ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

DETERMINANTS OF EXPORT DIVERSIFICATION: THE CASE OF ETHIOPIA

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ABSTRACT

This thesis focus on examining the determinants of export diversification in Ethiopia for the period ranges from 1985-2019. This paper used time series econometrics model which was estimated by Autoregressive Distribute Lag (ARDL) to analysis the presence of both long-run and short-run determinants of export diversification in Ethiopia. The determinants of export diversification proxies used in this study is number of cooperatives, productive aged 15-64 population, real Gross Domestic Product (GDP), real exchange rate, trade openness, top five exported commodities and top ten exported commodities as control variable. The empirical investigation shows that among the variable used in this study number of cooperatives, productive aged 15-64 population, real GDP and trade openness positively and significantly determine the export diversification. Finally, this study recommends that the Ethiopia government must search opportunity in and surrounding the number of cooperatives and productive age 15-64 population.

Keywords: Ethiopia, export diversification, cooperatives, productive aged, Autoregressive Distributed Lag.

SCHOOL OF GRADUATE STUDIES

DECLARATIONS

I Kuma Gebru Tabor, identification number GSE/0734/11 the study I done here by declare that it's not submitted this material, either in fully or partially, for a degree Addis Ababa University (AAU) or any others. The work presented in this writing is to the best of my own belief, knowledge and my Real work.

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APPROVAL

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This is to certify that the reseach thesis presented by Kuma Gebru Tabor, titled: DETERMINANTS OF EXPORT DIVERSIFICATION: THE CASE OF ETHIOPIA in partial fulfillment of the requirement for the degree of Master of Science (MSc.) in Economics (International Economics) compile with the regulation of the university and confirms to the acceptable standards with the respect to the originality and the quality.

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Contents

Acronym

ADF = Augmented Dickey Fuller

AAU = Addis Ababa University

AIC= Akaikes information criterion

ARDL = Autoregressive Distributed Lags

DW= Durbin Watsons

ED = Export Diversification

ECM= Errors Correction Models

ETB = Ethiopian Birrs

FCA = Federal Cooperative Agency

GDP = Growth Domestic Product

GMM= Generalized Methods of Moment

GNP = Growth National Product

HHI = Herfindahls Hirschman index

ICA = International Cooperative Alliance

ILO = International Labour Office

ITC = International Trade Centre

NBE = National Bank of Ethiopia

OLS = Ordinary Leasts Squares

PA = Productive Age

PP = Phillips Perron

RER = Real Exchange Rate

RGDP= Real Growth Domestic Product

SBC= Schwarzs Bayesians Criterions

SSA= Sub-Saharan Africa

TO = Trade Openness

UNCTAD = United Nations Conference on Trade and Development

US = United State

USD = United States Dollars

VAR = Vectors Autoregressives

WDI= World Development Indicators

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Different study put economic growth as highly competitiveness in the world, between different countries. To become a winner of economic growth competition they use trading of different products in different markets. Export is the main instrument used for this competition. To become the most influential competitor export diversification is used as most driving objectives. Export diversification is either in quality on new or in quality on existing products; making change either in product or market or both.

To alleviate poverty, Africa is in its own pathway to progress for sustainable development. To realize this increasing productive capacity, expanding exports and encouraging investment must be prioritized. Export potential indicator which grows current exports includes product competitiveness in the world (as revealed comparative advantage) and identifying currently more demanded products (as dynamic comparative advantage). Product diversification refers to new and differentiated products (International Trade Centre, n.d.).

Really for a few developing countries in the world like in east and south East Asia (such as South Korea, Taiwan, Hong Kong, Singapore, Malaysia and Thailand) as well as developing America (Brazil, Argentina and Mexico) have controlled to achieve a diversified export structure with greater volume of manufactures. As a result; they minimized the swing in export earnings (Shewangizaw sileshi, 2003). According to (Bereket, 2020) export concentration on basic commodities is dominating the foreign export earnings in Ethiopia.

1.2 The Statement Problems

Due to Lack of dynamism in export in terms of new firm entry and exit; survival rates do not depend on broad product types but export types and size of initial exports. Ethiopia's export competitiveness is at a diminishing rate over the world. Also starting business,

protecting the investors and trading across borders are very low in Ethiopia (World Bank Group, 2014).

Countries interested to export diversification for many contribution it offers the economy. First, it improves long run export earning to be stabilized (Ghosh & Ostry, 1994). The overview is that the larger, more export diversification would solve the potentially elastic and the swings demand associated with a fewer commodities. The next contribution is export diversification works as a strategy for structural economic reforms (Mampilly et al., 2007). Third, it may contribute to a hedge against the related price shocks prescriptions associated with primary commodity markets (Levchenko, 2006). Lastly, the exports diversification encouraging more rapid and sustained economic reforms (Choi & Hartigan, 2008). To attract policy makers' eye on export diversification and its determinant factors that increase services such as transport, communication, business are key issues recently (Brenton et al., 2007).

Modifications of cooperatives is better for changes in market conditions, value added processing, satisfying demand in innovation and differentiated products demanded worldwide (Hendrikse, 2013). Cooperatives seemed as the most solving major problem in the society currently over the world. Cooperatives played a crucial work during covid-19 pandemics by helping charitable community, volunteering during the lock down, fighting gender based violence during lock down, supporting people and non-profit making institutions (ICA, 2020).

Most cooperatives are focused locally on a number of cooperatives that reached a certain level of development and can take part in international trade with a significant role. When a government and individuals fail; cooperatives play a crucial role in reducing and ending poverty in all its forms everywhere. The Cooperatives in Africa have survived the market forces and continued to grow in number and membership. And also contributes to improving the governance efficiency and performance of primary cooperatives, other social economy organizations and their higher-level structures in order to strengthen their capacity to access markets, create jobs, generate income, reduce poverty, provide social

protection and give their members a voice and representation in society (Wanyama et al., 2009).

Cooperatives are key institutions to increase economic scale, to supply raw material and intermediate input at reasonable price, to create better condition for regional value chains and integration into global value chains, to catalyze transformation of African economy towards greater utilization of technology and knowledge (Annual Report ICA, 2020).

Productive population aged 15-64 wanted primary for the achievement in the growth agenda especially in social transformation, sustainable economic growth and integration. The cooperative have a power to access and create the economic opportunities for the Productive population aged 15-64 by minimizing the vulnerable (ICA, 2019). Elders are less economically productive compared with young people, relatively they will be burden in the future by the need to care for and pay for the support of the elderly population (Banister et al., 2010).

Degree of local market demands compared the export market as a variable which can be measured by the number of productive age population; because of higher demands at productive ages. The increase in demands of productive group of people leads to export diversification which may be more competitive locally and internationally. Africa has consistently performed worst on export diversification (UNCTAD, 2018).

As (Personal & Archive, 2018) said that mental flexibility, attitude towards technology, updating motor skills and acquisitions of new information of the younger is better than elders. Population aging in different parts of the world has differential impact on economic sector across countries.

Thus; the above facts initiates to examine and analyses whether productive population number (labor force participation) and number of cooperatives are determinants of export diversification in Ethiopia or not. All these studied literature initiates this research to taking it as a research gap to fill it using the number of cooperatives and productive age group (labor force participation) as variable that can determine export diversification.

1.3 The Objective of the Study

1.3.1 The General Objective

☞ What are the major determinants of export diversification in Ethiopia for the period 1985-2019.

1.3.2 The Specific Objective

☞To examine if number of cooperatives determine export diversification in Ethiopia

☞To examine if productive aged population determine export diversification in Ethiopia

☞To evaluate the effects of Real Exchange Rate on export diversification in Ethiopia

☞To examine the relationships between RGDP and export diversification in Ethiopia and

☞ To evaluate the effects of trade openness on export diversification in Ethiopia

1.4 The Researches Hypothesis

The following hypotheses would be tested for the statistical significance parameters of interest.

H_1: There is positive relationship between number of cooperatives and export diversification

H_2: There is positive relation between productive population and export diversification

H_3: Real effective exchange rate has a positive effect on export diversification

H_4: Real Gross Domestic Product has positive relationship with export diversification

H_5: Trade openness positively affects export diversification

1.5 The Significance of the Study

The pace of diversification, number of cooperatives and productive age group population catch the attention of Ethiopia's policy makers and many others. This study contributes to the literature on export diversification by identifying new factors that determine export diversification. And can be a good source of information and initiate intellectual debate about the subject, attract attention of other researchers to engage in with further enquiries.

1.6 Limitation of Study

The study is limited to secondary data only due to more time and budget requirements for primary data collection from representative sample. And also, the focus is to know whether number of cooperative is the determinant of export diversification or not. However; the detail cooperative effect not explained and examined in this.

1.7 Organization of this Study

The study is overviewed in five chapter. Chapter (1) presents the introductions that explain the background of study's, statement of problems and objectives of studies. Chapter (2) discusses the literature review. Here the concern is discussing the theories and concepts used in the investigation as thoroughly as possible. Chapter (3) focuses on methodology and discusses the method and techniques employed for the investigation. Chapter (4) is the presentation and analysis of data. The last chapter (5) is the conclusions.

