



THE IMPACT OF GOVERNMENT EXPENDITURE ON ECONOMIC DEVELOPMENT OUTCOMES IN ETHIOPIA

BINIAM KEFYALEW

AUGUEST , 2021

ADDID ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

SCHOOL OF GRADUATE STUDIES

**A Thesis Dissertation Submitted for the partial fulfilment of the requirement for the
degree of MASTERS OF SCIENCE IN DEVELOPMENT ECONOMICS**

AUGUST , 2021

ADDID ABABA, ETHIOPIA

APPROVAL SHEET

This is to certify that this thesis prepared by Biniam Kefyalew, entitled : “*The impact of government expenditure on economic development outcomes in Ethiopia*” and submitted in partial fulfillment of the requirement for the Degree of Master of Science (Development Economics) complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Advisor

Date

Signature

Internal Examiner

Date

Signature

External Examiner

Date

Signature

DECLARATIONS

This is to certify that the thesis entitled: The Impact of Government Expenditure on Economic Development outcomes in Ethiopia is submitted in partial fulfillment of the requirements for the Degree of Master of Science (Developmental Economics) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by:

Student Name: Biniam Kefyalew

Signature

Date:

ACKNOWLEDGEMENTS

I would like to express my genuine appreciation to my advisor. Sisay Debele (PhD) for his constructive comment, advice and guidance while I was writing this thesis. I am grateful to his valuable comments and suggestions and Zelalem Gutu (PhD) for his meticulous advice in my proposal work. I am so grateful to them for their precious time and patience with me.

I am very grateful to all my family members especially my father and mother, who were with me in the difficult situation which I face during my graduate study, and unlimited support in all aspect for the successful accomplishment of this thesis.

Table of Contents

ACKOWLEGMENT	i
TABLE OF CONTENT	ii
LIST OF FIGURES.....	iii
LIST OF TABLES	iv
LIST OF ACRONYMS.....	v
ABSTRACT.....	vi
1. INTRODUCTION	1
1.1. Background of the study	1
1.2. Statement of the Problem.....	3
1.3. Objective of the Research	5
1.3.1. General Objective	5
1.3.2. Specific Objective	5
1.4. Research Hypothesis.....	5
1.5. Significance of the study.....	6
1.6. Scope and Limitation of the Study.....	6
1.7. Organization of the thesis	6
2. LITRATURE REVIEW	7
2.2. Theoretical Review	10
2.3. Empirical Literature review	14
2.4. Research /Conceptual/ Framework	20
3. RESEARCH METHODOLOGY.....	21
3.1. Research Design.....	21
3.2. Data Type and Data Source	21
3.3. Method of data Analysis	21
3.3.1. Econometrics Model Specification	22
3.4. Estimation technique.....	24
3.4.1. Unit root Test	24
3.4.2. Stationary series and integrated process	24
3.4.3. Error Correction Model and Co-Integration	25
3.4.3.1. Co-integration	25
4. RESULT AND DISCUSSTION.....	26
4.1. Descriptive Analytics.....	26
4.1.1. Ethiopian Government Trends in Total Government Spending.....	26
4.1.2. Life ExpetancyTrends in Ethiopia	31
4.1.3. Expected Year of Schooling	32
4.2. Econometric Analytics.....	33

4.2.1. Unit Root Test.....	33
4.2.2. Lag selection	34
4.2.3. Co-Integration Test	34
4.2.4. Vector Error Correction Model (VECM) Model Estimation	37
4.2.5. VEC Granger Causality/ Wald Tests	38
5. CONCLUSSTION AND RECOMMENDATION	46
5.1. Conclusion	46
5.2. Recommendation	48
5.3. This thesis's limitations and future research	49
REFERENCE	50
APPENDIX	56

ACRONYMS AND ABBREVIATIONS

ADF	Augmented Dickey-Fuller Test
AEO	African Economic outlook
AIC	Akaikie Information criterion
ECM	Error correction model
ECT	Error correction term
EMDE	Emerging and Developing economies
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
HDI	Human Development Index
IMF	International monetary fund
MDG	Millennium Development Goal
MoFEC	Ministry of Finance and Economic Cooperation
RGDP	Real growth domestic product
NBE	National bank of Ethiopia
SC	Schwartz Information criteria
UNDP	United Nation Development Program
VECM	Vector Error Correction Model
WB	World Bank

LIST OF TABLES

Table 1: Result of Descriptive Statistics	13
Table 2: Unit root test result (ADF).....	23
Table 3: Lag Order Selection Criteria.....	38
Table 4: Residual stationary test	38
Table 5: Co-integration Test Results.....	39
Table 6: Serial correlation test.....	43
Table 7: Vector Error Correction Estimate Results.....	43

LIST OF FIGURES

Figure 1: Researcher Conceptual framework.....	19
Figure 2: HDI Index composition.....	21
Figure 3: Trend on total spending in Education and Health expenditure in Ethiopia.....	28
Figure 4: Chart describing life expectancy at birth from	30
Figure 5: The Mean year of schooling and Expected year of schooling	31
Figure 6: Diagnostic test of the Model.....	42
Figure 7: Normality Test	43

LIST OF APPENDIX

Appendix.1 :Unit root test result (ADF).....	46
Appendix 2: Diagnostics test for Normality test.....	47
Appendix 3: Test for Homoscedasticity.....	47
Appendix 4: Test for serial Autocorrelation.....	48
Appendix 5: Co-Integration Test.....	48
Appendix 6: VECM Estimate	48
Appendix:7: VEC Granger Causality.....	49
Appendix 8: P-Value for test of significance to t-statistics	50

Abstract

Using a time series data from 1990-2020, this study employs the augmented Solow human-capital-growth model to investigate the impact of government expenditure on economic development outcomes in Ethiopia. Expenditure on public health and education were taken as proxy variables for human capital development in order to see their impact on economic development. The Augmented Dickey Fuller test is employed to test for stationarity and Johansen Cointegration technique is used to validate cointegration among variables as a sign of long run relationship. The error correction model is used to adjust for the short run error correction. Further tests of autocorrelation and residual normality distribution were done. The result of the ADF test has shown that all variables are non-stationary at level I (0) and stationary at I (1). There are two cointegrating equations implying convergence. The result of the error correction model show that the model is adjusting at a relatively stable rate of 61 % towards the long run equilibrium. The result of the short run causality tests show public expenditure on education, public expenditure on health have significant effect.

Keywords: Economic Development, Human Capital, VECM, ECM, Ethiopia.

1. INTRODUCTION

1.1. Background of the study

Physical capital accumulation has traditionally been emphasized in economic theory as the most important source of economic growth, at least in the short run, with exogenous technical progress being the long-run predictor of growth. The neoclassical growth model's exogeneity of technical advancement and the difficulty of explaining long-term economic growth (due to diminishing returns to physical capital) have limited the model's analytical capacity and empirical verification. The endogenous growth models developed by Romer (1986) and Lucas (1988) were giving emphasis on human capital accumulation and its roles for economic growth (Mankiu, 2009).

Because successful schooling depends, among other things, on appropriate health, health is a prerequisite for increased productivity. workers that are in better health are more active and strong, and their production is higher. In this regard, health has a wider concept than mere understanding of absence of sickness. It is the ability of people to develop to their potential during their entire lives. In that sense, health is an important asset individuals possess, which has intrinsic value (being healthy is a very important source of well-being) as well as instrumental value (Bloom, Canning & Sevilla 2004).

A nation's human capital endowment, the skills and capacities that reside in people and that are put to productive use can be a more important determinants of its long term economic success than virtually any other resource (World Economic Forum 2016). Early neoclassical economic growth models give due attention to physical capital accumulation and technology to bring economic growth. In this regard, it is worth to note the Harrod (1939) and Domar (1946) models of economic growth as cited in Todaro (2010); which give due emphasis to a higher level of saving as having key role in the creation of better capital labor ratio (physical capital accumulation). Their assumption stipulates that countries with higher saving rate will grow faster than those with lower saving rate. In addition to the physical capital accumulation, they also noted the need for technological improvement in order to have a long term effect on economic growth.

National wealth should also include the value of the skills and training of the countries residents what economists call human capital in practice. Endogenous growth theorists have provided a number of reasons to explain why in the firms and the economy as a whole, the marginal

productivity of capital may not be diminishing. One explanation emphasizes the role of human capital the economist's term for the knowledge, skills, and training of individuals.

As economies accumulate capital and become richer, they devote more resources to investing in people through improved nutrition, schooling, health care, and on-the-job training. This investment in people increases the country's human capital, which in turn raises productivity. If the physical capital stock increases while the stock of human capital remains fixed, there will be diminishing marginal productivity of physical capital.

Recent research findings point to a strong connection between productivity growth and human capital. The government affects human capital development through educational policies, worker training, health programs, and in other ways (Andrew et al, 2001).

Health and education are both components of human capital and contributors to human welfare. One index of human welfare, which incorporates income, education and health, shows that Africa's level of human development is the lowest of any region in the world. Work can enhance human development when policies are taken to expand productive, remunerative and satisfying work opportunities; enhance workers' skills and potentials; and ensure their rights, safety, and wellbeing. Measuring aspects of work, both positive and negative, can help shape policy agendas and track progress toward human development enhancing work (UNDP, 2015). Public expenditure has been attracting the attention of economists in recent times due to its effects on the level of growth (Sunday and Elizabeth 2012). Government expenditure is expected to be a means of reducing the negative impacts of market failure on the economy. However, allocations of public expenditure with lack of consideration for the urgent needs of the country may endanger greater distortion in the economy which may be detrimental to growth. Economic growth is expected to bring about a better standard of living of the people through provision of better infrastructure, health, housing, education services and improvement in agricultural productivity and food security (Loto 2012).

As Ethiopia's per capita income has just crossed \$1,000 PPP based on an expected US dollar GDP of \$109.5bn for FY 2019-20 (3,422bn in Birr terms) and a population count per official statistics above 100 million (ADB, 2020). Taking a cross-country perspective and reviewing the record of other countries that crossed \$1,000 in per capita income (this occurred just 19 years ago in China, 13 years ago in India/Vietnam, and 7 years ago in Bangladesh/Kenya), we see that growth can continue at its recent pace as long as it is supported by high investment, and that Ethiopia could reach a \$2,000 per capita income (~\$5,100 per capita in PPP terms) within the space of seven years. (Cepheus research, 2020).

1.2. Statement of the Problem

Human capital is acquired mental and physical ability to human being through education, skill development, training, health care and other capacities of people to enhance their productivity and efficiency. It refers to any aspects of person that produces economic values which includes personal attributes such as health, nutrition status, knowledge and skills (Todaro, 2012). The dream of guaranteeing justifiable and persistent development in alleviating mass poverty at a meaningful and measurable manner, in one way or another, in the government's development strategy. (Kaleb, 2019). The predominant aim of every government's spending is to guarantee a long and healthy life for the citizens, ensure they are knowledgeable and enjoy a decent standard of living.

Ethiopia is a landlocked nation with the second most populous country in Africa after Nigeria with a total population of about more than 100 million in 2020 (ADB,2020). It is one of the poorest countries in the world ranking 174 out of 186 countries in the Human Development Index (HDI) and its human HDI index is around 0.48 in 2020 which clearly shows a lower level stature ranking around the world (UNDP, 2020). According to Ministry of Finance and Economic Cooperation report on FY 2000-2019, looking across the data trend, Ethiopia experienced a determined rise in their level of public expenditure and consequent increase in budget deficits and public debt as the country GDP is also growing at higher rate from 67,351Million in 2000/2001 to around 2,696,223 Million in 2018/19 enjoying an annual around 7.2 percent average growth rate in per capita gross domestic product. However, Ethiopia's HDI index is around is 0.485 in 2020 which means it is below the average of 0.547 for countries in Sub-Saharan Africa.meaning GDP growth and HDI are not growing harmoniously.

Empirical and theoretical literature mentioned above by different researchers at different time period and country experience majority of them used real GDP as proxy variable for measuring economic growth and analysed how the different components of government expenditure at aggregate level (education, health) impact economic growth and end up with different finding and conclusion using different measurement.

So, what will be the contribution of this research to the existing body of knowledge development/What makes it peculiar from prior studies /?.on the one hand several domestic and foreign empirical studies on government expenditure have been focus on economic growth (Chandran al, 2011; Al-Bataineh, 2012; Gangal & Gupta, 2013; Hasnul, 2015; Al-Shatti, 2014;Lahirushan & Gunsekara, 2015; Torki, 2016; Jelilov & Musa, 2016; Muguro, 2017) among others. On the other hand, theoretical views like Wagners law and Keynesian theory

opposite view on government expenditure and economic growth, because economic growth is necessary but not sufficient condition for economic development but failed to classify government expenditure into development and non-development in order to determine their specific effect on HDI.

Hence, this study come up with new perspective in addition to the existing literature to address the relationship between the consistent increase in components of government expenditure and its developmental outcomes in Ethiopia by considering human development index as proxy for measuring economic development outcomes with particular focus on health, GDP Per capita & education as the major element to be affected by expenditure made by government

1.3. Objective of the Research

1.3.1. General Objective

The study's overall goal is to examine the impact of government spending on Ethiopia's economic development outcomes by focusing on the structure rather than the size of public spending.

1.3.2. Specific Objective

The specific objective of the thesis work includes: -

- ✓ To examine expenditure on human capital (Education and health) affects economic development in Ethiopia.
- ✓ To analyze the short run and the long run impact of human capital on economic development in Ethiopia; and
- ✓ To examine the causal relationship between human capital and economic development in Ethiopia.

1.4. Research Hypothesis

Modern theory of economic growth argues that human capital, especially education and health has the principal role on achieving economic growth and development. Proponents of endogenous growth theory lay emphasis on human capital formation and regard it a factor which explains difference in growth performance of under developed and developed nations (Romer, 1992). Becker (1962), who believes that human capital is just like physical capital and one, can invest in it by means of education, health and training which, in turn, will raise output and contribute to economic growth.

Then the study tests the hypothesis:

Ho: $\beta_s=0$ (i.e. human capital have no short run and long run significance impact on economic development)

H1: $\beta_s \neq 0$ (i.e. human capital has short run and long run significance impact on economic development).

Similarly,

Ho: $\beta_s=0$ (i.e. there is no causality between human capital and economic development).

H1: $\beta_s \neq 0$ (i.e. there is causality between human capital and economic development).

The researcher expects that there will be a short and long run significant association between human capital and economic growth, as well as causation between human capital and economic development, based on the empirical findings of this study.

1.5. Significance of the study

The aim of this study is that it will deploy most recent & update data as well expected to apply quantitative analysis and multiple regression models to study the impact of government expenditure on economic development outcomes whether it can be positive, negative or neutral. This study updated information and the findings of this study can be used as a guide for researchers, policy developers and provide important information on the current performance of the public sectors for budget allocation. In addition to this, the study could be as an essential resource for further researches on this area and for the researchers to employ theoretical knowledge of research into practice.

