCFA (8.19%) of vehicles. Manufactured non-metallic mineral articles worth 48.932 billion FCFA (5.99%). Cereal imports have increased by 5% compared to that of 2020. With a sum of 47.840 billion FCFA representing 5.85% of total imports .Imports of technology services are growing and moving towards a digital economy. The introduction of new technologies contributes to the creation

of jobs and the improvement of the economy in the various sectors of activity (Amadou Diarra, 2021).

Each year, Malian's companies seek to innovate local productions in order to adapt to international standards. Imports of agricultural and industrial machinery are analyzed as a factor that can increase the productivity of companies operating in these sectors of activity.

In the fourth quarter of 2020, imports of machinery and transport equipment amounted to 177.274 million FCFA. This equipment is composed of various materials, including office machinery and telecommunication equipment for an estimated amount of 24.759 million FCFA, transport equipment of 62.925 million FCFA, and other machines composed of electrical and non-electrical devices. Generator machines with a total import cost of 89.590 million FCFA (World Bank, 2020).

Manufactured products are directly intended for consumption for the needs of the population. Malian's manufactured products are composed mainly of rice, flour, pharmaceutical products and chemicals. Rice importations dominate the market of Mali. It is considered as the base food of the population. The importation countries of rice are Thailand, Brazil and the United States. Additionally, Mali imports rice from neighboring nations like Ivory Coast and Senegal. In 2021, rice importations in Mali were estimated at 250,000 and 300,000 tons per year (WTO). These importations increased by more than 80% for the year 2022 with a quantity of 550,000 tons of rice. A 15% drop in imported quantities was observed at the end of 2021 (Africa24 News, 2021).

Mali imported 238,001 million dollars of pharmaceutical products within the framework of the health system and 9,853 million of organic chemical products. 81.586 million wheats were imported for the year 2021 (World Bank, 2021).

2.2.1. Trade Barriers

Trade barriers correspond to the customs duties that foreign products must pay when entering the national territory. This barrier allows a country to limit or make it difficult to access a product from abroad. Customs barriers are import duties imposed on goods. Increasing customs duties will allow local production to compete with foreign products (Fernandez, 2021).

To protect its industries, the European Union (EU) has adopted a policy of protectionism against China. For instance, in 2006, the European Commission decided to tax all products from China. These practices make it possible to establish equitable rules of international trade (Hanson, 2010).

Non-tariff barriers correspond to a set of non-tariff restrictive measures put in place by a country in order to protect the market from external competition. It includes a wide range of impediments resulting from prohibiting specific market requirement conditions that make imports or exports of products difficult or costly. For instance, sanitary measures are often imposed by countries on importers in order to control products entering the territory. The complication of administrative procedures can also discourage importers of goods. All these restrictions make it possible to promote and enhance local production compared to imported products (Beghin, 2006).

Trade barriers can have direct impacts on less industrialized countries where the economy depends on imports. The adoption of trade barriers in these countries will necessitate a slowdown in economic growth and an increase in the unemployment rate. Membership in a trade organization can help these countries expand imports and exports without facing customs barrier problems. Countries that have signed the same trade agreement can freely trade. Goods imported by these countries are subject to the same tax duty.

2.2.2. Import Tariff:

An import tariff is the sum of the import duties of the goods on the national territory. According to (Daron, Laibson, and List, 2016), import tariffs are taxes levied on goods and services transported across political boundaries. It is also a tax on imported goods ; An import tax can be imposed to obtain revenue or to protect domestic firms. Customs tariffs depend on the nature of the goods and the country of importation. It facilitates commercial exchanges and on the other hand, increases the national wealth of the country. One of the most crucial import control methods is the use of tariffs. Theoretically, when a tariff is placed on imported good, their prices rise by the tariff's amount in the domestic market. As the cost of imported items rises, consumer demand falls, which could lead them to switch to domestically

produced alternatives. Domestic industries would be encouraged to boost production and become more competitive as domestic consumption of home goods increases. However, the impact of tariffs in emerging countries, is a matter of debate. The effect of the tariff may be partially negated in this situation if the exporting nation gets government subsidies hence, in order to create a tariff (McConnell and Brue,2020).

Some countries impose high customs tariffs. Importers of goods are also forced to increase the selling prices of their products. Consumers will reduce their purchasing power and it will slow down the economic growth. Countries that operate the same monetary zone or signing the same trade agreement are forced to facilitate free trade between them. Importations of goods and services are subject to VAT and depending on the country of origin.

2.2.3. Import Quota:

One of the non-tariff barriers that are imposed on imports is an import quota. According to theory, a government can directly restrict the volume of imports by lowering the import quota Singh (1985). An import Quota specifies the maximum amount of a commodity that may be imported in any period. It can more effectively retard international commerce than tariffs (McConnell and Brue, 2020: 775). In terms of trade, import quotas and tariffs have the same economic impact. The Tariff generates revenue from domestic operations.

Due to the high domestic demand for imported goods, when the volume of importations declines, the domestic price of import increases, the demand for imported items declines as a result and consumers switch to less appealing domestic alternatives. Due to this, domestic production of imported items that compete with them rises, increasing output.

The benefits of quotas over a comparable tariff are up for debate. It is argued that tariffs may be better than an equal quota since they do not bring money for the government if it is not a provider, but instead favor quota holders while also leading to corruption and administrative has less Sing (1985). Contrarily, reducing imports through tariffs causes internal distortions and foreign supplier retaliation.

2.2.4. License:

An import license is another tool used in the import control system. A government can lower imports by immediately lowering import licenses. Import license is the restriction or limitation of a product imported by a country. The distinction between a quota and a license is; the license is based on volume while a Quota is the value of foreign exchange. On the other hand, an import license is a document issued by the government that authorizes the import of certain goods into its territory. To restrict imports of certain products, the government may decide to reduce the issuance of licenses to importers. An import license is considered as a non-tariff measure that can be used to achieve different public policy objectives. To comply with national regulations and standards, many companies require licenses for the import of pharmaceutical products and apply the restriction on the quantities of products imported (Sun and Su, 2024: 6).

2.2. 5. Exchange Control:

One of the import control measures is exchange control. Exchange control is used as an instrument of development planning in turn geared, at least in part, at alleviating the exchange problem. In terms of consequence, exchange control can affect the current economic situation and impact economic growth. The government of a nation distributes tiny amounts of foreign currency to lower imports. This implies that in order to preserve the balance of payments, the government directly controls the foreign exchange market (Krueger, 1966:466).

Mali is a country in the FCFA zone, whose exchange control is ensured by the Central Bank of West African States (BCEAO). This monetary zone includes eight (8) West African countries. The objective of this institution is to use a common currency and the free circulation of goods and services. BCEAO issues currencies to the various central banks of these member countries to carry out the various transactions. Countries that do not belong to a monetary zone like Guinea are forced to carry out their commercial operations in local currency or in foreign currency. In general, commercial exchanges are carried out in dollars.

Mali's commercial activities come under the Ministry of Commerce and Crafts. The various departments such as: the national trade directorate, the quality control services and customs are responsible for supervising imports, and exports.

2.2.6. Concept Environment:

Each year, rich and powerful countries meet to discuss environmental and ecological issues that the world is facing. The pollution of the environment by production companies is one of the main subjects of the meeting. According to Forthoffer (2003) the fight against climate change, which is essentially the consequence of the growth of energy consumption, will probably be one of the great battles that humanity will have to lead during the 21st century. Greenhouse gas emissions are mostly due to the transport of goods. International trade is considered one of the factors of environmental pollution. With a view to analyzing the concept of the environment on trade, we examined this part based on the different elements that can have an impact on the environment.

The increase in income and the stability of the economy requires export diversification. Countries seeking to achieve sustained economic growth through export product diversification must consider the effect of environmental pollution. Global warming issues have been critical in achieving economic growth through increased exports. The export and import of certain goods are forced to respect environmental standards (Adewuyi and Awoudumi, 2016).

To begin, this thesis define pollution as the degradation of the environment caused by various chemical products (natural, chemical, or radioactive), waste (household, industrial) or nuisances (sound, light, thermal, biological). According to Russell (1974), the term pollution is a natural phenomenon in the quality of water, air or soil. There are three main types of pollution.

- Air pollution, refers to the alteration of the chemical composition of the air by contamination harmful to human and environmental health. These pollutants come either from human activities such as (road traffic, heating, industry, and agriculture), or from natural sources (such as forest fires). The problem of air pollution has an effect on human health environment and many areas of life (Khallaf, 2011).

- Water pollution is presented as environmental degradation caused by chemical and bacteriological waste. It is also produced by medical waste, industries, and domestic waste.

- Soil pollution is caused by pesticides and insecticides. Soil pollution causes imbalances in soil nutrients. It reduces organic matter in the soil. Mining, agriculture, industrialization and warfare are the main elements that pollute the soil.

The relationship between environmental protection and free trade has been the key to theoretical discussions on an economic or political level since the 1990s , when environmental and particularly climate related issues started to take center stage and are now seen as being of the most important international affairs. Companies producing goods and services are nowadays considered as the main target of environmental pollution thanks to the waste they emit into nature. The import and export of goods and services by various transportation can have an impact on the environment. International trade plays a crucial role in the emission of carbon monoxide and other gases via the emissions resulting from the production and transport of goods and services which lead to climate change (Duodu and Mpuure, 2023).

The effect of international trade (Export, Import) on environmental pollution has always been a major subject in economic and political decision-making bodies. Studies have shown that imports and exports of goods can have various impacts on the environment. The extraction of raw materials such as iron, gold, diamonds, oil, bauxite etc, leads to the pollution of the environment for exporting country due to the CO₂ emissions released during operations. According to (Duodu and Puure, 2023), importations facilitate access to technologies that could shift the industrial sector from the use of fossil fuel combustion to renewable energy that limits CO₂ emissions. To avoid ecological problems, the European Union (EU) has banned the importations of products from deforestation. These products are coffee, wood, sheet of paper, cocoa, etc. It is generally accepted that imported products must meet national environmental health and safety standards (Potier, 1997).

The environmental effects of international trade are not yet fully understood. Direct pollution caused by transport, growth in production and problems of international pollution regulations are analyzed as negative aspects of international trade. On the positive side, we

have the transfer of proprietary technology or the efficient use of natural resources. Despite the fact, most of the analyzes concerns the exportation and importation of the environment, some studies show complementarities between these concepts.

Over time, the seas and oceans have become major hubs for human travel and trade. The phenomenon of globalization that appeared in the 20th century considerably increased maritime activity and identified the network of maritime routes that circumnavigated the earth. Today, 90% of world exports and imports are made by boat. Energy, raw materials, manufactured products, food, clothing... These numerous networks and mobile platforms are essential to our daily lives (Frankel, 2009).

According to Bara (2020), in 2015(8) billion tons of CO₂ emissions were incorporated into commercial transactions, which represents approximately 25% of all global emissions. Due to its trade surplus, China recorded 9.1 billion tons of CO₂ thanks to its various production units of goods and services. The heavy reliance on coal in Chinese industries has also increased the country's pollution rate.

China's exports to poor countries, of which it is a major trading partner pollute 35% of the environment in these countries. United States of America, which is considered the second polluting country in the world, is responsible for 12.6% of CO₂ emissions (GEO, 2015). In terms of market absorption, the United States is the largest market, absorbing 15% of traded CO₂ in 2015, while China is the second largest with 10%. This latter share has increased by 76% since 2005. Chinese exportations are responsible for half of the world's CO₂ emissions between 2005 and 2015, which means that China can be classified of the most polluted countries in the world (Cezar and Polge,2020).

The transport of goods and services from one country to another or from one region to another is sometimes constrained by air and sea pollution. In general, 25% of global carbon dioxide emissions come from the transport of goods. The majority of this pollution comes from the import of vehicles or the delivery of goods over short distances. Air pollution is still quite small. The transport of goods by sea can cause environmental pollution. Tons of cargo are thrown into the sea every year by different shipping companies. In 2007, 10,500 tons of crude oil were dumped on the coasts of the Pacific Ocean 300 km from the South Korean

side. Maritime transport of goods and services represents 3% of CO₂ emissions in the global environment. Ecological forecasts estimate that this rate will rise up to 17% by 2050 if measures are not taken to the pollution caused by production companies (France24 New, 2023).

In February 2018, a study was conducted on the effects of pollution caused by maritime freight transport. It was found that 250,000 premature deaths were caused each year by the fuels of shipping companies transporting goods. According to studies by France Nature Environment, air pollution caused by maritime transport in Europe is responsible for more than 50,000 deaths per year. Every year, 15,000 containers full of goods are lost in the sea which constitutes a danger to the environment (RFI New 2018).

Air freight is considered the fastest method of transporting goods and the most polluting of transport. According to the data, air transport is responsible for 2 to 5% of greenhouse gas emissions. The CO₂ emissions released by companies for the transport of goods have increased by 70% during the last twenty (20) years. The effects of this increase are due to the proliferation of cargo planes transporting goods.

The transportation of goods by train pollutes 10 to 50 times less than the bus. It is the least ecological means of transport. Rail transport of goods represents 9% of world transport. Its CO₂ emission is 0.3%. The transportation of goods and services by train directly occupies half the space of the road, consumes two (2) to three (3) times less energy and is ten (10) to twenty (20) times polluting the atmosphere. Rail transport has environmental advantages that are not discussed (Forthoffer, 2003).

SECOND CHAPTER

2. WORLD AND MALI ECONOMIC ANALYSIS

The analysis of the economic situation of the world concerns the major events that have marked the world economy. These events can be economic crises, natural calamities or pandemics. From the perspective of analysis, the subprime crisis and the coronavirus are analyzing in this part as being the great economic upheavals of the 21st century. The effects of the Russo-Ukrainian war on international trade and world economies are essential factors in this part.

2.1. WORLD ECONOMIC ANALYSIS

The world economy refers to the interconnected economic system of all human activities across nations. It encompasses global trade, investment, and financial markets, as well as measures like GDP growth, inflation rates, and various economic policies. (Bukharin and Lenin, 1929: 27) analyzed world economy as a species of social economy in general. The global economy refers to the interconnected system of economic activities that take place globally. According to IMF (2009) the world economy is currently experiencing a severe recession brought on by a severe financial crisis and a sharp decline in confidence. Global connection have the potential to expand, encompassing region that have not yet drawn into the vortex of capitalist life (Bukharin and Lenin, 1929:28).

The global economy is influenced by various factors including economic policies, international trade, financial markets, technological advances, and geopolitical developments. International and financial organizations, multinational companies, trade, or exchange blocs developed countries are analyzing in this thesis as the major players in the global economy.

International trade: International trade analysis includes the study of import and export movements between countries. Sun and Hestimati (2010) examine global trade as a key component of openness that has contributed significantly to economic growth. The key indicators include trade balance, agreements tariffs and global trade trends. According to Ostashko and Kobuta (2020 :7), the volume of world trade in goods in the first quarter 2020

decrease by 3% compared to 2019. This reduction is due to the impact of COVID19 that the world has gone through. Large companies and product exporting countries such as China and the USA have seen their exports decline. According to (WTO), the global trade in production and services reached US\$ 22 trillion in 2020, a 12% decrease from 2019. With US\$ 2.232 trillion, China was the world's top export accounting for 13% of global exports with an amount of US\$ 2.232 trillion in 2020. However, global exports in 2023 was increase by 9%, which explains the progress and good financial health of exporting countries.

Employment and unemployment: The global labor market is analyzed in relation to employment and unemployment rates. Bruner and Meltzer (1978) defined unemployment as the gap between the supply and demand for jobs at each real wage. The problem of unemployment is one of the major situations that the world is going through. The great challenges of economists and political leaders are the reduction of the unemployment rate and the increase of economic growth. According to the World Bank, the global unemployment rate in 2023 stands at 5.1% an improvement of 5.3% compared to 2022. This reduction is due to the creation of small and medium-sized companies in different corners of the world. However, the unemployment rate in the period 2022 in the USA was 3.65% in France 7.31%, in Canada 5.28%, in Nigeria 3.83%, and in Germany 3.14%. These unemployment rates have been increased due to COVID-19 (World Bank Data, 2022).