CHAPTER TWO

LITERATURE REVIEWS

2.1 Overview of Export Diversification

The relationship between export diversification and economic growth is an area that has been given much attention by different authors. According to (Tadesse G., 2016) growth in export diversification tends to cause growth in real GNP for three reasons. First, export diversification may represent an increase in the demand for the country's output and thus serve to increase real GNP. Secondly, increases in exports diversification may loosen a binding foreign exchange constraint and allow increases in productive intermediate imports and hence result in the growth of output. Finally, export diversification growth may result in enhanced efficiency and thus may lead to greater output.

As (Emagne, 2017) views a given economy as if it consists of two distinct sectors: export and non-export sectors. According to him the marginal factor productivities are significantly higher in the former than the latter. This arises from inter-sectorial beneficial externalities (capacity utilization, economics of scale incentives provided for technological improvement and efficient management due to competitive pressures from abroad) generated by the export sector. Thus, growth can be generated by reallocation of the existing resources from the less efficient non-export sector to the higher productivity export sector. In small open economies, export diversification can expand countries' limited domestic markets, and contribute to the economics of scale necessary for industrial developments.

Export diversification integrates domestic economy with regional and/or global economies thereby expanding the dimension of competition to the international markets. Competitiveness in a market encourages the resource allocation in less developed countries, for their transformation from less productive primary goods of farming sector to sophisticate productive of manufacturing sector. Therefore, factor productivities are improved through export diversification (Getahun, 2014). Clearly, since exports are component of GDP, export diversifications contributes directly to GDP growth, they relax

binding foreign exchange constraints and allow increases in imported capital goods and intermediate goods (Bond & Milne, 1987). Exports allow poor countries with narrow domestic markets to benefit from economies of scale. In addition, exports lead to improved efficiency in resource allocation and, in particular, improved capital utilization owing to competition in world markets (Herédia & Cabral, 2010).

The export of the primary product also has effects on the rest of the economy through reducing unemployment and underemployment, inducing a higher rate of domestic saving and investment, attracting an inflow of factor inputs into the expanding export sector, and establish links with other sectors of the economy (Shin et al., 2020) (Tirsit, 2011).

Countries are interested to export diversification for many contribution it offers the economy. First, it improves long run export earning to be stabilized (Ghosh & Ostry, 1994). The over-view is that the higher, more exports diversification would solve the potentially elastic and the swings demand associated with a fewer commodities. The next contribution is export diversification works as a strategy for structural economic reforms (Mampilly et al., 2007). Third, it may play role in a hedge against the related price shock related to the farming primary commodity markets (Levchenko, 2006). Lastly, export diversification encourages more rapid and continuous economic reforms (Choi & Hartigan, 2008). To attract policy makers' eye on export diversification and its determinant factors that increase services such as transport, communication, business are key issues recently (Brenton et al., 2007).

Cooperatives are key institutions to increase economic scale, to supply raw material and intermediate input at reasonable price, to create better condition for regional value chains and integration into global value chains, to catalyze transformation of African economy towards greater utilization of technology and knowledge (Annual Report ICA, 2020). (Winkler, 2012), using a panel data of 30 chosen sub-Saharan African countries for the period spans from 1995 to 2008 estimated the influences of export and exports diversification on worthiness, labor achievements, and determinants of labor demands. They confirmed that, (1), exports have a positive effects on value added, labor productivity and labor demand. (2), export diversification of commodities and markets increase the

worthiness and labor achievements, but not labors demand. They found that controlling for the large market share of export destination matters for growth and employment (3). They linked exports to export diversification of commodities and markets with exports market shares. Opposite to their hypothesis, they found a positive worthiness and labor productivity effects from exports not diversifies in exports commodity and markets of the countries. Finally, they find that the effect of exports on growth and employment is also influenced by export destination.

Countries should avoid heavy dependence on limited products since it diminishes the state's potential by part offsets the rise and fall in some export sector with other prevail stable. In their study of Latin American countries, they found that there was a positive interplay between export diversification and economic growth. And they showed that not only export growth led to economic growth, but export composition also mattered.

2.2 Empirical Review on Determinant of Export Diversifications

Adam & Michael (2014), empirically found the long run determinant of exports diversification by estimating a cross country regression model and used a panel data of 53 African countries spans from 1995 to 2011. Their study underpin the importance of per capita income, public investment, institutions and policies, human capital and infrastructure as main long run cause of export diversification on the continents.

Using data spans from 1995/1996 to 2014/2015 (Assefa & Gedefe, 2016) found the following. First, the export composition, they observed that while contribution of agriculture in export earning has been falling, contribution of the manufacturing sector has been rising. However, it's a simple difference, which can be suggested as the Ethiopian exporters are diversifying by a few into higher worthiness sectors and sectors that are not heavily affected by external price and demand shocks. The market destinations of export increases roles of more dynamic and emerging markets in Asia, Latin America and Sub-Saharan. Second, in any years, more export diversification or contraction caused by changes in exports by existing firms (the intensive margin). Despite controlled by existing firms close to one-third to one half of all exporters are new entrants in a typical year. The new export of firms by large don't add much to export improvements; simply because of

(i) the majority do not stay in for more than two years and (ii) their export sales are very small; given its level of development and size, Ethiopian exports remain relatively small in number and average size. Third, in terms of export diversification, Ethiopia's export sector is heavily dependent on primary commodity exports and a few large exporting firms.

Similarly, in terms of destination markets, Ethiopia's exports are focused on a small number of countries (135 markets out of a total of 247 potential markets). The story is the same or even worse in their findings of the product and market concentration analyses. The top 1 percent products, which are only 8 in number, account for 77 percent of total exports in the period. Likewise, the top 5 percent products (which are 35 in number) account for 92 percent of total exports. The fact that Ethiopia has a relatively small export base implies low export earnings and proneness to demand shocks and price swings in overseas markets.

Using a large data set of countries spans from 1962 to 2000 and Hirschman Herfindahl Index, (Agosin, 2007), (Jr & Abouellial, 2015) and (Herédia & Cabral, 2010) underpinned: - that exports diversification affected positively by financial development, human capital and geographical location (this is meant to be not remote) and negatively affected by trade liberalization and real exchanges volatility. The index that in the interval 0 to 1, the greater value implies the higher concentration.

The three channel via which export diversification play a roles to the economic growth. Increasing productivity of production factors through the transfer of knowledge is the first channel. Secondly, exports diversification in new industries leads to faster economic growth by supporting production in other industries. With existing and potential links of production, more diversified structure of exports can give an incentive to create new industries and expansion in existing industries within the economy. The third channel is through enhancing greater stability in export incomes. The relationship between a greater degree of diversification and greater stability of income in this case is analogous to which the portfolio theory indicates. Prices of basic commodities are characterized by a relatively high volatility in short run; hence countries dependent on exports of these goods may be exposed to high volatility of export incomes (Misztal, 2011).

Different literature review of export of agricultural products contribute 86% of the total earning from foreign in Ethiopia. Most of under developed countries like Ethiopia have only two abundant factors of production labor and land, with little capital. In Ethiopia labor force has a positive effect on economic growth. This may be reasonable due to fact that labor force is constantly and consistently growing. And exports diversification enhances stable export earnings. Real Exchange Rate may affect export diversification because it has a positive effects on economy (Tirsit, 2011). And exports diversification leads to higher GDP per-capita and was found to Granger-cause GDP using computable general equilibrium model and 38 year data (Naudé & Rossouw, 2008).

According to (US Department of Agriculture Rural Development, 2011); the powered cooperatives can support their member and other in different ways. There is no equal speeds for success by all things between all members. In different direction cooperatives can support the farmers and publics by ownership and Democratic Control (one voice one vote) and increased farm income.

Trade structure is affected by country size, location (geographically) and trade policy and strategy. However, export specialization of manufacturing is high (that means less export diversification) in small size and geographically far from the core market countries. The same difficulty occurs if no trade openness (Parteka & Tamberi, 2011).

2.2.1 Shortcomings of Reviewed Empirical Analyses

All the literatures reviewed above have employed different factors that are determinants of export diversification especially that they have used many independent variables using different data and methods. But, they not considered the number of cooperative effects on export diversification. Thus this study takes care of the number of cooperative in Ethiopia as one independent variable to show its effects on Ethiopia's export diversification.