1.6. Scope and Limitation of the Study

Undertaking research on the impact of government expenditure on economic development is a vast area since it requires time, and sufficient knowledge. These constraints force the study to undertake a research at national level (in Ethiopia) and examine the relationship between human capital and economic development in Ethiopia between 1990 to 2020 fiscal years. Availability of data is usually a challenge for researcher because United nation release data on HDI for Ethiopia starting from FY 2000.

1.7. Organization of the thesis

The study is organized into five sections: First section explains the introduction part, second review of theoretical and Empirical literature, continued with research Methodology and then Discussion and findings, finally it ends up by pointing a summary, conclusion and recommendation.

2. LITRATURE REVIEW

2.1. Introduction

Human capital represents the productive capacity of the people. Just like land or machinery, workers are an essential requirement for production. As such, human capital denotes the skill of the labor force, how well and efficiently workers can transform raw materials and capital into goods and services. These skills such as literacy, numeracy, cognitive, and analytical skills can be learned and honed through education; thus, any discussion of human capital has to touch upon education (Son, 2010). Human capital plays a critical role in economic growth and poverty reduction. From a macroeconomic perspective, the accumulation of human capital improves labor productivity; facilitates technological innovations; increases return to capital; and makes growth more sustainable, which, in turn, supports poverty reduction. Thus, human capital is regarded at the macro level as a key factor of production in the economy wide production function.

According to a microeconomic point of view, training expands the likelihood of being utilized in the labour market and further develops income limit. Hence, at the miniature level, human resources is viewed as the part of instruction that adds to a person's work usefulness and income while being a significant part of firm creation (Andrawetal, 2001). Although the conceptual definition of human capital is clear, its measurement is difficult because it is practically impossible to observe individual skill, and even harder to design a metric that is comparable across individuals and countries. Thus, various proxy measures of human capital have been proposed in the empirical literature, such as literacy rates (Azariadis and Drazen 1990); school enrollment rates (Barro 1991, Mankiw et al. 1992); years of schooling (Barro and Lee 1996, 2001, and 2010; Cohen and Soto 2007); and test scores (Hanushek and Kimko 2000, Hanushek and Woessmann 2009). While the literacy rate, which measures the proportion of the population who can read and write, is an important measure of well-being, it does not measure the educational attainment or skill level of the workforce. On the other hand, school enrollment rate is a relevant metric only for school-age children and has little relevance for the workforce.

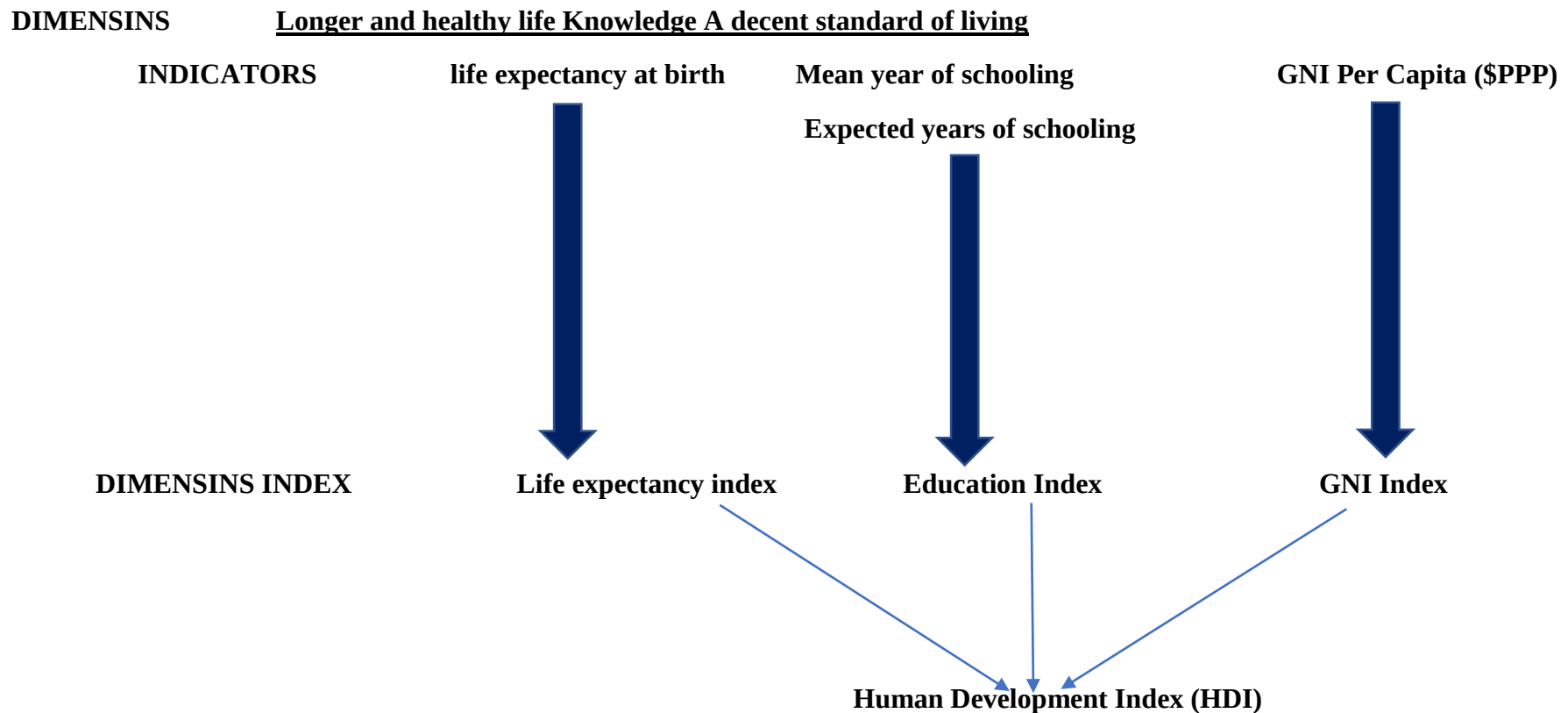
Definition of the fundamental elements to be used in estimation and measurement as dependent and independent variables.

Human Development Index (HDI): According to Human development report (2020), which stated that the HDI is one approach to measure the success rates of human development. It started to be used since 1990 to measure the achievement of human development of a country. Although not able to measure all dimensions of development, however, able to measure basic dimensions of human development which is considered to reflect the status of basic skills of population. HDI consists of 3 (three) components that are considered essential for humans and operationally easily calculated to produce a measure that reflects the effort of human development. The components are: (i). the chance of survival (longevity); (ii). Knowledge, and (iii). a decent living (living standards). Chances of survival is calculated based on life expectancy at birth, knowledge is measured by the average length of the school and the literacy rate of the population aged 15 years and above, and a decent life is measured by expenditure per capita based on purchasing power parity.

Health and Health expenditure: Ethiopia's total health expenditure (recurrent and capital) was estimated at ETB72 billion (US\$3.10 billion) in 2016/17, total health expenditure accounted for 4.2% of the country's GDP, which is lower than the expected average of 5% for low-income countries, and well below the global average of 9.2%. However, it represented a considerable improvement over the situation in the late 2000s, when it stood at around 3.8%. The share of recurrent health spending in 2016/17 increased to 87.95% from 86.3% in 2013/14, while the share of spending on training and research remained about the same. On the other hand, the share of capital spending has decreased to 8.6% in 2016/17 from 10.4% in 2013/14 (Berihun, 2014).

GDP per capita: GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

The Human Development Index (HDI) was created in 1990 by the UNDP and has become the most famous aggregate measure for well-being and an important parameter for progress (Malik, 2014). It is composed of 3 different dimensions: health, income and, education. Since 2010, it is calculated as the geometric mean of the 3 dimensions (Prasetyo and Zuhdi, 2013; Jahan, 2017).



The HDI Index composition. Source: Malik (2014)

Figure 1: HDI Index composition.

2.2. Theoretical Review

Human capital impacts economic growth only if it is utilized in the labor market: those who have attained schooling need to be employed so that their skills can be used to produce goods and services. However, there may be a mismatch between the skills taught by the educational system and the skills needed by the labor market, so highly educated workers may end up doing low productivity jobs. Thus, despite a country's achievements in accumulating human capital through the education system, this achievement may not lead to economic growth and poverty reduction if the labor market is not considered (Son, 2012).

From the early 1990s, various studies have attempted to identify the determinants of economic growth; long-run growth is endogenous rather than exogenous (Romer, 1986; Lucas, 1988; Mankiw et al., 1992). The idea of human resources alludes to the capacities and abilities of human resource of a nation, while human resources arrangement alludes to the most common way of gaining and expanding the quantity of individuals who have the right stuff, great wellbeing, schooling and experience that are basic for monetary development. Thus, investment in education and health are considered as human capital development. Human capital plays a special role in a number of models of endogenous economic growth. In Romer (1990) human capital is the major input to the research sector, which generates the new products or ideas that underlie technological progress. Thus, countries with greater initial stocks of human capital experience a more rapid rate of introduction of new goods and thereby tend to grow faster.

One particular source of externalities that has been emphasized in the recent growth literature is the accumulation of human capital and its effect on the productivity of the economy. Lucas (1988) provides one of the best-known attempts to incorporate the spillover effects of human capital accumulation, in a model built upon the idea that individual workers are more productive, regardless of their skill level, if other workers have more human capital (Montieletal, 2008). Economic theory suggests that human capital would be an important determinant of growth, and empirical evidence for a broad group of countries confirms this linkage. Many economists use different measurement to proxy human capital, however, the assumptions and results are, nevertheless, basically the same. The study conducted in 735 developing countries during 1960 to 1985 by Barro (1991) was the famous one. In his study the average number of years of education attainment (School attainment) was used as measurements of human capital. The result indicates that Countries that start with a higher level of educational attainment grow faster for a given level of initial per capita GDP. Education has been considered a key determinant of

economic growth since the introduction of Solow's (1956) growth model. Although Solow did not explicitly factor in education in his growth theory, the central role of technology in his model provided the impetus for the focus on education; after all, an educated population was necessary for technological innovation. The endogenous growth models played the central role of human capital in technological development and economic growth. According to these new growth theories such as Lucas (1988); Romer (1990); Mankiw, Romer, and Weil (1992); Barro and Sala-i-Martin (1997) the accumulation of human capital through education and on-the-job training fosters economic growth by improving labor productivity, promoting technological innovation and adaptation, and reducing fertility. Economic growth takes place due mainly to two factors: labor productivity growth and employment growth (Son, 2010).

Another issue regarding studies on the relationship between education and economic growth is the lack of consistency between human capital theory and empirical testing. While the Solow and Nelson-Phelps models defined the basis of human capital theory, testing them in practice has been a problem. Mincer (1974) tested this relationship by measuring human capital as years of schooling, and derived a log-linear specification for output and schooling, respectively. The Solowian exogenous growth theory that was developed in the 1950s, at the height of the wave of newly independent countries, can be considered the immediate predecessor of the new growth theories that emerged in the 1980s and 1990s. Originally, it only included labour, L , physical capital, K , and technology, A , the latter exogenously explaining long-run growth. However, with the human capital revolution also human capital was augmented to this model. Yet, because also for human capital diminishing returns were assumed, no real difference took place in the structure of the theory (Mankiw, 2009). In the neo-classical growth model from the 1950s no special attention was given to human capital. Basically, it was argued that the growth of physical capital had an effect on the growth of GDP while the unexplained residual, labeled Total Factor Productivity (TFP), explained economic growth in the long-run. The rise of human capital theory (Schultz 1961; Becker 1964) led to the inclusion of human capital. In contrast to neoclassical models, endogenous growth models explicitly incorporate technology and attempt to recognize that technological change depends on economic decisions in the same way as capital accumulation. In particular, technological change is most commonly related to the stock of human capital. In the endogenous models, economic growth can continue indefinitely because the returns on investment in a broad class of both physical and human capital goods do not necessarily diminish through time. Spillovers of knowledge across producers and external benefits from improvements in human capital are part of this process because they offset

tendencies to diminishing returns. Growth frameworks have also incorporated R&D concepts, as well as imperfect competition (Romer, 1986).

Endogenous growth theory argues that, as an economy's physical capital stock increases, its human capital stock tends to increase in the same proportion. Thus, when the physical capital stock increases, each unit of physical capital effectively works with the same amount of human capital, so the marginal productivity of capital need not decrease. The result that the saving rate affects the long-run growth rate of output stands in sharp contrast to the results of the Solow model, in which the saving rate does not affect the long-run growth rate. Saving affects long-run growth in the endogenous growth framework because, in that framework, higher rates of saving and capital formation stimulate greater investment in human capital and R&D. In comparison to the Solow model, the endogenous growth model places greater emphasis on saving, human capital formation, and R&D as sources of long-run growth (Andrawet al, 2001). One particular source of externalities that has been emphasized in the recent growth literature is the accumulation of human capital and its effect on the productivity of the economy. Lucas (1988) provides one of the best-known attempts to incorporate the spillover effects of human capital accumulation, in a model built upon the idea that individual workers are more productive, regardless of their skill level, if other workers have more human capital (Montiel et al, 2008). The world's poor countries have average levels of income per person that are less than one-tenth the average levels in the world's rich countries. These differences in income are reflected in almost every measure of the quality of life from the number of televisions and telephones per household to the infant mortality rate and life expectancy. Much research has been devoted to the question of whether economies converge over time to one another. If they do, then the world's poor economies will tend to catch up with the world's rich economies. This property of catch-up is called convergence. If convergence does not occur, then countries that start off behind are likely to remain poor. The Solow model makes clear predictions about when convergence should occur. According to the model, whether two economies will converge depends on why they differ in the first place. On the one hand, suppose two economies happen by historical accident to start off with different capital stocks, but they have the same steady state, as determined by their saving rates, population growth rates, and efficiency of labor. In this case, we should expect the two economies to converge; the poorer economy with the smaller capital stock will naturally grow more quickly to reach the steady state. On the other hand, if two economies have different steady states, perhaps because the economies have different rates of saving, then we should not expect convergence. Instead, each economy will approach its own steady state (Mankiu, 2009). Human capital is accumulated through explicit "production": a part of individuals' working

time is devoted to accumulation of skills. The growth of physical capital depends on the saving rate ($I = sy$), while the growth rate of human capital is determined by the amount of time devoted to its production. In the long run, the level of income is proportional to the economy's initial stock of human capital. In this particular formulation, the saving rate has no effect on the growth rate. The important implication of the external effect captured in the model presented by Lucas (1988) is that under a purely competitive equilibrium its presence leads to an underinvestment in human capital because private agents do not take into account the external benefits of human capital accumulation. The equilibrium growth rate is thus smaller than the optimal growth rate, due to the existence of externalities. Because the equilibrium growth rate depends on the rate of investment in human capital, the externality implies that growth would be higher with more investment in human capital. This leads to the conclusion that government policies (subsidies) are necessary to increase the equilibrium growth rate up to the level of the optimal growth rate. A government subsidy to human capital formation or schooling could potentially result in a substantial increase in the rate of economic growth (Montieletal, 2008). Lucas's (1988) original formulation is cast in an optimizing framework in which private agents determine their consumption path by maximizing their utility subject to an intertemporal resource constraint. The main point of his analysis, however, can be made by assuming a constant saving rate, as in Lucas (1993). Lucas (1988) also develops a second model that assumes a different structure of technological change. In this alternative framework all human capital accumulation occurs through on-the-job training, or learning by doing, rather than through the time allocated by workers to this accumulation. Thus, it is the time devoted directly to production activities that determines the rate of growth. An alternative approach to assessing the role played by external effects in the growth process was proposed by Romer (1986). In his framework the source of the externality is the stock of knowledge rather than an aggregate stock of human capital. Knowledge is produced by individuals, but because newly produced knowledge can be, at best, only partially and temporarily kept secret, the production of goods and services depends not only on private knowledge but also on the aggregate stock of knowledge.¹⁵ Firms or individuals only partially reap the rewards to the production of knowledge, and so a market equilibrium results in an underinvestment in knowledge accumulation. To the extent that knowledge can be related to the level of technology, Romer framework can be viewed as an attempt to determine endogenously the rate of technological progress. In subsequent work, Romer (1990) also explained endogenously the decision to invest in technological change, using a model based on a distinction between a research sector and the rest of the economy. In that framework, firms cannot appropriate all the benefits of knowledge production, implying that the social rate of

return exceeds the private rate of return to certain forms of capital accumulation. A tax and subsidy scheme can thus be utilized to raise the rate of growth. Following David Romer , a simplified version of Romer (1990) model can be described as follows. Consider an economy with two production sectors: a goods-producing sector, which uses physical capital, knowledge, and labor in the production process, and a knowledge-producing sector, where the same inputs are used to expand the stock of knowledge (Romer, 1991).