Employed is a person holding a full-time or part-time paid job (Daron, Laibson and List, 2016: 598). Employment in the formal sector encompasses all position in formal sector businesses or all individuals who , during a certain reference period, worked for at least one informal sector business, regardless of their emploment status or whether it was their primary or seconadry job (Hussmanns, 2004:2). By using this definition, in 2024, 3.5 billion people were employed world wide. The same database indicated that global employment declined considerably between 2019 and 2020 as the COVID19 pandemic's abrupt economic shock led the number of working individuals to drop by 3.19 billion (Statista, 2024) .

Financial markets: The extent of the globalization process is especially evident in the financial markets when compared to other sectors (Adambekova and Andekin, 2013 : 12). The financial institution like the World Bank and international monetary fund have become

the major element in the world economy. According to Adambekova and Andekin (2013), the financial market is probably the most common and sustainable concept used in society. The definition of the financial market varies depending on the author. The financial market is define as a segment of the loan market where securities are issued and bought and sold. The analysis of the financial markets makes it possible to understand the tendencies, the confidence of the investors and the financial risks (Krasavina, 2005:576).

Technology and innovation: These factors had an increasingly important impact on the global economy. Analysis of technical developments in automation and artificial intelligence offers insights into structural change and opportunities in the economy.

Economic Growth: To understand overall performance, one must assess the rate of global economic growth. Growth forecasts, as well as GDP growth rates in various fields, and nations can shed light on the state of the global economy.

With a view to an explicit analysis, we examined the situation of the world economy by focusing on the main highlights that have impacted the economic world. In the same idea, this step also explained the different highlights of the savings.

2.1.1. Global Economic Crisis from 2007 to 2008

After years of strong economic growth, the world economy was confronted with difficulties during the years 2007 and 2008. It became evident in the USA and UK in mid-2007 and threatened to envelop much of the world in late 2008 (Brancaccio and Fontana, 2011). This economic crisis called, the subprime crisis. It was triggered by the collapse of the American real estate market and quickly spread worldwide. The rising cost of oil, the decline of American dollar compared to the other currencies, the difficulties of repayment of credits by households were the major causes of the subprime crisis.

2.1.2. The Characteristic of Subprime Crisis

The subprime crisis was characterized by several elements, but the most important are:

The collapse of the financial markets: The financial crisis started with the collapse of the American real estate market, particularly in the sector of high-risk subprime mortgages. The complex financial products associated with these loans resulted in massive losses for

financial institutions and caused widespread panic in global financial markets (Levinson, 2009: 64-65).

Global Economic Recession: The financial crisis quickly turned into a global economic recession. Many countries experienced a contraction in their global economic output, an increase in unemployment, and a drop in investment. The major economies of the world including the United States of America, Europe and Japan were affected. The two economic powerhouses, the USA, and China adopted the strongest policy response to the crisis (Akyüz, 2011:5).

Monetary policy in both countries has been aggressively eased. In the USA, the measure aims to strengthen troubled financial institutions and allow banks to rebuild their capacity by relying on the yield curve. A monetary policy was established in China that resulted in a sharp rise in the country's public debt. This along with measures to increase demand for real estate caused a bubble in the market (Akyüz, 2011).

Financial institution bankruptcies and bailouts: Several large financial institutions faced bankrupt or were on the brink of bankruptcy due to their risky investments in subprime mortgages. Governments were forced to intervene by carrying out financial reinforcements to avoid a complete collapse of the financial system (Hellwing, 2009).

Impact on world trade: The global economic recession has led to a decrease in international trade. Global demand plummeted, exports declined, and companies reduced their investment and international operations. The OECD predicts world trade volume could shrink by 13 percent in 2009 from 2008 levels. The financial crisis has had devastating real effects on international trade. Each of these effects ripples around the world, some cumulative and others offsetting each other (Mckibbin and Stoechel, 2009).

Economic stimulus measure: To deal with the crisis, many governments implemented economic stimulus measures, including fiscal stimulus plans, financial support measures for businesses.

Banking Crisis: Several major global financial institutions were significantly affected by the crisis. Some bankrupt or had to be bailed out by the government to avoid a total collapse of the financial system (Gregoriou, 2009).

Figure 2.1.: Subprime Crisis



It is noticed in this image that the collapse of the global economy in 2009 began with the increase in housing prices and mortgage loan defaults. It was observed that the loans started to post signals in 1995 when the banks noted the progressive increase in the prices of house and the sufferings of refunding of the credits by the real estates.

In the United States of America, national average house prices increased by 93% to 137% depending on the index used between 1996 and 2006 (Sander, 2008). The growth in house prices in some cities like Los Angeles and Las Vegas were increased to 100%. Declines in the mortgage interest rate were observed from 2003.

During 2000, the real estate market experienced a rapid expansion of subprime mortgages. Banks lent money to poor creditworthy borrowers. The US central bank cut interest rates to stimulate the economy. The increased demand for housing also facilitated easy access to credit in banks.

From 2006, prices began to decline, which had an impact on the value of bank assets. At the same time, property prices fell, and many borrowers were unable to repay their loans. Payment defaults and foreclosures multiplied resulting in significant losses for the financial institutions holding these loans. This financial crisis quickly spread through the global financial markets and led to economic consequences on a global scale.

2.1. 3. The effect of Subprime Crisis in Africa

The global financial crisis is bound to have a major impact on developing countries including Africa (Masa and Velde, 2008:1). These impacts were direct like other economic crises but they affected a large part of Africa's economic activities. It also had serious impact on most of African economy because of their level of integration into and position in the international division of labor. Among these impacts, the financial sector and banking sector were more affected (Obayelu, 2010: 18).

International trade has been affected by the subprime crisis; African countries whose economies were based on the export of raw materials and agricultural products were affected by the drop in price on the international market. According to Allen and Giovannetti (2011:3), in the summer of 2008, oil was trading at \$147 a barrel, then the price went down to around \$40 in a short space of time. It means, oil exporting countries will lose \$107 dollars for every barrel sold because of the crisis. On the other hand, Eichengreen and O'Rourke (2009) maintain that, the fall in world trade was even sharper than in the depression, at around 11% in a single year. The agricultural exporter countries like Guinea Bissau, where 91.3% of export is in cashing nuts, which are strongly affected by price changes (Allen and Giovannetti, 2011).

The trade balance of most African countries was negative and led to an impact on public finance and foreign exchange reserves. Some African countries whose economies depend on international aid from international financial institutions such as the World Bank and international funds were reduced by these institutions. These countries have faced economic difficulties of the population.

The subprime crisis led to foreign direct investment (FDI) in Africa. In 2007, net foreign direct investment inflows to SSA amounted to about US\$25 billion and have continued to decrease. Additionally, it indicated that FDI is anticipated to lower the growth rate of remittance flows to sub-Saharan Africa from 42% in 2007 to only 6% in 2008 (Masa and Velde, 2008).

Many international companies reduced their investment due to uncertainty in the study and shrinking global market. Infrastructure projects and employment opportunities

were reduced in some African countries. Banks that were dependent on western banks suffered losses because of their attachment to the international financial market. The African stock market experienced falling values and increased volatility due to uncertainty and declining foreign capital.

The governments of industrialized Africa countries such as Nigeria, South Africa and Egypt have taken measures to mitigate the effect of the crisis. To address the country's diminishing foreign exchange reserve, the Nigerian central bank suggested in January 2009 that 3 trillion naira or \$20 billion will be spent from the nation's reserve. Additionally, the South African government has taken action to progressively lessen the residual foreign exchange controls that solely apply to South African citizens (Madubeko, 2010:20). Support policies for the most affected sectors were relaunched. Financial reforms to strengthen the stability of the economic system and initiatives aimed at diversifying the economies were adopted by these countries to help other countries affected by the crisis (Omotor, 2011:74).

It is important to note that the effects of the subprime crisis vary from country to country, depending on commodity exports, economic diversification, sound economic policies, and measures taken by the government to deal with the crisis. Some countries established themselves quickly, while others took longer to recover from the effects of the crisis.

2.1.4. The Effect of Subprime Crisis in Europe

Subprime crisis was a worldwide financial disaster that mostly impact the economy of Europe but also many other nations (Scares and Figueiredo, 2021). The European financial institutions, known for their good management of funds were confronted at the beginning of 2007 with a financial economic crisis. According to Jamet (2008), the European economy was not threatened with recession, but growth slowed down substantially in 2008, in particular in the United Kingdom and in the Eurozone. It affected the European economy.

The crisis has had the greatest impact on the banking and automotive industries (Glassner and Galgoci, 2009:9). In the UK, the biggest job losses were in investment banks, credit unions and other financial institutions that trade short-term instruments against long-term securities and loans. Credit Suisse and UK HSBC will cut 500 and 650 jobs, respectively

in investment banking (Glassner and Galgoci, 2009). The banking industry in France had been growing steadily for a number of years before it entered the financial crisis. But later on *societe generale* was affected by losses from subprime lending as well as a rumored fraud by one of its traders that was made public in early 2008 (Goddard, Molyneux, and Wilson, 2009:12).

The Euro zone countries were particularly affected, with a contraction in economic activity, an increase in unemployment and a drop in production levels. Some countries experienced prolonged economic difficulties, notably Greece, Spain and Ireland, which were forced to deal with sovereign crises. The subprime crisis has also exerted pressure on the single European currency Euro. Some Eurozone countries have been facing sovereign debt problems raising concerns about the strength of the Eurozone as a whole. Most European banks were exposed to US subprime mortgages and other toxic financial products. Some major European banks suffered large losses, faced liquidity problems and required government bailouts to prevent their collapse (Zesto, 2015).

To cope with budget and growing sovereign debt, many European countries implemented austerity policies. The UK government declared in October 2008 that £50 billion fund will be established for the recapitalization of failing banks. In the same year, the government plans to guarantee loans of up to £20 billion to small and medium sized businesses. The French government declared in October 2008 that it was allocating €40 billion for asset purchases and bank recapitalization. Additionally, a fund was created to offer guarantees for bank loans totaling €320 billion. Those led to public spending cuts, tax increases and structural reforms aimed at reducing deficits and restoring financial stability. However, those measures have also had an impact on economic growth and living standards (Goddard, Molyneux, and Wilson, 2009:4).

The effects of the subprime crisis in Europe were deep and long-lasting. Although the region experienced a gradual recovery thereafter, the crisis left economic, social, and political scars that continue to impact the region to this day.

2.2. THE CORONAVIRUS PANDEMIC AND THE WORLD ECONOMY

Coronavirus first appeared in December 2019 in Wuhan (China). After three months of devastation, World Health Organization recognized the disease as a pandemic. During this period, the world's economies were affected; economic activities were slowed down. International trade is under threat, and GDP is in red in most countries around the world. The analysis in this part briefly explains the economic situation of the world before, during and after COVID-19.

2.2.1. World Economy Before Covid-19

The COVID-19 epidemic has had a rapid and significant impact on our life, similar to the most devastating historical catastrophes like the subprime crisis or world war (Pileggi, 2021). After the great global financial crisis in 2007-2008, the world did not experience other economic crises. The economic growth were changing in most countries around the world. But after 12 years of great economic recession, at the end of 2019, a pandemic of the virus was discovered by scientists and then disturbed the world economic forecasts for 2020.

According to Chesnais (2020), as the pandemic approaches, the growth outlook for the world economy for 2020 published by the OECD was 2.9%. In October 2019, Germany's industrial production fell by 1.7%. The United States of America, considered the world's leading economic power, lost 0.4% of manufacturing production. China, whose economy depends on industries and exports of products to the world was the most impacted by the virus.

International trade played a vital role in the global economy. Exchanges of goods and services took place on a large scale. Countries participating in global supply chains. Economies were increasingly interconnected through international trade, capital flows, and cross-border investments. Trade between nations were facilitated by trade accords like the Trans-Pacific Partnership-agreement (TPP) and the North American Free Trade Agreement (NAFTA) (Feyisa, 2020).

Before the pandemic, most regions of the world were experiencing positive economic growth. Developed economies such as the United States, the European Union, and

Japan showed moderate but stable growth. Emerging and developing economies including China, India and some Latin American countries were growing faster. These countries accounted for a large share of global GDP and played a vital role in international trade and investment (Pileggi, 2021).

The labor market was relatively strong. Unemployment rates were generally low in many countries and income levels were rising in some regions. However, economic inequalities persisted, and various countries faced employment and income challenges. According to the World Labor Organization (WLO), in 2019, the unemployment rate was 5.58%. It is also indicated that the number of unemployed should reach 25 million by 2020 following the effects of COVID19 on the economies (Hong, 2021).

Financial markets were generally stable and interest rates were low in many countries. Investors sought returns in the stock and bond markets, and financial institutions played a key role in financial intermediation and the provision of credit. It should be noted that COVID19 caused major disruptions in the global economy with significant consequences for global GDP and the global economy as a whole.

Table 2.1. World Economic Growth Forecast According to OECD

Real GDP, years-on-years growth, %

World	2023	2024	2025	G20	2023	2024	2025
	3.1	3.2 —	3.2 —		3.4	3.2 —	3.1 —
Australia	2.0	1.1 ▼	1.8 ▼	Argentina	-1.6	-4.0 ▼	3.9 ▲
Canada	1.2	1.1 —	1.8 —	Brazil	2.9	2.9 ▲	2.6 ▲
Euro area	0.5	0.7 —	1.3 —	China	5.2	4.9 —	4.5 —
Germany	-0.1	0.1 —	1.0 —	Indonesia	8.2	6.7 —	6.8 —
France	1.1	1.1 ▲	1.2 —	Mexico	5.0	5.1 —	5.2 —
Italy	1.0	0.8 —	1.1 —	Russia	3.2	1.4 ▼	1.2 ▼
Spain	2.5	2.8 ▲	2.2 —	Saudi Arabia	3.6	3.7 ▲	1.1 —
Japan	1.7	-0.1 ▼	1.4 ▲	South Africa	-0.7	1.0 ▲	3.7 ▼
Korea	1.4	2.5 —	2.2 —	Türkiye	0.7	1.0 —	1.4 —
United Kingdom	0.1	1.1 ▲	1.2 —		5.1	3.2 —	3.1 —
United States	2.5	2.6 —	1.6 —				

Note: Revision relative to the best estimation from the May 2024 Economist Outlook India projection are based on fiscal years, starting in April. The European Union is a full member of the G20, but the G20 aggregate only includes countries that are also member in their own right. Spain is a permanent invitee to the G20. World and G20 aggregates use moving nominal GDP weights at purchasing power partners.

Where: —: No change or smaller than 0.3pp; ▲ Upward revision, by 0.3pp or more;

▼ Downward revision, by 0.3pp or more

As shown in table 2.1, the world economic growth in 2023 was at (3.1%) and the forecast set by the OECD in 2023 and 2024 remain constant at 3.2%, despite the economic crisis. Economic growth in the G20 countries was estimated at (3.4%) in 2023 and the annual projections for 2024 and 2025 have suffered a slight reduction to (3.2%) and (3.1%).

The USA, which is considered the world's leading economic power, has a growth rate of (2.5%) in 2023. According to OECD forecasts, the projections for 2024 and 2025 will remain constant at (2.6%) and (1.6%).

Euro area was at 0.5% and the projection has increased by (0.7%) in 2024 and will reach (1.3%) in 2025. Germany, considered the leading European economic power, lost (-0.1%) growth in 2023 and remains constant at (0.1%) in 2024, but OECD estimates predict an increase of (1.0) in 2025. Despite the potential of the Australian economy, the annual economic growth forecast has fallen to (1.1%) in 2024 and (1.8%) due to the fall in the price of bauxite on the international market, of which the country is the world's leading exporter. Japan with its technological and industrial power has suffered a decrease of (-0.1%) in growth in 2024. The measures have been taken by the government to enhance the economy in all sectors of activity, this growth will undergo an increase of (1.4%) in 2025 according to OECD projections.