2.3 Theoretical and Conceptual Framework on Export Diversification

The world economy used one fundamental methods of analysis as other parts of economics, caused the motivations and behavior of individuals are similar in the world trade which is similar to local transactions. But, this involves new and difference in concern, caused by

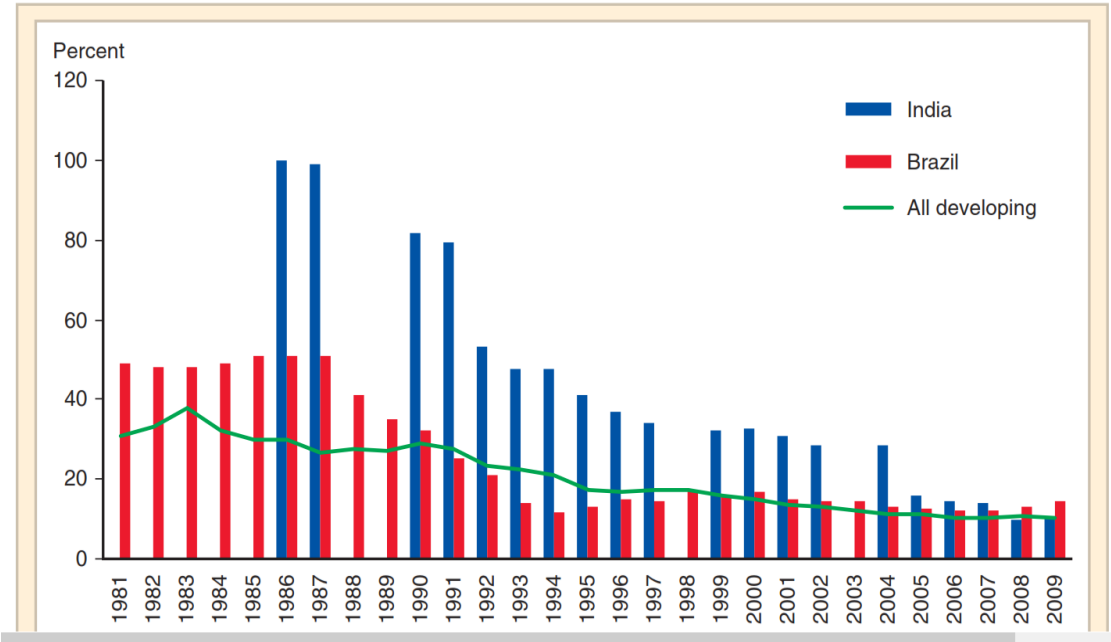
world trade and investment occur among the independent nations. International trade affect negatively the owners of resources that are "specific" to industries that compete with imports, that is, cannot find alternative employment in other industries. Trade can also alter the distribution of income between workers and the owners of capital. And, trade patterns is an interaction between the relative supplies of national resources such as capital, labor, and land on one side and the relative use of these factors in the production of different goods on the other. If labor is the only input of production, which assumed by Ricardian model, there is the increase in comparative advantage because of the world are different in labor productivity.

Whereas Heckscher-Ohlin model emphasizes the interplay among the ratios in which different inputs of production are used in different trade partners and the ratios in which they are used in producing different goods, which called factor proportion theory (i.e., the trade partner that is rich in inputs of exported commodity whose production is intensive in that inputs). The similarity in model trade is depend on four main relationships: (1) the relationship on the production-possibility-frontier (PPF) and the related supply curve; (2) the relationship on related price and related demands; (3) the determination of international equilibrium by world relative supply and world relative demand; and (4) the effects of the terms of trade which means the division of prices of a trade partners export for the prices of its import on a country's welfare. Growth that disproportionately expands a country's production possibilities in the direction of the good it exports (Home base) is export-biased growth. Similarly, growth biased toward the good a country imports (foreign base) is import-biased growth. Export-biased growth tends to worsen a growing country's terms of trade, to the benefit of the rest of the world; import-biased growth tends to improve a growing country's terms of trade at the rest of trade partners expenditures. Starting from middle of 1980s, a number of less developed nations changes the lower tariff rates and no restrict in import quotas and other barriers on trade.

The Figure 2:1 below shows trends in tariff rates for two important developing countries, India and Brazil, which once relied heavily on import substitution as a development strategy. As shown below, there is a dramatic fall in tariff rates in those two countries.

Trade liberalization in less developed nations had two results. One was a sudden change in the volume of trade and two its change in the nature of trade (Paul R. Krugman, 2019).

Figure 2.1Tariff Rates in Developing Countries



Source: - Krugman, et.al, 2012, page 264.

2.4 Overview of Economic Impact of Cooperatives

A cooperative can be defined in various way; for this study cooperative defined as which meet: - (voluntary and open membership), democratic member control, economic participation of member, autonomy and independent, (education, training and information), cooperation among the cooperatives and concern for community principles to meet common economic, social and other needs (ICA, 2019).

As (Deller et al., 2009) cooperative play a great role in Commercial sales and marketing (i.e. farm supply and marketing; biofuels; grocery and consumer goods retail; arts and crafts and entertainment); Social and public services (i.e. housing; healthcare; daycare; transportation; education); Financial services(i.e. credit unions; farm credit; mutual insurance); and Utilities (i.e. electric; telephone; water).

As (ILO, 2014); everywhere for all people eradicating extreme poverty and by 2030, reducing at least by half the ratios of men's, women's and children's to all ages living in

poverty; in all its dimensions of create opportunities, extend protection and facilitate empowerment as a weapon to alleviate poverty is the original idea of cooperatives. Build resilience of poor by reducing the vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters by providing micro-insurance coverage based on the principles of mutuality, solidarity and reciprocity. Cooperative increases the agricultural productivity by increasing the economies of scale and providing the healthy and nutritious food, a plat form for the joint development and sharing of innovations among members, an environment that is conducive to joint entrepreneurship, to the creation of decent jobs, to access to finance and helping the young people as stepping stone towards individual entrepreneurship or salaried employment. Horizontal cooperation and vertical integration of cooperative enables it members for sharing of commercial, financial and technological services. Cooperatives have a high capacity to act as a bridge between; informal and formal, rural and urban, and local and global, by providing the organizational interface enabling small-scale producers, farmers and consumers to interact with larger entities in cities and overseas and provide an appropriate organizational framework for the joint management and efficient use of natural resources, including through recycling and reuse. “Cooperatives contributed to the improvement of agricultural exports by arranging the export related services which is difficult to the individual producers. By doing so they may encourage small-scale farmers to grow export crops, and thus increase overall exports of the country”. (Nikolić, n.d.), Concluded that cooperatives have a significant potential for participation in international trade, and that they achieve the best results in cooperation.

CHAPTER THREE
METHODOLOGY AND DATA SOURCE OF STUDY

3.1 The Data Sources and It's Type

For this study data collection is based on secondary data; the time series data that spans from 1985 to 2019 collected from different data sources. All data used for this study is secondary data. Whereas; real exchange rate, total import, total export, nominal gross domestic product (NGDP) and real gross domestic product (RGDP) data collected from National Bank of Ethiopia (NBE); number of total productive age population from World Development Indicator (WDI) and number of cooperatives from Federal Cooperative Agency (FCA) of Ethiopia and from different journals, publications and literature reviews.

3.2 The Study Design and/or Methodology

To show what study looks like; both descriptive and econometrics analysis to investigate the determinants of export diversification in Ethiopia. In order to put the descriptive analysis of the multi-variate time-series data and their relationships analysis among endogenous and exogenous variables of the study.

3.2.1 The Descriptive Analysis Statistic

This part of the study helps to put the reviews of all variables included in this paper. The descriptive analysis includes the maximums, minimums, and standard-deviations, mean and also the average of the whole variables under study is undertaken. Also, the whole graphs and tabular analysis under-taken in the study is to see them how they move through a time.

3.2.2 The Econometric Model Specification

The aim is to find the determinants of export diversification. Therefore, the starting point of this analysis is from what different authors have confirmed. Cooperative, human capital (Herédia & Cabral, 2010) and productive age group has positive effect on export diversification, (ICA Report, 2019), real exchange rate (Genye, 2011) and (Parteka &

Tamberi, 2011) confirmed their positive effect on export diversification. Hence, the basic model has the following form:

$$LnEDt = \beta 0 + \beta 1 LnPAt + \beta 2 LnCOOPt + \beta 3 LnRERt + \beta 4 LnRGDPt +$$

$$\beta 5 LnTOt + \beta 6 LnTop5t + \beta 7 LnTop10t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.1$$

Where β_0 is a constant term and β_1, β_2, β_3, β_4, β_5, β_6 and β_7 are parameters to be estimated.

ED_t: is export diversification in a given year t and which is going to be measured by the most known method **Herfindahl-Hirschman index (HHI) (Export Concentration Ratio)** taking the sum of the squares of the shares of all commodities in the total export earnings. The implication is the higher concentration of export leads the results approached to one because of the more the squares of share. If there is only one export commodity for example the share will be one and the summation of the square of one will be one. On the other hand the less concentrated the market is the smaller the share of the largest firm which will mean that the square will even be smaller as the share is less or equal to one. Therefore, the sum of the square of the shares will be very small and close to zero. This means the market is not concentrated and is the main objectives to see its change over time (Agosin, 2007).

PA_t*:* is productive age population which is measured by number of population aged from 15 to 64 (labor force participation) in Ethiopia in a given year t. Most economic theorists, persuaded by (Diebold, 1967), disagree with the classical Malthusian principle that a rampant population growth would negatively affect economic growth. They argue that population growth promotes technological advancement, increases competition, increases investment strategies and help attain economic growth.

$COOP_t$*:* is number of cooperatives measured by the number of cooperative in a given year t (ICA Report of October, 2020).

RER_t: is a real exchange rate in year *t* defined as Ethiopia local currency Birr (ETB) units relative to the United State dollar (USD).

$RGDP_t$: is a real gross domestic product which is standard measure of economic output of a country at year t which is measures the total value of all goods and services produced in an economy.

TO_t: is trade openness of a country in year t, which is measured by a ratio of sum of Export (EX) and Import (IM) to GDP (Melina & Chaido, 2020). It minimize the transaction costs and increases the domestic firms' competiveness(Alaya, 2012).

$$TO_t = \frac{EX_t + IM_t}{GDP_t}$$

$Top5_t$: is Top five exported commodities from a country in year t, which measured by the sum each five most exported commodities shares from total exported commodities.

$Top10_t$: is Top ten exported commodities from a country in year t, which measured by the sum of each ten most exported commodities shares from total exported commodities.

