

# The Contribution of Export Diversification for Economic Growth in Ethiopia

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## Abstract

This paper has investigated the long-run performance (effect) of export and its volatility on GDP growth in Ethiopia. To address this research topic the paper has used extended Cobb-Douglas production growth model running Ordinary Least Square econometric approach. The study have been used five variable inputs i. e, export of good and service, Gross capital formation as proxy variable of stock of capital, export volatility index, Hirschman concentration index and labor and Real GDP as a dependent variable. The coverage of the time series data was from the year 1980 to 2012. According to the empirical finding of the paper, the long run effect of export seems to have positively statistical effect on output growth in case of Ethiopia. The study suggests that the country should have to diversify its export commodities where it has comparative advantage. In addition, the country should also increase its trading partner countries.

**Keywords:** Export diversification, Economic growth, Volatility, Overall growth.

## 1. Introduction

Motivated by the desire to spread risks, raising capacity utilization and increasing total export diversification has been the concern of most developing countries including Ethiopia. Despite such concern, however, very few developing countries in east and south east Asia (such as south Korea, Taiwan, Hong Kong, Singapore, Malaysia and Thailand) as well as developing America (such as Brazil, Argentina and Mexico) have actually managed to achieve a diversified export structure with greater volume of manufacturers. (BerhaneLakew, 2003)

Foreign trade plays decisive role in the economy of developing countries. However, the efforts of developing countries towards expanding their foreign exchange earnings are largely transferred by different constraints. The main constraints on domestic front include smallness of the volume of exportable products, the limited degree of diversification composition of exports. The fact that exports are made up of mainly unprocessed primary products on the external front show the demand for price of primary products excessive composition among developed countries. The fact that developing countries are limited industrial products with higher price relative to those primary products (WTO, 2003).

The overall performance of Africa in terms of export diversification has been far from satisfactory and most countries continued to be totally dependent on a few traditional exports. As argued by the world bank (2000), many African countries have lost market share in their traditional exports while at the same time to achieve significant export diversification in the post 30 years, such unsatisfactory performance given the regions huge potential for more diversified production and export signify the existence of same constraints either in the supply or demand side or both (BrhanuLakew, 2003).

Like other sub-Sahara Africa economies, the Ethiopia economy is essentially agricultural based and highly dependent on earnings of fragmented household agricultural activities. (KagneW Welde, 2007).

This study will throw light on the role for diversifying Ethiopia export in combating the earnings fluctuations and examine to which the problem is transmitted in to the growth of the country's economy. The study will also identify the kinds of commodities in which they contribute considerably to the stability of the country's export earnings.

The potential higher growth in Ethiopia failed to be realized partly on account of policy formulation and implementation and partly because of various adverse shocks. Economic activity in Ethiopia was adversely affected by both draught and war. Moreover, weak price for its main exports (coffee) have been causing export earning instability. (Shewangizaw Silesih, 2003)

The Ethiopia economy is agricultural commodities dominate the export basket, basically coffee. Although the focus of the economic reform program has been to make exports as an engine of growth, it does not seem that the government's attempt has brought the required results and thus whether exports determine GDP growth to be empirically probed (KagneW Wolde, 2007).

In Ethiopia most of agricultural production is undertaken by peasants, who do not have enough knowledge about how to manage and control efficiently allocated inputs of production.

Ethiopia's export portfolio is characterized by a highly concentrated on a few groups of commodities (coffee, sometimes called a one group economy) which are highly vulnerable to change in price of primary commodities. Needless to say, Ethiopia is a price taker in almost all of its export commodities. The world price Ethiopia coffee usually depends on the performance of the major coffee suppliers (like Brazil and Vietnam) to the world market.

Therefore, the study attempts to examine the possible supply and demand side causes and the extent to which the problem is transmitted into the overall economy and causing aggregate income here by deterring export performance and regarding economic growth. Finally, the study focus on what role export diversification will play in reducing the variability of export earnings and enhance economic growth. More specifically, the study has the following objectives.

- ✦ To highlight possible intervention areas for export growth and diversification.
- ✦ To assess whether there is diversification of export sector.
- ✦ To investigate the relationship between export of the country and economic growth using econometric model

## 2. Methodology of the study

### 2.1 Data Type and Source

The study is depending on time serious secondary data which collected from domestic and international publications. The source of domestic secondary data collected from National Bank of Ethiopia (NBE), Central statistical Authority (CSA) and Ethiopia Economic Association (EEA). World Bank (WB), International Monetary Fund (IMF).