2.3. Empirical Literature review

Reviewing and exploring an empirical studies conducted on the response of government expenditure to potentially impact human development index were assessed by respected scholars at different time, taking in to account various research methodology to come up with their own finding and conclusion, this study reviews some authors research work to be taken as supplement or compliment for this study. Most results are consistent but showing various finding depending up on the variable selection, model formulation as well country specific problems so, most of them inclined to hybrid. Even though education and health major pillars for economic development there is no universal consensus compositions of public expenditure directly promote economic development significantly and create fertile ground for economic wellbeing. Scholars examined the relationship between government expenditure on economic development outcomes.

Anbelaetal(2014) identified as human capital is one of the main determinants of economic growth and plays an important role in the technological progress of countries. Based on econometric panel data estimations involving a set of OCDE countries over 1960-2011, found that the countries" productive specialization dynamics is a crucial factor for economic growth. It is also shown that the interaction between human capital and structural change towards high knowledge-intensive industries impacts on the economic growth. However, the sign of this effect depends on the type of country and length of the period of analysis. Specifically, in the long term and in developed countries, where knowledge-intensive industries already account for a great share of the economy, the impact of the interaction between human capital and structural change is positive. In the case of less developed countries, and considering a shorter time period, the effect of human capital via specialization in high-tech and knowledge intensive activities emerged as negative.

Muhammed &Asfaw (2014) as cited in Smith (2012), Public spending can boost economic productivity by assisting with the start-up of new sectors or the introduction of activities that have yet to be introduced by the private sector. It can also have a direct impact on education,

health, housing, and basic needs provision. It has the ability to facilitate economic development by providing infrastructure in both theoretically and empirically.

Arabi et al (2013) investigate the impact of human capital on economic growth in Sudan for the period 1982-2009 by using a simultaneous equation model that links human capital i.e. school attainment; and investment in education and health to economic growth, total productivity, foreign direct investment, and human development index. Based on three-stage least squares technique, the empirical results of the paper show that quality of the education has a determinant role in the economic growth; health quality factor has a positive impact on economic growth as expected and total factor productivity which mainly represents the state of technology has adverse effect on economic growth and human development due to the obsolete and old fashion technology.

Haldaretal (2007) examined the time series behavior of investment in physical capital, human capital (comprising education and health) and output in a co-integration framework, taking growth of primary gross enrolment rate and a dummy for structural adjustment programme (openness which has been initiated in 1991) as exogenous variables in India from 1960 to 2006. The results suggest that physical capital investment has no long-run nor short-run effect but the human capital investment has significant long-run effect on per capita GNP; the stock of human capital measured by primary gross enrolment rate (lagged by three years) and openness is found to have a significant effect on growth of per capita GNP.

Atardi and Sala-i-Martin (2003) argue that Africa's growth tragedy of the 20th century can be explained by low endowments of human capital, poor external environment, and political instability. Cited in Hippe (2013) according to Becker (2002), human capital is the most decisive type of capital in contemporary economies. He refers to studies showing that human capital accounts for over 70% of total capital accumulation in the US representing more than a fifth of total GDP. Consequently, "technology may be the driver of a modern economy, especially of its high-tech sector, but human capital is certainly the fuel" (ibid).

Paul Romer (1990) on the other hand notes that an important distinction should be made between human capital and abstract technological knowledge. He further notes that although human capital involves the acquisition of knowledge, it differs in one respect from abstract knowledge such as invention or design. As such, human capital is a private good in that it is tied to a person and is therefore rival and excludable.

Kidanemariam (2015) on the other hand, using the ARDL approach to co-integration showed a stable long run relationship between real GDP per capita, education human capital and health human Capital. Accordingly, the estimated long run model indicated that human capital in the form of health have big positive impact on real GDP per capita rise followed by education human capital, among other things.

Ketema (2006), an Ethiopian author, has also attempted to analyses how spending could potentially effect growth throughout the period 1961-2004, using an empirical econometric study, and has come to the conclusion that human capital plays a critical role in the long run. Active government spending has a negative and negligible impact on real GDP.

Adewara and Oloni (2011) argue that government spending on well-being influences the country's economic development in a good direction, but that schooling has the exact opposite effect, with a negative and irrelevant commitment. Government spending has a critical and significant role in reviving a depressed financial situation by adjusting monetary arrangement gauges and contributes significantly.

Looking at Ethiopian government fiscal policy measures related to government spending on improving the composition of spending that affects development outcomes, many attempts have been made over the last ten years, and it has become a policy concern (Bayew, 2014). According to Beauty (2016), respected writers' theories can serve as a stepping stone in supporting our findings, but they do not guarantee the genuine relationship between the variables of interest. Indeed, the vast majority of economists would reach a certain level of comprehension on the subject.

In 2016, Beauty noted in his work that education is one of the major capacities that are valued, due to its impact on social orders and government support in a country. As a result, the government should take into account the execution of government spending portions in order to provide quality training, both in terms of the foundation of instruction and the character of the schooling framework. Wellbeing is the core in talk of making social government assistance achievement in a way that medical services is a conspicuous component to clarify the nature of human improvement in a country for the explanation that it is likewise assume noteworthy part as the solid state of a general public, on the off chance that it helps the advancement exertion of a country in a significant way.

According to BPS (2008, as cited by Beauty, 2016), achieving better socioeconomic wellbeing and development is the goal of any benevolent government of various sizes across regions and countries; additionally, government spending on developmental areas can be more pronounced in low income generating peoples than higher income categories due to the fact that labor is the only asset for low income generating peoples.

“How fiscal and monetary policies effect economic growth and development,” Patricia and Izuchukwu (2013, as cited in Olopade and Olepade (2010)). The goal of their research was to figure out which aspects of government spending contribute to growth and development, which ones don't, and which ones should be removed or reduced to the bare minimum. An analgesic is used in this research. They find no significant relationship between most of the components of expenditure and economic growth. Smith (2014) investigated the role of government finance in economic development in 56 developing countries, emphasizing on the implications of different types of government spending and revenue (mostly taxes). The findings suggest that government finance has aided development, contrary to some economists' assertions that the government has failed to do so. Belgrave and Craigwell (1995) used the Augmented Dickey Fuller and Engle and Granger cointegration technique to examine the impact of government expenditure on economic growth in Barbados from 1969 to 1992, disaggregating the level of government on economic growth into functional and economic categories. Their studies demonstrated that capital expenditure and earnings have a positive association.

Deverajan et al. (2010) examined the composition of public expenditure and economic development for a panel of 43 developing countries from 1970 to 1990 using Ordinary Least Squares. Increasing the share of current expenditure has a positive and statistically significant impact on growth, according to the data. As a component of government spending, capital, on the other hand, has a negative influence. Ghali (2000) studied the effects of government spending on economic growth. The study used time-series data for OECD countries from 1970 to 1995. The factors were government investment, exports, and imports. Government spending, according to the data, causes growth in the majority of countries. Tanninen (2000) analyzed panel data from 52 nations from 1970 to 1992. The study used the General Methods Moments method of estimation (GMM). Investment, government spending categories, and income disparity were the factors used. Government spending and consumption had a negative influence on economic growth, according to the study, and public spending on public goods slowed growth. Using long annual data from the United States, Islam and Nazemzadeh (2001) investigated the causal relationship between government size and economic development. They claimed that there was a causal link between economic growth and relative government size.

Dar and Khalkali (2002) looked at OECD countries from 1970 to 1999 to see how government size affects economic growth. The study, which used panel data, suggested that the size of government had a negative and statistically significant impact on economic growth. With their coefficients, the only countries that did not come under the aforesaid conclusion were the United States, Sweden, and Norway. Dilrukshini (2002) used the Johansen cointegration approach and the Granger causality test to examine the link between public expenditure and economic development in Sri Lanka from 1952 to 2002. The data imply that economic growth in Sri Lanka does not directly affect and dictate the growth of governmental expenditure.

Using panel data from Sub-Saharan Africa, Yasin (2003) investigated the relationship between government spending and economic growth. He built his empirical model of the study on the basis of the neoclassical production function. Government spending on capital formation, private investment, and foreign aid for development, population increase, and trade openness are all stipulated clearly.

From 1965 to 2000, Bagdin et al. (2003) investigated the relationship between government spending and economic development in Turkey. The Engel Granger cointegration test was used to examine the long-run relationship between public spending and GDP, and it was discovered that the two variables were not cointegrated. They discovered that neither national income growth nor national income growth had a causal relationship.

Bose et al. (2003) used the Seemingly Unrelated Regression technique to assess the effects of government spending for a panel of 30 developing countries over the 1970s and 1970s, with a particular focus on sectoral spending. Government capital expenditure as a proportion of GDP is positively and strongly related to economic growth, according to their findings.

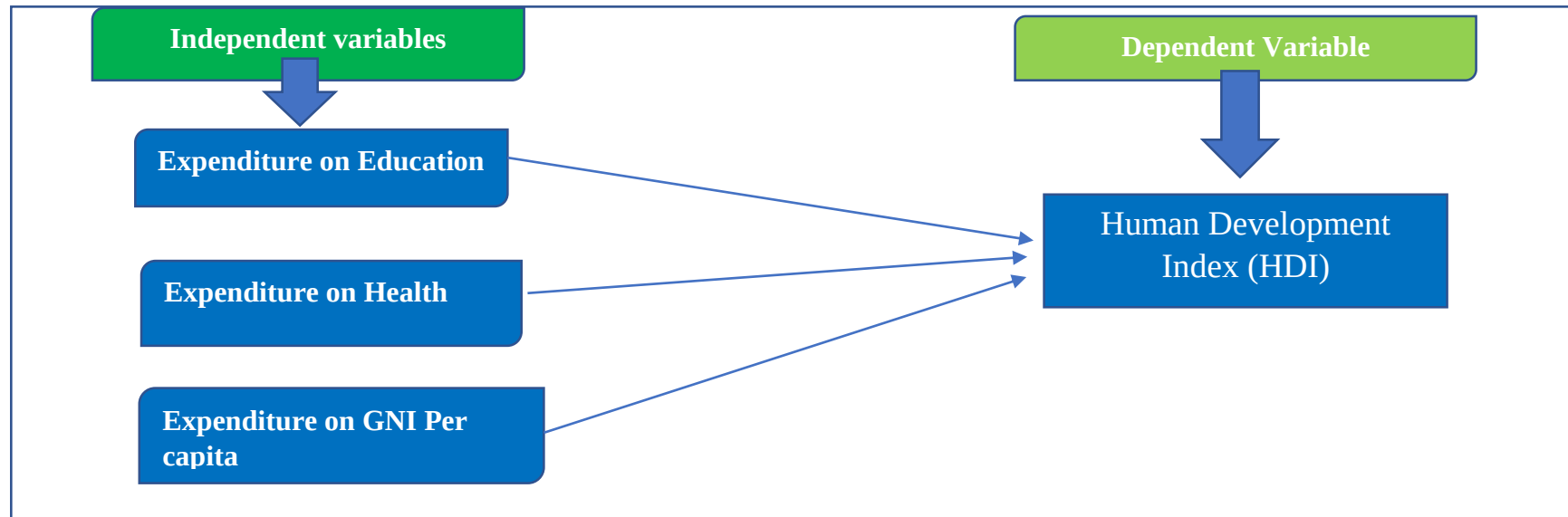
Wondaferahu (2003) conducted an econometric analysis of the impact of capital and current government spending on economic development from 1960/1961 to 2002/2003, using the Johanson Maximum Likelihood estimate technique. Capital expenditure has a favorable and significant impact on economic growth, according to the research, whereas current spending has a short-term negative impact on growth.

The results of the Bounds Test, where real GDP is employed as the dependent variable, reveal that there is no long-run relationship between government expenditure and economic growth in Nigeria, according to Nasiru (2012). Furthermore, the findings of causation suggest that government capital investment is a cause of economic growth. While there was no indication of

a link between government recurrent spending and economic growth, there was evidence of a link between government recurrent spending and economic growth.

From 1971 to 2011, Tofik (2012) investigated the relationship between official development assistance, government spending, and economic growth in Ethiopia. Consumer spending has a negative impact on economic growth, while public spending on physical investment and human capital development has a positive impact. Menyah and Wolde-Rufael (2013) investigated the relationship between government expenditure and economic growth in Ethiopia using the bounds test approach to cointegration and the Granger causality test in order to test Wagner's Law, which states that as real income rises, the share of public expenditure rises relative to national income.

2.4. Research /Conceptual/ Framework



Source: Author's Framework (Modified from Eleonora Sofilda, 2015):Conceptual Framework based on Human Development Report 2020.