Econometric Model

The econometric model of the analysis is the basic models having error terms. Has the following form:

$$LnEDt = \beta 0 + \beta 1 LnPAt + \beta 2 LnCOOPt + \beta 3 LnRERt + \beta 4 LnRGDPt + \beta 5 LnTOt + \beta 6 LnTop5t + \beta 7 LnTop10t + \varepsilon t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.2$$

Where; $\mathcal{E}_t$ is the usual error term. And "*Ln*" shows that all variables are employed with their natural logarithms.

3.3 Estimation Technique

3.3.1 Unit Root Test

(Gujarati, 2004), states the regressions of non-stationary test causes a false outcome and this test statistic shows an important relationships happens among the variables even when no relationship between the variables. Non-stationarity happens when correlation between

variable exists; but not truly correlated. The empirical expressions based on time series data assumed stationary. Thus, carrying out a unit root tests is necessary for the normality. So, a time series data is believed to be stationary when the mean and variances are consistent always through a time and the covariance across the two different time periods rely on their lags across them and not on current time (Oldekop et al., 2016). To solve the problems Augmented Dickey Fuller (ADF) (1979) tests was a necessary to check the existence of non-stationarity or not in the data set. The ADF test generally applicable to look at closely a unit roots. The ADF test accepts the additional lagged terms of endogenous variables to restrict the auto-correlation issues in the time series data. According to (Gujarati, 2004) the ADF test is completed with Phillips Perron (PP) which displays nonstructural breaks test that may cause serial correlation by lag order. Thus, the time series data examination start with test of stationarity for which requires that the first two moments of the series are time never changing/invariant. Starting with considering an auto regress order which written as bellows.

$$k_t = \delta + \rho k_{t-1} + V_t \text{--} 3.3$$

By assuming;

$$E[v_t/k_{t-1}.k_{t-2}....k_0] = 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.4$$

Where E is expected values and k_0 is the first values for k_t series.

This indicates that k_t applicable in a unit root process when $\rho = 1$ only. But, when the $\rho=1$ and $\delta=0$; k_t is applicable with a random walks without drifts. Further as the $\delta \neq 0$ and $\rho=1$, k_t applicable with a random walks with a drifts. This hypothesis expressed more when possibility of rewriting equation (3.3) in terms of change in k_t series. This means equation (3.3) can be written as the follows form,

$$k_t - k_{t-1} = \delta + \rho k_{t-1} - k_{t-1} + V_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.5$$

$$\Delta k_t = \delta + (\rho - 1)\, k_{t-1} + V_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.6$$

$$\Delta k_t = \delta + \theta k_{t-1} + V_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.7$$

In this case $\theta=\rho-1$ and the null hypothesis written as $H_0: \theta=0$ which suggested as $\rho=1$ for existence of unit root. Where, the one sides alternative hypothesis is: $H_1: \theta<0$ which implies $\rho<1$. But, if $\rho>1$ the work does not accepted for the reason that it considered as explosiveness or short temper processes. For a series with a trend, modification of its unit root test can be applicable Therefore, equation (3.7) written as the following;

$$\Delta k_t = \delta + \beta t + \theta k_{t-1} + V_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.8$$

Thus H_0 and H_1 is the same to the equation (3.7). If k_t in a unit root the $\delta\neq0$, its mean is a linear in t. The assumption if $\beta\neq0$, under $H_0=\theta<1$; it makes k_t a detrend stationary.

3.3.2 Testing for Autocorrelation

As (Wooldridge, 2000), underpinned that assume $Cov(U_iU_j)=0$; where, cov=covariance and which implies that the value of U does not depend on the past value of other variables; but, depends to its past value. This called Autocorrelation or serial correlation of a random variables U. The cause for this is model misspecification or genuine autocorrelation of error terms in the model. For unbiasedness statistically auto correlation of error term must exist but its variance not estimated correctly. Under this situation R-square may estimate too high. When the lagged dependent variable used in the model its estimator are biased and not constant. Thus, it's a significant to test for autocorrelation or serial correlation in the error terms. Thus; to know the existence of correlation between the random in different time periods the Durbin Watson (DW) statistics test is available. The thumbs rule shows that, when DW $\approx$2 it shows no serial correlations; when DW<2 a positive serial-correlation exists and when DW>2 it implies the existences of a negative serial-correlation. The DW test does not acceptable if lagged endogenous variables is there at the left hand of the regression equation. Knowing the weakness of DW test causes to the correlogram Q-statistics for confirmation tests.

3.3.3 Co-integration Test

Co-integration is an econometric belief which shows presence of a long run balance between the underlying economic time-series that come together from different directions

to the balance over time. Error correction model (ECM) indicates the short run and long run details together for the variables in Models and it's a significant for the model to empirically applicable in long run relationships. Unless otherwise the variable removed. The reason why attention given to co-integration is stationarity gives the short run dynamics of the models. Therefore; Granger (1981), Engle and Granger (1987) generate the ideas as solution to test co-integration. Different to this method, the Johansen (1988), Johansen and Juselius approach (1990) to cointegration and ARDL cointegration (Pesaran, M.H., Shin, 2001) method can be used.

3.3.4 The Autoregressive Distributed Lag (ARDL)

ARDL model has many merits that make it to be chosen. It used under the small sample (Pesaran, et al., 2001), (Narayan, 2004) is the first. The second merit is by a simple linear re-parameterization ECM can be obtained from ARDL. The third merits of ARDL is when a single long-run relationship exists the ARDL procedure can differentiate among the endogenous and exogenous variables. And; the forth merits of ARDL approach can be applicable for whether the regressors are purely ***I (0),*** purely ***I (1),*** or mutually co-integrated. Under this model it is permitted for all variables to have different lags.

For the merits mentioned above ARDL approach to co-integration procedure to find the long-run relationship. The model applied without the variables are I (0), I (1) or mixed; leads for accurate and efficient estimation. If one co-integration vector exists or if the equation used ARDL model; the co-integration vector can be re-parameterized into ECM. The ECM displays the short run dynamics and the long run relationship of the variable of a single model.

The orders lag in ARDL model is decided either by Akaike-information-criterion (AIC) or the Schwarz-Bayesian-Criterion (SBC), before the chosen model is estimated by ordinary list squares (OLS). For a small sample size choosing the lag number by AIC is a primary. Deciding the optimal lags length is necessary in ARDL model for over parameterizations and to capture the degrees of freedom. Additionally, as (Pesaran, M.H., Shin, 2001) for annual datas maximum of two (2) lags are advisable to be taken.

3.3.5 The Error Correction Model (ECM)

The philosophy of ECM by Grangers of 1986 was applicable to produce the short run estimations and give the short run dynamics required to recognize the presence of long run equilibrium. The ECM estimates how variables adjusted long run equilibriums. The ECM coefficient value shows the adjustment in the short run of endogenous for long run to equilibrium.

3.3.6 Granger Causality Test

The information about Granger causality test describes either one variable can be used in forecasts of another variable or not in the study. The variable K is to be called granger cause of variable T; the changeable of K value can be explained by past value of T. It describe what span does one series encompasses the details about other series (Engle and Granger, 1987).

CHAPTER FOUR

RESULT AND DISCUSSION

4.1 Descriptive Analysis

The means, maximums and minimum values of the observations, the standard deviations of the variables used in the model are described in table 4.1 below. The standard deviation describes how far from the average mean. If standard deviation is small it indicates that the mean of most observation closer to the average population mean. Thus, the observation mean has the opportunity of being nearer to the population mean and it become the best population mean estimator. The table below shows the mean value of Export Diversification (ED) is 0.290 and its maximum value 0.568 and its minimum value 0.133.

The table 4.1 below shows the mean value of Cooperative Number (COOP) and Productive Age Population (PA) is 27426.89 thousands and 37518863 and their maximum is 88811.00 thousands and 62928697 and their minimum is 5659.00 thousands and 20673475 respectively. The standard deviation of those variables are 25550.55 thousands and 12448621, which indicates how the sample is far from the average the sample. If standard deviation value is high it shows the change of or variation in number of cooperatives and Productive Age population from period to period in Ethiopia under the period of study. Additionally, if the minimum and maximum value is high this describe the existence of high variation of the variables in the study. The means of Real Exchange Rate (RER), Real Gross Domestic Product (RGDP), Trade Openness (TO), Top Five exported Products (Top5) and Top Ten exported Products (Top 10) is 9.940451, 416696.7 million, 0.259281, 0.843969 and 0.967946 respectively.