### 2.2 Model Specifications

The theoretical framework of this study is a Cobb-Douglas production function model developed by neo classical school.

$$Y(L, K) = AL^\delta K^{1-\delta} \quad (1)$$

Where,  $0 < \delta < 1$

L is labor input that is total number of person hours worked in a year

K is capital input that is the monetary worth of all machinery, equipment and building

A is total factor productivity

$\delta$  is the output elasticity of labor

$1-\delta$  is the output elasticity of capital

$1-\delta + \delta = 1$ , Constant Return to scale

But in this study the researcher extended the above neo classical growth model by including exports of goods and services, Hirschman concentration index and export instability index as additional determinants of economic growth in Ethiopia.

$$\log RGDP = \beta_0 + \beta_1 \log L + \beta_2 \log GCF + \beta_3 + TX + \beta_4 HRCI + \beta_5 EXVi + Ut \quad (2)$$

Log RGDP is the logarithm of output (Real GDP).

Log L is the logarithm of labor force which 15- 64 age groups

Log GCF is logarithm of gross capital formation

TX is the of total export of goods and services

HECXI is Hirschman concentration index

EXVi is of export instability index

$\beta_i$  (i = 0, 1, 2, 3, 4, and 5) are parameters to be estimated and t is time period.

## 3. Results and Discussions

### 3.1 Export Strictures of Ethiopia

In Ethiopia the export sector depends on very few primary products. The contribution non agricultural products to export are almost zero.

**Table 1 Commodities structure of export**

| Commodities           | Percentage of total share export |                 |                 |
|-----------------------|----------------------------------|-----------------|-----------------|
|                       | 1980/81-1989/90                  | 1990/91-1999/00 | 2000/01-2010/11 |
| Coffee                | 62.98%                           | 59.99%          | 32.15%          |
| oil seeds             | 1.98%                            | 4.33%           | 15.78%          |
| hides and skins       | 12.84%                           | 9.91%           | 4.88%           |
| Pulses                | 2.51%                            | 2.46%           | 4.83%           |
| meat and meat product | 0.59%                            | 0.57%           | 1.64%           |
| Others                | 19.10%                           | 22.75%          | 40.72%          |

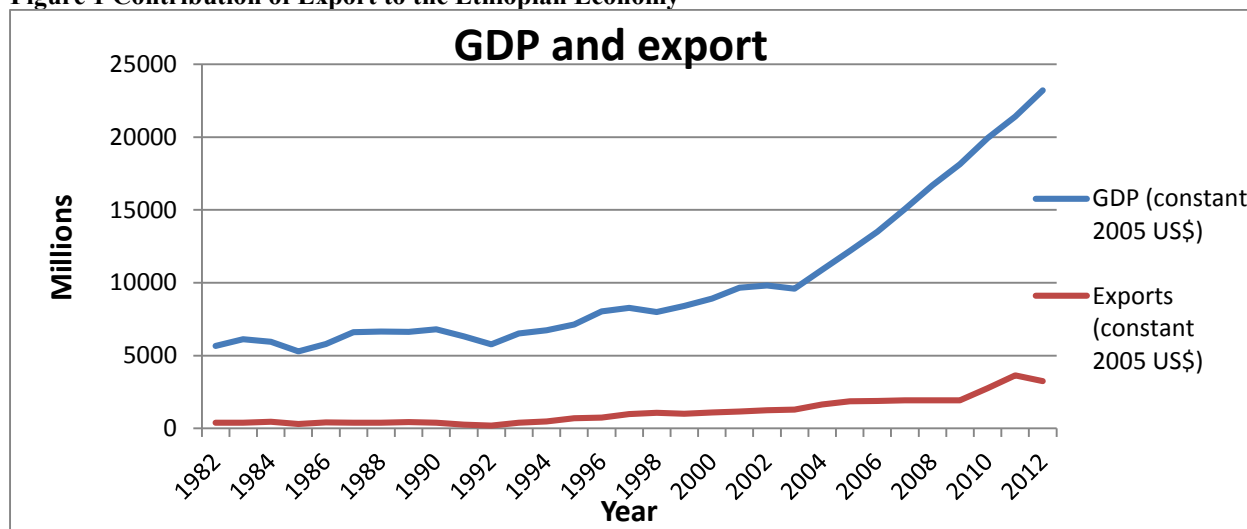
Source: NBE, 2012

The major exports of the country are coffee, oilseed, hides and skin, pulses, chat and meat and meat products. Coffee still has taken the dominance of the country export than others commodities. The volume of coffee export share shows increment form time to time.