Despite the various economic sanctions imposed by NATO countries against Russia due to the invasion of Ukraine by closing foreign companies and banks. Economic growth is expected to increase by (3.7%) in 2024 and will remain constant at (1.1%) in 2025.

Turkey with its economic crises and the devaluation of the Turkish lira was able to maintain growth at (3.2%) in 2024. Brazil, considered an influential member of BRICS, will present an economic growth of (2.9%) in 2024 and will progress by (2.6%) in 2025.

2.2.2. World Economy During Covid19

In December 2019, the coronavirus pandemic started in Wuhan the capital of Hubei province in China, and quickly spread across the globe. The pandemic resulted in significant loss of human life and had a severe impact on the global economy and finance. The economic

activities of the world were stopped. Economic activities came to halt as governments implemented confinement measure to curb the spread of the virus and negative effects on international trade (Fernandes, 2020:2- 3).

The economic slowdown led the increase of unemployment in many countries. In the USA, unemployment has increased by 20 million in four weeks (Borrell. J, 2020). The Companies affected by the closure were forced to lay off staff or implement workforce reductions. The most affected sectors were tourism, hotels, restaurants, aviation, and many other non-essential services (Fernandes, 2020).

Financial markets experienced extreme volatility due to the economic uncertainty caused by the pandemic. Stock market indices plummeted. Investors suffered significant losses and companies struggled to access financing in the markets. Stock markets such as Wall Street, CAC 40, and Nikkei city index, Shanghai, Hong Kong, Singapore, Taiwan, and Australia have recorded losses. It should also be added that the barrel of oil reduced from \$60 to \$30 (Kuma, 2020).

The pandemic caused the world recession following the slowdown in world production. Many countries have experienced a contraction in their gross domestic product (GDP) for several consecutive quarters. Global growth was strongly affected. According to the World Bank, global GDP fell by 5.2%.

Governments and central banks around the world have implemented economic stimulus measures to mitigate the effects of crisis. The United States has implemented the implementation of an economic recovery plan of a magnitude of 2000 billion dollars , for the European Union, they are trying to stabilize economic policies and support businesses and households. The government of the United Kingdom has announced a sum of 33 billion dollars to revive the economic activities of companies and to return to employment. Taxes and fees on real estate transactions have been removed. A reduction in VAT was granted to householders (Laurent and Boone, 2020).

In February 2020, the People's bank of China released monetary credits amounting to USD 23 billion while Central Bank of Japan made over 20 billion dollars available to the economy . Additionally, the European Central Bank reportedly allocated 750 billion euros to

address the recession specially to encourage companies to retain employees rather than resorting to layoffs (Kuma, 2020)

The pandemic also accelerated certain economic trends, such as the digitization of businesses, remote working, and the growth of e-commerce and the adoption of innovative technologies. Some industries faced major challenges while others saw growth opportunities. It is important to note that the economic impact of the pandemic has varied from one country to another depending on the measures taken, the health response capacities, the economic structure, and the policies put in place. Global economic recovery is underway, but it is likely to take time and require internationally coordinated efforts.

2.2.3. World Economy After COVID19

After the period of economic contraction due to the containment measures and disruptions related to the pandemic, the world economy is in the process of development and evolution. Many countries have experienced gradual economic recoveries. Economic growth has picked up in some regions, thanks in particular to the gradual lifting of restrictions and the economic stimulus measures put in place by governments. Economies are recovering although some regions of the world are experiencing different recovery rates due to the dependence of economic activities. Financial support programs are in place to support businesses and investors. The return to normal. Some economic trends have been changing. Contactless payments and home delivery services have become more common (Sharfunddin, 2020: 247-248).

The pandemic led some countries and companies to review their trade partnerships. Some countries seek to strengthen trade relations and diversify their trading partners to reduce risk and over dependencies. New trade agreements could emerge and reshape international trade flows. Commercial requirements have been strengthened. Countries and international organizations work together to promote common standards, facilitate the flow of goods and services, and resolve issues related to trade disruptions. Exporting companies had to adapt to new needs and new trends that were emerged during the pandemic. For example, some companies have started producing medical equipment or individual production products to meet growing demand. Others have had to rethink their business

model to turn to E-commerce and digital distribution channels. Some companies have also sought to find new export markets to compensate for losses suffered in traditional markets (Sharfuddin, 2020: 249).

In 2021, the economic world regained growth. World GDP increased by 6.1% after having fallen by 3.1% in 2020 due to the pandemic (Heyer and Timbeau 2020). During the year 2021, the activities of industrial countries such as the United States, the United Kingdom, and France rebounded, while the level of GDP of certain countries such as Mexico, Malaysia, and the Philippines remained low. Eastern European and Asian countries were lagging in economic activity. China's growth rate increased from 5.94% in 2019 to 8.45% in 2021, an increase of 30%. The recovery to normal led to rebounds in inflation in most countries. In Japan, inflation increased from (-0.4%) to (1.2%) in 2021. In Germany, the rate is 7.8%. In the Baltic countries, the rate exceeded 10%. In France, the inflation rate is moderate at 5.4%. In the USA, it exceeds 5% in 2021 (World Bank Data, 2021).

The Ukrainian crisis which has upset the energy and food market and weakens the economy. Countries dependent on Russian and Ukrainian products are the most impacted. Energy shortages have caused inflation rates. In April 2021, inflation reached 70% year on year in Turkey, 12.4% in Poland and more than 10% in several Latin American countries (Heyer and Timbeau, 2020).

On February 24, 2022, the Federal Republic of Russia invaded Ukraine. Several Western countries, especially the United States of America and the European Union have imposed sanctions on Russia to encourage a change in its behavior toward Ukraine. The sanctions were mainly directed against influential Russian personalities, companies, and specific economic sectors. NATO countries and USA have sanctioned Russian banks by excluding them from the SWIFT payment system and freezing Russian assets in foreign institutions, but these sanctions have an impact on global economy. Following these various sanctions, Russia has reduced its energy exports to Europe and America. Germany, which was Russia's leading energy partner in Europe and depended on 55% of Russian gas, is facing an energy crisis (France 24 New, 2020).

In December 2022, importation from the European Union represented 45% of Russian gas, it means 155 billion m³ and consumed 400 billion m³ of gas. Faced with these various sanctions, EU countries have turned to the USA to buy liquefied gas at high cost. Russia has also expanded its trading partners to sell its gas and oil to the **BRICS**. In a report published in June 2022, Chinese customs administration claims that Chinese importations of Russian oil reached 8.42 million tons. India has also increased its oil imports from 1% to 18%. (France 24 New, 2022).

To circumvent Russian products, the European Union goes through Türkiye to buy oil and yet Türkiye is not an oil-producing country. So, to maintain its growth, Türkiye has decided to increase its gross imports from Russia and resell to European Union countries. Faced with this shortage of oil, gas and wheat, prices have been increasing in the markets and thus causing inflation. Several currencies have lost their values, especially the Turkish lira. In 2022, Türkiye has increased twice its minimum wage from 5,004 TL (375.1 USD) in January 2022 to 6,471 TL (394.5 USD) in June 2022 (IMF2, 2022).

2.3. MALIAN ECONOMY ANALYSIS

The Republic of Mali is a country with a weak economy whose GDP is dominated by the primary and secondary sectors. Exports of raw materials such as cotton and gold contribute to improved economic growth. As for imports, it represents 29.50% of gross domestic product in 2020 (World Bank, 2020). The analysis of the Malian economy in this sub-chapter focuses on the situation of exports and imports during the last fifty years (1972-2023). The situation of commercial partners and the evolution of the Malian economy are elements which will be discussed in this sub-chapter.

2.3.1. Malian Export From 1972 to 2023

The opening of international trade and the orientation of the export of primary products to other partners has been one of the concerns of the Malian government for years. The performances in the mining sector, the results of cotton production and their prices on the financial market describe the rhythms of evolution of Malian exports (Dissa, 2012).

The restructuring reforms undertaken by the Ministry of Commerce in 1992 aims to promote the development of exports with the simplification of procedures, the abolition of

all export taxes and the coverage of tax losses which resulted from the consolidation of rights and import taxes at the customs cordon and the reduction of the number and the disparity of the rates (Sylvie and Nachtigal, 1995).

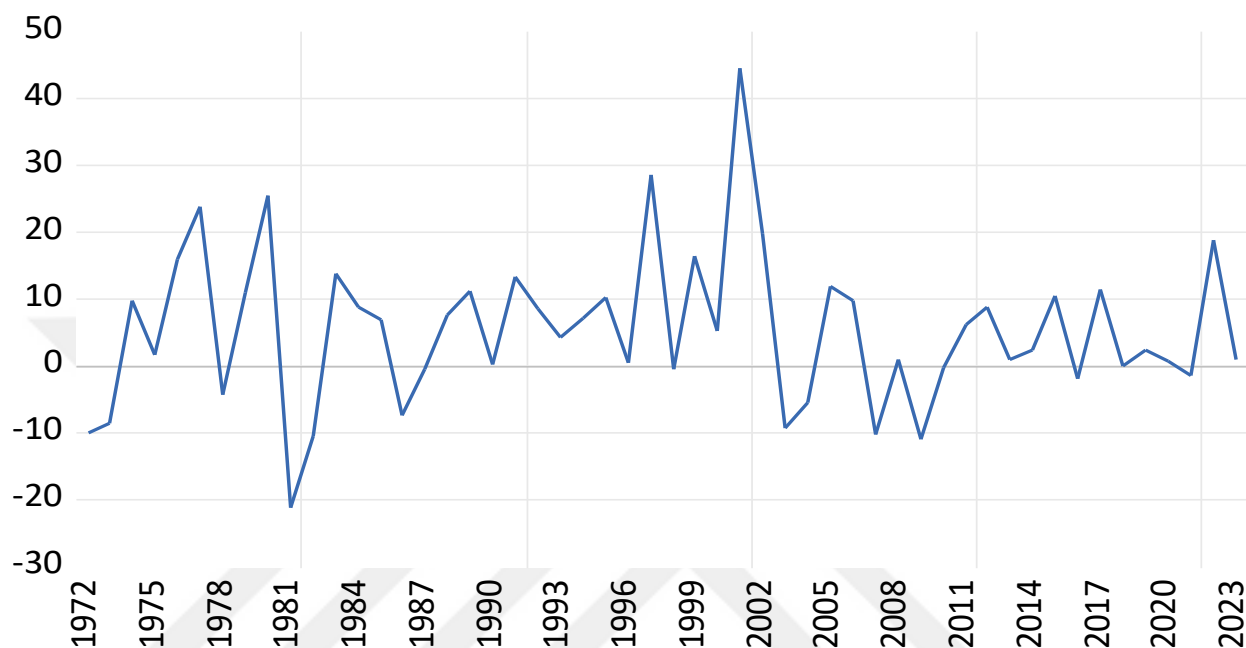
The rapid increase in exports compared to imports was noted for the periods from 1991 to 1992 with respective rates of 13.21% and 8.47%. Cotton exports, of which Mali is the leading sub-Saharan producer, increased by 50% and that of gold by 17%. A drop of 4.29% in exports was observed in 1993 due to the soaring price of cotton on the world market. The significant increase in exports to 10.01% in 1995 and 28.48% in 1997 was noted. Cotton exports reached 58% and gold exports increased by 16.9%, while cattle exports decreased by 12.8%. Exports generated a total revenue of 235.3 billion FCFA in 1996 compared to that of 1993, the amount of which is estimated at 98.9 billion FCFA, the share of export revenue from the primary sector is 44.37% of GDP in 1997 (FMI, 1996) .

The major drought crises experienced by Mali in 1998 almost had an impact on agricultural production in general and the cotton sector in particular, which represented 1% of GDP and 15% of export earnings in 1998. The government granted subsidies to producers to relaunched activities and guarantee prices. As for the export of livestock and other products, revenues almost decreased, the rate of exports was below the norm (0.52%).

The high level of exports in 2001 (44.31%) and 2002 (19.66%) were a perfect success for the Malian economy. Economic growth has also progressed by 15.37%. Low level of cotton caused difficulties in reimbursing agricultural credits and excessive accumulation debts to producers. On this date, Malian exports followed negative trajectories until 2010 before the government adopts new measures to enhance the various sectors concerned (Seydou, 2015: 9).

Figure 2.2 indicated an upward trend in exports were observed between 2011; 2012; 2015 and 2017 and follow-up of the progressive regressions of the products. The declines in exports are due to the various social and political crises in northern of Mali. Soaring raw material prices have also been one of the causes of low product export rates in recent years.

FIGURE 2. 2: Data of Export



Source: world Bank Database (1972-2023).

2.3.2. Mali's Export Structure

Malian exports are structured by three large groups of products: cotton, gold, and animals. 90% of the country's exports come from these groups. Exportations of manufactured products are somewhat underestimated due to their low rates in GDP. They represent 8% of the growing economy.

Table: 2.2. Main Export of Mali

	1995	1996	1997	1998	1999	2000	2001	2002	2022	2023	Annual Growth
Cotton fiber	58%	60%	48%	44%	43%	28%	46%	51%	29%	33.2%	-1.8%
Cotton derivatives	1%	1%	1%	1%	1%	1%	1%	1%	6.35%	0.4%	0.0%
Living animals	18%	14%	10%	9%	9%	10%	8%	8%	18%	54.6%	-10.9%
Gold	16%	18%	36%	41%	41%	49%	39%	34%	8.4%	26%	11.4%
Skin and Leather	1%	1%	1%	1%	1%	1%	1%	1%	0.1%	0.2%	0.0%
Others	6%	6%	4%	4%	4%	11%	5%	5%	5.8%	5.9%	-2.6%

Source: BCEAO, Mali's balance of payments for 1995-2000 data; DNP (2003). Evaluation of the economic and financial situation in Mali.

It note that, the annual growth is supported by the positive development of gold exports. During the years 1998, 1999 and 2000, the Malian economy was based on revenues related to the export of gold. Due to growing global gold prices for the second year in a row, gold exports rose by 26% in 2023. Geopolitical concerns, uncertainty surrounding Middle Eastern and Ukrainian conflicts, and more stringent financing requirements caused the average selling price that industrial firms in the sector were able to achieve to rise.

As for cotton lint, a decrease of (-1.8%) in annual growth was observed. The poor climatic conditions in the cotton-growing areas were the cause of this poor result. In 2023, the exports of cotton fiber, increased by 33.2% over the previous year. The Malian Textile Development Company's (CMDT) average selling price is the cause of this level. The rates of cotton, skins and, leather derivatives remain constant at 1% and no annual growth was observed at this level. Exports of live animals increased from 18% in 2022 to 54% in 2023 after the government lifted its prohibition on livestock exports in the first half of 2022. The majority of these exports to nations in the sub region are sheep and cattle. The other products whose participation in the GDP is neglected here present a negative rate of (-2.6%) but the average rate varies by 4%. These products include food products (foodstuffs and beverages), hides and skins, iron scrap, and machinery. They have seen a slight increase from 5.8% in 2022 to 5.9% in 2023.

2.3.3 Malian Import from 1972 to 2023

For years, the consumption of necessities has largely represented products imported by Mali from other countries. The reduction of customs tariffs, the cancellation of taxes on food products and the increase of foreign investment have been priorities for the Malian government. Imports of agricultural and agro-food products occupy 17% of the total volume. It is above all a product transformed from cereals (biscuits, pasta, etc.) and dairy products. Raw materials (cereal, sugar) represent less than 2.5% of the total (Dupavire, Coulibaly, and Diarra, 2004: 13).