Figure 2: Researcher Conceptual framework

3. RESEARCH METHODOLOGY

This section of the thesis applies econometric model as methodological framework by taking aside variable of interest as target variable and other variables for the study properly explained, in the same way the dataset used in the study are clearly defined in this part of the research work

3.1. Research Design

This research work is designed to bring plausible argument regarding the spending of government on economic development outcomes in Ethiopia. in order to give sensible proof or disprove to the specified hypothesis with some degree of evidence the researcher applied quantitative data analytics for the collected data taking a time frame form FY 1990/91-2019/20 in analysing expenditure on education and health sector by the government for analysis of the data the researcher used Vector error correction method and co-integration model to analyse the short and long run dynamics that the spending could impact on economic development outcomes in Ethiopia context on the specified period.

3.2. Data Type and Data Source

The type of data to be used in this study is secondary data for 30 years (1990/1991-2019/20) Annual time serious date is applied for the study. Time series econometrics has applications in macroeconomics, but mainly in financial economics where it is used for price analysis of stocks, derivatives, currencies, etc. (Boru, 2017). Dataused in this study are purely secondary data where no primary data is collected. The data are mostly be derived from the website of Central Statistics Authority (CSA) of Ethiopia, Ethiopian Ministry of Finance & Economic Cooperation, Ethiopian National Plan Commission National bank of Ethiopia, United Nation Development Report (UNDP), IMF &World Bank including published documents relevant for the study.

3.3. Method of data Analysis

Descriptive and trend analysis of the dataset were discussed as well econometric analysis were also applied to clearly understand the relationship among the variables using statistical software package EVIEWS Version 10.

3.3.1. Econometrics Model Specification

Human capital plays a critical role in a number of models of endogenous economic growth (Barro, 1991). Endogenous growth theory as developed by Lucas (1988) basically represents an extension of the Solow (1956) neoclassical growth model incorporating positive externalities related to the accumulation of human capital through knowledge

This research study, to better and clearly understand the long run and short run relationship between the variables of our interest, the researcher used vector error correction method as an econometric methodological framework developed by Johansson (1999) where all the variables are integrated of order (I) and unable to employ other method not used due to the fact that, researcher is unable to apply other methods like OLS , ARDL because to apply OLS the series has to be stationary at a unit while to apply ARDL series has to be stationary at different level, so the researcher use vector error correction and co-integration for analysis purpose. Estimate regression is applied to investigate the impact of GDP Per capita, health expenditure, and education expenditure on HDI.

The econometric model will be constructed with time series on years 1999/2000 to 2019/20. The implications of education in economic development have been investigated since the early 1960s by the so-called Human Capital School, which originated at the University of Chicago (Schultz, 1961; Becker, 1964), where expenditure on education was regarded as an investment. Spending on education and health has also been justified in endogenous growth theory (Lucas, 1988; Romer, 1990). In the endogenous growth model, technological progress, which increases productivity and accelerates the pace of growth, can be determined within the model through the formation of human capital. Spending on education and health helps promote efficiency, knowledge and inventions, all of which contribute to the economic growth of a country. Lucas (1988) states

$$y = AK^\alpha (uh)^{1-\alpha} (h_a)^{\gamma} \dots\dots\dots \text{Eq(1)}$$

Where y is output, K is physical capital, u is the fraction of time devoted to productive activities (and the rest to accumulation of knowledge), h is the human capital input and h_a is the average human capital in the economy. Spending on education and health care proceed as human capital inputs.

These inputs contribute to human capital and therefore to output growth through either direct accumulation (uh) or the existing stock of knowledge (ha), which leads to innovation and spills over into the rest of the economy. Moreover, if $\gamma > 0$, then the production function involves increasing returns to scale, where productivity growth is endogen zed in human capital inputs.

The Cobb- Douglas production function was used in the study, with output growth as a dependent variable and human capital growth as explanatory variables. Based on the standard growth accounting model, the influence of human capital on economic development in Ethiopia is examined in this paper.

$$Y_t = AE_t^\alpha H_t^\beta \varepsilon_t \quad ; \quad \alpha, \beta > 0 \dots \dots \dots \text{Eq(2)}$$

Equation (2) represents a Cobb-Douglas production function, where Y_t is output (HDI) per unit of labour, A is total factor productivity, E_t is the spending on education and H_t is the spending on health care, while α , β are the shares of education and health-care spending respectively.

Taking log,

$$\ln Y_t = \ln A + \alpha \ln E_t + \beta \ln H_t + \ln \varepsilon_t$$

Differentiating with respect to “t”, we have:

$$\frac{1}{Y_t} \frac{dY_t}{dt} = \frac{1}{A} \frac{dA}{dt} + \alpha \frac{1}{E_t} \frac{dE_t}{dt} + \beta \frac{1}{H_t} \frac{dH_t}{dt} + \frac{1}{\varepsilon} \frac{d\varepsilon}{dt} \dots \dots \dots \text{Eq(3)}$$

or

$$Y_t = A + \alpha E_t + \beta H_t + \eta_t \dots \dots \dots \text{Eq(4)}$$

Based on theoretical framework developed by mankiw,romer and weil(1992) the following model is specified.

$$\ln \text{HDI}_t = f(\ln \text{LFT}_t, \ln \text{EDUEX}_t, \ln \text{HEALTHEX}_t, \ln \text{GDP Per capita}_t)$$

$\ln \text{HDI}_t$ = Natural logarithm of HDI at time t.

$\ln E_t$ =Natural logarithm of education expenditure at time t.

$\ln H_t$ =Natural logarithm of health expenditure at time t.

Ln GDP Per capita= Natural logarithm of GDP Per capita at time t as Controlled variable

In this study HDI used as a proxy for economic development outcomes. The study also proxy human capital by total government expenditure on education, total government expenditure on health, GDP per capita as controlled variable based on theoretical and empirical literature.

3.4. Estimation technique

This part manages the assessment methodology followed successively in this analysis to appraise the Cointegration models. Fixed and non-stationarity, traces the systems for the assessment of unit root of the factors. Then again, it characterizes cointegration, examines the various techniques for Cointegration, choosing Johansen strategy and blueprints the vector Error Correction (VECM) model utilized in this examination utilizing EVIEW Versions 10.

3.4.1. Unit root Test

Stationarity is bedrock for time series econometric analysis neglected to have such characteristic can bring unwanted result and result for the estimation of our dataset, to get rid of such upsetting outcome, the investigation led test utilizing Augmented Dickey Fuller test to confirmation the information is fixed or not at level or order (1) for al variables under study. Augmented Dickey Fuller (ADF) to test the request for incorporation of both the reliant and autonomous factors.

3.4.2. Stationary series and integrated process

Observational work dependent on time arrangement information frequently accepts that the arrangement are fixed in their levels. To stay away from the circumstance of false regression, it is basic to see whether the connection between financial factors is typical and prepared for examination . To decide the non-fixed property of these time arrangement factors, both in the levels and in the primary distinction, the applicable Dickey Fuller (DF) and Augmented Dickey Fuller (ADF) tests have been applied. A period genuine vavriable is supposed to be fixed if the difference variance and mean are consistent and time free inability to meet the predefined prerequisite the entire calculation will be non sense or unfit to give the fundamental outcome to the examination work under investigation. The fixed interaction is supposed to be joining of request one, indicated by I(1) and the arrangement is fixed, differencing, isn't needed it is coordinated of request zero, meant by I(0). Similarly, a non-fixed arrangement which can be changed in to fixed by differencing it "d" times is supposed to be incorporated of request "d" i.e. I(d)(Tewodros, 2019)

3.4.3. Error Correction Model and Co-Integration

To judiciously analyze the degree to which monetary improvement is identified with government spending, the hypothesis of co-integration and Error correction model (ECM) is applied, with the assistance of this method, it's feasible to look at the short run and since a long run connection between the factors.

3.4.3.1.Co-integration

Co-integration can arise from change in the short run with a long run equilibrium. Existence of co-integration variables in our EViews output shows that all the variables are non-stationary, the deviations (i.e. the residuals from the estimation of the equation) are stationary.

The coefficient estimate from regressions is interpreted as the long-run effects. This thesis basically uses econometric model to come up with its own empirical finding. By applying this model, the researcher is able to analyse short-run and long-run dynamics across human development index and developmental expenditure made by government particularly on spending made on education and health sector using co-integration and VECM so as to arrive at sound finding from the time series data collected across time from FY 1990/1991-2019/20.

Finally, verify for unit root, the most widely applicable tool is applying ADF or PP but most literature in this area apply ADF in for testing a unit root performed in the levels with and without time trend as well as with first difference.

4. RESULT AND DISCUSSTION

The time series information model particular and henceforth plan given in the philosophy area isn't reasonable for VECM assessment. This is a result of the way that most macroeconomic time series contain unit roots and the relapse of one non-fixed series on another is probably going to yield false outcomes. The macroeconomic information for Ethiopia isn't an exemption in such manner. This implies, the information may not be fixed at a level $I(0)$ and subsequently, we can't run. Considering the above avocation, prior to running for any time series assessment technique, the information is prescribed to be checked for fixed.

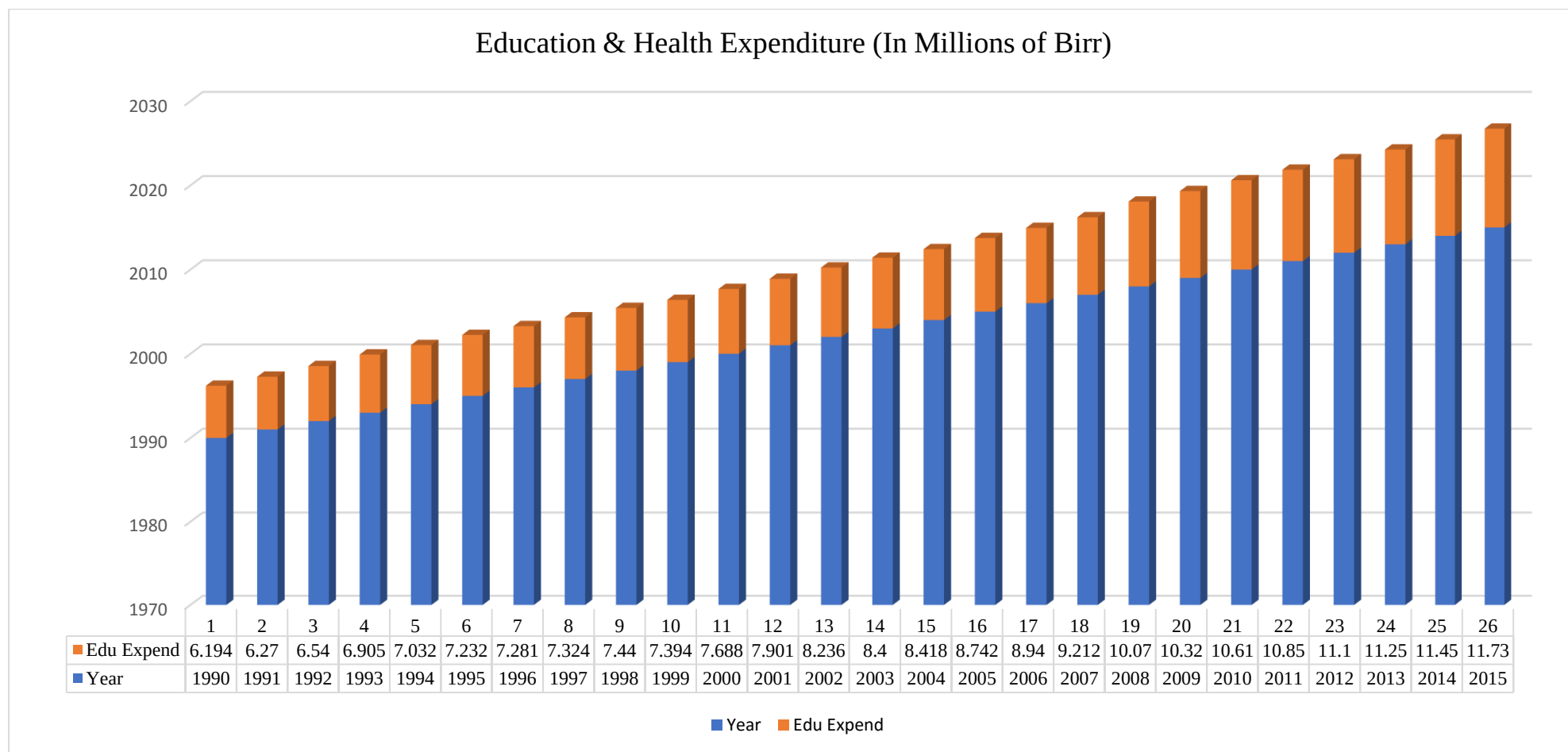
4.1. Descriptive Analytics

4.1.1. Ethiopian Government Trends in Total Government Spending

Looking across an ideal opportunity for as long as twenty years, public uses have ascended at a higher speed in outright terms, yet this is certifiably not a superior perspective on development as it doesn't consider price development after some time (Inflation) into thought. Thus, in the talk of breaking down the patterns of government spending, decision is made to consider ascending in open consumptions as far as rising public area share. For this situation, the way of generally government use is exhibited by considering the proportion of absolute government use to improve HDI, which estimates the measure of government spending comparative with the size of its economy and its formative results in the opposite side of the condition. Strategy and activities taken after toppled of military system, the new government (EPRDF) has taken arrangement instruments and measures on the expenditure side which for the most part centres around controlling the development and justifying its utilization (Berihun,2014).

In controlling the development of use, the public authority utilizes measure to pull out from direct inclusion underway and administration conveyance while opening the entryway for private area interest along these lines, there was a sharp decrease in the overall size of government during the early post-1991 periods. Then again, in Expenditure, the public authority needs to shape its capital and intermittent use to redistribute assets to essential social administrations including Education and wellbeing. It is accepted that these are regions where public speculation is relied upon to work with generally speaking financial exhibitions including private area support (MoFEC, 2019).

The figure 3: below delineate the pattern of government use during past year time spans and its pattern line to take a gander at the bearing of government spending towards it formative results in the nation in making significant and quantifiable change in the country.



Source: Author

Figure 3: Trend on total spending in Education and Health expenditure in Ethiopia

As per African development bank (2004), the underlying phase of the Transitional Government famous general target was given as achieving quick expansive based financial turn of events and as far as macroeconomic approach, this period has seen a stamped takeoff from the past 'Communist' framework or the 'Derg system'. According to Alemayehu (2001:5), this difference lies on openly adopting a market-oriented economic policy. During the start of year 2000 and onwards Ethiopia often seemingly announced her official economic policy direction as being that of “Developmental State Model” which before then was practiced and followed by the East Asian countries, many of which are categorized as “Tiger Economies”. Some authors even argue on the dates that Ethiopia started to follow developmental state model by taking it as far back as year 1995, when the government for the first time was established as Federal Democratic Republic of Ethiopia (FDRE).