### 3.2 The Role and Contribution of Export in the Ethiopian Economy

Like in most of the Sub-Sahara African and other developing countries, exports can play a significant role in the growth and performance of the Ethiopian economy.

**Figure 1 Contribution of Export to the Ethiopian Economy**



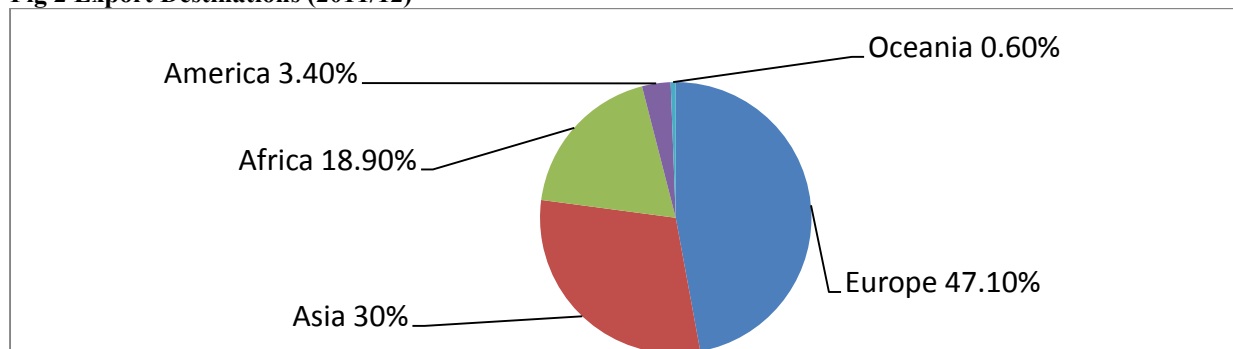
Source: IMF, 2012/13

It can be seen that on average exports contributed about 9.9 percent to GDP during the past three decades. The share of exports in GDP was the highest during the present government as compared to the former ones. The highest share was recorded in the period 2002-2012 which was about 13.6 percent of GDP, the lowest in period 1981/82 to 1990/91 (about 6.4 percent). At the end of the Derge regime in 1991/92 the export share to GDP was the lowest and worse.

### 3.3 Major Destinations of Ethiopia's Exports in 2011/12

Ethiopia's merchandise exports have vast market in Europe, accounting for 47.1 percent of the total merchandise exports. Within European countries, Switzerland, accounting for about 38.6 percent of the total exports, was the largest market mainly for gold. Germany, the second important market in the continent accounting for 20.7 percent, mainly imported coffee, textile & garments, flower and leather & leather products. The Netherlands, constituting 14.6 percent of Ethiopia's export to Europe, was an important export destination primarily for flower, gold, vegetable and coffee. Italy with 5.4 percent of the total Ethiopian exports to the Europe was the market for coffee, leather & leather products, textile & garment and pulses. About 30 percent of the total Ethiopian exports were shipped to Asian market, of which China accounted for 34.6 percent, Saudi Arabia 21.7 percent, United Arab Emirates 8.1 percent, Israel 6.4 percent and Japan 4.8 percent. The prime export items shipped to China included oilseeds, leather & leather products, mineral products, natural gums and vegetables. Coffee, meat & meat products, oilseeds, live animals and flower were exported to Saudi Arabia. Meat & meat products, pulses, live animals, oilseeds, vegetables, natural gum, flower and food were the major export products sold to United Arab Emirates. Israel bought mainly oilseeds, coffee and vegetables while Japan imported mainly coffee, oilseeds, and flower.

**Fig 2 Export Destinations (2011/12)**



Source: NBE, 2012/13

Meanwhile, about 18.9 percent of Ethiopia's total exports went to African nations of which Somalia, Sudan, Djibouti, and Egypt together accounted for 93.3 percent of the total exports to the continent.

Exports to Somalia mainly included vegetables, live animals and chat. Live animals, coffee, pulses and

spices were the main exports to Sudan. Djibouti imported vegetables, live animals, chat, textile & garments, fruits and pulses whilst Egypt bought live animals, oilseeds, meat & meat products and pulses. Ethiopia's exports to American accounted for 3.4 percent of the total export during 2011/12 of which United States and Canada together made up 92.5 percent.