Poor climatic conditions led to low cereal production capacity in Mali in 1990 and this led to increased imports of rice and other products such as wheat, corn, etc.... Most of the cereal imports come from the Asian countries and those from Africa are marginalized

because of the quality. A rapid increase has been observed from 1990-1992 at different rates of 7.21%; 9.56% and 4.20% in 1992. At the beginning of 1993, Mali experienced socio-political unrest which destabilized economic activities and led to the arrest of President Moussa Traore. Macroeconomic indicators were on alert. Imports decreased by (-5.25% in 1993) and (-10.24% in 1994) (world indicator bank).

During the years 1995 and 1998, Mali registered an enormous quantity of imports of goods and services which negatively impacted the level of economic growth. There was a notable Lack of payment liquidity in various banks. Meanwhile, the economy was supported by the export earnings from gold and cotton. In 2001, according to data reported by the national directorate of economic and statistical studies, imports rose to 24.44% before falling to (-5.48%) in 2002, as for exports, the cotton sector recorded a record amount in 2001 and 2002. The growth rate almost tripled for the same year. The reforms initiated by the government in 2003 recorded improvements in the Malian economy. The great import performances were observed from 2005 to 2008(Seydou, 2015).

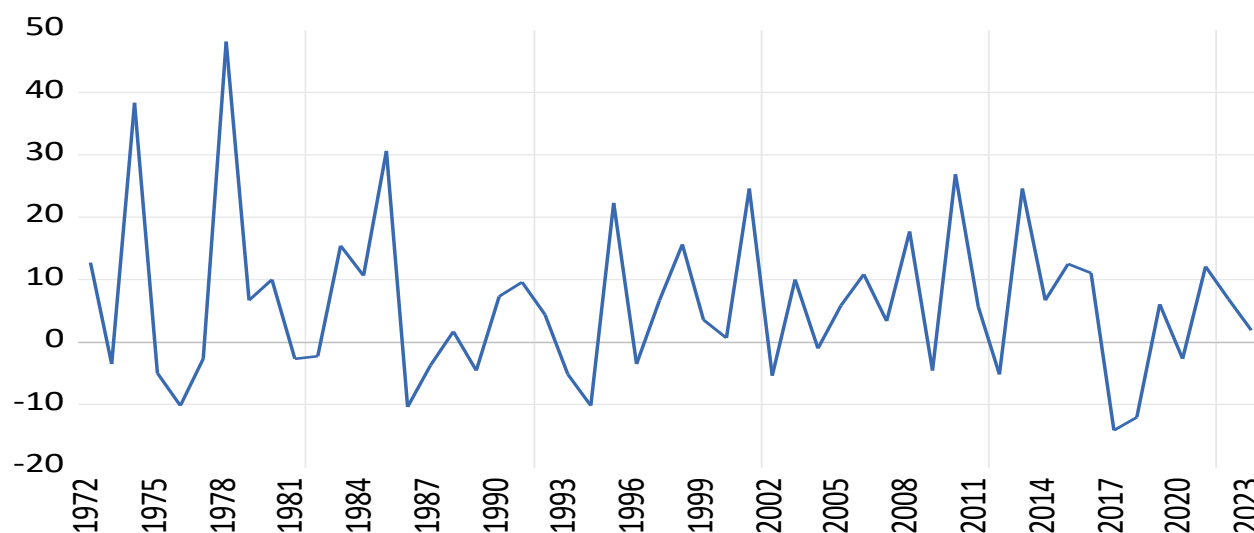
The highest import rate in the last years was observed in 2010 with 26.68% and followed by 24.56% in 2013 and 10.84% in 2016. It is noted that the increase in imports in the Malian economic circuit led to low exports of raw materials and also led to low economic growth.

From 2017, the Malian economy has been facing a huge problem due to the various sanctions of ECOWAS and other economic organizations. The import and export sub-sectors have been the most impacted over the years. Imports follow a decreasing line until 2020, the year of COVID19, which disrupted economic transactions before recovering in 2021 with a rate of 14.06% (Ouere, 2022).

Global economic activity slowed in 2023 compared to 2022, primarily due to the ongoing consequences of the geopolitical and health crises, as well as the Russo-Ukrainian crisis. International Monetary Fund (IMF) forecasts indicate that the world economy expanded by 3.1% in 2023, following a 3.5% growth in 2022. The combination of many shocks, such as high inflationary pressures brought on by the unfavorable effects of geopolitical tensions and interest rate hikes after monetary policy tightened in many nations,

is responsible for this slowdown. In Mali, like other countries, an increase in economic activity was observed in 2023, with a GDP growth rate of 4.65% after 3.47% in 2022, thanks to the increase in cotton production. Imports reduced by 6.8% in 2023 compared to those of 2021 (18.69%) (BCEAO,2023).

Figure: 2.3. Data of Import



2.3.4. Mali's Import Structure

Malian imports are analyzed as an infinite part of GDP. Imports of machinery and vehicles represent the largest important product group (about 3%) followed by three other product groups which are in almost the same proportion (petroleum products, food products and building materials). Food products are dominated by sugar, milk and cereals. (Benoit, Coulibaly and Amadou, 2004).

Table 2.3. Main Import of Mali

	1995	1996	1997	1998	1999	2000	2001	2002	2022	2023	Annual Growth
Food	14%	15%	15%	16%	14%	10%	13%	13%	16%	29.94%	-1.1%
Textiles and Leather	6%	6%	6%	6%	6%	5%	5%	5%	5%	6%	-2.6%
Machines and Vehicles	33%	29%	29%	29%	30%	31%	28%	28%	16.3%	19.70%	-2.3%

Construction Materials	10%	10%	11%	11%	11%	9%	14%	14%	5.5%	6%	4.9%
Chemicals and Pharmaceuticals	14%	14%	9%	10%	10%	11%	9%	9%	9.9%	11.68%	-6.1%
Petroleum Products	11%	13%	14%	12%	14%	21%	13%	14%	75.1%	32.93%	3.5%
Others	12%	13%	16%	16%	16%	13%	18%	17%	4.8%	16.49%	5.1%

Source: BCEAO, Mali's balance of payments for 1995-2000 data; DNP (2003).

2.3.5. Evaluation of the Economic and Financial Situation in Mali

The breakdown of goods imports by major category shows that Mali mainly imports food, construction materials, chemicals and pharmaceuticals, energy products, textiles, and leather. Construction materials account for 4.5% of the growth, followed by petroleum products at 3.5%. The annual growth in food represents (-1.1%) while that in textiles is (-2.6%). The growth of other imported products is increasing from year to year.

2.3.6. Mali's Trading Partners

Adhering to the World Trade Organization (WTO) on May 31, 1995, within the framework of increasing and diversifying its products, the Republic of Mali exercised commercial activities with several countries of the world. In the analysis of this part, Mali's main trading partners are classified geographically

Table 2.4. Trading Partners

	1995	1996	1997	1998	1999	2000	2022	2023	Average Share	Annual Growth
	Export									
Africa	25%	22%	14%	18%	19%	19%	39.9%	46.2%	20%	-5.3%
UEMOA	23%	20%	12%	15%	17%	17%	5.6%	8.6%	17%	-5.9%
Ivory Coast	12%	10%	10%	10%	10%	10%	29.1%	39.6	10%	-3.6%
Senegal	9%	8%	3%	3%	6%	6%	44.6%	58.4	6%	-7.8%
Europe	36%	39%	51%	54%	45%	45%	28%	31.00%	45%	4.6%

European Union	25%	24%	19%	19%	22%	22%	28%	31.4%	22%	-2.5%
France	4%	5%	6%	7%	6%	6%	9.1%	7.1%	6%	8.4%
Asia	28%	28%	24%	19%	25%	25%	23.8%	14.0%	25%	-2.2%
Taiwan	2%	3%	6%	6%	4%	4%	6%	6%	4%	14.9%
America	11%	11%	11%	11%	11%	11%	11%	1%	11%	0.0%
USA	3%	3%	4%	4%	4%	4%	4%	4%	4%	5.9%
	Import									
Africa	36%	38%	42%	37%	31%	40%	65.3%	46.2%	37%	2.1%
UEMOA	35%	37%	41%	33%	27%	34%	63.7%	22.25	35%	-0.6%
Ivory Coast	24%	29%	29%	27%	22%	25%	45.5%	45.1%	26%	0.8%
Senegal	10%	8%	8%	7%	5%	6%	35.3%	40.0%	7%	-9.7%
Europe	49%	47%	47%	40%	44%	35%	13.2%	13.4	44%	-6.5%
European Union	48%	46%	26%	37%	41%	32%	13.5%	8.87	42%	-7.8%
France	25%	27%	26%	21%	24%	18%	29.8%	28.6%	24%	-6.4%
Asia	8%	8%	6%	14%	14%	14%	18.2%	17.4	11%	11.8%
China	2%	3%	3%	4%	4%	5%	15.8%	20%	4%	20.1%
America	7%	7%	5%	8%	9%	11%	2.7%	2.7%	8%	9.5%
USA	2%	3%	3%	6%	5%	8%	2.8%	2.8%	2.4%	32.0%
Rest of the world	0%	0%	0%	1%	2%	0%	1%	1%	1%	

Source: BCEAO . Balance of payment of Mali

The European continent's export share is estimated at 31% in 2023, compared to 28.5% in 2022, with an increase of 2.9%. This increase is explained by the large quantities of gold exported to Switzerland. The average share of Mali's exportations to Europe represents 45% of the market, as for the annual growth, we noted a rate of 4.6% which is lower than the annual growth of France, Taiwan, and the USA. The share of exports to Asia stood at 14% in 2023 after 23.8% in 2022. The main destinations for these products are Bangladesh, India and Vietnam, which are interested in Malian cotton fiber, and the UAE for artisanal gold. The European Union and Asia, which are the main cotton and gold export

partners of Mali, shared the average share of 22% and 25% with almost negative growth of (-2.5%) and (2.2%).

Mali generally exports gold to Ghana and South Africa because of the multinationals of these countries which are represented on Malian territory. The average share of Africa is estimated according to raw gold and other goods. The supply of cattle and other agricultural products from Ivory Coast and Senegal increased the average share from 1995 to 2000 while their annual growth were negative (-5.3%) and (-5.9%). Following the economic sanctions imposed by ECOWAS against Mali in 2023, exports of live animals to Senegal and Ivory Coast are estimated at 58% and 39.6% respectively.

Malian imports are concentrated on vehicles and machinery. Europe is ranked as the leading partner for these products with an average share of 44% followed by the European Union (42.6%), Africa (37%) and WAEMU (35%).

Nowadays, the Malian market is filled with products from China. Although its average share represented 4% of imports from 1995 to 2000, economic studies show that annual growth is increasing sharply. The USA which occupies an average share of 5% is considered in this analysis as the highest growth rate.

THREE CHAPTER

3. THEORETICAL AND LITERATURE REVIEW

This chapter is divided into two parts; the first part is focusing on the theoretical literature surrounding economic growth. It retraces the history of growth and the various advancements leading to present day understanding. The second part presents empirical studies, examining the relationship between import, export and economic growth

3. 1 Theoretical Literature

Economic growth is a very relevant and complex subject that is part of economic news. Debates regarding growth have been a major issue among economic researchers for years. The results obtained by these various researches were contested by both sides; this is due to the economic realities of the countries in which they examined.

Nowadays, countries are confronted with problems of population growth and living standards. The major concern of managers is to guarantee sustainable and sustained growth for years. Economic growth is an effective strategy for reducing poverty (Acemoğlu, 2018: 535).

According to Bouyacoub (2012), economic growth is a main concern of all economics and the paths leading to it are neither similar nor transposable from one economy to another. In other words, economic growth is the total wealth produced by a country during a given period. This theory analyzes the economic situation of a country between two successive years. It explains the capacity of a country to be able to control all the economic activities exerting on the national territory.

In the study of economics, economic growth is considered as the most prestigious wealth that a country can have, and include the construction of schools, roads and hospital infrastructure, the creation of food self-sufficiency, and the financing of small and medium enterprises in order to reduce unemployment.

The analysis conducted by various economic researchers suggests that a country's growth is influenced significantly by how well its human and natural resources are managed, as well as its external relations with other nations. Some may find this perspectives

questionable, arguing instead that growth is primarily driven by economic plans enacted investment, exports, import, and the quality of human capital. Within this framework, exports and imports emerge as critical element in understanding the overall economic growth of a nation.

3.1.1. Classical Theory on Economic Growth

Between the 18th and 19th centuries, economists David Ricardo (1772-1823), Jean Baptiste Say (1767-1832), and Adam Smith (1723-1790) developed the classical theory. They have helped to make the economy better and more contemporary. The division of labor, the neutrality of money, and the idea of value serve as the foundation for their theories.

According to Adam Smith (1723-1790), a country's wealth is made up of all useful items that are created through labor and consumed once a year. This riches is created in proportion to labor productivity. The reason for the rise in worker productivity and wealth is the labor division that is created. The engendered labor division is the cause of increased labor productivity and wealth. The division of labor also makes it possible to increase productive power by (3) three means: Specialization, which consists of introducing a task to each individual within a production chain. The invention of new machines for industries that will facilitate labor and increase production capacity. Adams Smith's theory teaches us that by dividing or specializing labor, it will increase the gains in economic productivity and will allow the opulence of economic growth. So, the theory states that the division of labor is at the origin of economic growth. The classical school wants the extension of the market to sell the products obtained, since there is no point in producing efficient goods if there is no large market. They also add the salary as a motivating factor for the workers in industry (Lanza, 2012: 16-18).

The theory of David Ricardo (1772-1823) is interested in the reinvestment of profits earned by the entrepreneur during the manufacture and sale of goods. Ricardo's analysis also focuses on the diverging interests between classes of society that will limit growth.

The first class are the owners of land who earn the rent, the second are entrepreneurs who have invested funds to produce goods and the last group concerns the workers (salaried) who will produce as part of the expansion of the company. . For Ricardo, each class is entitled

to a particular income. The minimum wage theory is Ricardo's theory that allows the worker to feed his family. With economic growth, the population will have to increase, which means increasing productivity and labor. Landowners must provide the most fertile land for crops to grow. If production increases, the wages must also increase for the workers and the profit of the entrepreneurs also increases, which explains the circuit of economic growth according to Ricardo's analysis (Lanza 2012: 29-33).

According to the classical school, money is neutral and has no bearing on the actual state of the economy. A quantity of money in circulation does not have a positive impact on long-term production but will affect the price level. The classics consider that all prices double, so there is no variation in the relative price of goods. In the short run, classical school indicated that money has no effect on production but in the long-run money is neutral in the economy; however, monetizes consider that the influx of money in circulation has an impact on price variation. By analyzing the monetary concept, this thesis affirm that money is an element that facilitates economic and financial transactions. Too much money in circulation gives rise to prices in the market and causes inflation (Harris, 2007).

Thomas Malthus (1766-1834) was a British economist and pastor of the classical school. Thomas's theory is known as "Population Theory", it was expounded in his book entitled "An essay on the principle of population". Thomas Mathus shares the same ideas as Ricardo and Adam Smith, but his theories come close to that of Smith. The main idea of Thomas is to focus on the growth of the population and that of the production. Mathus explains that population increases in a geometric manner while production increases in a linear or arithmetic manner. With the industrial revolution, several economists do not share the same ideas as Thomas: For instance, Blaug (1962) affirms that the theories of Thomas Malthus have never been validated empirically. For Blaug (1962), the increase in the population is due to the non-control of births and late marriage because these elements are not natural but rather artificial. At the end of the 18th centuries, Thomas Malthus joins t Adam smith's ideas by affirming that the demand creates the offer and the offer cannot create the demand, that is to say, when there is an increase demand on the market, the supply also follow the increase, but this theory is opposed to the law of Jean Baptiste say which postulates that

the supply on the market creates the demand. For him, demand explains the existence of supply and not the other way around (Lanza, 2012: 26-27).