Therefore since 2002 the FDRE government came up with successive huge and stretched strategic plans including SDPRP (2002/03-2004/05), PASDEP (2005/06-2010/11) and GTP1 (2010/11-2014/15) and GTP2 (2014/15-2019/20) with the objective of bringing an accelerated and sustainable development, ensuring the fruits of development accrue to the poor people, putting an end to the country's status as an international alms recipient and to progressively improve her standing in the global integration process, realizing accelerated economic development through strengthened free market economy.

According to the Transitional Government of Ethiopia (1994), it was necessary to replace the educational system that served the old discarded order by the new one. The development of the education sector in Ethiopia has been at an early stage. On the eve of the ongoing educational reform process, which began in 1994 following the endorsement of the New Education and Training Policy, enrollment in primary education stood at about 2.81 million. This includes over-age pupils that amount 34 % of the school-age population. Likewise, enrolment ratio in secondary level stood at about 15% and in the third level at 1 %. Compared to African countries, Ethiopia's enrolment ratios fared among the lowest in primary education and somewhat better though below average in secondary education. Similarly, enrollment in all levels of education is male biased, the tertiary level being worse.

The study used dataset for the period ranging from 1999/2000 to 2018/19 is used to describe our independent and dependent variables including human development index and government expenditure on education and health. In addition, GDP per capita is taken as a control variable. Human development Index (HDI) is a dependent variable, whereas, education, health and GDP Percapita are explanatory variables to explain the dependent variable.

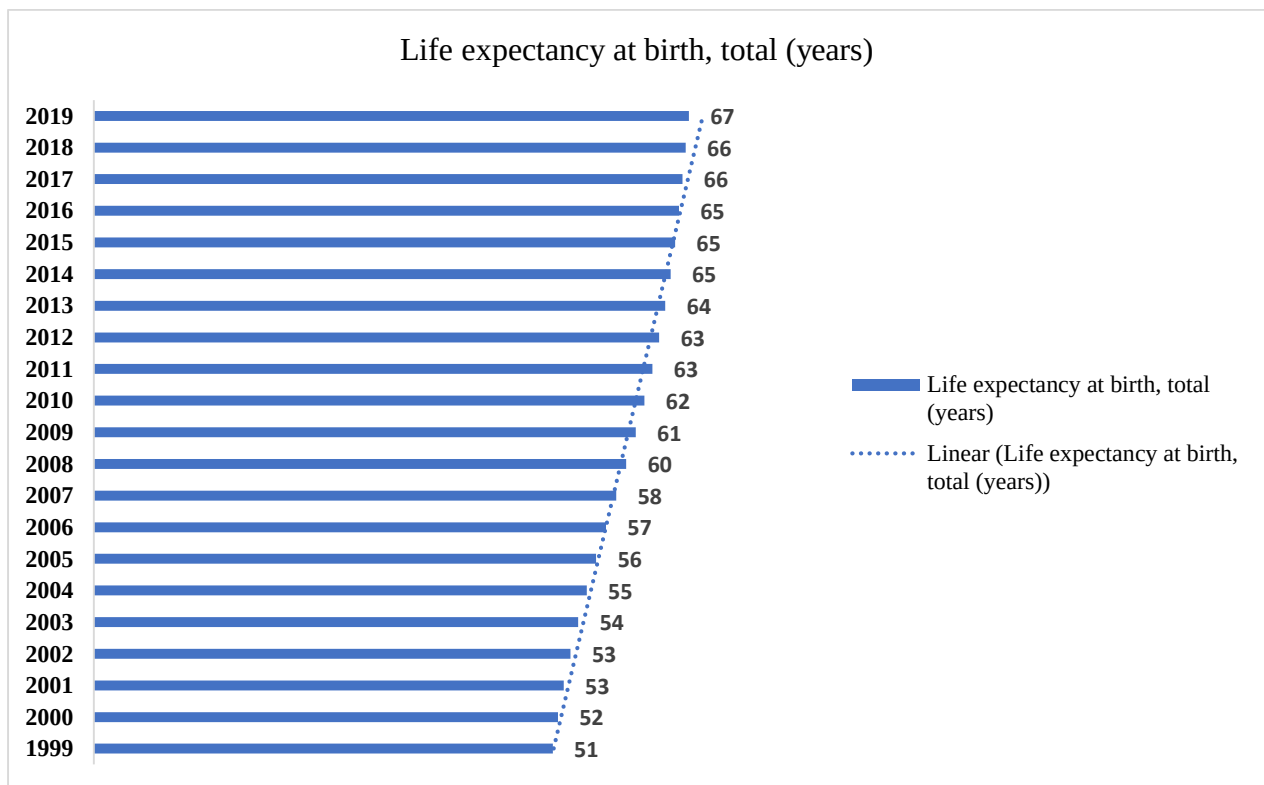
Table 1: Descriptive Statistics

Summary of Descriptive Statistics						
Variables	Mean	Standard Deviation	Maximum	Minimum	Kurtosis	Skewness
HDI	0.38	0.07	0.48	0.29	1.58	0.05
HEALTH	10,578.45	11,637.00	38,382.00	578	2.9	1.05
EDUCATION	29,972.50	32,939.98	102,816.00	1,638.00	2.72	1.05
GDP PERCAPITA	438.68	285.82	970	119.6	1.87	0.47
Note: HDI, Human Development Index						
Source: Author and EVIEW						

From the above Table:1: Summarizes the data using commonly used measure of central tendencies& measure of dispersions like mean, standard deviation, maximum value, minimum value, kurtosis and skewness simply describing variable of interest under study for estimation purpose where, all are stated in local currency of the country except GDP Per capita which is expressed in terms of (USD). This study takes in to account 20 years of time series dataset for analysis purpose. The HDI scoring a minimum value of 0.29 and maximum of 0.48. Health has mean of 0.38 showing a range 578 and 38,382 million minimum and maximum values respectively, exhibiting a standard deviation of 11,637 million. Education on the other hand has shown a mean value of 29,972.50. Showing a range 1,638 and 102,816 million minimum and maximum values respectively reflecting a standard deviation of 32,939.98 million. 578.00to a maximum of 38,382.00million ETB with standard deviation of 11,637 million ETBin the same way GDP Percapita average 438 (In Millions of USD)and varies from 119.6 to 970with a standard deviation of 285.82.

4.1.2. Life Expectancy Trends in Ethiopia

The data from world bank shows us life expectancy at birth looking across from the time period from FY 1990-2020 as it is clearly reflected on the figure -4, the life expectancy at birth is increasing from time to time, it was around 47.1 in 1999 but it is around 67 in 2019 exhibiting a 41.4% growth rate observed. This is one indication that the spending on health sector can bring positive impact on life of citizens as the estimated model also prove it. Keeping other variables affecting health remain constant. Expenditure on health made by the government is crucial element for human resource productivity of having a good stamina creates energy and motivation to labour force as result socio economic development could be enhanced by generating sustained income through increasing the human development index.

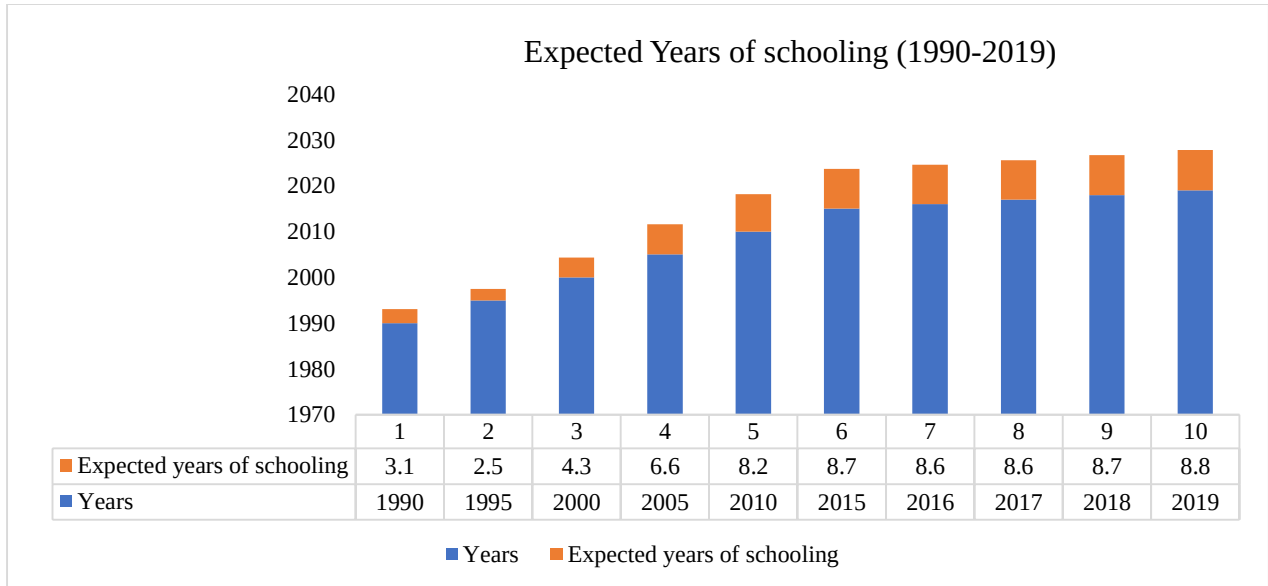


Source: World Bank (2019)

Figure 4: Trend in life expectancy at birth

4.1.3. Expected Year of Schooling

The average expenditure on education in Ethiopia each year has increased for the past 30 years the increase in education expenditure plays pivotal role for the the growth rate of HDI.



Source: Author

Figure 5: The Mean year of schooling and Expected year of schooling (2000-2019)

Considering the time series data starting from FY 1990-2019 (Displayed in interval of Presentation purpose across five-year interval period) perfectly shown in figure 5 that expected years of schooling increase from 3.1 in 1990 to 8.8 in 2019 commendable growth rate around 183.8 was observed this fact shows it is meaningful for government to spend on education sector on bringing positive impact in the estimated model also prove it. Keeping other variables affecting education like quality of education is remains constant.

4.2. Econometric Analytics

4.2.1. Unit Root Test

It is a precondition for any researcher working on time series data to test for unit root before making any analysis from the data set so as to determine the fitted methodological framework because method used depending on the level of series it is integrated whether at unit or integrated of order (I). The non-stationarity of the series in empirical literature used Augmented Dickey-Fuller test and sometimes PP used for analysis. Probability value and ADF test shows higher than the significance level of $\alpha = 0.05$ significance level. The result obtained from the EVIEWS output after running the data shown as all the variables are integrated of order one with proof with their respective p-value using sign at 5% and 10% level of significance.

Table 2: Unit root test result (ADF): Null Hypothesis: the variable has a unit root

At unit level I(0)	t-Statistic With Constant	P-Value	Sig.	Both at trend and Intercept	P-Value	Sig.	I (1)	With Constant	P-Value	Sig	Both at trend and Intercept	P-Value	Sig.Level
LN(HDI)	-0.8622	0.7708	No	-3.3234	0.0925	*	D(LN HDI)	-5.0582	0.0013	***	-4.9368	0.0071	***
LN(EDUCATION)	-1.0619	0.7082	No	-1.9302	0.5999	No	D (LN EDUCATION)	-4.4037	0.0033	***	-4.4159	0.0134	**
LN(HEALTH)	-1.2292	0.6343	No	-2.5181	0.3161	No	D (LN HEALTH)	-5.9074	0.0002	***	-5.7405	0.0012	***
LN(GDP_PERCAPITA)	-1.1596	0.666	No	-2.883	0.1898	No	D(LNGDP_PERCAPITA)	-3.9479	0.0089	***	-3.9328	0.0339	**

Sources: Author & Eviews10 and Excel Arrangement: a: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1% and (no) Not Significant

4.2.2. Lag selection

Lag order specification has robust impact for the subsequent modeling choice. Selecting very few lags could have the tendency to bring an observable difference in the random disturbance term, in the same way selecting many lags will bring fewer degrees of freedom as adding another lag, and adds variables. For determining the appropriate lag length for the VECM model Akaike information criterion (AIC) information criteria were used.

Table 3: Order selection criteria using Akaike information criteria

Optimal lag Used	AIC	HQ	LR	SC	FPE
0	-2.475225	-2.441575	NA	-2.276396	9.89e-07
1	-8.179471*	-8.011222*	103.4384*	-7.185324*	3.47e-09*

Sources: Eviwes10

Guideline: The lower the AIC value, the better will be the model all the time.

4.2.3. Co-Integration Test

Cointegration is an econometric term that simulates the existence of a long-run equilibrium between underlying economic time series that converges with time. As a result, cointegration strengthens the statistical and economic foundation for the empirical error correction model, which combines short- and long-run information in modelling variables. Cointegration testing is a critical step in establishing relationship among the dependent and independent variables.

As per the Eview output for testing the dataset the model exhibit stationary of the residual at a unit and all the variables are integrated of first order (Engle and Granger, 1987). Johansen (1988) test was used to applicable if the co-integrating variables higher than one. The co-integration tests include long run relation among the dependent (HDI) and independent variables (Education, Health and GDP Per capita) over the period 1990/1991-2019/20.

Accordingly, Johansen co-integration test is used in determined lag length with order of one.

Table 4: Co-integration and Johansen Normalization

Summary of Rank Test/Trace for Co-Integration				
H0: There is no co-integrating Equation				
H1: There is co-Integrating Equation				
Target Variable: HDI				
Explanatory Variable: Education, Health and GDP PERCAPITA				
Co-integrating Equation in Number	Eigenvalue	Trace Statistic	Sig.(5%)	P-Value
None *	0.97	98.68	47.86	0.00
At most 1 *	0.67	37.73	29.80	0.01
At most 2 *	0.56	17.76	15.49	0.02
At most 3	0.14	2.80	3.84	0.09

Source: Author

The * shows as shown above explains a rejection/Failed to accept/ our null hypothesis of no co-integrating equations but we can not reject At most 3 because the P- value is grater than 5% while for None, At most 1 and At most 2 ,we reject the null hypothesis.

Based on the results of the trace statistics likelihood ratio test shown in Table 4, there is a co-integration relationship, implying that there is a long-run equilibrium relationship between government spending and human development , and the null hypothesis of no co-integrating vector is rejected at the 5% level of significance in favor of at least one co-integrating vector.

