UNIVERSITY OF RWANDA

COLLEGE OF BUSINESS AND ECONOMICS

THE ANALYSIS OF EXPORT DIVERSIFICATION ON ECONOMIC GROWTH: EMPIRICAL ANALYSIS OF RWANDAN CASE

BY

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APPROVAL SHEET

This thesis entitled, the analysis of export diversification on economic growth: empirical analysis of Rwandan case written and submitted by Esperance MUKAGAHAMA in partial fulfilment of the requirements for the degree of Masters of Business Administration (MBA Finance), is hereby accepted and approved.

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DECLARATION

This research dissertation is my original work and has not been presented to any other institution for examination.

Signed……. Date

Dedication

I dedicate this humble work to God, my beloved husband and my dearest children.

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MUKAGAHAMA Esperance

Abstract

This study analyzed the export diversification on the economic growth in Rwanda between 1999 and 2016. Using co-integration and error correction models, the thesis found a long run relationship between the variables under study. Empirically, the study attempted to examine the hypothesis that export diversification was linked to economic growth by considering the fundamental variables used in the estimated model. The empirical results revealed that Rwanda's terms of trade were negative and did not have significant contribution to RGDP. The empirical evidence regarding the relationship between exports and economic growth was not robust, although the results of the study indicated that exports had a positive effect on the overall economic growth. Export could be considered as an engine of growth even if the study revealed that its impact was quantitatively insignificant in short-term. The findings results also indicated that the REXP led to growth of RGDP. The positive correlation of RGFCF was confirmed and RTOT has been identified with unidirectional relationship. The evidence suggested that trade strategies promote exports expansion of goods and services which are required as driver of sustainable economic growth in Rwanda.

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List of abbreviations

ADF: Augmented Dickey Fuller test

DW: Durbin Watson test

EAC: East African Community

ECM: Error Correction Model

ET: Error

GDP: Gross Domestic Product

GNI: Gross National Income

HI: Herfindahl Index

I (1): Integrated of Order one

IMF: International Monetary Fund

ISS: Import-Substitution Strategy

LDC: Less Developed Countries

LGDP: Logarithm of Gross Domestic Product

LREXP: Logarithm of Real Export

LRGFCF: Logarithm of Real gross Fixed Capital Formation

LRTOT: Logarithm of Real Terms of Trade

MBA: Masters of Business Administration

MINECOFIN: Ministry of Finance and Economic Planning

NBR: National Bank of Rwanda,

NES: National Export Strategy

R^2: Regression squared

REXP: Export

RGDP: Real Gross Domestic Product

RGP: Real Gross Product

RWF: Rwandan Francs

SFB: School of Finance and Banking

T: Time

USD: USA Dollar

VAR: Vector Auto-Regression

VEA: Volume Export Agreement

VER: Volume Export Restraint

UR: University of Rwanda

CHAPTER ONE: INTRODUCTION

1.1Overview of theoretical background

Economic growth continues to be a subject of policy discussions for African countries and most developing countries. The argument is that economic growth can be generated by developing and increasing of exports. The advantages given to the exporters include reducing tariffs, removing price controls and using different approaches to achieve a strong export diversification.

In general, expansion of export base or export diversification has a significant impact on economic growth. Helpman and Krugman (1985) confirmed that exports are generally supposed to contribute positively to the economic growth in various ways, either by facilitating the exploitation of economies of scale, relieving the foreign exchange constraint as advocated by McKinnon (1964), or enhancing efficiency through increased competition according to Krueger (1980) and promoting the diffusion of technical knowledge according to Grossmand and Helpman (1991). From there, this thesis analyses the case of Rwanda where the import is 1.77 billion of dollars and the export is 621 million only.

Bonaglia and Fukasaku (2003) discussed the role of export diversification on economic growth which shifted away from import substitution towards export promotion and increased openness. These authors confirmed also that the major issues for developing countries are production and trade which are concentrated on a narrow range of products in unprocessed natural resources sectors.

1.2 Statement of the problem

Like many African countries, Rwanda faces a problem of high export concentration and this is one of the country structural economic constraints.

In Rwanda, the export is dominated only by traditional products as coffee, tea, and minerals like tin, coltan, wolfram and cassiterite. Food is the main imported product. The imports list also machinery and equipment, construction materials, petroleum products and fertilizers in Rwanda as quoted by the Ministry of Finance Report in 2016.

Several authors have explained the link between export diversification and economic growth. Particularly, recent works on endogenous growth have emphasized the importance of diversification.

Jung and Marshall in 1985, verified the exports diversification and economic growth causality in developing countries. Four African countries were included in the sample of the study and the results illustrated that among them only in Kenya, the exports play a positive role in increasing the economic growth.

Herfindahl index (HI), an index used by international institutions to measure the degree of export diversification still confirm important gaps in Rwandan exports which are highly concentrated as shown on the table below .

Table1.1: Herfindahl Index (HI) for Rwanda's exports

Period	HI average
1995-2004	0.4
2005-2010	0.2
2011-2016	0.25

Sources: BNR

Rwanda National Bank Report in 2015 revealed that total trade with EAC in 2015 had a poor performance in export while the imports increased. Rwanda is among the country which has the lowest export coverage in the East African region and less diversified.

Moreover, the International Monetary Fund (2016) reported that Rwanda has exported goods and services worth $621 million and spent $1, 77 billion in imports.

1.3 Research objectives

This study focuses on an empirical analysis and establishes the relationship between exports diversification and economic growth to provide empirical evidences and results.

1.3.1 General objective

The general objective of this research is to verify if there is a relationship between export diversification and economic growth as specified by economic theories.

1.3.2 Specific objectives

The specific objectives of this research are:

1. To prove empirically how the level of export diversification affects or explains Rwandan economic growth for a period of eighteen years.
2. To identify other macroeconomic variables that explain the economic growth in Rwanda.

1.4 Research questions

In view of the above mentioned objectives, the research questions are:

1. How the level of export diversification affects or explains economic growth in Rwanda? And what measures and policies can Rwanda adopt with regard to export diversification?
2. In addition to export diversification, what are other macroeconomic variables which explain the economic growth in Rwanda?

1.5 Methodology

This study has used different econometric techniques such as unit roots test, co-integration test and error correction model test in order to verify if there is a relationship between export diversification and economic growth as specified by economic theories.

1.6 Scope and limitation of the study

This study was carried out in Rwanda. The researcher focused on macroeconomics variables and investigated empirically the relationship between export diversification and economic growth in Rwanda. It covered a period of Eighteen years between 1999 and 2016 and considered data availability.

1.7 Thesis structure

This thesis is subdivided in five chapters: Chapter one is the introduction, Chapter two provides a brief review of literature concerning what other scholars and researchers have discussed in relation with the research topic. Then chapter three discusses the analytical framework and methodology while Chapter four analyzes the empirical results and chapter five presents conclusion and recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Many economists discussed about the relationship between export diversification, economic growth, international trade, labor and exchange rate. Dornbusch et al. (1993) explained that when transport costs increase, it impacts domestic products and it promotes the product specialization. However, the existence of demand externalities generates profits to the producers which is yielded and leads to the sector concentration.

According to Barro and Sala-i-Martin (1995) the period between 1960 and 1990 was characterized by a complete lack of growth and a decline of real income. This crisis helped in developing mechanisms to produce more and to increase exports.