Jean Baptiste Say (1767-1832) is a French economist of the classical school. His theories are opposed to those of the Keynesians. Jean.B studied the balance of supply and demand. He considers that, regularization of the economy must take place without the intervention of the government. In Jean Baptiste Say's economic analysis, demand is generated by supply. The profits earned by a merchant are invested for the acquisition of other goods, this means that the products are exchanged between them, and that the currency is only an intermediary of exchange. The role of the state in this theory is to promote a good climate of investment, trust, and respect for private property (Say and Reynaud, 1953).

Frederic Bastiat (1801-1850) was a French economist and politician. He is one of the pioneers of economic liberalism. Frederic Bastiat's economic theories focus on free trade. The author strongly believes that trade barriers such as tariffs and import restrictions harm economic prosperity by hampering international trade. Frederic Bastiat considers that free trade allows a more efficient use of resources and is beneficial to all the nations involved. Frederic also supports the theory of Joseph Schumpeter (1883-1950) by saying, in a dynamic economy, innovation and progress often lead to the disappearance of certain obsolete industries and jobs, and it can create new economic activities and opportunities. Frederic Bastiat criticizes Karl Max's labor-value and surplus-value theory. Bastiat considers that the value of a goods or a services depends on the subjective utility for the individual rather than on the quantity of work necessary to produce it (Barry, 2001).

3.1.2. Neo Classical Theory on Economic Growth

The neoclassical school was born in the early 1870s, in general, neoclassical thinkers agree with the classics on certain concepts and certain ideas such as economic freedom, competition, and the defense of property, the private initiative, economic liberalism and self-regulation of markets through prices. They defend the laws of the market without the government interference in the economy. They also postulate the neutrality of the currency and the perfect flexibility of prices. The neoclassical reject certain classical concepts, they abandon the theory of work value in favor of utility value, and their approach

is based on the general equilibrium of short period unlike the classical long period where all markets are interdependent through adjustments relative price. For them, society is not divided into social classes but made up of individuals (Hennings and Samuel, 2012).

Over the years, the neoclassical adopted new theory based on methodological individualism and rationality. This explains that individuals have a goal of satisfaction and make choices to maximize satisfaction. In addition, they also explain that the price of a good does not result from the quantity of work necessary to produce it but from its usefulness.

The neoclassical school advocates a purely microeconomic approach to studying behaviors and interactions between individuals. According to the neoclassical, the state should be the policeman of the economy, it should not worry about demand, which is supposed to be sufficient and available, and should focus on supply conditions

3.1.3. Keynesian Theory on Economic Growth

Keynesian theory comes from the English economist John Maynard Keynes (1883-1946) who is considered as one of influential economists of the 20th century; his ideas contrast with neoclassical economics, particularly because he emphasized the vital role of state intervention in revitalizing the national economy. According to Keynes, the economy is the production of goods and services which are influencing by the consumption of the investment, the purchases, and the export; demand increases only when one of its components is stimulated.

During difficult times, demand drops dramatically, this drop is due to the fact that consumers reduce their spending, on this side, and investors cease their activities because consumers are less interested in their products. To avoid this situation, Keynes proposes a takeover by the government in order to boost production. According to Keynes, the economy functions based on three principles: First principle; the economy is influenced by the decisions of the public and private sectors; the public sector has the role of regulation and the private has the role of stimulating of the economy. The Second principle; incomes adjust slowly to changes in supply and demand, any shortages and surpluses of production depending on the prevailing economic situation. The third principle, a change in demand impacts production and employment (Commendatore, Acunto, Panico and Pinto, 2003).

Keynes assumes that the lack of control of the market could lead to public affairs. The regulation of the market by the state was one of the priorities of Keynesian theory. Keynes criticizes the way liberals conceive of the market, the currency, the interest rate, the link between supply and demand (Dostalerr, 2010). According to, Keynes, the government must get in and control the market rather than just watching an economy.

Keynesianism considers the economic cycle as a serious economic problem and thinks that it must be solved by serious economic policy. Keynes called this policy as the anticipating policy which consists in reducing the budget deficit by financing large-scale projects. In this situation, the state must subsidize projects in order to stimulate employment and then wages must be stabilized in such a way that when demand increases again, taxes too.

The goal of tax increases is to keep inflation from happening. At this level, Keynes suggests monetary policy to promote investment and cut interest rates, he also advises keeping an eye on the money supply growth to make sure the inflow of liquidity doesn't upset the equilibrium of the economy. For Keynes government must take in hand the resolution of the economy over a short period and letting the market recover on its own will be risky and unable to set them up, this policy will therefore consist in making a constant reform to the economy. National economy which will finance flagship development projects such as roads, dams and other infrastructure, its projects generally require high labor, which will lead to job creation (Mariati, Yuesti and Tahu, 2024 : 67-68).

In this Keynesian theory, we must remember three things:

- ✓ To affect economic growth, the government must modify monetary policy and economy.
- ✓ For the purpose of restore market equilibrium, Keynesianism promotes the infusion of capital and the assistance of investors.
- ✓ The state is a fully-fledged actor in the economy in the same way as the investor.

3.1.4. Mercantilism Theory on Economic Growth.

Mercantilism is a movement of economic researchers of the 16th and 17th century who analyze exports and the return of capital. Mercantilism is the idea that for a nation to get richer, exports must be greater than imports in order to accumulate the necessary financial resources. Throughout the history of economic and political philosophy mercantilism may be one of the most difficult ideas to understand, despite being frequently used by academics from various professions, its exact theoretical meaning has changed over the past 150 years. (Conti, 2018).

In recent years, we have witnessed economic and industrial progress in the world. Mercantilism theories have been one of the major references for the expansion and facilitation of exports and especially the limitation of imports in the economic circuit. Economic growth is considered as the key to a country's national wealth. According to (Stern and Wennerlind, 2013: 7) mercantilism should be viewed as a system of thought that is infused with concern about politics, science, and morality. However, given the complexity of the theory, other economic researchers have given up the idea of mercantilism, this is particularly the case with Pincus (2012). The mercantilist revolution predicted a clear and significant discourse on the creation and consumption of wealth. (Rashid, 1993).

In this theory, researchers suggest government intervention in the context of the creation of a number of industrial capacity production plants. Raw materials imported at low cost from other countries should be transformed into finished products in state enterprises and exported to trading partners. The resources obtained by the exports should allow the increase of economy. The mercantilists consider that the government must preserve its wealth inside the country. For this, the state must help to develop the manufactures and the development of the infrastructures to support the exchanges in the country. They must also promote exportations by defending export protection and subsidies. Mercantilism considers that the national wealth must come from outside, example, the trade surpluses of the exports. They estimate that the imports are sources of impoverishment of the national economy, therefore it is necessary to reduce the imports. Thus, the state must prevent the population from buying foreign products by heavily taxing certain foreign products or by creating

standards that will prohibit products from being imported into the national territory. Like all economic theory, mercantilism has two major flaws. The first is the non-cooperative economy and the second is inflation. For them, inflation allows sellers to raise prices and erase state debts; it makes the country less competitive and decreases the ability to export (Magnusson, 2019).

3.1.5. Endogenous Theories on Economic Growth

Paul Romer (1986) and Robert Lucas (1988) have significantly advanced endogenous growth theory by emphasizing the roles of knowledge accumulation and human capital in driving long-term economic growth. They argued that, Endogenous growth theory is primarily driven by internal factors rather than external influences. This contrasts with traditional neoclassical growth models, which attribute long-term growth to external technological advancements (Roberts and Setterfield, 2007: 16-19).

Paul Romer (1986) proposed a model in which the main driver of economic progress is the accumulation of knowledge. He suggested that even if individual enterprises get steady returns, investments in knowledge generation result in growing macroeconomic rewards. Romer emphasizes that technology and knowledge are the results of economic decisions. The models suggest that policies promoting education, skill development, and innovation are crucial for fostering long-term economic growth (Jones, 2019: 860-863).

Robert Lucas (1988) concentrated on human capital as a key driver of economic expansion. It maintained that spending on education and skill-development raises worker productivity, which results in long-term growth. Another idea that Lucas's approach emphasizes is "learning by doing," which holds that real-world experience and on-the-job training lead to increases in productivity. Lucas argued that, invest on human capital development and education are the essential elements of sustainable economic growth. Lucas suggest that, a country's economic growth trajectory can be significantly impacted by policies that support education and skill development. Through human capital investment, governments may create an atmosphere that supports innovation and long-term economic growth (Monteils, 2002: 94-96).

3.1.6. Grossman and Helpman (1991) Model on Economic Growth

Grossman and Elhanan Helpman created a thorough model that incorporates innovation as a key factor in sustained economic growth. Their strategy positions innovation as an endogenous component of the economic system by highlighting the fact that deliberate, profit-driven investments in industry research and development lead to technical breakthroughs. In their research, international trade can influence global economic and innovation. For them, invest in technology and innovation are the main source of sustainable growth. It recognizes that inventions can have a spillover effect, meaning that the advantages of new technologies go beyond the company that made them, benefiting other industries and advancing economic growth as a whole (Grossman and Helpman, 1994: 26-28).

Through the integration of global commerce, the model offers valuable insights into how nations might use trade to boost their economic growth and innovative capabilities. The model emphasizes how businesses use research and development to create new goods and procedures in an effort to obtain a competitive edge and generate monopolistic profits. This continuous cycle of innovation contributes to sustained economic growth. Endogenous growth theory has been greatly impacted by Grossman and Helpman's (1991) model, which clarified the processes by which innovation fueled by deliberate research and development investments -drives sustained economic growth. Their research highlights the vital significance that international commerce and policy play in determining how innovative economies are (Grossman and Helpman, 1991).

Grossman and Helpman are convinced that, reducing trade barriers can enhance knowledge diffusion and innovation by exposing domestic firms to international competition and new technologies. This reduction in customs barriers is an opportunity for local companies to compete on the international market with a view to exporting manufactured products (Mondal and Gupta, 2009).

3.1.7. New Trade Theory on Economic Growth

Paul Krugman created New Trade Theory in his groundbreaking publications from 1979 and 1980. It provides an explanation for patterns of international trade that conventional theories, such comparative advantage-based theories, were unable to adequately address. The

new trade theory highlights how customer preferences for diversity and economies of scale propel trade between nations with comparable traits (Marques, 2004: 4-8).

The Krugman hypothesis takes into account monopolistic competition, in which a large number of manufacture comparable but distinct goods. Since each manufacture has some market power, they can set prices higher than their marginal costs. The coexistence of several firm in the same industry and the frequency of intra-industry trading are both explained by this framework. Krugman suggests that, countries with larger domestic markets for a particular product will tend to host more firms producing that product, leading to a concentration of production and exports in those sectors (Ehnts and Trautwein, 2012).

3. 2. EMPIRICAL LITERATURE

The various studies and research have been carried out by economic researchers to analyze the relationship between import, export, and economic growth but the results remain controversial. Most of its authors have studied the methods of VAR (Vector auto regression) and VEC (Vector error correction) model in order to know the impact of trade (import, export) on economic growth. In this practical case, our analysis was based on practical examples from certain researchers.

Baharumshah and Rashid (1999) examined the relationship between export, import and economic growth in Malasia. Johansen (1988) procedure model have been used. According to their finding, the result indicated a long run relationship. The VEC suggest economic growth is driven by export.

Ramos, (2001) analyzed the granger causality between export, import and economic growth in Portugal over the period 1865-1998. The analysis estimated that there was a feedback effect between the rise of export and import output and, there is no correlation between trade (export, import) and economic growth.

Jordan and Eita (2007) examined the causality between export and economic growth of Namibia from 1970 to 2005. Granger causality and cointegration test were applied. The result showed: export granger cause economic growth and GDP per capital.

Elbeydi and Gazda, (2010) studied the relationship between export and economic growth in Libya. The annual time series data from 1980 to 2007 were used. The finding indicates that there is a bidirectional causality between export and GDP in long run.

Amiri and Gerdtham (2011), examined the relationship between export, import and economic growth in France from 1961-2006 by using geostatistical models and granger causality test. The result of granger causality test showed the existence of long-run. It also indicated unidirectional causality running from export and import to GDP. The result from linear granger causality indicated that, there is no kind of significant causality running from GDP to export and GDP to import.

Taghavi, Goudarzi, Masoudi, and Gashti (2012) studied the impact of export and import on economic growth in Iran from 1962 to 2011, the authors affirmed that, export or import provides the promotion capabilities and the increasing of productivity growth of Iran. In theirs analysis, export had direct and positive relationship on economic growth in long run, on the other hand, import had negative effect on GDP.

Achchutha (2013) analyzed “export, import and economic growth: Evidence from Sri Lanka” over the period 1970 to 2010. The result revealed a link between export and import is favorable because they both significantly influence economic growth. Author recommended: small and medium-sized enterprises must focus on exporting goods and services. The import of raw materials must be managed in a transparent manner within the framework of a good budgetary and monetary policy.

Turan and Karamana (2014) examined empirical study on import, export, and economic growth in Albania by using annual data from 1984 to 2012. The data were obtained on World Bank, unit root test and ARDL model were used to check the stationarity and cointegration between the variables. The finding result showed that; in ARDL model, export had significant impact on economic growth and import had a negative impact on GDP.

Mohsen (2015) investigated the effect of export and import on the economic growth of Syria over the period 1980- 2010. The ADF unit root test, Granger Causality and Johansen cointegration were used, the result showed all the variables were stationary at first

differencing in ADF unit root test. In granger causality, the result indicated a bidirectional causality relationship between export, import and economic growth in short and long-run.

El Alaoui (2015) tested causality and cointegration relationship between export, import and economic growth from Morocco by using annual times series data from 1980 to 2013. The analysis of the result showed a bidirectional causality between GDP and import, unidirectional causality running from export to import and no causality between GDP and export.

Mehta (2015) investigated the dynamics of relationship between export, import and economic growth in India by using times series data from 1976 to 2014. ADF test, Johansen co-integration and vector error correction model have been used. The result revealed that: export and import were stationary in ADF model, a long run relationship between GDP, export, and import, while in causality analysis, it was found an unidirectional causality from GDP to export and export to import however, there was not causality from GDP to import.

Bakari and Mabrouk (2016) studied the relationship among export, import, and economic growth in Turkey for the period 1960-2015. The Johansen cointegration analysis the vector auto regressive model and the granger causality test were employed. The empirical analysis showed that, there is no relationship between export, import and economic growth in Turkey. In causality test, we observed a bidirectional causality running from import to GDP and export to GDP.

Bakari (2017) investigated the relationship between export, import, domestic investment, and GDP in Egypt. Annual data from 1945 to 2015 was tested by applying VEC model and Johansen co-integration analysis. The result indicated long-run domestic investment and export have negative relationship on GDP, Import has positive impact on GDP.

Another study examined by Bakari (2017) analysis the linkages between export, import, and economic growth of Tunisia by using time series annual from 1965 to 2016. The study used cointegration analysis, VECM model and the granger causality test as methodology. The result confirmed a long run relationship between the variables .The author

argued that export and import are the key in Tunisian economy and represent a large part of the economic growth.

Bakari and Mabrouki (2017) investigated the impact of export, import on economic growth from Panama over the period 1980-2015. The result showed that all the variables were integrated at $I(1)$ in unit root test while Johansen test indicated the absence of a cointegration between the variables, the VAR model indicated that, export had a positive effect on GDP but not significant and Import had a negative effect on GDP, however the granger causality indicate an influence of export and import on GDP but GDP does not influence export and import.

Bakar and Krit (2017) studied the relationship between export, import, and economic growth from Mauritania from 1960 to 2015. The result of unit root test indicated that every variable was stationary at first difference. According to VEC model, export had a positive effect on economic growth while import had negative impact on GDP. The granger causality test confirmed an unidirectional causality between import and GDP at the same method, it had been found, there is not causal relationship between Export and economic growth.