Table 4.1 Descriptive Statistics Result, Sample: 1985 2019

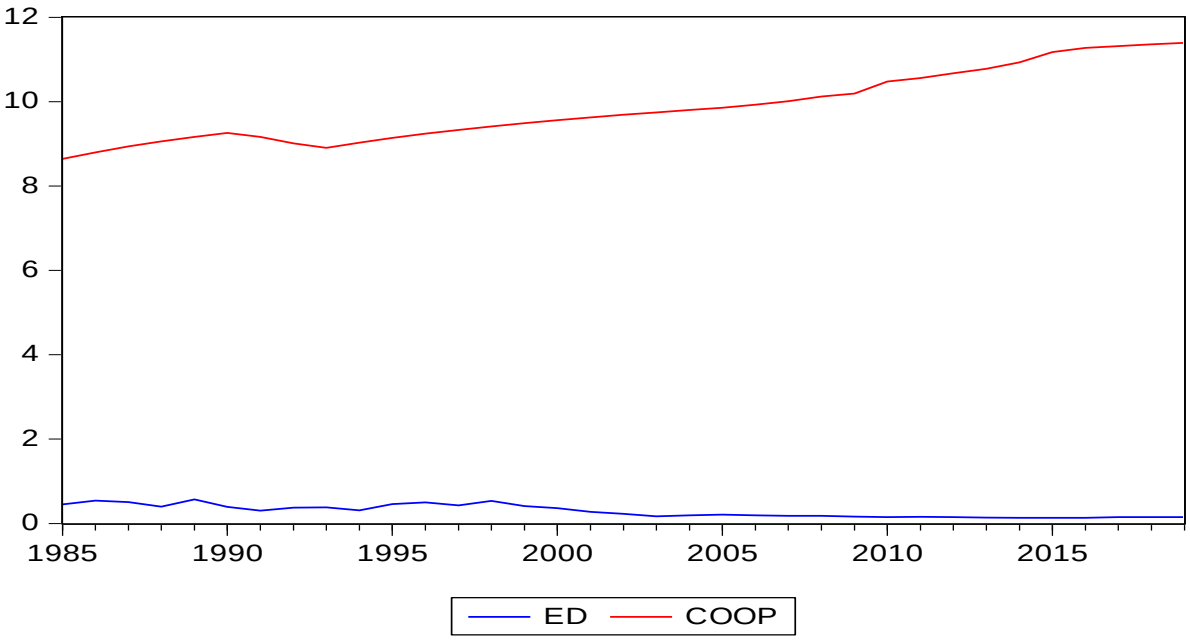
Variables	Statistic Results						
	Mean	**Maximum**	**Minimum**	**Std.devia.**	**Sums ***	**Sum Sq. Dev**	**Observations**
ED	0.290	0.568	0.133	0.146	10.161	0.721	35
COOP	27426.89	88811.00	5659.00	25550.55	959941.0	2.22E+10	35
PA	37518863	62928697	20673475	12448621	1.31E+09	5.27E+15	35
RER	9.940	28.054	2.070	7.395	347.9158	1859.110	35
RGDP	416696.7	1874689	101802.6	481867.9	14584384	7.89E+12	35
TO	0.259	0.405	0.085	0.086	9.075	0.254	35
TOP5	0.844	0.982	0.701	0.097	29.538	0.317	35
TOP10	0.968	1.000	0.926	0.029	33.878	0.0297	35

Source: Author's Computations using E-Views Result, 2021

4.1.1 Export Diversification and Cooperative Number in Ethiopia from 1985 to 2019 Trends

The export diversification in Ethiopia described as a fluctuation up to 1998. But after 1999 it shows sustainable changes and growth. Based on the raw data export diversification not growing until 2000. The export diversification is unstable until that year. From 2003 export diversification shows a significant improvements until 2019. The export diversification from 0.36601 the product concentration in 2000 to 0.15015 the decrease of product concentration that shows the increase in export diversification which is a dramatic growth.

Figure 4.1 Trends of Export Diversification and Number of Cooperative in Ethiopia from 1985 to 2019



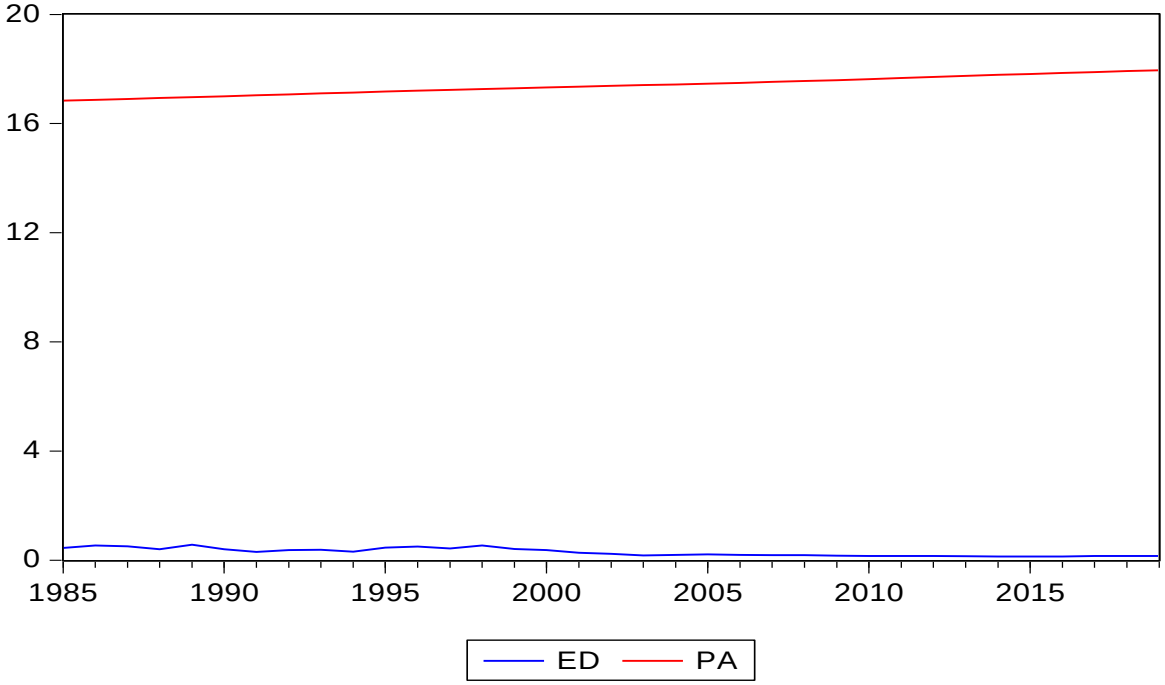
Source: Author's Computations using E-Views Result, 2021

The trend of cooperative number in Ethiopia showed an increasing trend until 1990 and suddenly there is a decrease from 10.524 thousand to 7.366 thousands in 1993. After 1994 the number of cooperatives is increasing until 2019 from 8.339 to 88.811 thousand.

4.1.2 Trends of Export Diversification and Productive Age Population in Ethiopia from 1985 to 2019

The graph above shows the trend of population Age of 15-64 population in Ethiopia. The growth and trend of population aged of 15-64 shows a very little growth, but consistently.

Figure 4.2 Trends of Export Diversification and Productive Age Population in Ethiopia from 1985 to 2019

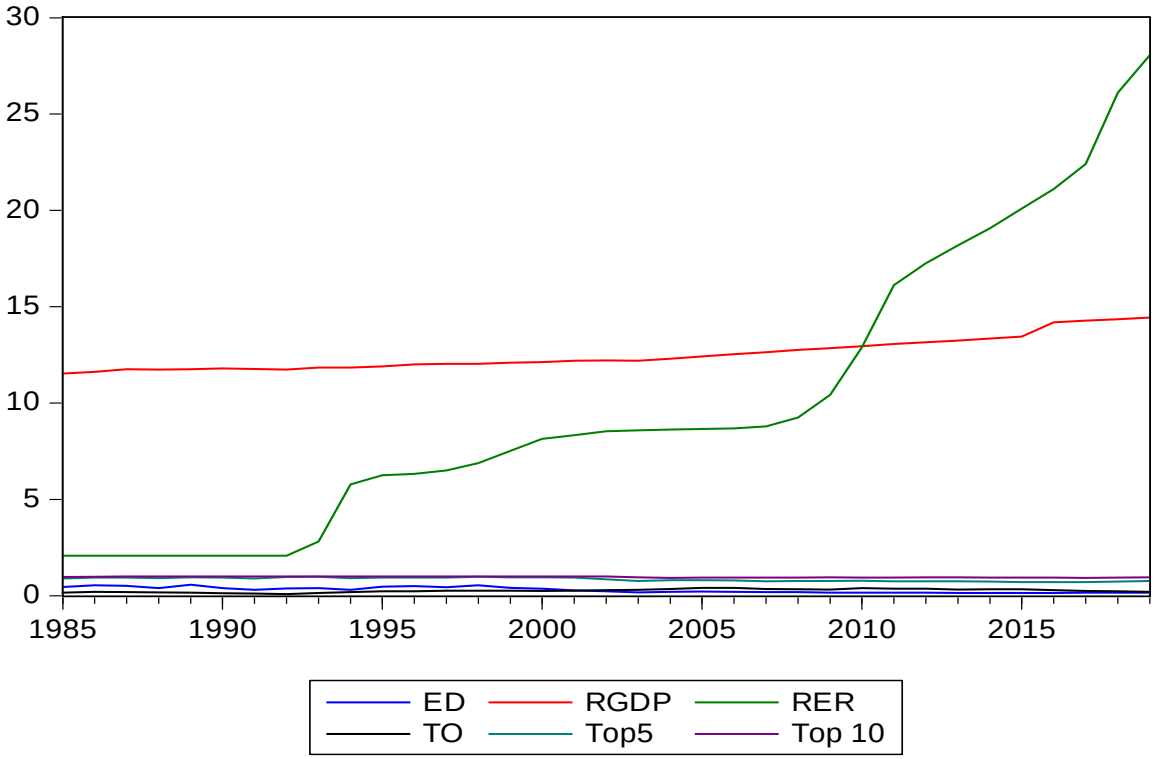


Source: Author's Computation using E-View Results, 2021

4.1.3 Trends of Export Diversification Real Gross Domestic Product, Real Exchange Rate in Ethiopia from 1985 to 2019

As raw data indicates the country real GDP increased from 1.018 billion in 1985 to 1.449 billion in 2016 which shows 579.96% increments and this is the 18 years change gap. From 2017 the Ethiopian economy shows a consistent growing's until 2019. The Growth of real GDP by 109.38% increased from to 1.595 million in 2017 and reaches 1.875 billion in 2019 which is an excite growth. On the other hand trade openness, top five and ten exported products remains almost consistently. While the real exchange rate remain constant until 1994. Starting from 1995 Ethiopia's birr value starts depreciated to 5.77 and 28.05 by 2019 which imply the highly depreciation of Ethiopian currency.