H₀: No long run relationship among the variables (Education=Health=GDP Percapita =0)

H₁: long run relationship among variables (Education=Health=GDP Percapita differ from 0)

The EVIEWS result from Wald test shows that overall test :F-statistic with a value of 4.52 with degrees of freedom(df) with (3,12) corresponding P-value of 0.02 Since, the Probability value is less than 0.05, we reject the null hypothesis and proof of evidence that the variables experience a long run relationship with F-Statistics of 4.52 and Chi-square distribution of 13.55. Since, the Probability value is less than 0.05, we reject the null hypothesis and proof of evidence that the variables experience a long run relationship with F-Statistics of 4.52 and Chi-square distribution of 13.55.

Table 5: Summary of Johansen Normalization

Summary of Johansen Normalization Interpretation			
Co-Integrating Equation by Normalization			
Log HDI	D LN (GDP Percapita)	DLN (Education)	DLN (Health)
1	0.318382	-0.191799	-0.112406
	-0.04069	-0.02272	-0.03467
Coefficient of Adjustment & Standard Error			
DLN(HDI)	-0.619737		
	-0.22451		
D(LN GDP Percapita)	-0.839841		
	-0.45816		
D(LN Education)	0.240397		
	-0.48307		
D(LNHealth)	1.303244		
	-0.87474		

Source: Author

Johansen Normalization Interpretation

LNHDI is positioned as Dependent variable while log GDP Per capita, Education, Health are the Independent variables. Both Education and Health have a positive impact on HDI as we convert the sign while interpreting a Normalized Johansen Co-Integrating Equation. In the long run, log of HDI has a positive impact on log of education and log of health but log of GDP Per capita has a negative impact on log of HDI, on average, Ceteris paribus the coefficient is statistically significant at 5% level of significance. The null hypothesis of no co-integrating equation is rejected against the alternative of co-integrating relationship in the Model.

4.2.4. Vector Error Correction Model (VECM) Model Estimation

Table 6: Vector Error Correction Estimate Results

Dependent Variable : Human Development Index (HDI)				
Independent Variable: Education, Health and GDPPercapita.				
At First order Integration showing long run relationship among the variables				
Cointegrating Eq:	CointEq1			
LNHDI(-1)	1.00000			
LNEDUCATION(-1)	-0.191799			
	-0.02272			
	[-8.44113]			
LNHEALTH(-1)	-0.112406			
	-0.03467			
	[-3.24189]			
LNGDP PERCAPITA(-1)	0.318382			
	-0.04069			
	[7.82490]			
C	1.92734			
At First order Integration showing short run relationship among the variables				
ECM	D(LNHDI)	D(LNEDUCATION)	D(LNHEALTH)	D(LNGDP PERCAPITA)
CointEq1	-0.619737	0.240397	1.303244	-0.839841
	-0.22451	-0.48307	-0.87474	-0.45816
	[-2.76040]	[0.49764s]	[1.48986]	[-1.83308]
D(LN(HDI(-1)))	0.347894	0.663485	-0.075969	1.368906
	-0.20871	-0.44908	-0.81319	-0.42592
	[1.66688]	[1.47745]	[-0.09342]	[3.21402]
D(LN(EDUCATION(-1)))	-0.00314	-0.038244	-0.354701	-0.06088
	-0.10905	-0.23464	-0.42489	-0.22254
	[-0.02879]	[-0.16299]	[-0.83481]	[-0.27357]
D(LN(HEALTH(-1)))	0.232805	0.400886	-0.43219	0.266692
	-0.06545	-0.14082	-0.255	-0.13356
	[3.55707]	[2.84672]	[-1.69484]	[1.99676]
D(LN(GDP PERCAPITA (-1)))	-0.043405	-0.400478	0.211238	0.353695
	-0.11767	-0.25318	-0.45847	-0.24013
	[-0.36887]	[-1.58176]	[0.46075]	[1.47294]
C	-0.028482	0.159358	0.38019	-0.010999

	-0.03481	-0.07489	-0.13561	-0.07103
	[-0.81829]	[2.12783]	[2.80346]	[-0.15485]
R-squared	0.669917	0.468262	0.389108	0.524293
Adj. R-squared	0.532382	0.246704	0.134569	0.326082
F-statistic	4.870899	2.113498	1.528679	2.645125
Sum sq. resids	0.020727	0.095957	0.314643	0.086316
Log likelihood	35.35953	21.56713	10.87929	22.52016
S.E. equation	0.04156	0.089423	0.161927	0.084811
Akaike AIC	-3.26217	-1.729681	-0.542143	-1.835574
S.D. dependent	0.060775	0.10303	0.174061	0.103312
Mean dependent	0.027381	0.214141	0.226491	0.111228

Source :Author

4.2.5. VEC Granger Causality/ Wald Tests

Date: 08/26/21 Time: 07:17			
Sample: 1990 2019			
Included observations: 18			
Excluded	Chi-sq	df	Prob.
D(LHEALTH)	5.774291	1	0.0163
D(LHDI)	4.384075	1	0.0363
All	8.758895	2	0.0125
Dependent variable: D(LHDI)			
Excluded	Chi-sq	df	Prob.
D(LHEALTH)	12.22105	1	0.0005
D(LEDUCATION)	0.076372	1	0.7823
All	12.38765	2	0.0020

4.2.5.1.Causality test for Education

Human capital formation is theoretically related with the development of educational sector which comprises the quality as well as numeric components (expansion of education). As can be seen from the test statistics results, there is causality running from lags of government expenditure on education to HDI which is again consistent to theories and our predictions. Hence, the test result shows that the government's spending on educational sector can be explained by a short run impact that it has in the country's economic development.

4.2.5.2.Causality test for Health

Consistent results to theories and to our predictions is that of government expenditure on health. It appears that the sum of the differenced lags of health has significant contribution to the country's economic development. its impact on economic development in the long term may have contributed to the existence of long run equilibrium. The contribution of health in economic wellbeing of the labor force is something under studied in the Ethiopian context and it is much attributed to economic development than economic growth.

4.2.6. Long run model result

Government's Expenditure in human capital has a favourable and considerable impact on Ethiopia's real per capita growth. This underpins the importance of having a healthy, productive, and well-trained workforce when it comes to implementing government policies, strategies, and initiatives. Investment in human capital stock has externalities that increase labour, capital, and other elements' productivity, which is vital for the production process to continue. The government's high priority for expanding education, and health care could explain the effect. This is in line with Barro and Sala-i-(1995) Martin's and Abdullah et al findings (2008). They discovered that public spending on health and education had a positive and statistically significant influence on real per capita GDP, and that it can help raise private sector marginal productivity indirectly by contributing to human capital accumulation.

The long-run coefficients of education expenditure, and health expenditure are an aligned with theory and are also statistically significant that contribute in economic development outcomes during 1990/91 – 2020/21. It also exhibits the existence of a positive and significant long-run relationship between human capital and economic development.

Co- integrating Equation long run model:

$$LNHDI_t = -1.9 + 0.191LNEDUE_{\text{Exp}} + 0.112LNHEA_{\text{Exp}} - 0.318LN\text{GDPPERCAPITA}$$

Education expenditure by the Ethiopian government have a positive significant impact in the long run, on average, ceteris paribus the coefficient is statistically significant at 5% level of significance, and it has positive relationship with LNHDI. As per the data collected the researcher variable of interest, the output of these estimation is significant in the long run.

The co-integrating coefficient or Speed of Adjustment coefficient: The speed of Adjustment is negative and statistically significant (<0.05) at 10% level of significance to retain its economic interpretation. It is interpreted as departure in one direction, the correction would please back to the other direction to retain equilibrium. 61.9% departure to long run equilibrium corrected each period. The modest estimated coefficient of the error term indicates a moderate rate of

adjustment towards equilibrium, implying that it will take years to fix. As a result, each year, 61.9 percent of deviations from long-run equilibrium are eliminated.

As per the co-integration test there is a strong equilibrium so. It has high policy implication in a way that the dependent variable is significantly responsive to the explanatory variables. It is interpreted as previous year period deviation from long run equilibrium is corrected in the current period as an adjustment speed of 61.9%. Or 61.9% departure to long run equilibrium corrected each period. Since, all the variables are in log-log functional form, interpretation is based on elasticity (Gujirati, 2008). It has high policy implication in a way that the dependent variable is highly responsive to the explanatory variables, the R-Square is around 66.7% indication that the variables are appropriate because of that there is feasible long run relation as the convergence coefficient /error correction coefficient is significant.

A 1% percentage change in education will result in 19.1% change in HDI could be able to impact the value of HDI. The result proves the stated hypothesis under the research hypothesis. The finding of the analysis also reveals that education expenditure by government is able to provide a positive and significant benefits to the increase in the HDI in the long run. The average expenditure on education in Ethiopia each year has increased for the past 20 years, the increase in education expenditure is so significant to have an impact in the long run growth rate of HDI. All the variables are in logarithmic form (log-log functional form), so interpretation is based on elasticity and the sign will be changed while interpreting the result in VECM Model. A 1% percentage change in EDUCATION will result in 19.1% change in HDI. A 1% percentage change in health will result in 11.2% change in HDI. A 1% percentage change in GDP Percapita will result in 3.1% change in HDI.

Health expenditure by the Ethiopian government have a positive significant impact in the long run as per the result of the data on average, ceteris paribus the coefficient is statistically significant at 5% level of significance, and it has positive relationship with LNHDHDI. According to the data gathered from the concerned government establishments, in the long run VECM model shows in Table -6 a coefficient is 0.112 with t-value of 0.03 on health expenditure, meaning interpreted long run result of such model the negative value is interpreted in positive manner A 1% percentage change in HEALTH will result in 11.2% change in HDI at 5% level of significance ,it has positive long run relationship with LNHDHDI while GDP percapita as controlled variable has shown a negative impact on HDI meaning that Even though national income is increasing from time to time the country population is growing at alarming rate so taking the ration income/population is low and the income that the majority of the society earning are not strong enough to crash the living cost on the one hand hardly hit by inflation and

on the other hand it is absorbed by the growing population of the nation. As the finding reveals that A 1% percentage change in government expenditure resulted in (0.0043) decline in HDI unless adjusted for inflation and moderate population growth.

Education expenditure and health expenditure has a long run impact on the Ethiopian economy growth and statistically significant at 10 percent significance level. Concerning the long run positive impact of the education expenditure on human development index which is the proxies of human capital on Ethiopian economic growth, are consistent with the endogenous growth theories (mainly advocated and/or developed by Lucas 1988), Romer (1990) which argue that improvement in human capital (skilled and healthy workers) leads to productivity improvement that enhances output. The result is semi-arguable with Sunday and Elizabeth (2012, as cited in Berihun, 2014), study findings show that government spending on education has little effect on economic growth, but government spending on health, on the other hand, can have a strong and significant impact on the degree of economic growth. The result is also in support empirical study conducted in Bangladesh (2012) that the short-run dynamics among education and health-care spending over the period 1981-2011 is significant. These short-run dynamics move towards the long-run equilibrium state, correcting 64 per cent of the disequilibrium errors of the past periods. It was also found that both education and health-care spending have been contributing to GDP where the gestation lag of education spending is four years and that of health-care spending is one year

According to theoretical literature, education and health are basic objectives of development; they are important ends in themselves. Health is central to well-being, and education is essential for a satisfying and rewarding life; both are fundamental to the broader notion of expanded human capabilities that lie at the heart of the meaning of development. At the same time, education plays a key role in the ability of a developing country to absorb modern technology and to develop the capacity for self-sustaining growth and development. Moreover, health is a prerequisite for increases in productivity, and successful education relies on adequate health as well. Thus both health and education can also be seen as vital components of growth and development as inputs to the aggregate production function. Their dual role as both inputs and outputs gives health and education their central importance in economic development (Todaro, 2012).

The significant role of education and health-care spending in the HDI growth as stated on the literature citing Asian country Singapore may be viewed as a success for domestic policy. In this regard, Osman-Gani (2004) presented an account of macro-level strategies of human capital formation and their success. Particularly since the country's independence, the economy of

Singapore rapidly has been transformed from being a low-income economy to a high-income developed economy. In terms of almost all economic and social parameters, the progress of the country is very impressive. Based on 2011 data, the literacy rate in Singapore is 96.1 per cent, expectation of life at birth is 82 years, labour force participation rate (percentage of economically active persons to the population aged 15 years and older) is 66.1,7 and number of doctors per 10,000 populations is 18. The country's HDI score was 0.889 in 2011 and it rose to the 26th position in the HDI rankings. One of the most important reasons behind the phenomenal success of Singapore is the strong base of human capital which the country has generated through consistent and strategic national policy of spending in the education and health sectors for the development of the country. In the same way, the finding is most likely in a similar fashion Al-Yousif (2008) examined the causal relationship between education expenditure (as a proxy for human capital) and economic growth in the six economies of the Gulf Cooperation Council over the period 1977-2004. Results based on the Granger causality test, within a vector error-correction mechanism, are mixed and varied across the countries. Permani (2009) reviewed the literature on the link between education and economic growth in East Asia and found that education assumes an important role in economic growth, although it is not a singularly important one. Permani (2009) was of the view that the observed two-way causal link between education and economic growth appeared to be ambiguous. Li and Liang (2010) examined the sources of economic growth through the estimation of an augmented Mankiw-Romer-Weil model, which considers human capital in the forms of both health and education for a group of East Asian countries. Empirical results, based on panel data analysis for the period 1961-2007 and subsample estimation for the period following the 1997 Asian financial crisis, exhibit the impact of the stock of health and education on economic growth, that is, that such growth is statistically significant while the impact of health on economic growth is stronger than that of education.

4.2.7. Short run result of the model

LNHDI taken as target variable

$$\Delta \text{HDI}_t = -0.619 \text{ECT}_{t-1} - 0.347894 \Delta \text{LNHDI}_{t-1} - 0.003140 \Delta \text{LNEDUCATION}_{t-1} + 0.232805 \Delta \text{LNHEALTH}_{t-1} - 0.043405 \Delta \text{LNGDP_PERCAPITA}_{t-1} - 0.028482.$$

In the short run with coefficient on health shows 0.23 with respective t-value of 0.06 showing positive relationship in the short run. A rate change wellbeing is related with a 0.23 percent rise in HDI. The coefficient on education shows (0.003) with respective t-value of 0.06 showing a negative relationship in the short run. A rate change wellbeing is related with a 0.003 percent decline in HDI.

The co-integrating coefficient or Speed of Adjustment coefficient is (-0.619) is significant at 10% level showing a P-value of 0.0082 as per the co-integration test there is a strong equilibrium so. It has high policy implication in a way that the dependent variable is significantly responsive to the explanatory variables. It is interpreted as previous year period deviation from long run equilibrium is corrected in the current period as an adjustment speed of 61.9%. Or 61.9% departure to long run equilibrium corrected each period. Since, all the variables are in log-log functional form, interpretation is based on elasticity (Gujarati, 2008). It has high policy implication in a way that the dependent variable is highly responsive to the explanatory variables. A percentage change education expenditure is associated with a 0.3% decrease in HDI on average Ceteris Paribus in the short run. A percentage change health is associated with a 2.3% increase in HDI, on average Ceteris Paribus in the short run. A percentage change GDP Per capita is associated with a 4.3% decrease in HDI on average Ceteris Paribus in the short run.