Van den Berg and Lewer (2007) observed the causality between trade and growth which seems to have a bi-directional nature: First, the relationship between trade and growth is based on trade aiming at enhancing growth. Second, higher levels of development and better technologies lead to a larger degree of trade among economies. Another interesting aspect to be considered apart the context of this study is the complexity of this relationship between trade and growth. This complexity includes other variables such as economic, social, and political factors which influence both trade and growth.

Balassa B. (1980) confirmed that advocates of the strategy leading to growth through export and free trade are the most developing countries that pointed out it is important to follow inward-oriented policies under the Import-Substitution Strategy (ISS).

Before developing the export diversification and economic growth theories, let explore some theories on export.

2.1 Export theory

2.2.1 Merchandise exports and imports

Daniels et al. (2009) said that the popular mode of international business is exports and imports especially between small companies. Merchandise exports are real products or goods that are sent abroad, merchandise imports are goods that are bought abroad and brought in a country. Since exported and imported goods are known and measurable, they are called visible exports and imports. For example, when a country exports its goods to another country, they are exports for the first country and imports for the second country. For most countries exports and imports of goods are measured through the revenues and expenditures.

2.2.2 Service export and imports

Daniels et al. (2009) noted again that the concepts export and imports often affect only merchandise and not services. The concepts service export and terms service imports are important when referring to products or non-products generating international earnings. The company or individual that provides the services and receives payment makes a services export while the company or individual receiving and paying for the services makes a service import. Currently, the services constitute the growth sector in the international trade.

2.2.3 Economic strengths

Daniels explained why goods and services are exchanged between countries and why capital and people travel among countries doing business. They also discuss why the currency on one country has more value than another.

Economies theory also explained the cost effectiveness of goods and services among different countries. Moreover, they provided analytical tools that determined the impact of the operations of an international company on the economies of both host and home

countries, as well as the impact of the economic environment of a host country on a foreign company.

2.2.4 Export subsidies

The export subsidies are payment made to a home firm or an individual who exported goods and services. Paul R. Krugman et al. (2009) confirmed this and said that an export subsidy is a payment for goods and services exported by a firm or an individual. It is compared to a tariff; it can be either specific or proportional to the value exported. When the Government offers an export subsidy, the exporter will ship goods and the domestic price will exceed the foreign price by the subsidy. It is exactly the opposite of a tariff. Unlike a tariff, export subsidy loses the meaning of the terms of trade by lowering the price of export in the foreign market. Therefore, a subsidy definitely leads to costs that exceed its benefits.

Lila J. Truett and DalebTruett (1987) explained that export subsidies are a directed payment which is given to producers or exporters who sell abroad a particular product. Export subsidies can be used per unit of product exported. The major trading nations have excluded the use of direct export subsidies on manufactured goods. Hence, subsidies are frequently given in an indirect form. For example a government may offer tax reductions or low interest loans to exporters of a given product in order to help the exporter to be more competitive on the foreign market.

Whether, direct or indirect subsidies are perceived as a form of protection for domestic producers against foreign competition, they become an advantage given to the domestic producers.

2.2.5 Export credit subsidies

According to the International Monetary Fund (2009), the export credit subsidies are like the export subsidies except the fact that they take the form of a subsidized loan to the importer or buyer. The IMF mentions that the United States like most developed countries

has a government institution called export-import Bank whose mission is to give subsidized loans to help exporters.

2.2.6 Voluntary Export Restraints

Voluntary Export Restraints is a limitation imposed by exporters as a condition given to the importing country. Paul R. Krugman et al. (2009) said that another variant of import quota is the voluntary export restraint (VER) which is also a voluntary export agreement (VEA) generally imposed at the request of the importer. Voluntary export restraints are agreed by the exporter to anticipate or to prevent other trade restrictions.

From an economic point of view, a Voluntary Export Restraints (VER) is an import quota where the licenses are assigned to foreign countries; it is very costly for importing country. Like a tariff, VER is always more costly for the importing country than a tariff which is a limit imports considering the same amount. The difference is considered as revenue under tariff which becomes a benefit earned by foreign under the VRE. VER covers more than one country and it clearly produces a loss for the importing country.

2.2.7 Exports strategy

Discussing about export strategy, Daniels et al. (2009), showed that there are many advantages for a company which chooses to enter in a foreign market. These advantages include ownership opportunities, easy access to the local market and international nature. They discussed and found that those advantages help companies to discover that exporting goods and services is the most attractive way to increase sales and to acquire competitively useful assets in the foreign market.

The same authors open a debate and prove how one medium size manufacturer used export operations to boost his/her approach to creating value, especially in product design and distribution.

McGraw-Hill (2010) said that the strategy behind the production is to add the export diversification into the goods manufactured by less developed countries (LDC_S). In order

to achieve export diversification, more goods must be manufactured. To achieve this, manufacturers in the LDC_S with encounter serious challenges relating to income elasticity of demand, effects of technological change and quality labor.

2.2.7.1 Export strategic advantages

Companies in general join the foreign market to extend their market and to diversify the export. Export strategic advantages are demonstrated by Daniel et al. (2009) who said that both service companies and goods manufacturers export in order to increase sales revenues. Many factors are needed to meet clients' expectations abroad. These factors include accountants, advertisement, lawyer solicitors, and consultants. These factors are local and have an impact on export in the foreign markets.

Companies that are capital and research intensive as well as pharmaceutical companies export goods in order to achieve economies of scale by spreading their research, product development, and capacity expenditures over a larger sales area. Moreover, many companies that are not leading in their domestic markets need sales export as an indirect way to counter the volume advantage imposed by the market leader. The same author confirms that one of the advantages of these export sales is to facilitate greater access to the domestic market. Another advantage is that companies export more than they invest abroad due to a higher risk of operating internationally.

2.2.7.2 Export condition

McGraw-Hill (2010) believed that in the monetized version of the classical model, a country exports a product produced at low cost when the wage and the exchange rates are not very significant. The export and cost condition are the main requirements for a country to export goods.

The potential trade flows have to be examined under the export condition where the ability to export depends not only on relative labor efficiency but also on relative wage and exchange rates of a country. The trade is affected by the shifts in wage and exchange rates.

When there are changes, the wage rates modify the level of cost advantage. Serious changes reduce the capacity of a country to export and its commitment to produce goods. Hence, such a country will lose labor; the domestic price will be higher than the foreign price and lack of means to import goods.

2.2.8 Export Market

The International Monetary Fund (1999) published that export markets are not enough to lead a country to growth and development. Political reaction in the European Union and the United States of America is an enormous threat to a regime that depends on export led growth. Markets are powerful, often wonderful opportunities but they are not enough to achieve economic growth. They overshoot, they overcorrect, and they do not always reveal the real price of public goods. They do not always invest in human beings and when the markets are wrong, they leave enormous costs.

2.2.9 Rwandan Export Structure

In Rwanda, the export structure depends deeply on a few traditional agricultural and mineral export products such as coffee, tea, pyrethrum and minerals. Rwandan economy is based on this export structure. Rwanda has neither developed its industry sector nor diversified its export structure during its post-independence period. Rwanda export has focused on the same products which are subject to large price fluctuations and increase of market prices. The weakness of the export sector in Rwanda is due to the lack of skilled labor and infrastructure to process the products (MINECOFIN report 2011).