Figure 4.3 Trends of Export Diversification and Real Gross Domestic Product, Real Exchange Rate in Ethiopia from 1985 to 2019



Source: Author's Computations using E-Views Result, 2021

4.2 Econometrics Analysis

4.2.1 Result of Unit Root Test

Before any meaningful regression is performed with time series variables, it is essential to test the existence of unit roots in the variables and hence to establish their order of integration. The variables used in the models for analysis is needed to be stationary. When the order of integration is greater than one, the ARDL bound test for co-integration is inapplicable. Consequently, it is necessary to test the stationarity of the whole variables in the model before running the regression analysis. The stationarity of time series data are identified by testing for a unit roots. Therefore, in this study ADF is used for a unit root tests. The stationarity test result are showed in table 4.2 below.

The table that shows the unit root test result of all variables in the model are at level and first differences. The ADF test result indicates that one of the variables were found to be stationary at the level and the others at the first differences; which suggests that except the COOP all variables are I(1). Where COOP is stationary at I (0). Therefore, the short-run and long-run relationship test between the endogenous and exogenous variables are based on the establishment integration order.

Table 4.2 Result of Stationarity Tests

Variable	At Level or First Difference	ADF tests statistic	Critical Values		
			1%	5%	10%
ED	At Level	-1.494197	-3.639407	-2.951125	-2.614300
	At First Difference	-8.025729*	-3.646342	-2.954021	-2.615817
LnCOOP	At Level	-5.041169*	-4.262735	-3.552973	-3.209642
LnPA	At Level	-2.864664	-4.262735	-3.552973	-3.209642
	At First Difference	-4.932386*	-2.639210	-1.951687	-1.610579
LnRGDP	At Level	2.143911	-3.639407	-2.951125	-2.614300
	At First Difference	-4.990476*	-3.646342	-2.954021	-2.615817
RER	At Level	-0.556346	-4.262735	-3.552973	-3.209642
	At First Difference	-3.621068**	-4.262735	-3.552973	-3.209642
LnTO	At Level	-0.142962	-4.252879	-3.548490	-3.207094
	At First Difference	-4.460759**	-4.262735	-3.552973	-3.209642
LnTOP5	Level	-2.770643	-4.252879	-3.548490	-3.207094
	At First Difference	-5.613263*	-4.273277	-3.557759	-3.212361
LnTOP10	At Level	-2.719116	-4.252879	-3.548490	-3.207094
	At First Difference	-4.139124**	-4.262735	-3.552973	-3.209642

Source: Author's Computations using E-Views Result, 2021

The (**) and (*) denotes significance level at 5% and 1% respectively.

4.2.2 The Long run and Short run Relationship Estimate

4.2.2.1 The Long Run ARDL Bound Test for the Co-Integration

The main concept of ARDL bound test analysis is to test the presence of long run relationship between the variables included in the model. The ARDL bound tests applied in this model is to analyze the existence of the long run relationships and the optimal lags length chosen using Akaike Information Criteria. The result of the stationarity test in table

4.2 shows that one of the variables is stationary at level I (0) and all others at first difference I (1). Therefore, the application of ARDL approach is appropriate in this study.

Further the ARDL bound test is applicable to test the null hypothesis that suggests nonco-integration exists, which opposes the alternative hypothesis suggests that there is a co-integration. Then the computed F-statistics is comparable to the critical values suggested by (Pesaran, et. al, 2001), (Narayan, 2004). If computed F statistics is higher than the critical values of upper bound which means I (1), then the null hypothesis rejected. When the values of F-statistics is smaller than critical values of the lower bound which means I (0); the null hypothesis accepted. But, if the value of F-statistic is between critical values of lower bound I (0) and critical value of the upper bound test I (1), we cannot give the conclusions.

The table 4.3 below indicates the bound tests for co-integration. The F statistics value is (5.203), the output is above critical value of the upper bound at 1%. The output implies that co-integration relationship presence among the endogenous and exogenous variable.

Table 4.3 ARDL Bound Tests, Sample: 1986 2019

Included observations: 34

Null Hypothesis: No long run relationship exists

Test of Statistics	Values	*k*
F-statistics	5.203031	7
Critical Value Bound		
Significances	I_0 Bounds	I_1 Bounds
At 10%	2.03	3.13
At 5%	2.32	3.5
At 2.5%	2.6	3.84
At 1%	2.96	4.26

Source: Author's Computations using E-Views Result, 2021

4.2.2.2 The Long Run Relationships Estimate

The bound test of long run co-integration of all variables in the model leads to accept they are co-integrated. The endogenous variable is ED and exogenous variables are LnPA, LnRGDP, LnTO, LnCOOP, LnTOP5, LnTOP10 and RER. After the existences of long run relationships is confirmed; the estimated long run coefficient are presented here in table 4.4.

Table: 4.4 the ARDL Long Runs Estimate

Long-Run Coefficient

Variable-	Coefficient-	Std. Error-	t-Statistic-	Prob.-
LNPA	1.878059	0.438601	4.281935	0.0004
LNRGDP	0.698636	0.246654	2.832457	0.0103
LNTO	0.659845	0.180349	3.658705	0.0016
LNCOOP	0.621182	0.348035	1.784826	0.0395
LNTOP5	2.675537	1.431872	1.868558	0.0764
LNTOP_10	2.694295	3.738589	0.720672	0.4795
RER	0.036954	0.023992	1.540271	0.1392
C	29.011731	6.892530	4.209155	0.0004

Source: Author's Computations using E-Views Result, 2021

The ARDL long run coefficient Estimates in table 4.4 indicates that the existences of a positive significant effects of the number of cooperatives and population aged 15-64 on export diversification in the study period. Keeping other things constant, at 1% increase in number of cooperatives and population aged 15-64 increases export diversification 0.62% and 1.88% respectively. Those variables are significant at 1% levels statistically, which shows the number of cooperatives and population aged 15-64 has a high contribution in export diversification determination in Ethiopia. This indicates that the number of cooperatives and population aged 15-64 increased consistently under the period of the study.

The coefficient of control variables included in the model, i.e, top five exported commodities (TOP5), top ten exported commodities (TOP10) and real exchange rate RER all positive insignificant effect at 5% level of significance. On the other hand, RGDP and TO are the other variables that have positive and statistically significant effect on export diversification at conventional level of significance. Holding other things remain constant,

a 1% increase in TO causes 0.66% and 1% increase in real GDP causes 0.70% the increases in export diversification.

4.2.2.3 The Short Run Error Correction Estimates

After in export diversification equations its long run coefficient is confirmed, its short run ECM can be analyzed. The output indicates the coefficients of ECM is -0.7687 and more significant. The ECM indicates the system adjusts itself by 76.87 % to the equilibrium over year in the long run; when short run a disturbance and/or shock exists. This shows the convergences from disequilibrium to equilibrium by 76.87 % in the long run per year. In the short run model estimates of the number of cooperatives, real GDP and top five exported commodities analyzed coefficients are the main determinants of export diversification in Ethiopia. While all the rest of the variables are insignificant at 5% level of significances.

Table 4.5 The Short Runs Estimate Results

ARDL Co-integration And the Long Runs Form
Dependent Variables: ED
Selected Models: ARDL (1, 1, 0, 1, 0, 1, 1, 1)
Samples: 1985 2019
Observations number: 34

Co-integrating Forms				
Variable	Coefficients	Std. Errors	t-Statistics	Prob.
D(LNPA)	18.148773	10.054745	1.804996	0.0862
D(LNRGDP)	0.537043	0.203589	2.637878	0.0158
D(LNTO)	0.184067	0.161423	1.140277	0.2676
D(LNCOOP)	0.477504	0.226716	2.106181	0.0480
D(LNTOP5)	3.603611	0.705108	5.110722	0.0001
D(LNTOP_10)	-1.375996	2.904287	-0.473781	0.6408
D(RER)	-0.018737	0.030675	-0.610828	0.5482
CointEq(-1)	-0.768702	0.200783	-3.828525	0.0000

Source: Author's Computations using E-Views Result, 2021

4.3 Diagnostic Test

4.3.1 Test for Autocorrelation

Durbin Watson (DW) test is used to check autocorrelation statistics. This correlation caused in the model by miss specification or the existences of true autocorrelation of

random terms in the model. Thus the hypothesis; *Ho*: suggests non autocorrelation if ρ is equal to zero (*0);* and H_1: suggests whether a positive (+) or negative (-) is when ($\rho=\pm1$). But; the thumb rules of hypothesis is; if the DW≈2 it indicate that no serial correlations. In the study; the regression results shows that the Darbin Watson is 1.89, this is approximated to number two (2). Further, the Q statistic serial-correlations LM tests are applicable and the output presented in appendix *B* indicates the existences of non-serial-correlation due to its Probability values is higher than of the nominal Probability values at 5%. Breuschs godfrey serial-correlations LM is applicable in tests to verify for the existence of serial-correlation. If the P-chi-square (1) is less than 5% of significance level, then the H_0 of non-autocorrelations rejected and H_1 of non-autocorrelation accepted when vice versa.