Uddin and Khanam, (2017) studied the relationship between import, export and economic growth of lower income country. Their study were focus on Bangladesh economic by taking 32 observations from 1981 to 2012. The researcher observed an insignificant link between these variables and came to the conclusion that import and GDP growth are adversely correlated, and that import and GDP are negatively correlated.

Ali and Dalmar (2018) investigated the impact of import and export performance on the economic growth of Somalia from 1970 to 1991. They used ordinary least squares technique, the granger causality and Johansen co-integration as methodologies. The result indicated a bidirectional granger causality between import and export and unidirectional causality between export and economic growth.

Fannoun and Hassouneh (2019) investigated the causal relationship between export, import, and economic growth in Palestine from 2000 to 2018 by using quarterly .VEC and the Johansen's cointegration test are using. The findings result indicated a long-term association between exports, imports, and economic growth. In the short-term, export led

imports, and in the long-term, a bidirectional relationship was seen between trade (export, import) and economic growth in the causality test.

Okyere and Jilu (2020) studied the impact of export and import to economic growth of Ghana from 1998 to 2018 by using annual times series. The unit root test and causality test technique were used. It emerges from this analysis, all variables are cointegrate at I(1) and export has a significant causal relationship with Ghana's growth, however, there is no significant causal relationship between Import and GDP.

Zang and Baimbridge (2021) investigated the relationship between export, import, and economic growth in South Korea and Japan by using VAR model. It was noted that, the variables were cointegrated for both countries by applying long run equilibrium. In short run, the results indicated that, export and import have different effects on economic growth. The analyses indicated that, over the period, economic growth in Korea had a negative impact on export, while export-led growth for Japan's economic. In causality test, there is evidence of directional relationship between import, export and economic growth for Japanese and Korean economic.

Denano, Sibera, and Toma (2023) investigated the causal relationship between economic, export and import in Ethiopia. The time series data from 1988 to 2021 were employed. They authors used Toda Yamamoto causality test and Johansen test to determine a long and short run equilibrium between variables. The finding result revealed a long run relationship between by using granger causality and yamamoto test. A bidirectional causal running from import to GDP. A unidirectional causal running from economic growth to export was found.

Hadouga (2023) examined the impact of export on economic growth in Russia between 2000-2022. The author also made a projection study of the first ten years on the effect of export on economic growth. The study used unit root test, fully modify ordinary least squared method to analysis the impact of export on GDP. The result indicated that, export had a positive and significant impact on economic growth in Russia and rise of each export, investment and economic growth from 2023 to 2033 based on the prediction analysis.

It mean, during the next ten (10) years, Russia's export to rest of the world will have a positive impact on the country's economic growth.

Abdul sahib (2024) examine the role of export, import, and gross capital formation in Iraq over the time series data from 2004 to 2021. Granger causality test was used as methodology. It relevead an unidirectional causal relation running from gross capital formation to export and import. However there is no causal relation running from trade (export and import) to GCF. The study recommend to increase the level of gross capital formation in order to enhancing export and ensure sustainable economic growth.

Athira and Rajendran (2025) studied the macro analysis between export, import and GDP in Indian from 1991 to 2023 by using VAR test, causality test and impulse analysis. The result indicated that, there is no consistent relationship between export, import and economy growth by using johansen cointegration test. The VAR granger causality model confirmed that trade affect economy growth in long-run. Therefore, they authors suggested to enhancing economic and political stability in a country that can lead to higher GDP growth and improved export performance.

Adekunle (2025) studied the connection between export, import, GDP, and gross formation in South Africa from the period 1986 to 2022 by using ARDL model, unit root test procedure as methodologies. The result indicated that, trade (export-import) are significant element to enhancing gross domestic product and has positive long-run connection on gross capital formation (GCF). To maintain a strong economic strong, the author advices government to support domestic industries more in order to increase the level of export that can reduce poverty by employing the population or involve them in the development of key growth sectors.

Table 3.1. Empirical Analysis Concerns the Relationship Between Export, Import and Economic Growth

N°	Authors and Years	Countries	Periods	Econometrics Technique	Finding result
1	Baharumshah, and Rashid (1999)	Malasia	1970-1994	-Johansen -VEC model	-Positive relationship and GDP is driven by Export
2	Ramos (2001)	Portugal	1965-1998	-Causality test	-Import has negative impact on GDP (Long run) -Export has positive impact on GDP (Long run)
3	Zerto and Tao (2002)	Canada and USA	1984 – 1996	-VECM -Granger causality	For Canada - $X \leftrightarrow GDP$ - $M \leftrightarrow GDP$ For USA $X \leftrightarrow GDP$ - $GDP \leftrightarrow M$
4	Jordan and Eita (2007)	Namibia	1970-2005	-Regression Analysis	-Strong positive relationship between variables
5	Elbeydi, Hamuda, and Gazda (2010)	Lybia	1980-2007	-VECM -Granger Causality test	-Long and Short-Run (Positive relationship) - $X \leftrightarrow GDP$
6	Taghavi, Goudarzi and Gashti (2012)	Iran	1960-2011	-VAR model	- $X \rightarrow GDP$ Long run (Positive effect)
7	Achchtuthan (2013)	Sri Lanka	1970-2010	-Regression Analysis	Strong and Positive relationship between variables

8	Turan and Karamanaj (2014)	Albania	1984-2021	-ARDL model	-X,M,GDP→Long run impact -GDP→X -GDP≠M -X→M
9	El Alaoui (2015)	Morocco	1980-2011	-VAR model	-Existence of Long run relationship -GDP↔GDP -X→M -GDP≠X
10	Meita (2015)	India	1976-2014	-Johansen cointegration -VECM	-No relationship between export and GDP -M→M -GDP≠X
11	Mohsen (2015)	Syria	1980-2018	-Causality test	-Import has negative impact on GDP(Long-run) -Export has positive impact on GDP (Long run)
12	Bakari and Mabrouki (2016)	Turkey	1960-2015	-VECM -Johansen cointegration -Causality test	-Negative relationship in long run -X↔GDP -M↔GDP
13	Bakari and Mabrouki (2017)	Panama	1980-2015	-Johansen Cointegration -VECM	-No relationship between variables -M↔GDP -X↔GDP

14	Bakari and Krit (2017)	Mauritania	1960-2015	-VECM -Granger causality test	-Positive relationship between variables in long run - $M \rightarrow GDP$ - $X \neq GDP$
15	Uddin and Khanam (2017)	Lower income country (Bangladesh)	1981-2012	-ARDL -VECM -Causality	-Negative relationship between variables
16	Ali, Ali, and Dalmar (2018)	Somalia	1970 -1991	-OLS Technique -Causality test	GCF $\rightarrow$ export GCF $\rightarrow$ import $X, M \neq GCF$
17	Fannoun and Hassaoumeh (2019)	Palestine	2000 – 2018	-VEC -Granger causality test	-Long run (Positive impact) - $(X,M) \leftrightarrow GDP$ -Short run (Positive impact)
18	Okyere and Jilu (2020)	Ghana	1998 -2018	-Granger causality test	-Import has negative impact on GDP (Long run) -Export has positive impact on GDP (Long run)
19	Zang and Baimbridge (2021)	South Korea and Japan	1963-2003 (South Korea) 1975-2003 (Japan)	-VAR model -Granger causality	-Cointegration relation for both countries -Positive relation in short run - $M \leftrightarrow GDP$ (Both countries)

20	Denano, Sibera, and Toma (2023)	Ethiopia	1988-2021	-VAR model - Granger Causality	Positive relationship between variables -Import↔GDP
21	Hadouga (2023)	Russia	2000-2022	-FMOLS	-Positive relationship between export and GDP
22	Abdul Sahib (2024)	Iraq	2004-2021	-Granger causality test	-GCF→export GCF→Import X,M≠GCF
23	Athira and Rajendran (2025)	India	1991 -2023	-VAR - Granger Causality	Long run relationship between trade and GDP
24	Adekunle (2025)	South Africa	1986 – 2022	-ARDL	-Positive and significant long run relationship

FOURTH CHAPTER

4. DATA AND METHODOLOGY

4.1. DATA

This thesis utilized annual time's series data from 1972 to 2023 obtained by online publication from the world indicator bank. The research used for this study covers a period of fifty on observations. The data collected for the variables Export, Import, final consumption expenditure and Economic growth are evaluated in percentage (%).

Table. 4.1. Data

YEARS	GROSS DOMESTIC PRODUCT (GDP)	EXPORTS	IMPORTS	FINAL CONSUMPTION EXPENDITURE (FCE)
1972	5,844016	-10,0722	12,62483	6,754104
1973	-1,45512	-8,79966	-3,58827	-1,42842
1974	-1,52883	9,648716	38,14113	8,820426
1975	11,62505	1,601606	-5,05044	7,09315
1976	13,62344	15,74762	-10,2841	10,53
1977	6,348647	23,80701	-2,76715	0,647415
1978	-1,46348	-4,39457	47,96827	6,193831
1979	10,39568	10,91948	6,593518	8,197271
1980	-4,32584	25,38776	9,794034	-4,35329
1981	1,508804	-21,3406	-2,91328	5,059376
1982	-7,37843	-10,5496	-2,43087	-5,74104
1983	1,820874	13,69606	15,41425	3,376103
1984	-0,28701	8,672746	10,60791	1,21663
1985	20,28663	6,848886	30,50795	15,54182
1986	2,692621	-7,42565	-10,5326	-4,54721
1987	-0,13916	-0,63859	-3,95603	-7,01845
1988	7,389721	7,473887	1,630643	8,70326
1989	4,177388	11,10396	-4,62851	-1,93991
1990	-2,5024	0,092637	7,210949	-0,63295
1991	11,7452	13,21837	9,566956	14,98243
1992	-3,21866	8,476928	4,207688	-7,11701
1993	3,172168	4,186309	-5,25673	5,24178
1994	3,779934	6,909325	-10,2453	-3,2384
1995	0,921022	10,01794	22,19534	1,680865

1996	7,055785	0,444649	-3,71326	8,132743
1997	4,829024	28,48565	6,555358	-1,00757
1998	7,571668	-0,52235	15,45001	11,56391
1999	5,700944	16,41709	3,453782	6,161897
2000	-0,06083	5,015479	0,550941	0,070684
2001	15,37624	44,31243	24,44438	7,340577
2002	3,106308	19,66536	-5,48309	-0,52583
2003	9,119042	-9,29968	9,806171	6,546206
2004	1,559999	-5,7019	-1,11981	4,799281
2005	6,534779	11,90142	5,750648	5,942496
2006	4,662187	9,627661	10,66668	3,678471
2007	3,493617	-10,4124	3,224219	5,972239
2008	4,773145	0,718748	17,62646	7,988977
2009	4,806322	-11,0542	-4,73075	5,204952
2010	5,313935	-0,24894	26,68117	10,08442
2011	3,213134	6,168263	5,51345	3,814588
2012	-0,83673	8,753965	-5,28653	-1,55098
2013	2,295068	0,825641	24,56765	7,763854
2014	7,084684	2,190466	6,662674	8,254933
2015	6,1718	10,4	12,3	6,643226
2016	5,852299	-2,03175	10,84165	5,937563
2017	5,305456	11,4	-14,2	3,633923
2018	4,746484	-0,1	-12,1	2,846022
2019	4,756161	2,3	5,9	3,830542
2020	-1,23545	0,5	-2,9	2,297696
2021	3,052614	-1,5	12,06523	3,437509
2022	3,474952	18,69501	6,8	4,575359
2023	4,656776	0,9	1,8	4,626222

Source: world Bank Database (1972-2023)

4. 2. METHODOLOGY

This section is focusing on the econometric analysis between export, import and economic growth. As a determinant of economic growth, the variable final consumption expenditure was added in this test.

4.2.1. Unit Root Test:

In the econometric literature, autoregressive time series with unit root test have received a lot of attention (Phillips, 987). Before applying the regression model in time series,

we need to know what the unit root test is, by definition, a unit root test is used to determine whether the time series is stationary. According to Perron (1990), a unit root hypothesis in a time series of a data has indeed for reaching implication of empirical evidence. The stationarity concept appears as the main element in the unit root test study; it is required before to performing the regression result will be better if the series is non stationary. The unit roots are defined as an autoregressive moving-average (ARMA) or a no stationary autoregressive (AR) time series processes. They are better represented by following equation (Herranz, 2017: 1).

$$Y_t = Y_{t-1} + \varepsilon_t \quad (4.1)$$

Where ε_t represents the error terms or random innovations and Y_t and Y_{t-1} represent the time series. The problem of unit root is mentioned to the autoregressive first-order AR (1) if the coefficient Φ ($-1 \leq \Phi \leq 1$) of the time series Y_{t-1} in the equation 4.7. is equal to 1 (Nkoro and Uko, 2016: 69).

$$Y_t = \Phi Y_{t-1} + \varepsilon \quad (4.2)$$

$\Phi = 1$: The variable Y_t has a unit root or it is not stationary in level.

The stationarity test in econometric analysis is very important; it helps to determine the trend of the most appropriate data consisting in determining the links between the variables. There was a lot of discussion on this subject during the start of the 1970s. The academics who first proposed that macroeconomic data, which is characterized by unit root typically contains Stochastic trends were granger and Newbold (1974). Additionally, they imply that erroneous regressions could result from the use of these variables in econometric models. Therefore, checking for stationarity is crucial because the regression's entire results could be manipulated (Mustaq, 2011).

Two approaches are employed to check for stationarity in the data: the first is informal and it is based on the graphical representation while the second is formal and uses the Eviews software. The stationarity of a series of unit root tests is examined based on the statistical test and the critical value of five percent. In simple language, the trend and constant

probabilities must be less than or equal to 5% of the critical value for a test to be stationary. Most estimates can be applied in all cases to stationary variables. The stationarity level can be at I (0), I(1) or I(2), but our thesis will be limited to stationarity of levels I(0) and I(1).

Where:

I (0) = When the values are checking only at the trend and constant.

I (1) = First difference

I (2) = Second difference

This study used the Augmented Dickey Fuller Test, Phillips Perron Test, KPSS Test, and NG Perron test to find the stationarity level of variables, and 5% is used as the critical value. Following the bound test procedure for unit root, all variables included in the study have to be stationary in level I(0) or I(1) to apply the procedure.

4.2.1.1. Augmented Dickey-Fuller Unit Root Test (ADF)

The Dickey -Fuller test verifies the autoregressive integrated moving average (ARIMA) null hypothesis by comparing it to alternative and stationary data. ADF test extended version of simple Dickey-Fuller test (Musthafa, 2011). The ADF with information-based lag selection can be just as successful as the one with the proper lag order. Regardless of the ADF test type, it consistently outperforms the mechanical selection ruler or other arbitrary choices of preset lag when information-based lag selection is used (Cheung and Lai 1998:62).

Formulation of the Dickey Fuller unit root test can be illustrated as follows:

$$Y_t = \beta_1 + \beta_2 Y_t + \varepsilon_t \dots \dots \dots (4.3)$$

$$Y_t = \beta_1 + \beta_2 Y_t + \beta_3 Y_{t-1} + \varepsilon_t \dots \dots \dots (4.4)$$

$$Y_t = \beta_1 + \beta_2 Y_t + \beta_3 Y_{t-1} + \beta_4 Y_{t-2} + \varepsilon_t \dots \dots \dots (4.5)$$

Now,

$$\Delta Y_t = \gamma Y_{t-1} + \beta_1 \Delta Y_{t-1} + \varepsilon_t \dots \dots \dots (4.6)$$

$$\Delta Y_t = \gamma Y_{t-1} + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \dots + \beta_p \Delta Y_{t-p} + \varepsilon_t \dots \dots \dots (4.7)$$

This formula is applied to obtain the result when the series does not have an autocorrelation problem. Therefore, this equation could be written as indicated bellow:

$$\Delta Y_t = \gamma Y_{t-1} + \sum_{i=1}^P \beta_i \Delta Y_{t-i} + \varepsilon_t \dots \dots \dots (4.8)$$

$$\Delta Y_t = \alpha + \gamma Y_{t-1} + \sum_{i=1}^P \beta_i \Delta Y_{t-i} + \varepsilon_t \dots \dots \dots (4.9)$$

$$\Delta Y_t = \alpha + \beta_t + \gamma Y_{t-1} + \sum_{i=1}^P \beta_i \Delta Y_{t-i} + \varepsilon_t \dots \dots \dots (4.10)$$

Some common assumptions of ordinary least square (OLS) are discussed here.