According to BNR report (2011), Rwanda exports have improved significantly in recent years from $367 million in 2009 to $454 million. In 2011 imports have increased from US$282 million to US$1.3 billion.

Rwanda is the most importing country in the EAC region. The reconstruction and rebuilding of Rwanda economy after 1994 has improved the records in this sector. Rwanda exports are limited to a small number of commodities: coffee, minerals and tea are the main

sources of export revenues. Coffee counted on average 24% of the total exports on the period under review while tea represented about 20% of the total.

The following sections provide the concepts of export diversification and different dimensions of export diversification.

2.3 Export diversification

Export diversification occurs by extending the goods and services or by adding the destination of exports. We supported this idea by the theory of Ali, Alwang and Siegel, (1991), who pointed out that the product mix and the export destination must be taken into consideration. According to Berthelemy and Chauvin (2000), the substitution of market products is verified when the market prices for those products are reduced.

2.3.1 Export diversification structure

A common problem faced by economies lacking a diversified export structure is high dependence on primary commodity exports. This leads to high vulnerability vis-à-vis various types of external risks. During the period of crisis, world price is shaken; countries experience slowdown in their economic growth and deterioration of trade.

According to Koren and Tenreyro (2007), macroeconomic risks related to world demand and price volatility affect more severely concentrated economies. Bond and Malik (2009) add that there is also evidence that the higher the export concentration, the smaller the level of private investment in the economy. The diversified export structure can be considered as a trade-off between allocate-efficiency and export earnings instability associated with export specialization (Ali et al, 1991).

2.3.2 Export diversification and economic growth

Amin Gutierrez de Pineres and Ferrantino (2000) advocate that diversifying the export portfolio aims at reducing export earnings variability and leads to terms of trade gains which are based on neoclassical trade theory, and it is not strictly relevant to long run

economic growth. However, it can be imagined that export diversification affects long-run growth as recommended by endogenous growth theory, which emphasizes the role of increasing returns to scale and dynamic spillover effects.

Some scholars suggest that exports may contribute to economic growth through generating positive externalities on non-trading sectors, through more efficient management styles and better production techniques. Moreover, a productivity differential in favor of the exports sector would involve its expansion relative to the non-trading sector and lead to a positive effect on aggregate output.

This phenomenon would also give confidence to the allocation of resources to more efficient investment projects. It is therefore interesting to mention how the former argument that has been quite recently moved from the export to the import perspective. As stated by Madsen (2009), the recent endogenous growth literature focuses on the fact that imports of knowledge enhance economic growth.

2.3.3 Export diversification in Rwanda

To diversify the exports, the 5-years Rwanda National Export Strategy (NES) has identified the key priority sectors that include the traditional sectors of tea, coffee, tourism, mining and non-traditional export sectors of horticulture and business process outsourcing.

The country imports are also growing even higher. The exports increased from 63.3 million USD in 2003 to 454 million USD in 2011 as compared to the imports which increased from 283 million USD to 1.3 billion USD in 2011 respectively. This implies a wide terms of trade deficit.

Increased diversification of commodity exports and increased high value exports are needed to generate employment and meet government targets for poverty reduction. As indicated earlier, Rwandan exports are highly concentrated and need to be diversified.

2.3.4 Effect of export diversification on trade

Export diversification has also an effect on the trade. Ghosh and Ostry (1994, said that the export diversification is normally seen as a positive trade objective behind economic

growth. Diversification makes countries less vulnerable to adverse terms of trade challenged by attempts to stabilize export revenues.

Pineres and Ferantino (2000), demonstrated that export diversification facilitate the positive channel of terms of trade shocks into growth, it increases the returns and it creates the learning opportunities that lead to new forms of comparative advantage. Subsequently, A. Smith's perspective associates trade to gains per capita output and increase in the rate of economic growth. Moreover, it is important to differentiate static gains and dynamic gains from trade. The previous results from the reallocation of resources from one sector to the other, it increases the specialization and supports the comparative advantage which takes place. Thirlwall (2000) explained that dynamic gains are obtained from trade. When trade is associated with investment, it generates rapid productivity growth based on scale economies, learning by doing and the acquisition of new knowledge from abroad, and particularly through foreign direct investment.

And as stated earlier, various authors have suggested that there is a way of understanding the possible link between exports and growth. This link cannot be understood simply by analyzing the international trade theory but also the growth theory. This is why the theory analysis is now shifted to the field of economic growth.

2.4 Economic growth

From Wikipedia July 2012, the economic growth is defined as an increase of the amount of goods and services in an economy for a given period of time. It is also conventionally measured as the percentage rate of improved real gross domestic products.

McGraw–Hill (2010) explained that as long as a real income increases, the effects appear on both producers and consumers. Producers need to decide how he will vary production, considering the increase of resources or change in technology. The consumer faces a serious challenge of sending the additional real income.

The consumer and producer's decision requires country participation in international trade and commitment to determine whether it will adopt open trade when economic growth will be achieved. With growth there is an increase in real income which allows consumers to choose their product. The effects of growth on trade reflect both the consumer and producer. Factors that do not promote trade reduce the productivity. Productivity affects trade expansion and income growth. In general, the economic growth would impact the welfare of the people and the whole country.

Hendrik Vanden G. (2001), confirmed that many people consider the present than the future when they earn a higher salary. The current growth influences the standard of living of citizens and country economic growth. The same author defined the economic growth as the improvement of the standard of living of citizens, the per capita income or work product. The per capita GDP is often an approximation, not a real GDP or the measure of economic growth rate perceived in the level of education, the reduction of infant mortality, nutrition etc. related to human welfare.

According to Robert E. Hall and Mark Lieberman (2001), economic growth requires that groups or nations provide value data in order to determine economic expansion and growth costs and benefits are considered.

In addition of the above mentioned resources, the increase in human capital is generally related to the change in physical capital to raise growth. The consequence of the growth is the production increase and the improvement of the standard of living.

Mad Newman (1998) stated that the economic growth is the surplus of a firm profits over what it could make in other contexts such as industries, international trade etc. He noted also that in the short run supply curve for the industry is shifted by the economic profits. He added that when there are economic profits, new firms will come in the industry sector, and profit will shift up the economy. The exceeding price to the average of total costs is the economic profits.

Finally, another way of government to promote their domestic industries to be more competitive in the international market is subsidy which is also another way of measuring free trade. Such subsidies may be provided in the form of cash disbursements, tax exemptions, preferential financing or insurance arrangements and other prudential treatment for exports.

Lilay-Truett and Daleb Truett (1987) discussed on the development of countries whose commercial policies stimulate new industries. Their usual approach is to promote domestic producers, to expand operations without foreign competition and to restrict imports of manufactured goods. The danger is that when industries are protected, they tend to remain in this situation and they are no longer innovative.

2.4.1 Growing income inequality

Concerning the growing income inequality, Daniels et al. (2009) argued that in order to show and to evaluate economic well-being it is imperative to look not only at a country context but also how it is performing compared to the economic well-being of other countries. A country cannot evaluate its economic status unless it is aware of its performance compared to other countries. The same authors showed that when the companies share with other countries, they reach the cost saving.

2.4.2 Trade and economic growth

The theoretical linkages between trade and growth have been formalized by prominent scholars such as Rivera-Batiz, Romer, Grossman, and Helpman. An interesting argument brought by the former two authors is the effect of trade on economic growth that has been extensively analyzed from the point of view of the foreign exchange degeneration. It has been affirmed that an augmentation of exports could be advantageous in terms of improving the foreign exchange constraint, ultimately applying a positive effect on growth.