Table 4.6 The Breuschs Godfrey Serial-Correlations LM Tests

F statistic	1.507924	Prob. /F(1,19)	0.2345
Obs*R squared	2.499981	Prob. Chi Square(1)	0.1138

Source: Author's Computations using E-Views Result, 2021

From the table 4.6 concluded that the existences of non-autocorrelation shows that the estimated p-chi-square (1) is 11.38% which is higher than 5%; so, H_0 of non-autocorrelation problems are accepted.

4.3.2 The Test for Heteroskedasticity

This part is applicable to confirm that the standard errors are true. The assumption is the variance of Random terms is invariant which indicates the errors are non-heteroskedastic. Thus H_0 of the random terms are non-heteroskedastic confirmed. Therefore, the Breusch Pagan Godfrey tests verifies for the existences of heteroskedasticity or not. The hypothesis that; H_0: the error variances is constant over time and H_1: the error variance in time variant.

The table 4.7 describes that the probability value of both *F* statistic and chi-square *($\chi 2$)* and the probability values of the scaled explained summed squares are higher than 5% for rejection of the H_1 time variant of random variances.

Table 4.7 The Heteroskedasticity Tests: Breuschs Pagan Godfrey

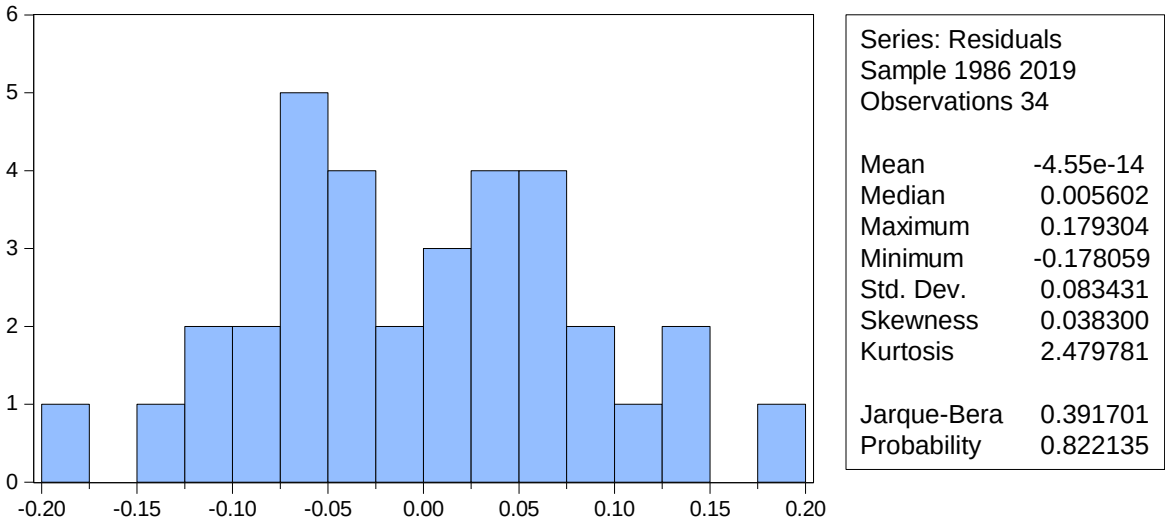
F-statistics	0.754003	/Prob. F(13,20)	0.6949
Obs*R squared	11.18276	/Prob. Chi-Square(13)	0.5955
Scaled-explained SS	2.862984	/Prob. Chi-Square(13)	0.9984

Source: Author's Computations using E-Views Result, 2021

4.3.3 Normality Test

Normality test is applicable to determines either distribution of data is a symmetric or not; and when Probability values of Jerque Bera statistics value (82.21%) test is higher than 0.05 the normality of model is true that explainned in figure 4.4 below.

Figure 4.4 The Normality Tests Result



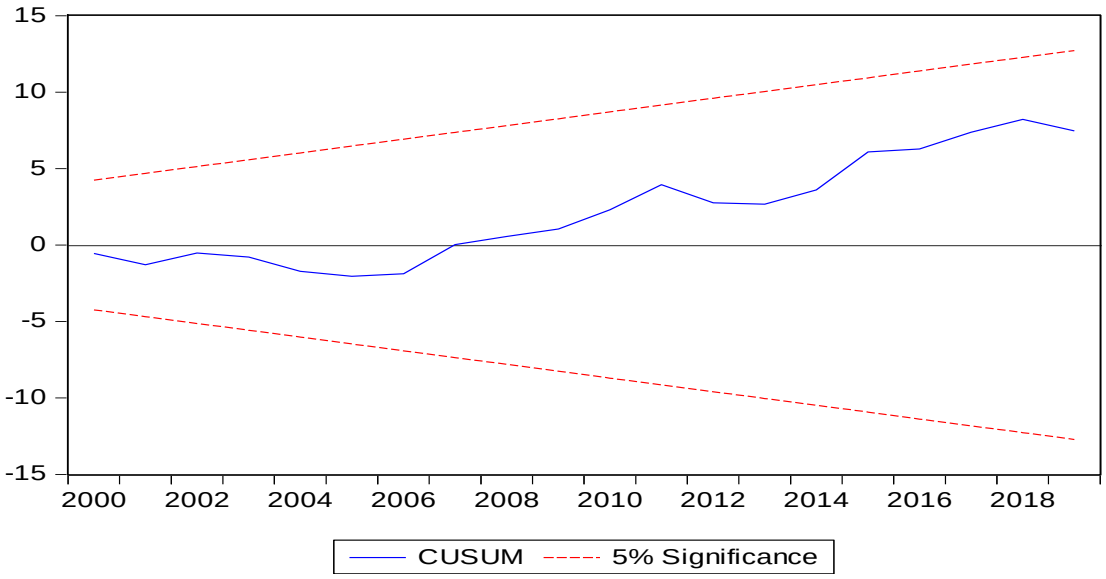
Source: Author's Computations using E-Views Result, 2021

4.3.4 The Test for model stability

Model stability tests are applied under this section including the stationarity, non-homoscedastic and serial-correlation tests. The stability of the models coefficients in the long-run analyzed by cumulative sums of recursive residual (CUSUM) and the cumulative sums of squared recursive residuals (CUSUMSQ) test as suggested by (Pesaran, M.H., Shin, 2001).

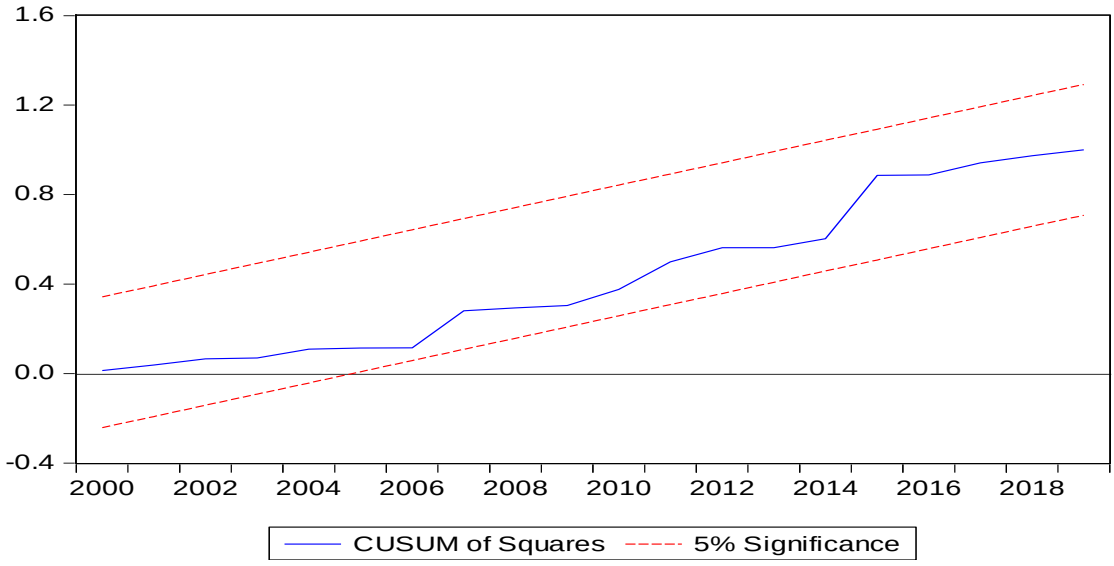
The figures of both CUSUM and CUSUMSQ line runs in the boundaries. Therefore, coefficients estimated in the models chosen is stable.