The United States imported mainly coffee, oilseeds, mineral products and leather & leather products while Canada mainly bought coffee.

### 3.4 Unit Root Test

The estimation time series model starts by checking either the variables are stationery or not and Augmented Dickey-Fuller test was used for testing stationery of variables. Table (1) and (2) presents the results of Augmented Dickey Fuller (ADF) test. The result showed that all the variables were non stationary at level. But they become stationary at their first difference.

**Table 2: Unit Root Test of Variables at a Level**

| Variables [lags] | With constant |        |        | With constant and trend |        |        |        |
|------------------|---------------|--------|--------|-------------------------|--------|--------|--------|
|                  | 0             | 1      | 2      | 0                       | 1      | 2      |        |
| Log(RGDP)        | 4.11          | 2.542  | 2.833  | -0.438                  | -0.852 | -0.101 |        |
| Log (LF)         | 2.754         | 2.078  | 1.204  | 0.511                   | 0.843  | -0.333 |        |
| Log (GCF)        | 1.636         | 2.156  | 1.763  | -2.289                  | -1.59  | -1.904 |        |
| TX               | 2.451         | 1.156  | 3.444  | -1.12                   | -1.539 | -0.291 |        |
| EXVI             | -1.101        | -1.137 | -0.782 | -2.267                  | -2.672 | -1.673 |        |
| HRCI             | -2.13         | -1.29  | -0.56  | -2.369                  | -2.895 | -1.752 |        |
| Critical Values  | 1%            | -2.649 | -2.65  | -2.652                  | -4.316 | -4.325 | -4.334 |
|                  | 5%            | -1.95  | -1.95  | -1.95                   | -3.572 | -3.576 | -3.58  |
|                  | 10%           | -1.603 | -1.602 | -1.602                  | -3.223 | -3.226 | -3.228 |

Source: Author's own estimation

**Table 3: Unit Root Test of Variables at First Difference**

| Variables [lags] | With constant |           |           | With constant and trend |           |          |        |
|------------------|---------------|-----------|-----------|-------------------------|-----------|----------|--------|
|                  | 0             | 1         | 2         | 0                       | 1         | 2        |        |
| Log(DRGDP)       | -5.774***     | -2.773*** | -1.15     | -8.179***               | -5.114*** | -2.821   |        |
| Log (DLF)        | -4.223***     | -1.651*   | -1.169    | -6.322***               | -2.853    | -2.338   |        |
| Log (DGCF)       | -6.820***     | -3.126*** | -3.068*** | -7.799***               | -3.926**  | -4.320** |        |
| DTX              | -3.859***     | -4.649*** | -1.727**  | -4.672***               | -6.844**  | -4.184** |        |
| DEXVI            | -5.258***     | -5.432*** | -3.672*** | -5.213***               | -5.461*** | -3.795** |        |
| DHRCI            | -6.455        | -3.279    | -1.487    | -8.229***               | -5.194*** | -2.835   |        |
| Critical Values  | 1%            | -2.65     | -2.652    | -2.654                  | -4.33     | -4.334   | -4.343 |
|                  | 5%            | -1.95     | -1.95     | -1.95                   | -3.58     | -3.58    | -3.584 |
|                  | 10%           | -1.602    | -1.602    | -1.602                  | -3.23     | -3.228   | -3.23  |

Source: Author's own estimation

\*\*\* Stationary at 1%, 5%, and 10%

\*\* Stationary at 5% and 10%

\* Stationary at 10%

### 3.5 Result of Co integration Test

The next step is to test whether the presence of long run equilibrium relationship among variables or not. The study used Engle-Granger (EG) approach to perform the co-integration test and it was found that the residual is stationary at level using Augmented Dickey Fuller test (ADF) at 1%, 5 % and 10% critical value level of significance which is as shown in table 4.3.

**Table 4 co-integration residuals test result**

|                    | Test statistics | 1% Critical value | 5% critical value | 10% critical value | P value |
|--------------------|-----------------|-------------------|-------------------|--------------------|---------|
| Predicted residual | -3.823***       | -3.702            | -2.980            | -2.622             | 0.002   |

Source: Own Estimation

\*\*\* Residual is stationary at Level

The fact that the residual is stationary implies that the variables are co-integrated and the null hypothesis of no co-integration among the variables is rejected at the 1%, 5% and 10% levels of significance. The results thus demonstrate that the considered variables are co integrated in that there is a long run equilibrium relationship among them and the existence of causality for instance, between export and GDP in at least one direction.