As explained by Edwards (1993), an increase in imports of intermediate products allows to overcome bottlenecks and to exert an influence on output growth. Esfahani (1991, cited

in Edwards (1993), pointed out that export-oriented policies would positively affect growth by bringing foreign exchange, improving import shortages, and supporting output expansion.

Moreover, Grossman and Helpman (1991), said that endogenous growth theories put strong emphasis on trade as the main channel that allow knowledge to be transmitted worldwide. As confirmed by Madsen (2009), the growth model shows that development activity is proportional to growth when they vary.

2.4.3 International trade problem

According to Hendrik Vanden G. (2001), the traditional theory of international trade showed that there is the problem in the way of describing the international trade. The international trade is static while the economic growth is dynamic. Adam Smith's theory suggested that the gains specialization is limited by the extent of the market. It does not only translate what has become the standard static argument for free trade, it can also be incorporated into economic growth study, to check the dynamic long run gains of economic growth, with the participation of international trade, to demonstrate the picture and effect of trade on growth.

2.4.4 Exchange rate limits

McGraw-Hill (2010) illustrated that the limits of the export condition are specified through wage and exchange rate when a country has cost advantage in particular product. The export condition can decide the wage that will cause prices to be the same in different countries. The exchange rate can vary also with a country trade partner. Shifting, tasting and preferences of foreign goods lead to an increase in the domestic product. Foreign goods become cheap when measured in foreign currency and increase competiveness of country exported goods. Foreign goods become cheaper with the decrease in the foreign currency and domestic cost which is considered as a stimulus influencing the price. In the classical model, this means that changes in exchange rate can cause also the change of goods exported.

2.4.5 Relationship between diversification and growth

The relationship between trade and growth reveals the consequences of many challenges that have taken place in the fields of developing economics and international trade theory over the last two decades. This has led to the tremendous modification from inward-oriented policies to export promotion strategy as concluded by See Heitger (1997).

In the analysis of the link between diversification and growth, many authors use macro-econometric models where they seek to test the correlation between the level of growth and various diversification indices. At this stage, the methodology adopted by Berthelemy and Chauvin, (2000) need to be mentioned. They use first of all the traditional methodology where they break down the contribution of various factors of growth. Then, they use the cob-Douglas production function, where they break down different contributions into capital, labor and total productivity of factors.

Thereafter, through an econometric regression, they consider different aspect that could explain the total productivity of factors. At this stage, they retained several explanatory variables that are indices of diversification, development finance, economic openness, and human capital. This methodology is interesting since it shows the contribution of diversification to economic growth.

2. 4.6 Relationship between income, growth and government efficiency

The International Monetary Fund (2016), Real GDP is 6.6% due to the improved foreign and public investment, services and export. From there, several structural strengths, sustainable drivers of real GDP growth, reform and supportive business environment will continue to grow. The income level is linked strongly to the quality of bureaucracy, rule of law, and democracy. The level of corruption, ethnic fractionalization and political instability are very low for rich countries.

They showed also that political stability and institutional quality are associated with growth. Like other authors, Tanzi et.al (1998), agrees that corruption obliges significant

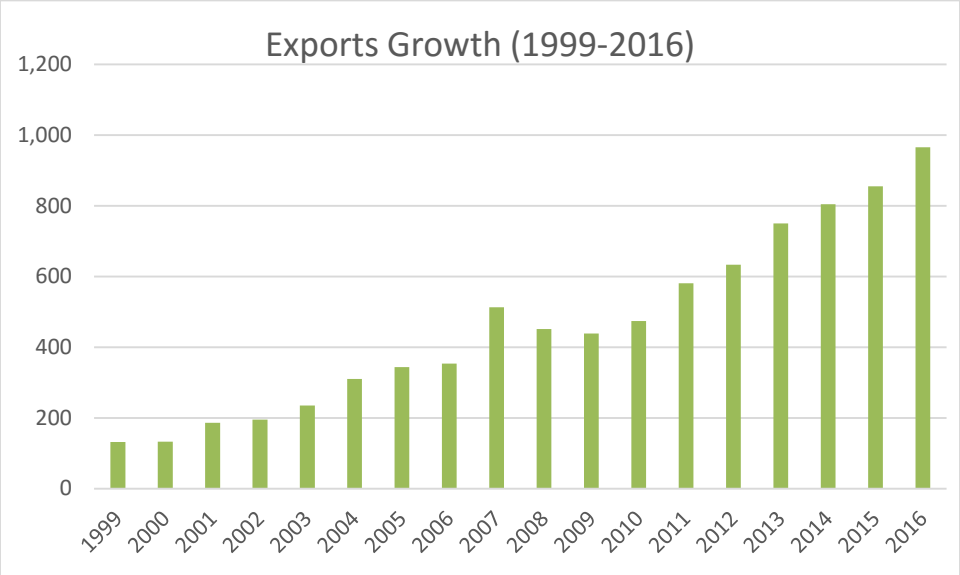
economic costs. Some economists argue that the level of corruption facilitates transactions between the private and the public sectors of economy. Many empirical literatures have established and demonstrated that high income level inequality are destructive to growth, they lead to high level of corruption and have a negative effect on growth.

2.4.7 Export revenue growth rates in Rwanda

Rwanda is one of the fastest growing economies in central Africa. Although Rwanda is a poor and mostly agricultural, the nation has made a significant and important progress. Many new industries are rising such as tourism, cut flowers and fish farming have been fasting necessary.

Rwanda suffers from high export concentration, mostly overdependence on volatile commodity products such as coffee, tea and minerals despite a significant improvement in her export diversification towards the end of 1980s and early 1990s where the share of coffee, primary export product, ranged between 70 and 95 percent.

Figure.2.1: Graph of Export Revenue growth in Rwanda (1999-2016)



Source: BNR

The expansion and diversification of Rwanda export is essential to improving the current account balance in the long term, which in 2016 exceeded $900 million. The development of exports can reduce the country dependence on foreign aid and debt; contribute to a stable and sustainable economic growth in the long run. The government stresses the importance of export diversification as one of the strategies to boost this sector. It is clear that increase in the productivity and exports of coffee and tea alone, will not be sufficient to build the Rwandan export sector. Therefore efforts have been streamlined to expand export which is based on the economic strategy by increasing productivity through land consolidation and crop specialization to reduce the level of export highly concentrated on tea and coffee.

2.4.8 The measurement of the growth

Daniels et al. (2009) considered economic growth and environment as globalization criticism of economic growth problems. They added that globalization leads to growth, it uses more nonrenewable natural resources and causes environmental damage. Hendrik

Vanden B. (2001, p 37) discussed that the economic growth is measured in terms of per capita real income or per capita real output. In this study, the economic growth is represented by the real gross domestic product which is one of the measurements of the growth.

Hendrik said again that the real gross national product (Real GN) and real gross domestic product (real GDP) are the most common measurements of output. Hence, the measurement of economic growth, the Real GDP or GNP gives us the picture of the general growth trends.

The increase of per capita does not prove the increase of material things but also allows access to better choices GDP which has an effect on the level of income of people.