The study under section raised and clearly state a research hypothesis to prove or disprove by the data finding that statement by reviewing on literature analysis to bring the hypotheses to be statistically tested to fail to reject or reject null hypothesis. Hypothesis (H_{01}): It was hypothesized as Government expenditure on Education has positive and significant impact on economic development outcomes in Ethiopia in the long run, the finding proves that education and government spending has long run relationship. Hypothesis (H_{02}): It was hypothesized in the research hypothesis as Government expenditure on Health has positive and significant impact on economic development in Ethiopia in the long run. which means the expenditure on education is highly responsive to change wellbeing of the society and the result prove the stated hypothesis. Health expenditure variable has t statistics as (0.06) in the long run and the value of 0.232 in the short run with respective P-Value of 0.0009 which is significant at 5% level of significance. A percentage change health is associated with a 0.232 percent increase in HDI on average Ceteris Paribus in the short run. A percentage change GDP Per capita is associated with a 0.04 percent decrease in HDI on average Ceteris Paribus in the short run.

4.2.8. Model Stability

Model stability diagnosis is vital component in estimating a variables of study to avoid random walk and other undesirable result came out from our analysis affect our finding credibility with literature and theory, Figure 7: depicted a square the polynomial root characteristics root lie within the circle. The implication of the points to be lie with the unit circle is the model is more stable and provide more accurate prediction of our estimate (Bazezew, 2014).

4.2.8.1. Model Stability Test

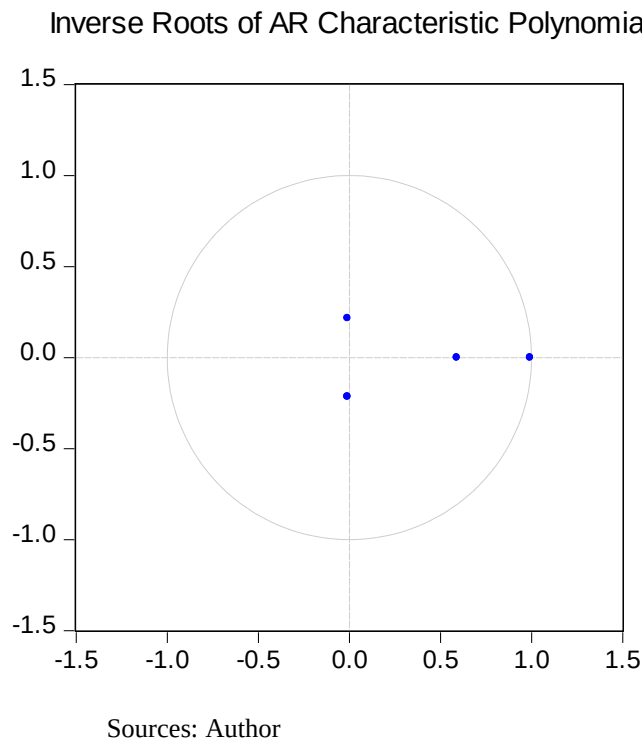


Figure 7::Model Diagnostics

As per the Johansen test and co-integration and unit root test for the residual the study clearly demonstrate a long run relationship between the variables (Tewodros, 2016). In order to look at relationship among dependent and independent the estimated output is presented below

H0: There is serial correlation among the variables

H1: There no serial correlation among the variables

Table 7: Summary for Breusch-Godfrey test

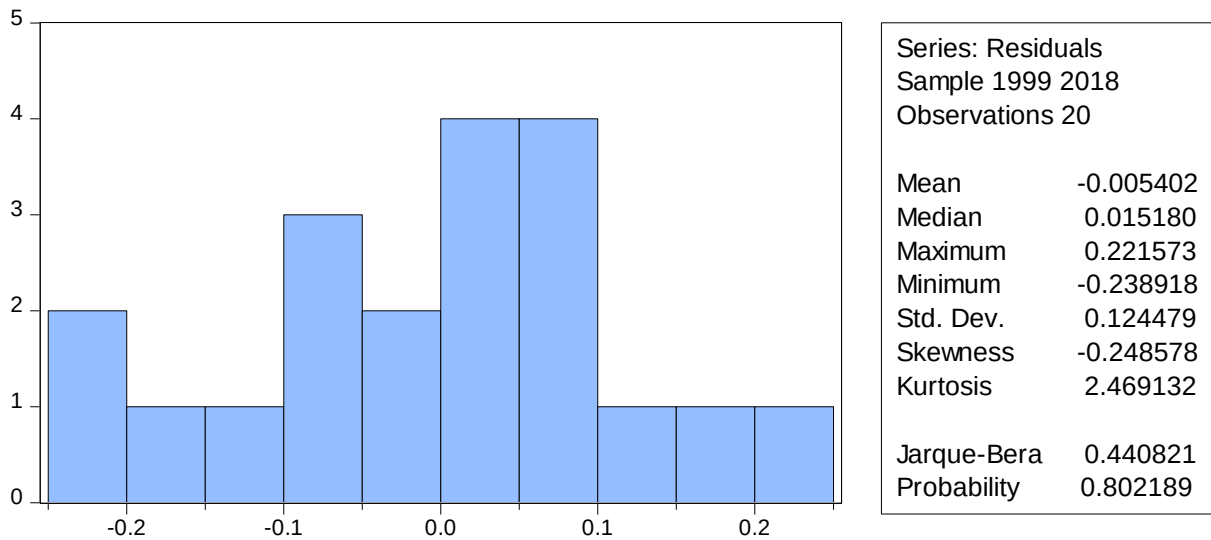
Breusch-Godfrey Serial Correlation			
F-statistic	0.31	Prob. F(1,15)	0.58
Obs*R-squared	0.41	Prob. Chi-Square(1)	0.52

Sources: Eviwes10

The Table-7: Below result reveals there is no serial correlation because the pvalue is above 5% and so the model is fit for analysis. Since the data have a Prob. Chi-Square above 0.05 (5% level of significance) then the dataset is homoscedastic reject the null hypothesis that data set is hetroscedastic. Table 6: clearly shows P-value is above 0.05 at 5%level of significance, there is no serial correlation among the variables.

4.2.8.2. Test for Normality

The other time series model and data test is about the nature of distribution of the residual. The null hypothesis is suggested that the residual is normal distributed. From figure 8, the p-value associated with the Jaque-Berra normality test is larger than the standard significance level (i.e. $0.80 > 0.05$), we fail to reject the null. So the residual is normally distributed.



Source: Author

Figure 8::Normality Test using Histogram

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

Education and health are the lifeblood for economic development of any nation including our country Ethiopia in creating a modern and civilized society. Education is essential for a satisfying and rewarding life and the other hand, health is essential on well being. Health and education can also be seen as vital components of growth and development as inputs to aggregate production function. Educated and healthy society have more tendency to create knowledge based robust and resilient economy.

One of the indicators used to measure the success rate of development of a society is the Human Development Index (HDI) as proxy variable. HDI is a composition index which based on three indicators, namely: health, educational attainment and standard of living (purchasing power). HDI are closely related to explain economic development. Based on the results of combined test, the study conclude that by using the VECM estimate both in short and long run, in Ethiopia, there is also evidence that supports the Romer and Lucas hypothesis.

Rostow-Musgrave hypothesis stated in his hypothesis that during the early phases of economic development, the rate of growth of public expenditure will be very high, because the government supplies the basic infrastructure (social overhead). All variables except GDP Per capita have a positive influence and significant statistically at 10% confidence level in the long run. But empirical studies conducted in west Africa like Nigeria study shows spending education have not any meaningful impact in changing human development index but the society have higher income per capita because of that their HDI is higher in comparison with sub-Saharan African countries like Ethiopia, where as in Ethiopia this research finding shows a positive long run relationship. However, study on sub-Saharan African shows that expenditure on health contributor to economic development. In this case the finding of this thesis work is aligned and share the study on sub Saharan African finding on health expenditure by the government.

Consequently, even though empirical works made by scholar's at different time and theoretical review of respected authors still the area has not yet generalize government spending enhance economic development at all levels. Having said this, the study intended to investigate the influence of government spending on health and education taking GDP Per capita As control variable. So as to get rid of meaningless unit root test were conducted and passed at first difference integration.

The finding from the dataset output run by Eview10 implies that taking time variable long run effect government expenditure on education and health expenditure is significant to impact economic development outcomes and statistically significant at 5 percent level in Ethiopia taking in to account the time period for the past 20 years of historical data.

A 1 percent increase in education expenditure leads to 19.1% percent rise in human development index in the long run by the same token resource a one percent increase in health sector leads to 11% percentage increase in human development index. GDP Per capita as controlled variable is showing negative long run relationship in a way that as Ethiopian population is increasing from time to time at increasing rate with a population of 117 million (CSA, 2021) while total income generated in the country is growing at decreasing rate, so if we divide the country GDP per population the ratio is becoming smaller and smaller.

Even though, the per capita income is increasing from \$ 120 in 1999/2000 to \$1000 in 2020 per annum showing an increasing by \$ 880 in absolute terms but the VECM estimate reveals A 1 percent increase in government expenditure leads to 0.31 percent decrease in human development index in the long run that the people is not entertaining decent standard of living by fulfilling its day to day demand for living by the same token we may think in a way that there may be high income disparity or uneven distribution of resource can be a likely situations for the people to suffer from low quality standard of living .

5.2. Recommendation

The researcher come up with his own finding based on the data analysis result and recommend the following points as a stepping stone for development journey Ethiopia which includes:

- ❖ Even if there is greater stride or improvement on the education and health sector development from time to time in Ethiopia in comparison with command economy of the Derg regime and the previous Imperial period, still more is left to be done due to the dynamic nature of the growing population and digital Economy to cope up with the growing demand in technology and resilience for shocks in the economy like health problem COVID -19 unless the country invest appropriate and reasonable budget in boosting the health sector by making partnership with private investors it may be difficult for the country to maintain the current status quo and to show progress, so meticulous attention has to be given as a major policy issue.
- ❖ In most developed countries, education and health sector are the backbone for country economic development keeping other factors constant it has given more focus to create more knowledgeable and creative society to solve developmental & macroeconomic problems like unemployment through creativity and to integrate knowledge based economy. In addition ,government should do more in improving not only the numbers of developmental sectors like hospitals and schools but also focus on fair distribution of access for health and education at above average level so as to reach to a better level in human development index because such variables plays pivotal role in incorporating a human lives in many dimensions .As per the finding of this research work, spending made by the government on education and health sector could have a potential measurable impact in changing the landscape of economic development of Ethiopia in the long run in one way or another.
- ❖ In an exertion made by the current Ethiopian government to improve better the nature of social prosperity in a given society increased government Spending every year in the wellbeing area assumes urgent part. Expanded government expenditure to augment wellbeing administrations implied that the public will have simple admittance to quality medical care, and moderate to live a sound, seemingly perpetual, adequate sustenance, particularly for the helpless keeping different things constant. Increase in government spending on social wellbeing could potentially bring a social prosperity as showed in human improvement list

of empirical review in Singapore and other Asian economy experience stated in our literature by endogenizing human capital in our economic development model as the theoretical review from endogenous growth model.

- ❖ It is the duty and responsibility of the Federal Democratic Republic of Ethiopia (FDRE) to ensure socio economic prosperity as far as numerous factors to safeguard favorable and agreeable social government assistance to the mass.
- ❖ It would be fine, if the public authority doubts in each planning, particularly in education and health as both pivotal to the general public overall, so the expansion in government budgetought to be taken as a significant issue, in such manner the Ethiopia government give second need(Priority) for wellbeing in budget plan for the monetary period FY 2020/21 the second most noteworthy spending portion, at Birr 56.8bn, with subsidizing in this detail allotted to 47 governmentally regulated colleges for a normal assignment of around Birr 1.2 billion for every University.

5.3. This thesis's limitations and future research

This study examined the effects of government expenditure on education and health by stating a research hypothesis and GDP per capita as controlled variable forthe period 1990/91 and 2019/20 but many other issue has to be futher investigated by adding some other variables due to the new development of various study which criticise HDI as best measure of economic development like income distrbution, gender inequality are not accessed but taking GDP per capita as proxy variable to measure living condition but such variables may have other impact on HDI measurement due to time and resource constraint . The HDI measurement to incorporate variables like inequality, poverty, and gender disparity. A country with a high value for GDP per capita would indicate a developed country, but what if that GNI is reached by marginalizing certain genders or ethnic classes? And what if that GDP is achieved by a small percentage of the population that is wealthy and therefore incorporating such variables by expanding the time coverage aswell can give more sound and plausible argument for other researcher to fill such gap of the study.

REFERENCE

- Abu, N. Abdullahi, U. (2010), "Government Expenditure and Economic Growth in Nigeria, 1970-2008: A Disaggregated Analysis", *Business and Economics Journal*, Volume 4 pages 2-4.
- Abdu, M and Melesse, A. (2014), "Government Spending for Economic Growth in Ethiopia," *Journal of Economics and Sustainable Development*, ISSN 2222-1700 (Paper) ISSN2222-2855 (Online) Vol.5, No.9, 2014.
- Abizadeh, S & Yousefi, M. (1998), "An Empirical Analysis of South Korea's Economic Development and Public Expenditures Growth", *Journal of Socio-Economics*, Vol. 27, pp.687-700.
- Adewara Sunday Olabisi and Oloni, Elizabeth Funlayo (2012), "Composition of Public Expenditure and Economic Growth in Nigeria", *Journal of Emerging Trends in Economics and Management Sciences, (JETEMS)* 3(4): 403-407 (ISSN: 2141-7024).
- Age'nor, P.R.(2007). *The Economic Adjustment and Growth*. New Delhi: Viva books Private Limited.
- Ahsan, S. M., Andy C. K. and Balbir S. S. (1992), "Public Expenditure and National Income Causality: Further Evidence on the Role of Omitted Variables", *Southern Economic Journal*, 58(3), 623-634.
- Ahortor, C. R. K., Adenekan, A. and Ohemeng, W. (2013). "An Estimate of Inflation Threshold in the WAMZ: The Case of Ghana and Nigeria", *Journal of Monetary and Economic Integration*, 11(2), 30-40.
- Alexiou, C. (2009), "Government Spending and Economic Growth: Econometric Evidence from South Eastern Europe (SSE)", *Journal of Economic and Social Research*, Vol.11 (1), pp.1-16.