Figure 4.5 CUSUM Tests



Sources: The The Author's Computations using E-Views Result, 2021

Figure 4.6 CUSUMSQ Tests



Sources: The Author's Computations using E-Views Result, 2021

4.4 The Key Regression Statistic

The goodness of fit statistics is called R squared that measure either endogenous variables are more defined by the exogenous variables in a models. R squared is used to verify either the data are fitted and or good actually in the regressed models. R squared is also the squared correlation coefficients across the endogenous value variables and for the fitted value correspondence to a models. The correlation coefficient fails in the intervals of negative one (-1) and one (1) value; this caused by values of R squared fail in the interval of zero (0) and one (1). In table 4.8 values of R squared is 97.3%. This shows that 97.3% of endogenous variable is explained by the exogenous variables included in the model and the other shock is because of error term.

Table 4.8 The Key Regressions Statistic Results

R squared	0.973071	Mean of dependent var	-1.378810
Adjusted/R squared	0.955568	S.D. of dependent var	0.508414
S.E. of regressions	0.107169	Akaike-inform-criterion	-1.335924
Sum*squared resid	0.229703	Schwarzs-criterion	-0.707423
Log*likelihood	36.71071	Hannans-Quinn-criter.	-1.121587
F statistics	55.59231	Durbins-Watson-statistic	2.328764
Prob(F statistics)	0.000000		

Source: Author's Computations of E-Views Result, 2021

4.5 The Engle Granger Causality Test

The granger causality test in table 4.9 indicates the existence of granger causality form population aged of 15-64 to export diversification and from export diversification to top five and top ten exported commodities.

Hypothesis:

H_0: number of cooperative not Granger Causes export diversification in Ethiopia.

H_1: number of cooperative Granger Causes export diversification in Ethiopia.

H_0: population aged 15-64 not Granger Causes export diversification in Ethiopia.

H_1: population aged 15-64 Granger Causes export diversification in Ethiopia.

In this case if the probability of granger-cause is smaller than 0.05 significance level, H_0 of no granger causes are not accepted and the H_1 must confirmed. The output in the table below indicates the either cause run from cooperative number and population aged 15-64 to export diversification or export diversification to cooperative number and population aged 15-64.

The conclusion can be given that population aged 15-64 granger-cause export diversification as the estimated P value is smaller than 0.05 significance level; while no granger-causality among number of cooperatives and export diversification. The result of Granger causality also indicates that export diversification seems does not Granger cause population aged 15-64. On the other hand export diversification Granger causes both top5 and top10 exported commodities.

Table 4.9 The Grangers-Causality Tests Result

Pairwise- Grangers Causality Tests
Sample: 1985 2019
Lags: 1

Null Hypothesis:	Obser	F-Statistics	/Prob.
LNPA does not Granger Cause ED	34	4.66723	0.0386
ED does not Granger Cause LNPA		2.66268	0.1128
LNRGDP does not Granger Cause ED	34	0.97528	0.3310
ED does not Granger Cause LNRGDP		1.05950	0.3113
LNTO does not Granger Cause ED	34	1.76236	0.1940
ED does not Granger Cause LNTO		0.00203	0.9643
LNCOOP does not Granger Cause ED	34	3.33883	0.0773
ED does not Granger Cause LNCOOP		0.08464	0.7730
LNTOP5 does not Granger Cause ED	34	0.30608	0.5841
ED does not Granger Cause LNTOP5		6.29913	0.0175
LNTOP_10 does not Granger Cause ED	34	0.18705	0.6684
ED does not Granger Cause LNTOP_10		19.8291	0.0001
RER does not Granger Cause ED	34	0.73469	0.3979
ED does not Granger Cause RER		0.15852	0.6933

Source: Author's Computations using E-Views Result, 2021

The above result indicates; the granger-cause is a unidirectional running from population aged 15-64 to export diversification.

CHAPTER FIVE

CONCLUSION AND POLICY RECOMMENDATION

5.1 Conclusions

This paper analyzed determinants of export diversification in Ethiopia for the data spans from 1985 to 2019. In this study time series data used to find the determinants of Ethiopia's export diversification. For the long run and short run existence, autoregressive distributed lags co-integration methodology applied. The empirical finding on determinants of export diversification in Ethiopia model confirms that, number of cooperatives, population aged 15-64, real GDP of home country and trade openness are positive and significant determinants of country's export diversification. Real exchange rate, top five and top ten exported commodities were found to be statistically insignificant to determine Ethiopian export diversification in the long-run. Among the listed variables real GDP, number of cooperatives and top five exported commodities are found to be the only determinant of Ethiopian export diversification in the short-run. They confirmed that the three variables are positive and statistically significant; whereas all other variables are statistically insignificant. The error correction term indicates the re-adjustment of all variables to the equilibrium is by 76.87% per year in the long run when the short run shock exists. The granger-causality test shows population aged 15-64 granger-cause export diversification this indicates unidirectional run from population aged 15-64 to export diversification.

5.2 Policy Recommendation

The empirical result suggests that in Ethiopia an increase number of cooperatives cause for improvement in export diversifications. Thus, the opportunity in and surrounding the number of cooperatives and productive age 15-64 population must searched. That is the concerned part must to allow for further searching the opportunity in number of cooperatives in long-run to support for more export diversification. The conclusion also reveals that Ethiopian government should work more with population aged 15-64 to diversify the exports to use their energetic and most productive in economic activity with

short and long term policy and strategy. In promoting Ethiopian export diversification the role of maintaining a high real GDP is indispensable.

Despite of its importance, the study does have some limitations. First, regarding the measurement of cooperatives, most (if not all) indices of cooperative rely on different classification of their economic activity participation, initial capital, market share, members (total, sex, level of education, income, family number, geographical location) and geographical locations. These classifications are not revised, which makes it difficult if not impossible to distinguish them. Moreover, relatedness in cooperative classifications is sometimes arbitrary, and lacking a proper scientific relatedness framework. As a result, number of cooperatives resulting in difficulties to which determine the export diversification. Second, productive population aged 15-64 index is based on totally economic active population, which does not account for those in school, unemployment and employed number. Using the above classification would also improve results and will allow for more comprehensive analysis.

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Appendix

Appendix A: The ARDL regressions result

Dependent Variables: ED
Methods: ARDL
Samples (adjusted): 1986 2019
Observations number: 34 after the adjustments
Maximum-dependent lags: 1 (Automatic-selection)
Models-selection method: Akaike-info-criterion (AIC)
Dynamic-regressors (1 lag, automatic): LNPA LNRGDP LNTO LNTOP5 LNTOP_10 RER LNCOOP
Fixed-regressors: C
Number of the models-evalulated: 128
Selected Models: ARDL(1, 1, 0, 1, 1, 1, 1, 0)

/Variables	/Coefficients	/Std. Errors	t-Statistic	/Prob.*
ED(-1)	0.231298	0.200783	1.151979	0.2629
LNPA	18.14877	10.05474	1.804996	0.0862
LNPA(-1)	19.59244	10.06618	1.946363	0.0658
LNRGDP	0.537043	0.203589	2.637878	0.0158
LNTO	0.184067	0.161423	1.140277	0.2676
LNTO(-1)	0.323157	0.185398	1.743045	0.0967
LNTOP5	3.603611	0.705108	5.110722	0.0001
LNTOP5(-1)	-1.546919	1.017307	-1.520602	0.1440
LNTOP_10	-1.375996	2.904287	-0.473781	0.6408
LNTOP_10(-1)	3.447107	2.078457	1.658493	0.1128
RER	-0.018737	0.030675	-0.610828	0.5482
RER(-1)	0.047144	0.031254	1.508420	0.1471
LNCOOP	0.477504	0.226716	2.106181	0.0480
C	22.30138	6.647150	3.355029	0.0032

R-squared	0.973071	Mean dependent var	-1.378810
Adjusted R-squared	0.955568	S.D. dependent var	0.508414
S.E. of regression	0.107169	Akaike info criterion	-1.335924
Sum squared resid	0.229703	Schwarz criterion	-0.707423
Log likelihood	36.71071	Hannan-Quinn criter.	-1.121587
F-statistic	55.59231	Durbin-Watson stat	2.328764
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Appendix B: Autocorrelations Tests Results

Samples: 1985 2019
Observations number: 34
/Q-statistics probabilities /adjusted for 1 dynamic regressors

/Autocorrelation	Partial Correlation		/AC	/PAC	/Q Stat	Prob*
.*| . |	.*| . |	1	-0.174	-0.174	1.1166	0.291
.*| . |	.*| . |	2	-0.137	-0.172	1.8348	0.400
. |*. |	. | . |	3	0.099	0.044	2.2230	0.527
.*| . |	.*| . |	4	-0.077	-0.077	2.4673	0.650
**| . |	**| . |	5	-0.211	-0.233	4.3395	0.502
.*| . |	**| . |	6	-0.110	-0.253	4.8716	0.560
. | . |	.*| . |	7	0.060	-0.097	5.0357	0.656
.*| . |	.*| . |	8	-0.084	-0.165	5.3646	0.718
. |*. |	. | . |	9	0.144	0.055	6.3790	0.701
. |*. |	. | . |	10	0.111	0.039	7.0099	0.725
.*| . |	.*| . |	11	-0.122	-0.154	7.7982	0.731
. | . |	. | . |	12	0.066	-0.049	8.0435	0.782
. |*. |	. |*. |	13	0.207	0.191	10.544	0.649
**| . |	.*| . |	14	-0.280	-0.162	15.343	0.355
.*| . |	.*| . |	15	-0.139	-0.173	16.580	0.345
. |*. |	.*| . |	16	0.097	-0.097	17.224	0.371

*denotes the Probabilities may not be valid for this equation specifications.