2.5 Gross Domestic Product (GDP)

According to Daniels et al. (2009), the gross domestic products is defined as the total value of all goods and services produced within a country over one year, no matter whether foreign or domestic owned companies make products. Such GDP is useful for assessing countries where the output of multinational sector has a significant share of activity. The same authors argue that technical GDP plus the income generated from exports, imports and international operations of a nation's companies equal to GNI (gross national income). They confirmed again that when the gross domestic products (GDP) increase from one period to another as a result of the increase of the goods and services produced in a country, the price of goods increase also. In order to keep price constant, the annual growth is measured against price levels and the real GDP is opposed to nominal GDP. It is important to check the annual growth which is remaining in the actual production of goods and services.

2.5.1 Net exports

The net export is the difference between the total exports and total imports.

Net exports = total exports – total imports

According to Robert E. Hall and Mark Lieberman (2001), the net export is a given value that is determined by many forces from outside. The net export for our country is always negative because imported goods and services are higher than exports. Hence, the net export can change and various reasons are taken into consideration to prove it. These reasons include the change of the taste of goods, change in price of foreign currency on the exchange market etc.

N. Gregory et.al (2006), the net export equals the purchases of domestic goods by foreigners (exports) minus the domestic purchases of foreign goods (imports). In other words, the net exports include all the expenses on domestic goods by foreign countries minus the expenses on foreign goods by domestic residents (imports).

2.5.2 Gross Investment

Countries experiencing rapid growth invest a considerable amount of their GDP while countries that fail to invest have a slow economic growth. This is based on economic theory and the basic neoclassical growth model of Solow (1956) and Swan (1956) who predicted that investment is one of the key determinants of growth. Investment has also a direct and positive effect on GDP. According to Piana (2001), the domestic expenditure will increase the GDP by the same amount. They find that it is important to add the production of goods and services with annual investment expenditure when the GDP is measured.

2.5.3 Government Expenditure

According to Gregory et al. (2006) GDP is a measurement of both the economy total income and economy expenditure on goods and services. These authors explain that GDP per person reveals the income and expenditure of the average citizens within the country

economy. Since people prefer higher income and enjoy higher expenditure, GDP per person is a natural measurement of the economic wellbeing of average citizens. In general, GDP uses market prices and valuates goods and services and omits goods and services which were not brought to the market.

N. Gregory M. et.al (2006), added that GDP measures total income and total expenditures of an economy and it is the market value of all final goods and services within a country in a given period. Mad Newman (1998), defined GDP as the value of total amount of final goods and services are produced by a country economy during a particular period. This measurement is very important to control the sales and to determine the figures which are successful and helpful in forecasting the future health of the economy. From this assumption, by stripping out price effects and showing figures, the economies of rich countries are growing much more than those of poor countries.

In order to examine the link between export diversification and economic growth, the present study used the econometric method and the explanatory variables are the level of real exports, the level of real gross fixed capital formation and the level of real terms of trade which are used to production function with the real gross domestic products used as dependent variable.

Van den Berg and Lewer (2007), suggested that other variables can impact the economic growth with the inclusion of exports variable which captures the positive effects of export diversification on economic growth. The international trade theoretical framework postulated also that international trade has a very positive effect on economic growth. To link the export diversification and the economic growth, the analytical framework and methodology are considered in the following chapter.

CHAPTER THREE: ANALYTICAL FRAMEWORK OF EXPORT DIVERSIFICATION AND METHODOLOGY

3.1 Introduction

Many researches have been carried out on the relationship between export growth and economic growth. The most remarkable ones are Sharma and Dhakal (1994) and Bhagwati (1988). They demonstrated the existence of bidirectional causality between exports and economic growth. They also proved that there is a causal relationship between international trades and output. This relationship promotes the trade output and income level. Therefore, this output facilitates the expansion in trade volumes which causes a vicious circle process of growth and trade.

This study used the export diversification as a favorable indicator of economic growth in Rwanda. Empirical studies on the export diversification propose the economic growth level.

3.2 Time series

Samuel Cameron (2005), defined that a time series is the test of unit roots, model estimation and co-integration that measure the relationship between variables. Various studies have evaluated the effects of export diversification on economic growth using time series test.

Empirical studies supported the idea that the increase in export diversification is associated with the inclusive economic growth. Some studies have proven that the economic growth is associated positively with export diversification while others have found that there is no significant relationship between export diversification and economic growth.

The export diversification and economic growth have a sensitive variation. The relationship between export diversification and economic growth is very essential to this study. As specified in Dickey and Fuller (1979), the Augmented Dickey-Fuller (ADF) test

has been used to measure the empirical model, whereas the unit roots from the ADF test have been conducted. The possibility (probability) of the link between the trend of variables and a stable long-run equilibrium has all been verified. As suggested by other studies, a primary and secondary level of export diversification has an impact on the economic growth.

3.3 Methodology

The aim of this study is to establish the relationship between export diversification and economic growth in Rwanda. The positive relationship between export diversification and economic growth implied that export diversification, which is a crucial tool for macroeconomic policy, achieves the economic growth.

The methodological part of this study has been subdivided as follows: the researcher described the data collected from Rwanda National Bank (BNR), carried out a graphical analysis of the export diversification performance and possible outputs. Then, the researcher verified if all the variables were stationary, using the unit root tests. The researcher adjusted the export diversification and other variables in order to discover the long run relationship among variables. Finally, the Error Correction Model was used to analyse the active relationship between export diversification and economic growth.

3.3.1 Data and variables descriptions

The analysis of the relationship between export and economic growth has taken into consideration the quarter observations from 1999 to 2016 in Rwanda. The data used are macroeconomic and consist of Real Export (REXP), Real Gross Fixed Capital Formation (RGFCF) and Real Terms of Trade (RTOT) which are independent variables, whereas Real Gross Domestic Product (RGDP) is dependent variable. All variables affect the economic growth specified by the RGDP. The data are in billon of Rwandan franc. Before the data were analysed, time series are transformed into logarithms as presented in this equation:

$$LRGDP = a0 + a1LRGFCF + a2LREXP + a3LRTOT + \varepsilon t \ldots\ldots (1)$$

Where:

The logarithm of Real Gross Domestic Product is represented by LRGDP,

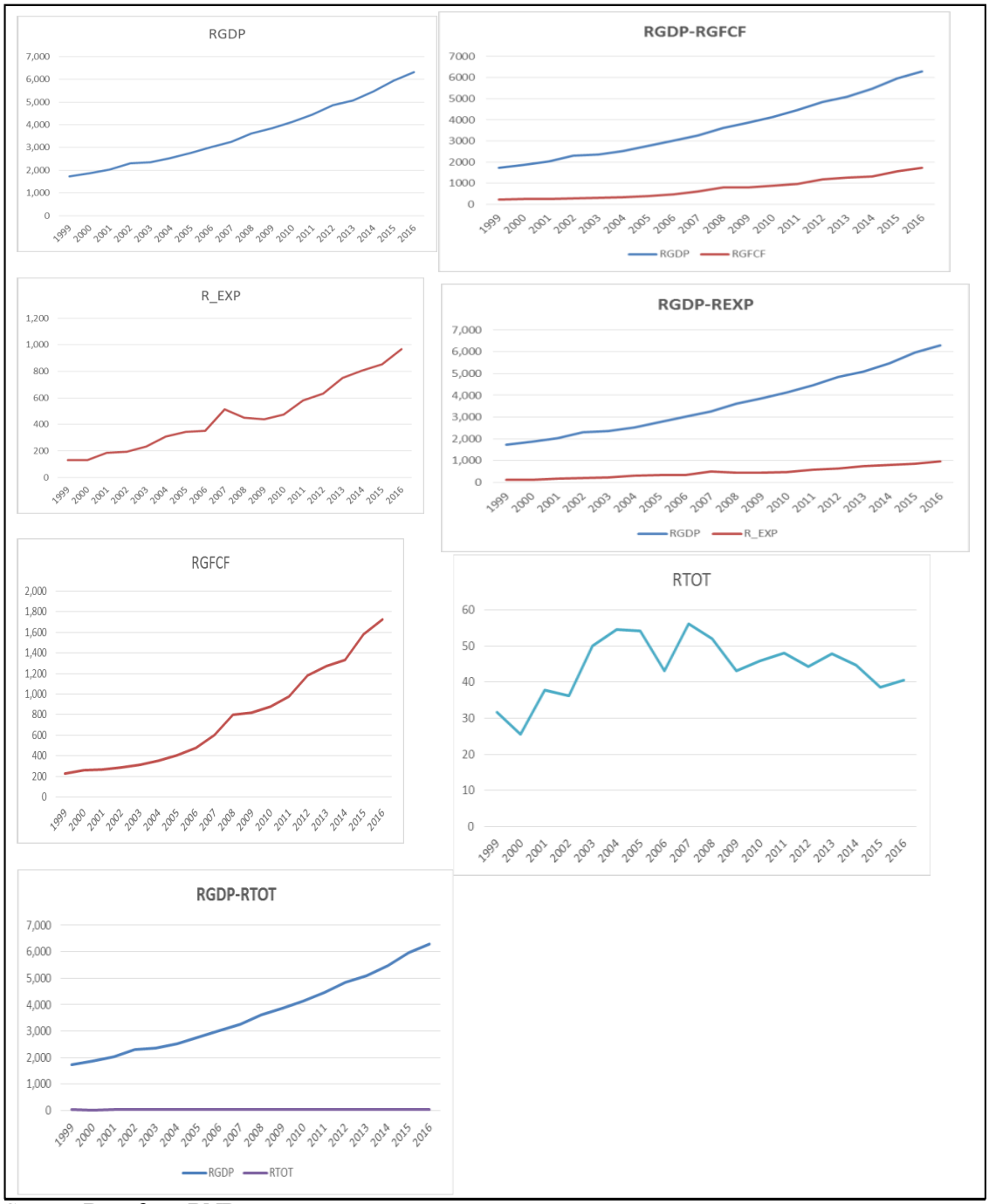
LRGFCF is the logarithm of Real Gross Fixed Capital Formation,

LREXP is the logarithm of Real exports,

LRTOT is the logarithm of Real Terms of Trade.

The following graphs prove the linear relationship among variables.

Figure3.1: RGDP, REXP, RGFCF and RTOT evolutions



Source: Data from BNR

This graphics explain the relation between the dependant variable RGDP and independent variebles REXP, RGFCF and RTOT in Rwanda.

3.3.2 Johansen Causality Results

From Wikipedia, Johannes test is a procedure for testing cointegration of several time series when data are in the presence of I(1) with a large number of variables. In other words, Johannes test permits more than one cointegrating relationship which is applicable than the Engle-Granger test based on a single cointegrating relationship. To be specific, this test is used to set where all variables in the system have all a same level of stationarity. Johansen (1995) states that a pre-test of variables' order of integration is a little need for all system under study. Damodar N. Gujarati and Dawn C. Porter (2009) supported the idea that the co-integration is a linear combination of time series which are stationary and the error-correction mechanism is also considered as a bridge which connects the short run of variables to its long run behaviour.

The first step in the researcher's empirical work was to verify if variables could be part of the same model which could be determined by the degree of integration of each variable. The researcher determined and analysed the stationarity of the series.

To achieve the stationarity, times series tests are differentiated and the series are known as integrated of order d, denoted I (d). This differentiation occurs when variables are not stationary in their same level.

The second step in the researcher's empirical study was to verify if variables under study were co-integrated. Co-integration is the relationship between the relevant variables in order to find out if they are integrated on levels or differentiated on order I (1). Hence, the variables are co-integrated and a linear combination of the time series is stationary. The researcher used the Johansen test initially to check whether there was a long run relationship among variables used in the model. Then the Johansen procedure was verified to check the co-integration of variables.

The co-integration was performed by testing the residual variable which includes a static regression, the confirmation of a specific short term dynamics and long run relationships. The aim was to find out whether all variables were co-integrated and maintain the long run equilibrium relationship. Thus, the error correction model for Rwanda has been identified using the econometric estimation. The lag values of the dependent variable have been verified.

3.3.2.1 Stationarity Test

All variables used in the model were tested using the ADF test statistics to measure the stationarity of variables. Table 3.1 presented the results and showed that RGDP, REXP RGFCF and RTOT were not stationary in their original levels of series although they were stationary in their first difference of series at 5% the level of significance.

The table 3.1 summarises ADF test results of variables used, both at level and first differentiation. Eviews-10 has been used to test the stationarity and the number of lag was automatically determined by using different information of probabilities below 5% at the first differentiation and all T-critical values below ADF value.

Table3: ADF test

Variables	Level	First differentiation	Conclusion
RGFCF	0.00299	0.00014	I(1)
LEXR	0.0171	0.001025	I(1)
LTOT	0.0007	0.001445	I(1)
LGDP	0.0088	0.008201	I(1)

3.3.2.2 Co-integration tests

Johansen test verified the co-integration among the 4 variables at 5% level of significance presented in tables 4.1 and 4.2. We estimated the long run relationship among these variables.

CHAPTER FOUR: EMPIRICAL FINDINGS AND INTERPRETATIONS

4. Estimation of the Model

The trace test identified two co integrating relationships while the Max-eigenvalue test indicates 1 cointegrating vector.

Table 4.1 Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.526379	73.04197	54.07904	0.0004
At most 1 *	0.406784	41.65331	35.19275	0.0088
At most 2	0.252872	19.72103	20.26184	0.0592
At most 3	0.163082	7.477243	9.164546	0.1034

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 4.2. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.526379	31.38865	28.58808	0.0213
At most 1	0.406784	21.93229	22.29962	0.0562
At most 2	0.252872	12.24378	15.89210	0.1723
At most 3	0.163082	7.477243	9.164546	0.1034

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

The estimated long run equation between GDP and its determinants is

Table 4.3. ECM Cointegration

Equation(s):	Log likelihood	237.6102

Normalized Cointegrating coefficients (standard error in parentheses)

LRGDP	LGFCF	LREXP	LTOT	C
1.000000	-0.481713	-0.158229	0.256761	-4.443212
	(0.10357)	(0.10986)	(0.14165)	(0.68556)