- Amanja, M. D. and Morrissey. O. (2005), “Fiscal Policy and Economic Growth in Kenya”,
Centre for Research in Economic Development and International Trade
- Aryal, Bibhu Prasad (2006), "Relation between government expenditure and economic growth",
Masters Theses. Paper 804. <http://thekeep.eiu.edu/theses/804>
- Ansari, MI, Gordon, DV & Akumoaah C 1997, “Keynes versus Wagner: Public Expenditure and
National Income for Three African Countries”, *Applied Economics*, Vol.29, pp.543-550.
- Aschauer, D. A. (1989), “Public Expenditure Productive?” *Journal of Monetary Economics*,
23, 177-200.
- A.Ogundipe, A. (n.d.). Government Spending and Economic Growth in Nigeria; Evidence from
Disaggregated Analysis
- Bazezew (2014). Impact of Government Sectoral Expenditure on Economic Growth in Ethiopia
with a particular Focus on Agriculture, Defense, Education and Health Sector
- Bacon and Eltis (1970). Government intervention leads to reduction in private investment
activities and this is known as 'crowding out'.
- Bedru and Achamelew (2017). Expenditures on agriculture, education, to be positive and
statistically significant effect on Ethiopian economic growth.
- Bose, M.E. Haque and D.R. Osborn (2007). The impact of public expenditure on economic
growth is positive, based on a sample of developing countries.
- Burda and Wyplosz, (2001). “Economic growth in cross-section of countries
- Boru (2017). The impact of industry concentration on Performance exploring a comprehensive
bank Performance Model. The case of Ethiopian private banks .
- Barro, R. (1989). A Cross - Country Study of Growth, Saving and Government. NBER Working
Paper No. 2855.

- Barro, R. J. (1990), "Government Spending in Simple Model of Endogenous Growth", *Journal of Political Economy*, 98(5), S103-117.
- Baumol, W .J., Blackman, S.A.B. and Wolff, E.N. (1985), "Unbalanced Growth Revisited: Asymptotic Stagnancy and New Evidence". *American Economic Review* 75(4): 806-816.
- Beck, M. (1976), "The Expanding Public Sector: Some Contrary Evidence", *National Tax Journal*, 29(1): 15-20.
- Baumol, W .J. (1967), "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis". *American Economics Review* 57(3): 415- 426
- Cepheus research (2020).Ethiopian Government Budget Report.
- Chandran Govindaraju et al. (2011).The effect of government expenditure on economic growth in Malaysia.
- Collis and Hussey (2003). (Journal of Ethiopian Studies) towards a history of the fiscal policy of the prerevolutionary Ethiopia state.
- Castles, F.G. and Dowrick, S. (1 990). "The Impact of Government Spending Levels on Medium Term Economic Growth in the OECD, 1 960-1 985", *Journal of Theoretical Policies*, Vol-02, pp.1 73-204.
- Cheng, BS & Lai, T. W. (1997), "Government Expenditure and Economic Growth in South Korea: A VAR Approach", *Journal of Economic Development*, Vol.22, No.1, pp.11-24.
- Chang, T., Liu, W. and Caudill, S. B. (2004), "A re-examination of Wagner's law for ten countries based on cointegration and error correction modelling techniques", *Applied Financial Economics*, Vol. 14, pp.577–589.

Devarajan, S., Swaroop, V. and Zou, H. (1996). "The Composition of Public Expenditure and Economic Growth", *Journal of Monetary Economics*, Vol-37, pp. 313-344.

Dilrukshini, W.A. (2002): "Public Expenditure and Economic Growth: Cointegration Analysis and Causality Testing." *Staff Studies Central of Sri Lanka*, Vol.34 (1), pp.51-68

Dogan, E. and Tang, T.C. (2006) "Government expenditure and national income: causality tests for five South East Asian countries", *International Business and Economics Research Journal*, pp 49-58.

Enders, W. (1995) *Applied Econometric Time Series*, New York: John Wiley & Sons, Inc. E. O. Maku, Does Government Spending Spur Economic Growth in Nigeria, MPRA Paper no.17491, 2009.

Engle, R. and Granger, C., (1987), "Cointegration and error correction: Representation, estimation and testing", *Econometrica*, Volume 55, PP.251-276.

Folster and Henrokson (1997). The impact of government expenditure on economic growth in Nigeria. Wesley University of science and technology on do Nigeria

Gangal and Gupta (2013). examined the influence of government spending on economic growth of India using time series .

Kwendo and Muturi (2015). effect of public spending on economic growth in Burundi, Kenya, Rwanda, Tanzania and Uganda

Kyissima, Pacific and Ramadha (2017) long and short run impact of government expenditure in Tanzania.

M. Dandan, D. (2011). Government Expenditures and Economic Growth in Jordan International Conference on economics and finance research Singapore.

Muhammed & Asfaw (2014).government spending for economic growth. *Journal of Economics and Sustainable Development*, 5(1)66-74.

Malik (2014) Government Expenditure, Economic Development and Economic Growth in Brazil

MOFCE (2019/21): Ministry of Finance and Economic Cooperation.

M. Dandan, D. (2011). Government Expenditures and Economic Growth in Jordan International Conference on economics and finance research Singapore.

Muhammed & Asfaw (2014).government spending for economic growth. *Journal of Economics and Sustainable Development*, 5(1)66-74.

Mulugeta (2012) Government expenditure growth nexus: evidence from Namibia. Research Journal of Finance and Accounting.

Malik (2014) Government Expenditure, Economic Development and Economic Growth in Brazil

MOFCE (2019/21): Ministry of Finance and Economic Cooperation.

Muritala Taiwo (2011): Government Expenditure and Economic Development: Empirical Evidence from Nigeria

Muguro (2017): impact of public expenditure on economic growth in Kenya.

Rostow, W.W. (1960), *The Stages of Economic Growth - A Non Communist Manifesto* (Third Edition). Cambridge: Cambridge University Press.

NBE (2019/21): *National Bank of Ethiopia*.

Niloy, et al.(2007) the growth effects of government spending with a particular focuses on disaggregated government expenditures for a panel of 30 developing countries.

Tajudeen and Ismail (2013) Public Expenditure and Economic Growth in Nigeria.

Tewodros (2016). The Effect of government transportm, infrastructure expenditure on economic growth in Ethiopia.

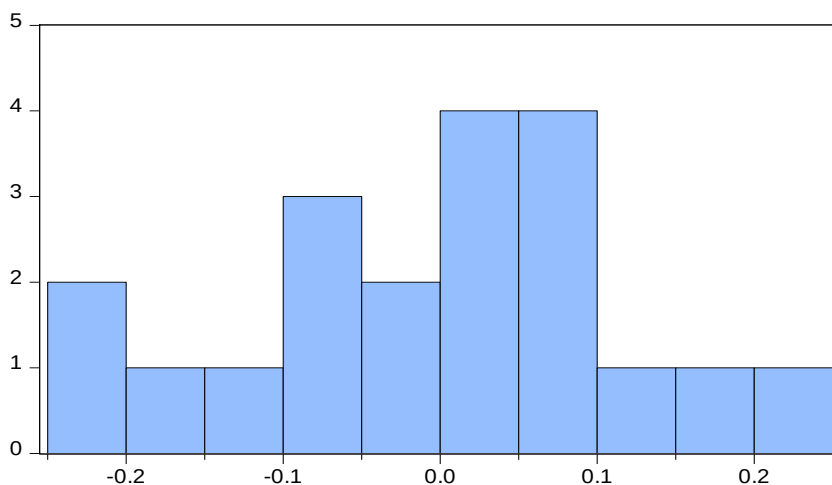
UNDP. (2020). *Human Development Report*.

APPENDIX

1. Appendiix.1 : Unit root test result (ADF)

UNIT ROOT TEST RESULTS TABLE (ADF)					
<i>Null Hypothesis: the variable has a unit root</i>					
	At Level				
		LNHDI	LNEDUCATION	LNHEALTH	LNGDP_PERCAPITA
With Constant	t-Statistic	-0.8622	-1.0619	-1.2292	-1.1596
	Prob.	0.7708	0.7082	0.6343	0.666
		n0	n0	n0	n0
With Constant & Trend	t-Statistic	-3.3234	-1.9302	-2.5181	-2.883
	Prob.	0.0925	0.5999	0.3161	0.1898
		*	n0	n0	n0
	At First Difference				
		dLN(HDI)	dLN(EDUCATION	dLN (HEALTH)	dLN GDP_PERCAPITA
With Constant	t-Statistic	-5.0582	-4.4037	-5.9074	-3.9479
	Prob.	0.0013	0.0033	0.0002	0.0089
		***	***	***	***
With Constant & Trend	t-Statistic	-4.9368	-4.4159	-5.7405	-3.9328
	Prob.	0.0071	0.0134	0.0012	0.0339
		***	**	***	**

2. Appendix 2: Diagnostics test for Normality test



Series: Residuals	
Sample 1999 2018	
Observations 20	
Mean	-0.005402
Median	0.015180
Maximum	0.221573
Minimum	-0.238918
Std. Dev.	0.124479
Skewness	-0.248578
Kurtosis	2.469132
Jarque-Bera	0.440821
Probability	0.802189

Source: EVIEW 10

3. Appendix 3: Test for Homoscedasticity

F-statistic	0.597785	Prob. F(3,16)	0.6256
Obs*R-squared	2.015759	Prob. Chi-Square(3)	0.5691
Scaled explained SS	1.103447	Prob. Chi-Square(3)	0.7762

- ✓ Since the data have a Prob. Chi-Square above 0.05 (5% level of significance) then the dataset is homoscedastic reject the null hypothesis that data set is heteroscedastic.

4. Appendix 4: Test for serial Autocorrelation

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	11.38504	16	0.7851	0.640087	(16, 15.9)	0.8090

5. Appendix 5: Co-Integration Test

Cointegration Rank Test (Trace)				
Number of Co-Integrating Equations	Eigenvalue	Trace Statistic	Sig.Level	Prob.**
None *	0.966162	98.67918	47.85613	0.0000
At most 1 *	0.670198	37.72785	29.79707	0.0050
At most 2 *	0.564523	17.76112	15.49471	0.0224
At most 3	0.143940	2.797475	3.841466	0.0944
Trace test indicates 3 cointegrating eqn(s) at the 0.05 level				
Co-Integration Coefficient with Normalization(standard error in parentheses)				
HDI	EDUCATION	HEALTH	GDP PERCAPITA	
1.000000	-0.191799	-0.112406	0.318382	
	(0.02272)	(0.03467)	(0.04069)	
Coefficients of Adjustment (standard error in parentheses)				
HDI	-0.619737			
	(0.22451)			
EDUCATION	0.240397			
	(0.48307)			
HEALTH	1.303244			
	(0.87474)			
GDP PERCAPITA	-0.839841			
	(0.45816)			

Note: All the variables are in log form with lag length of one and at first difference

6. Appendix 6: VECM Estimate

Dependent Variable : Human Development Index (HDI)				
Independent Variable: Education, Health and GDPPercapita.				
At First order Integration showing long run relationship among the variables				
Cointegrating Eq:	CointEq1			
HDI	1.00000			
EDUCATION	-0.191799			
	-0.02272			
	[-8.44113]			
HEALTH	-0.112406			
	-0.03467			
	[-3.24189]			
GDP PERCAPITA	0.318382			
	-0.04069			
	[7.82490]			
C	1.92734			
At First order Integration showing short run relationship among the variables				
ECM	Δ HDI	Δ EDUCATION	Δ HEALTH	Δ GDP PERCAPITA
CointEq1	-0.619737	0.240397	1.303244	-0.839841
	-0.22451	-0.48307	-0.87474	-0.45816
	[-2.76040]	[0.49764]	[1.48986]	[-1.83308]
HDI	0.347894	0.663485	-0.075969	1.368906
	-0.20871	-0.44908	-0.81319	-0.42592
	[1.66688]	[1.47745]	[-0.09342]	[3.21402]
EDUCATION	-0.00314	-0.038244	-0.354701	-0.06088
	-0.10905	-0.23464	-0.42489	-0.22254
	[-0.02879]	[-0.16299]	[-0.83481]	[-0.27357]
HEALTH	0.232805	0.400886	-0.43219	0.266692
	-0.06545	-0.14082	-0.255	-0.13356
	[3.55707]	[2.84672]	[-1.69484]	[1.99676]
GDP PERCAPITA	-0.043405	-0.400478	0.211238	0.353695

	-0.11767	-0.25318	-0.45847	-0.24013
	[-0.36887]	[-1.58176]	[0.46075]	[1.47294]
C	-0.028482	0.159358	0.38019	-0.010999
	-0.03481	-0.07489	-0.13561	-0.07103
	[-0.81829]	[2.12783]	[2.80346]	[-0.15485]
R-squared	0.669917	0.468262	0.389108	0.524293
Adj. R-squared	0.532382	0.246704	0.134569	0.326082
F-statistic	4.870899	2.113498	1.528679	2.645125
Sum sq. resids	0.020727	0.095957	0.314643	0.086316
Log likelihood	35.35953	21.56713	10.87929	22.52016
S.E. equation	0.04156	0.089423	0.161927	0.084811
Akaike AIC	-3.26217	-1.729681	-0.542143	-1.835574
S.D. dependent	0.060775	0.10303	0.174061	0.103312
Mean dependent	0.027381	0.214141	0.226491	0.111228

7. Appendix 7: Summary of the Equation with the respective P-Value for test of significance to t-statistics .

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.619737	0.224509	-2.760405	0.0082
C(2)	0.347894	0.208710	1.666877	0.1021
C(3)	-0.003140	0.109051	-0.028794	0.9771
C(4)	0.232805	0.065449	3.557066	0.0009
C(5)	-0.043405	0.117669	-0.368875	0.7138
C(6)	-0.028482	0.034807	-0.818288	0.4172
C(7)	0.240397	0.483070	0.497645	0.6210
C(8)	0.663485	0.449075	1.477447	0.1461
C(9)	-0.038244	0.234642	-0.162990	0.8712
C(10)	0.400886	0.140824	2.846717	0.0065
C(11)	-0.400478	0.253185	-1.581761	0.1203
C(12)	0.159358	0.074892	2.127828	0.0385
C(13)	1.303244	0.874744	1.489858	0.1428
C(14)	-0.075969	0.813185	-0.093421	0.9260
C(15)	-0.354701	0.424890	-0.834806	0.4080
C(16)	-0.432190	0.255004	-1.694837	0.0966
C(17)	0.211238	0.458467	0.460749	0.6471
C(18)	0.380190	0.135615	2.803456	0.0073
C(19)	-0.839841	0.458159	-1.833079	0.0730
C(20)	1.368906	0.425917	3.214022	0.0023
C(21)	-0.060880	0.222542	-0.273567	0.7856
C(22)	0.266692	0.133562	1.996765	0.0515
C(23)	0.353695	0.240128	1.472942	0.1473
C(24)	-0.010999	0.071030	-0.154849	0.8776