### 3.6 Estimates of Long run and Error Correction Model

**Table 5:** Estimation of Long Run Elasticity

```
. reg logrgdpt loglt logkt tx exvi hirexcin
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| Source   | SS         | df | MS         |                 |          |  |
|----------|------------|----|------------|-----------------|----------|--|
| Model    | 1.14052183 | 5  | .228104366 | Number of obs = | 33       |  |
| Residual | .029250749 | 27 | .001083361 | F( 5, 27) =     | 210.55   |  |
|          |            |    |            | Prob > F        | = 0.0000 |  |
|          |            |    |            | R-squared       | = 0.9750 |  |
|          |            |    |            | Adj R-squared   | = 0.9704 |  |
| Total    | 1.16977258 | 32 | .036555393 | Root MSE        | = .03291 |  |

| logrgdpt | Coef.     | Std. Err. | t     | P> t  | [95% Conf. Interval] |          |
|----------|-----------|-----------|-------|-------|----------------------|----------|
| loglt    | 2.645149  | 1.085784  | 2.44  | 0.022 | .4173035             | 4.872994 |
| logkt    | .3343496  | .0589619  | 5.67  | 0.000 | .2133698             | .4553294 |
| tx       | 2.27e-06  | 1.00e-06  | 2.27  | 0.031 | 2.22e-07             | 4.32e-06 |
| exvi     | .0791405  | .0344308  | 2.30  | 0.030 | .0084943             | .1497867 |
| hirexcin | -.0097204 | .1597462  | -0.06 | 0.952 | -.3374925            | .3180517 |
| _cons    | -.7217775 | 1.918839  | -0.38 | 0.710 | -4.658909            | 3.215354 |

According to Neoclassical theory, the results of labor and capital of production are expected to have signs of non-negatives. Means neoclassical theory argues that these two factors labour and capital (L and K) have positively impact on output growth due to its crucial benefit contribution of forwarding GDP by creating efficiency. And in this study labor and capital showed a statistically positive effect on the output growth at 1%, 5 % and 10 % level of significance. That means labor and gross capital formation have significant effect on the long-run output growth in case Ethiopia. Means that;

- When labor force increases by 1%, the Ethiopian economy (real GDP) rises by 2.65% *citrus paribus*.
- Real GDP of a country increases by 0.33% when there is 1% increment in its gross capital formation, other things remain unchanged.

Regarding to export; most empirical economic research supports the premise of export led economic growth hypothesis. However, other economic research opposed the hypothesis. For instance popular economists, Karonis (1984) and Ram (1985) finding had showed export positively impact on output growth. Other economists, Tung and Marshal (1985) did not find much support from the export-led economic growth hypothesis. The regression result has showed that the export variable has a positive coefficient (value 2.27) in which the variable is statistically significant, and from this it can be concluded that obviously export has a positive impact on output growth in case of Ethiopia. Other things remaining constant 1 unit increase in the Ethiopian Export leads to 2.27% rise in output (real GDP) of a nation.

The variable for export volatility has positive sign and its coefficient (0.0791) and the variable is statistically significant at 5% and 10% level of significance. But the result of Hirschman concentration index is insignificant in at 1%, 5% and 10% level of significance. For a fraction or 0.01 unit increases in concentration in commodity exported RGDP decrease by 0.0097%. Thus Hirschman concentration index have negative and insignificant relation with economic growth of the country.

### 3.7 Diagnostic Tests

Diagnostics test are usually undertaken to detect model misspecification and as a guide for model improvement. And it is a must to test the data for different diseases which would mislead the output and end up with wrong interpretations and conclusions. To this end different tests namely: Breusch-Godfrey LM test for autocorrelation, Jarque-Bera Normality test, Chow Breakpoint Test for stability of parameters, Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity, Ramsey RESET test and ARCH, were employed to assure the robustness of the model.

### 4. Conclusion

Despite the focus on export diversification in the development plans of the country (Ethiopia), the export pattern is still dominated by traditional products. The country's export sub-sector is highly dependent on agricultural sector; particularly on few primary products namely coffee, chat, flower, etc. in group known as cash crops. The central question of this paper was to study whether exports contribute to economic growth or not in the Ethiopian context using a time series econometric model. Prior to the estimation of the specified model, tests for stationary were carried out using the Augmented Dickey-Fuller tests. The results from the unit root testing revealed all variables are non stationery at a level but they are stationery at first difference. The study used Engle-Granger (EG) approach to perform a co-integration test and it was found that there is long run relationship among the variables.