This equation can also be presented as follow:

$$LRGDP = 4.4 + 0.48LRGFCF + 0.16LREXP - 0.26LRTOT$$

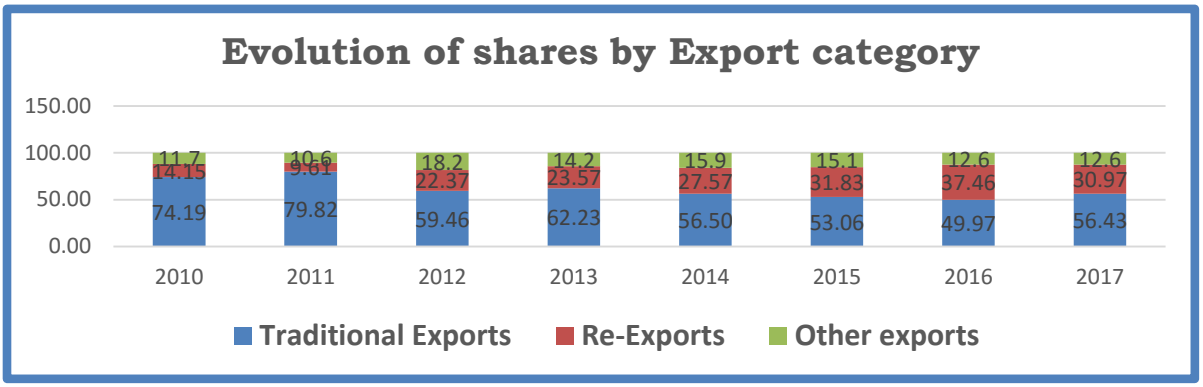
T-statistics	(4.8)*	(1.4)	(1.9)**

*: significant at 5%; **: significant at 10%

This equation indicate that LGFCF and LTOT explain GDP in Rwanda while export does not have a significant impact on economic growth in the period under review, rejecting of our hypothesis. Our findings support the current Made in Rwanda Government policy to increase the export base in Rwanda, by increasing the domestic production in more tradable sectors of the economy. According to the table below, the export base in Rwanda has not been much diversified. While the share of traditional exports in total exports reduced, from 74.19% in 2010 to 56.43% in 2017, the increase in re exports is mainly due to re-export of petroleum products in DRC and Burundi without any added value.

Diversification of the economy , which means the promotion of new economic activities; particularly in tradable sectors, is important to provide the growth engine when external shocks happen and pave the way for sustainable growth.

4.1. Graphic of the evolution of tradition Exports and Re-export



Source: BNR

To achieve high economic growth, Rwanda will have to accelerate its growth of trade because exports will provide foreign exchange to finance needed investment for economic growth. This will be achieved by increasing domestic production in line with made in Rwanda policy and also attract more foreign direct investment but oriented to tradable sectors. The share of exports in GDP in Rwanda (20.1% of GDP in 2016) still low relative to other land locked countries and comparable capital income levels explaining why exports are not significantly contributing to GDP growth.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

5.1.1 Introduction

The aim of this study was to verify how the level of export diversification affects or explains Rwandan economic growth, what measures of economic growth policies can Rwanda adopt with regard to export diversification and if there is no significant correlation between variables in this study, which macroeconomic variables explain the economic growth in Rwanda.

This study was divided in five chapters. Chapter one introduced the study while chapter two presented the overview of literature and theories on export diversification and economic growth. Chapter three presented the econometric techniques and methods which led us to the results using unit roots test, co-integration test and error correction model test. Chapter four analyzed the data results. The results analysis of the study proved that the relationship between the economic growth and export diversification is not significant in Rwanda. Finally, Chapter five presented the conclusion and recommendations.

In this study, we verified the relationship between the real export variation and real economic growth tended by real gross domestic product in Rwanda from 1999 to 2016.

We used the econometric technique to verify the significance of variables.

The study estimated the model and analyzed the results which showed the contribution of Real Export (REXP), Real Gross Fixed Capital Formation (RGFCF) and Real Terms Of Trade (RTOT) that influenced the Real Gross Domestic Products (RGDP). The relationship of exports diversification on economic growth is not significant and the hypothesis is not confirmed.

5.1.2 Summary of the study

This study was concluded basing on the results found in the model estimation of real gross domestic products, real export, real gross fixed capital formation and real terms of trade.

To support how the level of export diversification affects or explains Rwandan economic growth, the long run relationship exists among variables in Rwanda.

The study found that export diversification and gross fixed capital formation had a positive effect on the economic growth while the terms of trade has a negative effect on economic growth in Rwanda. Terms of trade could not increase the economic growth, which is in contradiction with normal economy. Finally, the long-run equilibrium was suggested by the study results and any future adjustments of data were performed at 4.4 percent.

To measure the economic growth policies Rwanda adopted with regard to the export diversification and significant correlation between variables.

This study found that RFCF and RTOT were co-integrated but the REXP significance was not verified in Rwandan case. The results showed that Real Export (REXP) did not explain the economic growth considerably in Rwanda for the period under study. This was expected, considering the economic situation for which imports exceed exports with a low domestic investment and production. On one hand, the elasticity of export diversification was positive and but not insignificant. The export diversification (0.16) increased together with the economic growth. On the other hand, the elasticity of gross fixed capital formation was positive (0.48) and significant to confirm the economy theories.

The increase of the capital impacted positively and significantly on the gross domestic products. Finally, the elasticity of terms of trade was small (-0.26) and not significant. This confirmed the dependence of Rwanda on imports rather than export which did not increase significantly as a response to Rwandan economic growth increase. The negative sign of Real Terms of Trade (RTOF) elasticity was in contradiction with economic implication.

To verify if there is no significant correlation between variables of this study and which macroeconomic variables can explain the economic growth in Rwanda. This study found that export diversification affected positively the economic growth but not significantly on a low level (0.16%) of economic growth against 1% of export variation. Rwanda has to increase its tradable productions in order to increase the exports capacity and to achieve a relevant economy growth.

The data practice has considered the impact of export diversification and the correlation between the real gross fixed capital formation, real terms of trade and real gross domestic product. This macroeconomic variables used in this study confirmed the correlation between data as dependent variable and independents variables.

In conclusion Rwanda Government pressures the importance of export diversification as one of the strategies to increase the economic growth in long run. The performance of export sector was one of key to achieve Rwandan mission of increasing the economic growth with a regards on its policy called “Made in Rwanda” to be performed and to improve the investment of tradable products. Among the reasons given in this study include: the positive relationship but not significant between the export diversification and the economic growth, the level of 1% of export diversification against 0.16% of economic growth and other macroeconomic variables such as Real Gross Fixed capital Formation and Real Terms of Trade which explain economic Growth in Rwanda. The Real Gross Fixed capital Formation was positively correlated with the economic growth while the Real Terms of Trade and economic growth were negatively correlated.

5.2 Recommendations

The increase of economic growth through export diversification has been real but the Government way is still long due to the insufficient export diversification variation of 1% confronted with 0.16 % of the economic growth.

Considering the findings, the study recommends:

1. The Government of Rwanda needs increase the productivity of various products intended for export as a means to get foreign currency in order to support its economic growth. This goes hand in hand with promoting the quality of manufactured products proposed for export which will increase the diversification on goods.

   In order to facilitate transactions with foreign countries, to build the trust of foreign markets and to be competitive on foreign market; the export sector and trade need to be promoted by reducing taxes for export and increasing government subvention.

   The government has already initiated the idea and introduce some policy like: land consolidation and crop diversification, the product called 'made in Rwanda", Doing Business which allow local cooperatives and business holder to increase their production that will intend the export but the way is still long since imports continue to exceed exports ($621 million and 1,77 billion in 2016).

   The Government of Rwanda needs to motivate the private sector in their ambition to build industries, by providing bank loans at lower interest rate. They can also promote the foreign investors to invest in domestics products; this industry promotion will carry up the export diversification.