1. ε must be independent
2. There should be no heteroskedasticity, should be homogeneity.
3. There should no structurally break, co-efficient should stable.
4. Error term should be normality distributed.

The process for checking stationarity in the augmented Dickey-Fuller test is the same as that of the simple Dickey-Fuller test: stationarity is first tested at the level, then at the first difference, and lastly at the second difference. At first difference the equation will be as follows (Musthaq, 2011).

$$\Delta^2 Y_t = \gamma Y_{t-1} + \sum_{i=1}^P \beta_i \Delta^2 Y_{t-i} + \varepsilon_t \dots \dots \dots (4.11)$$

$$\Delta^2 Y_t = \alpha + \gamma Y_{t-1} + \sum_{i=1}^P \beta_i \Delta^2 Y_{t-i} + \varepsilon_t \dots \dots \dots (4.12)$$

$$\Delta 2Y_t = \alpha + \gamma Y_{t-1} + \beta t + \sum_{i=1}^P \beta_i \Delta 2Y_{t-i} + \varepsilon_t \dots \dots \dots (4.13)$$

Hypothesis by using ADF methods.

H₀ : variables has unit root test (Not stationary: $\gamma = 0$)

H₁: variables has not unit root test (stationary: $\gamma < 0$)

If the Probability < δ (5%) or |t-statistics| > |Critical Value|:

H₀ is rejected because of its non-support stationary hypothesis.

H₁ is maintained because of its support stationary hypothesis.

4.2.1.2. Phillip -Peron Unit Root Test (PP)

By using lags of the dependent variable, lag augmentation is utilized in the ADF regression to produce residuals free for serial correlation (Dickey-Fuller, 1979). Nonetheless, an alternative approach to unit root testing that can be used to models with weakly dependent errors is the Phillip -Perron (PP) unit root test which were created by Phillip(1987) and Phillip-Perron (1988) (Del Barrio, Rodrigues, and Taylor, 2015:3.).To address serial correlation in the errors, the PP test employed a nonparametric serial correlation correction factor that is based on a reliable estimate of the long-term variable of the errors process (Del Barrio, 2015).

The equation of Philip Perron's test procedure consists of verifying the unit root test hypothesis. H₀: $\delta = 0$ in the following models:

$$\Delta Y_t = \beta_0 + \beta t + \delta Y_{t-1} + \varepsilon \quad (4.14)$$

$$\Delta Y_t = \beta_0 + \delta Y_{t-1} + \varepsilon \quad (4.15)$$

$$\Delta Y_t = \beta t + \delta Y_{t-1} + \varepsilon \quad (4.16)$$

Notes:

Δ : Represent the first difference operator.

(t) : Denotes the time series

β_0 : Represent the constant value.

δ : Represent the coefficient of the time series

Y : Deterministic trend

ε_t : Represent error terms or the innovations process.

The Hypotheses

H0: variable has unit root test (Not stationary: $\delta = 1$)

H1: variable has not unit root test (stationary $\delta < 1$)

If the Probability $< \delta$ (5%) or $|t\text{-statistics}| > |\text{CriticalValue}|$:

H0 is rejected because of its non-support stationary hypothesis;

H1 is maintained because of its support stationary hypothesis.

Phillips-Peron (1998) evaluates that the time series data has a unit root. The null hypothesis is that the data contains a unit root, and the alternative is that the variable is already bringing about a stationary process. While the augmented Dicky-fuller test uses additional lags of the first-differenced variable, Phillips-Peron performs Newey west's (1987) standard errors term to reckon for serial correlation (Ertur, 1998: 13).

4. 2.1.3. Kwiatkowski -Phillip-Schmidt -Shin Unit Root Test (KPSS)

In econometric, the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests establish whether an observable time series is stationary around a deterministic trend. The random walk's zero variance is assessed using the langrage multiplier test. Stationary error and the deterministic trend random walk add up to the series (Ray, 2012).

The KPSS (1992) is an element that completes unit root tests like ADF, and PP; its role is to check the stationarity and the hypotheses of the tests. The KPSS Lagrange multiplier tests the null of stationarity ($H_0: \rho < 1$) against the alternative of a unit root ($H_1: \rho = 1$).

According to (El Bouhadi and Ouahid, 2016: 284), the establishment of the test statistic is based beforehand on the decomposition of the underlying process of the series

studied () in a linear deterministic trend $\beta_0 t$, a random walk, let $\beta_t = \beta_{t-1} + \varepsilon_t$ and ε_t represent a white noise, and a stationary random component. It represents a model where the series of observations is represented as the sum of three components: deterministic trend, a random walk, and a stationary error term. The equation is written as follows:

$$Y_t = \beta_0 t + \beta_{t-1} + \varepsilon_t \quad (4.17)$$

Noted that:

- Y_t , $(t) = 1, 2, \dots, X$: represents the of observations of the studied variables
- t : Denotes the deterministic trend.
- β_0 : The coefficient of the deterministic trend
- β_{t-1} : Represents the random walk process.
- ε_t : Represents the error terms.

The Hypotheses

H_0 : var has not unit root test (stationary)

H_1 : var has unit root test (stationary)

If T-Statistic > Critical Value:

H_0 is rejected - H_1 is accepted.

If T-Statistic < Critical Value: H_0 cannot be rejected.

4.2.1.4. Ng-Perron Unit Root Test

The NG-Peron is a statistical unit root test that examines the stationarity of variables .Even when there are notable impact, the majority of scientists are still confident in the finding. According to Malik (2015), Ng and Perron (2001) created a unit root test that combines the Phillips Peron test and DFGLS features. According to Peron and Ng, the test does remarkably well, particularly when a negative moving average is present. However, the choice of spectral density estimators employed in the test's formulation has a significant impact on how well the test performs.

NG and Peron proposed four (4) test statistics that are: MZa, MZt, MSB, and MPT.

$$K = \sum_{t=2}^T (y_t^d - 1) / {}^2T^2 \quad (4.18)$$

The four generalized least squares detrended statistic models can be written as:

$$\mathbf{MZ}_a = \frac{(T^{-1}\tilde{y}_t)^2 - \int (0)}{2k} \quad (4.19)$$

$$\mathbf{MZ}_t = \mathbf{MZ}_a \times \mathbf{MSB} \quad (4.20)$$

$$\mathbf{MSB} = \left(\frac{k}{\hat{f}(0)} \right)^{1/2} \quad (4.21)$$

$$\mathbf{MPT} = \begin{cases} \frac{c^{-2}k - \tilde{c} T^{-1}(\tilde{y}_t)^2}{\int (0)} \\ \frac{c^{-2}k - (1-\tilde{c})T^{-1}(\tilde{y}_t)^2}{\int (0)} \end{cases} \quad (4.22)$$

Where d_t^0 represent drift and d_t^1 drift and trend in GDP, and $k = \sum_{t=1}^T \frac{(\tilde{y}_{t-1})^2}{T^2}$. The symbol

$\int (0)$ indicates the estimation of spectral density at frequency zero.

Hypotheses

These hypotheses defined the analysis of Ng-Peron

H0: var has unit root test (Not stationary)

H1: var has not unit root test (stationary)

MSB and MPT test

If T-Statistic < Critical Value: -

H0 is rejected because of its non-support stationarity hypothesis.

H1 is maintained because of its support stationarity hypothesis.

If T-Statistic > Critical Value: The null hypothesis (H0) is maintained.

MZa and MZt test

If |t-statistics| > |Critical Value|:

H0 is rejected because of its non-support stationarity hypothesis.

H1 is maintained because of its support stationarity hypothesis.

If |t-statistics| < |Critical Value|: The null hypothesis (H0) is maintained.

4.2.1.5. Bound Testing Procedure

The bound test method is employed to ascertain whether the variables have a short and long-term relationship. The bound test is also used in an autoregressive distributed lag (ARDL) model to analyze the t-ratio between the cointegration test proposed by Banerjee Dolado and the coefficient of the lagged depending variable. (Pesaran, Shin and Smith, 2001).

According to the Pesaran (2001) study the bound testing techniques is a set of test that, once their null hypotheses are jointly rejected, infer the existence of co-integration. This approach is based on the ARDL model's unrestricted version of an error correction model (ECM). (Bertsates, Sakellaris and Tsionas, 2022).

$$\Delta GDP_t = \beta_0 + \sum_{i=-1}^m \beta_{1i} \Delta GDP_{t-i} + \sum_{i=0}^m \beta_{2i} \Delta Ex_{t-i} + \sum_{i=0}^m \beta_{3i} \Delta Imp_{t-i} + \beta_4 GDP_{t-1} + \beta_5 LExp_{t-1} + \beta_6 Limp + \varepsilon_t \quad (4.23)$$

The optimal lag decision is analyzed according to the Akaike info criterial and Schwarz info criterial values. It corresponds to the smallest value of AIC and SIC and do not include autorelation problem is select.

Hypotheses

The bound test procedure hypotheses are determined according to the coefficients of β_1 , β_2 and β_3 . So we can dressed the hypothesis as follow.

H0: $\beta_1 = \beta_2 = \beta_3 = 0$; There is no co-integration relationship between variables.

H1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$; There is co-integration relationship between variables.

The positioning of F-statistic in bound test is a relevant element in the Interpretations. The stationarity of root unit test results I(0) and I(1) are also important aspects in the analysis and interpretation of the bound test results. The interpretation of F-statistic is analyzed as follows:

Regardless of the time series orders of integration, the null hypothesis is rejected when F-statistic is higher than the upper critical value and there is cointegration relationship

between variables. In contrast, the null hypothesis cannot be rejected when the F-statistic is less than the lower critical value. Lastly the conclusion is inconclusive if the F-statistic lies between the lower and upper critical levels (Fosu and Magnus, 2006: 2081).

4.2.2. Diagnostic Test

Before starting any economic regression model, it is necessary to verify the authenticity of the variables. Diagnostic testing is a technique that identifies and analyzes the correlation, evidence of particularity and linearity through the various diagnostic tests. This study used some diagnostic test which include correlation (LM) test, Heteroskedasticity Arch Test. These diagnostic tests are required to verify the estimate of the research results. They are divided by Peseran et al. (2001).

Decisions were made after analyzing the f-statistic value against the probability of 5% significance. The values of Obs*-R-square and the probability were the very relevant elements that help us to make decisions throughout this study. Diagnostic tests are accepted when the F-statistic and Obs* R-square values are positively significant, and their probability is greater than 5% significance level. The null hypothesis is accepted when the p-value is bigger than 5% critical value and the null hypothesis is no accepted while p-value is less than critical value.

4.2.3. Stability Test

Stability test is a preliminary study carried out by economic researchers to ascertain whether there are stable links between the variables to be analyzed. It helps us to make long-term decisions and present research results.

According to Brown, Durbin and Evan (1975), the CUSUM cumulative test and the CUSUM of squares cumulative test will be used to assess the structural stability of both short and long-term transactions, because they demonstrate two crucial aspects of the data. The presence of any structural changes in the data and the stability and consistency of long-term parameters with short-term parameter. These two tests rank among the most significant in this field (Laoufi, Hadidi and Bahnas, 2020).

4.2.4. Autoregressive Distributed Lag (ARDL) Model

The abbreviation for Autoregressive distributed lag model is ARDL. Much theoretical and empirical research in several economic areas has focused on econometric analysis of long-run relations (Jula, 2015). The use of ARDL models has a long history, starting with distributed lag models from early 60 Koyck (1945), being adapted and constantly improved by economists (Almon and Van, 2004) and Jula (2015). The estimated ARDL model is using to verify the cointegration relationship between the variables, it explains the presence of short and Long-run equilibrium in this study.

For this thesis, the autoregressive distributed lag and error correction model analysis method (ARDL) were employed to examine if the dependent variable (economic growth) and independent variables (export, import) have a short term or long term relationship. Compared to previous approaches like Angel Granger (1987), Johansen –Gesells methods (1990), its estimated short and long-term parameters were more consistent.

Pesaran, Shin and Smith (2001) have created the autoregressive distributed lags (ARDL) model. Since this model is regarded as a substitute for well known, widely used integration tests. The test differ from others since it does not demand that all-time series be of the same degree $I(0)$ or $I(1)$. The only prerequisite for using this test is that none of the variables degrees of integrity must be $I(2)$ (Laoufi, Hadidi , and Bahnas, 2020).

The use of econometric software such as EViews has enabled us today to facilitate the analysis and interpretation of data in order to find the different research results. In most econometric research, the autoregressive distributed lags (ARDL) method is an essential part of analyzing the results of the data, that why, in the analysis of this study we will use this method to determine the long and short run.

Autoregressive Distributed Length method (ARDL) is divided into four (4) analysis steps that will be used in this study to determine long and short run.

The first step is to find the optimal Length selected. Akaike info criteria and Schwarz info criteria are the main elements used to determine the length. According to (Karagol.et, al, 2007), optimal length provides minimum values of Akaike and Schwarz criterial.

The second steps consist in determining the value of the F-statistique by focus on Bound test table. When the value of the F-statistic (Wald test) is greater than the upper Bound limit, the null hypothesis is not accepted which means there is cointegration relationship; If the F-statistic is less than lower bound limit, we accept the null hypothesis which means there is no co-integration relationship, Pesaran and Al (2001) proposed that when the value of the F-statistic falls between the lower bound and upper bound limit, we cannot interpreted the result.

The third step is to examine the long and short -term relationship between the variables, it will allow us to have a vision on the Malian economy in the coming years.

The ARDL model estimation equation is written as follows:

$$\text{GDP}_t = f(\text{exports}, \text{imports}, \text{final consumption expenditure})$$

The function can also be represented in a log linear econometric format:

$$\text{Log(GDP)}_t = \beta_0 + \beta_1 \log(\text{exports})_t + \beta_2 \log(\text{imports})_t + \beta_3 (\text{FCE})_t + \epsilon_t \quad (4.24)$$

Where,

β_0 : constant term,

β_1 : coefficient of variable (export),

β_2 : coefficient of variables (import)

β_3 : coefficient of variables (final consumption expenditure)

t : the time trend

ϵ : the random error assumed to be normally, identically, and independently distributed.

FIVE CHAPTER

5. EMPIRICAL ANALYSIS

This chapter analyzes and interprets the link between exports, imports, final consumption expenditure and economic growth of Mali from 1972 to 2023 by using different econometric methods. The first analysis will be based on the unit root test and its components such as ADF, PP, KPSS, and Ng-Peron; the second part will analysis the diagnostic and stability test; the third will interpret the results of the ARDL model from the Bound test, in the short and long run.

5.1.1. Unit Root Test

The objective of this unit root test is to examine the stationarity between the variables (export, import, final consumption expenditure and economic Growth) by applying the different statistical tests such as: ADF, PP, KPSS, and Ng-Peron.

Before analyzing the ARDL model and causality test, the statistical tests of these different methods were compared to 5% significance level. **Tables 5.2 and 5.3** explain the result.