The empirical result obtaining from the study shows that capital formation and labour has a positive and

significant contribution to boost economic growth of the country. Related the relationship between export and economic growth of the country it was found to be positively related and statistically significant, supporting the export-led growth hypothesis. As the result the country needs to strengthen export performance capacity and to promote diversification in the sector to fully exploit the benefits of the sector and achieve sustainable economic growth.

## References

- *Amin Gutiérrez de Piñeres, S. and Ferrantino, M. (1997):* Export Diversification and Structural Dynamics in the Growth Process: the case of Chile, *Journal of development Economics*, 52, pp375-391
- Alemayehu G. (1999), "The Ethiopia economy problem and prospect" Ethiopia Economic Association 8<sup>th</sup> annual conference.
- BirhanuLakew (2003), prospects for export diversification in Ethiopia
- Cline, W. (1982), "can the east Asian model of development be generalized?" ,in *world development*, vol 10, no.2, pp 81-90.
- Esfahani, H.S. (1991), "Exports, imports and economic growth in semi-industrialized countries", *Journal of Development Economics*,
- Fahim Al-Marhubi (1998):" Export Diversification and Growth: an empirical investigation" *Applied Economics Letters*, 2000, 7, 559-562
- Fosu A. (1992), "export and economic growth the Africa case" *development journal paper*, vol 18 pp 831-835, Oakland university, Miching, USA.
- Girma, E. (1982), an analysis of the relationship between Ethiopia's foreign trade and GDP, Msc thesis, Addis Ababa university, Addis Ababa, Ethiopia
- Harris, R.Z.D. (1985), *Using Co-integration Analysis in Econometric Modeling*, London,University of Portsmouth, Prentice Hall
- Imperial government of Ethiopia (1962), *The first five years development plan (1957-61)*, Addis Ababa
- Imperial government of Ethiopia (1962), *the second five years of development plan (1962-1967)* Addis Ababa.
- Imperial government of Ethiopia (1968), *the third five years of development plan (1968-1973)* Addis Ababa.
- Jung, W.S. and Marshall, P.J. (1985), "Exports, growth and causality in developing countries", *Journal of Development Economics*,
- KagnewWolde (2007), *export performance and economic growth in Ethiopia*
- Kavoussi, R.M (1984), "export expansion and economic growth further imperial evidence", *journal of development economics*
- Mac beanetal (1980), *export instability and economic development*, London
- National Bank of Ethiopia (2015), *export in Ethiopia reported by National Bank of Ethiopia*
- Provisional military government of socialist Ethiopia (1985), *the ten years perspective plan (1984-1994)*, in Amharic Addis Ababa.(1992), *the growth of export from developing countries : export pessimism and reality*
- Rao, B.B. (1994), *Co-integration for the Applied Economist*, University of New South Wales, Australia, Macmillan.
- Rodriguez, Francisco, and DaniRodrik (2001): "Trade Policy and Economic Growth: A skeptical guide to the cross national evidence" in Ben Breanne and Kenneth Rogoff, eds. *NBER macroeconomics Annual 2000*. Cambridge, Mass: MIT Press
- Singer, H.W. (1950):" The distribution of Trade between Investing and Borrowing Countries" *American Economic Review*, Vol. 40, May 1950, pp.531-548
- Soderstain, bo and red, Geoffrey (1994), *international economics*, 3<sup>rd</sup> edition, Macmillan press Ltd, London
- Ssemogrer G.N. and Kasekende LA (1994), *constraints to the development and diversification of non-traditional exports in Uganda (1981-90)*, African economic research consortium, research paper 28, Nairobi.
- Ram. R (1971), "export and economic growth in developing countries" *evidence from time serious and cross-section data; econ. Dev. And cultural change*, vol.36(1),pp.51-53.
- Tecson G.R, (1992), *market for Philippine manufactured export transitional government of Ethiopia's economic policy during the transitional period( an official translation)*, Addis Ababa
- Wilson R, (1984), *Egypt's export diversification: benefits and constraints*, in *the developing economis*, vol 22, no1, pp 86-101.
- World trade organization (2003), *world trade report: trade and development*.
- Zafr-UI Hussain (2003), *export diversification and sustainable growth*.