   In order to increase the productivity and to improve the quality of export products; the government needs to provide the necessary inputs such as formation of technicians, machines, pesticides and manure, etc. In this way the export is likely to be modernized, diversified and become more competitive on external market.

2. Rwanda National Bank needs to control the export system carefully, focusing on the exchange rate which is a big issue for foreign market. As the exchange rate influences the foreign market price that can decrease or encourage the export. The

National Bank should support and facilitate access of local investors to bank loans at lower interest rate and longer reimbursement period.

3. The private sector needs study tours to learn and to explore foreign opportunities so as to decide the right goods and services to initiate. The private sector also need trainings in order to know their rights and obligations vis-à-vis the public laws. They also need to know in what ways the government and potential donors are ready to support the regional integration, trade and export. The above recommendations assure to the private sector the confidence in increasing their productions quality and consequently the export will also increase.

5.3 Areas for future research

This research on the impact of export diversification on economic growth could not cover all the macroeconomics variables such as the exchange rate, trade openness, investment etc. which can have considerable effect on the economic growth. Those variables could be discussed in future researches in order to check if they are in relation with the economic growth in Rwanda.

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Annexes

A.1. RWANDAN DATA

FIGURES IN BILLION (FRW)

	R_GDP	R_GFCF	R_EXP	R_TOT
2006Q1	694	97	85	52
2006Q2	750	121	101	49
2006Q3	789	121	81	40
2006Q4	796	139	83	39
2007Q1	787	141	126	63
2007Q2	808	148	132	59
2007Q3	818	149	122	54
2007Q4	848	173	123	52
2008Q1	862	162	119	67
2008Q2	916	204	123	56
2008Q3	915	212	102	46
2008Q4	933	231	102	43
2009Q1	967	228	115	47
2009Q2	962	213	110	42
2009Q3	947	186	108	45
2009Q4	977	205	100	39
2010Q1	1,017	223	113	48
2010Q2	1,024	196	120	49
2010Q3	1,023	214	123	48
2010Q4	1,072	257	112	38
2011Q1	1,081	259	150	55
2011Q2	1,065	218	130	45
2011Q3	1,147	231	153	49
2011Q4	1,165	265	146	44

2012Q1	1,176	283	165	51
2012Q2	1,184	260	146	42
2012Q3	1,231	302	163	41
2012Q4	1,260	341	158	43
2013Q1	1,232	316	168	48
2013Q2	1,269	301	206	54
2013Q3	1,266	308	198	50
2013Q4	1,312	346	178	41
2014Q1	1,324	335	188	42
2014Q2	1,344	319	195	45
2014Q3	1,399	290	212	46
2014Q4	1,400	389	210	46
2015Q1	1,430	379	211	40
2015Q2	1,469	375	213	39
2015Q3	1,513	372	215	39
2015Q4	1,540	457	216	37
2016Q1	1,557	491	228	39
2016Q2	1,577	406	230	36
2016Q3	1,593	432	252	42
2016Q4	1,576	396	256	45

Source: BNR

A.2.ADT Test

	DIFFR_GDP	DIFFR_GFCF	DIFFR_EXP	DIFFR_TOT
2006Q1				
2006Q2	0.077601246	0.221079567	0.17246926	-0.05942342
2006Q3	0.050693114	0	-0.220671362	-0.202940844
2006Q4	0.008832865	0.138683388	0.024391453	-0.025317808
2007Q1	-0.011370937	0.014285957	0.417441299	0.47957308
2007Q2	0.02633381	0.048452383	0.046520016	-0.065597282
2007Q3	0.012300278	0.006734032	-0.078780878	-0.088553397
2007Q4	0.036018299	0.149345289	0.008163311	-0.037740328
2008Q1	0.016374635	-0.065695259	-0.033060862	0.253448901
2008Q2	0.060761094	0.230523659	0.033060862	-0.179340929
2008Q3	-0.001092299	0.038466281	-0.187211542	-0.196710294
2008Q4	0.019481136	0.085831436	0	-0.067441281
2009Q1	0.035793295	-0.013072082	0.119959315	0.088947486
2009Q2	-0.005184045	-0.068053463	-0.044451763	-0.112477983
2009Q3	-0.015715357	-0.135545492	-0.018349139	0.068992871
2009Q4	0.031187559	0.097263305	-0.076961041	-0.143100844
2010Q1	0.040125744	0.084161792	0.122217633	0.207639365
2010Q2	0.00685941	-0.129057112	0.060103924	0.020619287
2010Q3	-0.00097704	0.087861356	0.024692613	-0.020619287
2010Q4	0.046786576	0.18310007	-0.093685484	-0.233614851
2011Q1	0.008360476	0.007751977	0.292136423	0.369747026
2011Q2	-0.014911739	-0.172332999	-0.143100844	-0.200670695
2011Q3	0.074175039	0.057922648	0.162903471	0.085157808
2011Q4	0.015571249	0.137312115	-0.0468313	-0.107630664
2012Q1	0.009397762	0.065717072	0.122338852	0.147635999
2012Q2	0.006779687	-0.084765267	-0.122338852	-0.194156014
2012Q3	0.038928311	0.149745386	0.110143579	-0.024097552
2012Q4	0.023284874	0.12145546	-0.031155168	0.047628049
2013Q1	-0.022472856	-0.076140264	0.061368946	0.110000895
2013Q2	0.029590324	-0.048631949	0.203912189	0.117783036
2013Q3	-0.002366865	0.022989518	-0.039609138	-0.076961041
2013Q4	0.035690367	0.116338992	-0.10648348	-0.198450939
2014Q1	0.009104767	-0.032308243	0.054658413	0.024097552
2014Q2	0.014992785	-0.048939429	0.036557596	0.068992871
2014Q3	0.040107454	-0.09531018	0.083586716	0.021978907
2014Q4	0.000714541	0.293698421	-0.009478744	0

2015Q1	0.021202208	-0.026043139	0.004750603	-0.139761942
2015Q2	0.026907453	-0.010610179	0.009434032	-0.025317808
2015Q3	0.029512538	-0.008032172	0.009345862	0
2015Q4	0.017687982	0.205789537	0.00464038	-0.052643733
2016Q1	0.010978476	0.071760737	0.054067221	0.052643733
2016Q2	0.012763415	-0.190090968	0.00873368	-0.080042708
2016Q3	0.010094723	0.062072429	0.091349779	0.15415068
2016Q4	-0.010729039	-0.087011377	0.015748357	0.068992871
	0.82017331	1.406703233	1.102526188	-0.144581229

A.3.Annual Data

FIGURES IN BILLION (FRW)

	RGDP	RGFCF	R_EXP	R_IMP	RTOT
1999	1,735	226	132	417	32
2000	1,880	263	133	519	26
2001	2,040	264	186	492	38
2002	2,309	284	195	538	36
2003	2,360	313	235	470	50
2004	2,535	350	310	569	54
2005	2,773	407	344	636	54
2006	3,029	478	354	821	43
2007	3,262	604	513	913	56
2008	3,626	800	451	868	52
2009	3,854	820	439	1,019	43
2010	4,135	879	474	1,033	46
2011	4,457	974	581	1,212	48
2012	4,851	1,179	633	1,432	44
2013	5,079	1,271	750	1,570	48
2014	5,466	1,333	805	1,799	45
2015	5,951	1,583	855	2,213	39
2016	6,304	1,726	966	2,382	41

Source: BNR