Table 5.1. Definition of Variables

Variables	Symbols	Definitions	Sources
Economic growth	GDP	GDP Growth (Annual %)	World bank (world development indicator)
Export	Exp	Exports of goods and services (Annual %) Growth	World bank (world development indicator)
Import	Imp	Imports of goods and services (Annual %) Growth	World bank (world development indicator)
Final consumption expenditure	FCE	Final consumption expenditure (Annual %) Growth	World development indicator)

5.1. 1.1. The Result from Unit Root Test

After analysis the relationship between export, import, final consumption expenditure on economic growth of Mali by applying different methods of unit root test, the result indicated that: The dependent variable (economic growth) is stationary at level I(0) in the Augmented Dickey Fuller (ADF) test , Philip Peron (PP) test, Kwiatwaski Philip Schimd-Shin (KPSS). At the same method, the result of export, import and final consumption expenditure from unit root test indicated that the series does not include the unit root problem, so it is stationary at level I (0).

Table 5.2. Result of ADF, PP, and KPSS test

Variables	ADF	PP	KPSS	Decision
GDP (Dependent)	-8.244627** (c) -3.565430(1%) -2.919952(5%)	-8.350218**(C) -3.565430(1%) -2.919952(5%)	0.09075**(C) 0.739000(1%) 0.463000(5%)	I(0)
Export (independent)	-7.077117**(c) -3.565430(1%) -2.919952(5%)	-7.114815**(C) -3.565430(1%) -2.919952(5%)	0.093441**(c) 0.739000(1%) 0.463000(5%)	I(0)
Import (independent)	-8.677699**(c) -3.565430(1%) -2.919952(5%)	-9.728508**(c) -3.565430(1%) -2.919952(5%)	0.174132**(c) 0.739000(1%) 0.463000(5%)	I(0)
Final consumption expenditure (independent)	-9.619477**(c) -3.565430(1%) -2.919952(5%)	-9.619477** (c) -3.565430(1%) -2.919952(5%)	0.198895** (c) 0.739000 (1%) 0.463000 (5%)	I(0)

Note: The numbers in parentheses” (.)” are the lag lengths that are determined by Schwarz Criterion in ADF test. Bartlett Kernel estimation method is used in PP and KPSS, bandwidth is determined as Newey-West.

Table: 5.3. Result of NG -Peron Test

Variables	NG- Peron				
	MZa	Mzt	MSB	MPT	Decision
GDP (dependent)	-25.0475** -13.8000(1%) -8.10000(5%)	-3.58878** -2.58000(1%) -1.98000(5%)	0.14128** 0.17400(1%) 0.23300(5%)	0.97851** 1.78000(1%) 3.17000(5%)	I(0)
Export (independent)	-4.11215** -13.8000(1%) -8.1000(5%)	-14.3018** -2.58000(1%) -1.98000(5%)	0.34779** 0.17400(1%) 0.23300(5%)	5.96266** 1.78000(1%) 3.17000(5%)	I(0)
Import (independent)	-24.8157** -13.8000(1%) -8.1000(5%)	-3.51237** -2.58000(1%) -1.98000(5%)	0.14154** 0.17400(1%) 0.23300(5%)	1.02096** 1.78000(1%) 3.17000(5%)	I(0)
Final consumption expenditure (independent)	-24.1942** -13.8000(1%) 8.10000(5%)	-3.47757** 2.58000(1%) 1.98000 (5%)	0.14374** 0.17400(1%) 0.23300(5%)	1.01438** 1.78000(1%) 3.17000(5%)	I(0)

Note: The numbers in parentheses” (.)” are the lag lengths that are determined by Schwarz Criterion in ADF test ,Bartlett Kernel estimation method is used in PP and KPSS, bandwidth is determined as Newey-West.

5. 1.2. Post Estimation Test

Before drawing conclusions or policy inferences from any estimation regression model, it is important to perform relevant test estimation or diagnostic tests to verify the validity of the regression model. Thus, the specification of every econometric model should be thoroughly tested before we even tentatively accept its result. These tests include the normality test, serial correlation test, homoscedasticity test, linearity test, and stability test. These diagnostics are required to verify the reliability of the estimated coefficient (Obumneke, 2020).

5.1.3. Serial Correlation Test

Serial correlation has been central to time series econometrics. The existence of serial correlation complicates statistical inference from econometric models and time series analysis (Hong, 2006: 227-244). On the other hand, serial correlation test is a statistic method

used to determine whether there is a correlation between residuals (errors) in regression analysis or time series data at different time intervals.

5.1.4. Heteroskedasticity Test

Heteroskedasticity test is employed to find out if there is evidence particularity between variables by using Arch test.

Table 5.4. Diagnostic and Stability Test

Test		Ho	F-statistic		Obs* R-Square	
			Value	Prob	Value	Prob
Serial correlation	LM test	No correlation	0.663203	0.5201	1.457393	0.4825
Heteroskedasticity	Arch	No evidence particularity	1.119355	0.2952	1.13902	0.2859
Linearity	Ramsey Reset	Linear relationship	0.111455	0.7400		
Normality	Jarque-Bera	Residuals normality Distributed			0.880563	0.643855

Source: computer using EViews 12 (Author)

Serial correlation: Since the probability of Obs* R-square are greater than 5% significance level, we cannot reject the null hypothesis, so there is no evidence of serial correlation for this variable. It is means the model is free from the problem of autocorrelation.

Heteroskedasticity: The coefficient of Obs* R-square (1.13902) is positive and significance and the probability (0.2859) higher than 5% significant level, therefore, there is no evidence particularity between the variable by using Arch test in Heteroskedasticity. It is means, the test has not heteroskedacity problem.

The normality test indicated a residuals normality distributed by using Jarque-Bera model since the coefficient is positive and the probability is greater than 5% critical value. We cannot reject the null hypothesis , therefore the study confirm a normality.

Table 5.5. Optimal Lag Select.

After the unit root test, the maximum lag length of the model is found by using Vector Autoregressive (VAR) lag order selection criteria (Shoreward, Khan, and Mushtaq, 2018).In time series analysis, particularly in models like vector autoregressive (VAR),

optimal lag select is crucial for accurate forecasting and understanding dynamic relationship between variables that can influence current values. It determine the number of past periods to include in the model. The optimal lag length is performing before cointegration test, it determines the long and short run equilibrium.

M	AIC	SIC	X ² Breusch Godfrey
1	5.185966	5.644852	6.352770(0.0417)
2	5.020427	5.63164	2.518453(0.2839)
3	5.892338	5.407308	4.512958(0.1047)
4*	4.937368*	5.882124	0.213918(0.8986)

Source: Computation using Eviews12 software. Notes: X2 BREUSCH- GODFREY is autocorrelation test statistics. The numbers in parentheses are probability values. * Denotes the selected lag length.

The formula for autocorrelation is applied by the dependent variable; the dependent variable of this thesis is economic growth (GDP). Optimal lag selection (m) is an important state in bound testing. The lag that provides the minimum value of Akaike and /or Schwarz criteria at the same time and does not cause an autocorrelation problem is accepted as optimum (Karagol et Al, 2007: 76). The optimal lag of this thesis was chosen by the smallest value of AIC; hence, the optimal lag select is **Lag 4= 4.937368**

5.1.5. Result from ARDL Bound Test and F-Statistic

The F-statistic is a ratio used in statistical analysis to compare the variances between groups or models. It's commonly applied in ANOVA (Analysis of variance) and regression analysis. In the context of ANOVA, the F-statistic quantifies how much the group means deviate from the overall mean relative to the variation within the group. A higher F-statistic indicated that the group means are significantly different. In regression, the F-statistic test overall significance of the model.

The calculation of critical value and F-statistic are different. The critical value is a specific value compared to the F-statistic however, the F-statistic is the value we calculate

from our data. It must be used in combination with the P-value. The P-value is the probability of getting a result at least as extreme as the one that was observed, given the null hypothesis is true. In calculating of the F-statistic, if the result is significant it does not mean that all the variables or coefficients are significant.

Therefore, the coefficients of variables are $C(21) = C(22) = C(23) = C(24) = 0$. The calculated of F-statistic from the Wald test is # **4.55** #. When the value of F-statistic (Wald test) is greater than the upper bound limit, the serie is contegrated or there is contegression relationship between variables; if the F-statistic is less than lower bound limit, the series are not contegrated which means there is no co-integration relationship. Pesaran et al, (2001) proposed that when the value of the F-statistic falls between the lower bound and upper bound limits, we cannot interpreted the result.

As all variables are stationary at I (0), the F-statistic is compared with the Lower bound test. Lower bound=3.23 and F-statistic=4.55, since the F-statistic is bigger than the lower bound test, so the study confirmed a cointegration relationship between variables.

Table 5.6. Result from ARDL Bound Test

K	F-statistic	Critical values	
		5% significance Level	
3	4.55	Lower Bound	Upper Bound
		3.23	4.35

Source: computer using EViews 12. Notes: K indicates the number of independent variables in the model. Critical values came from Table C1(III) in Pesaran et al. (2001:300).

5.1.7. The Result of Long Run Coefficient from ARDL Model

The existence of long- run relationships by using cointegration techniques in empirical analysis has been paid considerable attention over the past decade. To determine the long-run equilibrium, the cointegration technique has become the solution. According to (Nkoro and Uko, 2016), cointegration is a powerful way of detecting the presence of steady- state equilibrium. The econometricians Granger (1981) and Engel and Granger (1987) were the first to formalize the idea of cointegration, providing tests and estimation procedures to

evaluate the existence of a long- run relationship between the variables (Nkoro and Uko, 2016).

The determination of the long run is detected through the use of the F-statistic (Wald test) by focusing on the data of the dependent and independent variables. The analysis and interpretation of the long- run equilibrium of this study are focused on the coefficients of the variables and their probabilities.

The table 5.7 shows us the result of the ARDL long-run equilibrium between economic growth, export, import and final consumption expenditure. After analysis on the EViews 12 software, the independent variables export and final consumption expenditure have the coefficient respective (0, 1177327) and (0.673126) with probalities (0,003) and (0.007) witch are smaller than 5% critical value, therefore we can dressed that export and final consumption expenditure are significant and positive impact on economic growth in long run in Mali economic .These connection provide information about how GDP, export and final consumption expenditure interact, pointing to areas where policy adjustments may have a particularly big impact. The result statement of this study is in line with Adekule (2025) who mentioned that export has positive impact on economic growth for the South African economy in long-rung. However, import has negative impact on economic growth in long-run for this study.

By focusing on the formula (4.24) log linear of the GDP which is written as:

$$\text{Log (GDP)}_t = \beta_0 + \beta_1 \log(\text{exports})_t + \beta_2 \log(\text{imports})_t + \beta_3 \log(\text{FCE})_t + \epsilon_t$$

The result of long- run can be interpreted as:

$$\text{GDP} = 0.647306 + 0.1177327 (\text{exp}) + 0.000988 (\text{imp}) + 0.673126(\text{FCE}) + \epsilon_t$$

Any increase in export and final consumption will also increase the value of economic growth. These interpretation explains to us that GDP is dependent on the export, import and final consumption expenditure variables.

Table 5.7. The Long-Run Coefficient from ARDL Model (1;0)

Dependent Variables DGDP				
Variables	Coefficient	Standard Error	T-statistic	Probability
Export	0.1177327	0.056623	3.131745	0.003
Import	0.000988	0.088679	0.011137	0.991
FCE	0.647306	0.236093	2.851100	0.007
C	0.647306	1.032166	0.627134	0.534

5.1.7. Short Run Error Correction Model (ECM)

Sargan (1984), Hendry and Anderson (1977) and Davidson et al.(1978) were the first to use the error correction model to determine how much an explanatory variable deviates from an equilibrium relationship with the dependent variables, rather than the level of some explanatory variables(Niyimbanira,2013). In order words, this model is used when there is cointegration between variables and a chance that there may be short-term disequilibrium. To determine the short-run equilibrium, Error correction plays an important role; it helps econometricians to analyze the impact of one variable on another.

Short –term error correction model (ECM) analysis is performed after long-term conclusion on the independent variables. In the analysis, it must be apparent that the model error correction (ECM) coefficient must be negative with a probability of less than 5% for the independent variables to affect the dependent variable. Contrary cases may occur in certain situations where the model error correction coefficient is negative, and the probability is higher than 5%, and vice versa. It explained the relationship between export, import, final consumption expenditure and economic growth.

5.1.7.1. The Result from Short Run Error Correction Model

The finding result indicated that, the error correction CointEq (-1) is negative and significant since the probability is smaller than 5% critical value, therefore the analysis supports a cointegration relationship in short- run equilibrium. The value of cointqE (-1) is (0.850465) suggesting that approximately 85% of the annual deviation in economic growth from its long-term equilibrium is correct in short-run. In order words, any deviation in choc will approach equilibrium in (0.850465) in short-run.

The variables economic growth, import and final consumption expenditure are cointegrate and their probability are smaller than 5% critical value, therefore the analysis support a cointegration relation. It is means that, there are short run relationship between these variables.

Table 5.8. Error Correction Model (ECM)

Dependent variable GDP				
Variables	Coefficient	Standard error	t-statistic	Probability
D(GDP(-1))	-0.131597	0.096485	-1.36396	0.18000
D(GDP(-2))	0.201897	0.069121	2.920928	0.0058
D(IMP)	-0.078467	0.024967	-3.142811	0.0032
D(IMP(-1))	-0.062769	0.025759	-2.436746	0.019
D(FCE)	0.848359	0.071265	11.90423	0.0000
D(FCE(-1))	0.378757	1.0101526	3.730624	0.0000
CointEq(-1)	-0.850465	0.113054	-7.522643	0.0000
R-squared	0.911700	Mean dependent var	0.1262	
Adjusted R-squared	0.899086	S.D dependent var	7.75921	
S.E of regression	2.464886	Akaike info criterion	4.77371	
Sum squared	255.1736	Schwarz criterion	5.04397	
Log likelihood	-109.9560	Hannan-Quinn criterion	4.87625	

Source: Computation Using Eviews12

CONCLUSION AND RECOMMENDATIONS

This study examined the relationship between exports, imports, and economic growth of Mali by using annual data from 1972 to 2023. As economic growth determinant, the variable final consumption expenditure has been added in this analysis to analyze and interpret the result. The data were obtained by online publication from World Bank indicator. The data used in this analysis are expressed as a percentage (%).

This analysis used ADF, PP, KPSS, and NG-Perron as unit root methodologies to check the stationarity between the variables. The result showed that, all the variables are stationary at $I(0)$. In diagnostic test, serial correlation, heteroskedasticity tests, normality and linearity test were utilized to verify the validity of the regression model. The result of serial correlation by using the LM test indicated a non-existence of serial correlation. However, the result of heteroskedasticity test observed the non-evidence of heteroskedasticity by using the Arch test. The normality test indicated a residuals normality distributed by using Jean-Bera test. By using Ramsey reset in linearity, the study indicated a linear relationship between variables.

Before determining long and short-run equilibrium by using the ARDL model, we first sought to determine the optimal lag for this study. The analysis revealed that our optimal is $\text{Lag}(4) = 4.937368$, which corresponds to the smallest value of Akaike info criteria (AIC). As for the bound test procedure, the value of F-statistic is **4.55**, it means the study confirmed the existence of cointegration between variables.

In long-run impact of the ARDL model, the finding result indicated a long run relationship between economic growth, export and final consumption expenditure. At the same time, import has negative impact on economic in long-run equilibrium in this study.

The error correction model $\text{CointEq}(-0.850465)$ has negative sign and the probability is smaller than 5% critical value, therefore the test supports a cointegration in bound test. The result of short run error correction model indicated that the variables (import and final consumption expenditure) have a positive impact on economic growth.

This study recommends to promote trade (export, import) and maintain protections in various strategic areas, such as the cotton and gold sectors, which represent significant shares in the national economy. The government should support the primary sector by encouraging

agriculture in arid areas and providing them with agricultural inputs and other materials. It will help ensure food security and reduce imports of basic necessities. The government must also assist small and medium-sized enterprises in their various activities in order to reduce unemployment rate and increase level of economic growth.



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