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Ethiopia's Trade Potential in the Inter-Governmental Authority on Development (IGAD)

Ethiopian Economics Association

Ethiopian Economics Policy Research Institute

(EEA/EEPRI)

P.O.Box 34282

Addis Ababa, Ethiopia

Tel. (251-11) 6453200

Fax. (251-11) 6453020

E-mail : eea@ethionet.et

Web: www.eeaecon.org

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Amin Abdella, Research Fellow

Trade and Industry Division

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Abstract

This study is aimed at predicting the trade potentials of Ethiopia in the Intergovernmental Authority on Development (IGAD) block using augmented gravity model. Both the Fixed Effect Model (FEM) and Random Effect Model (REM) are estimated and tested for specification to choose the best model that fits the data. According to the test, the Fixed Effect Model (FEM) is found to be the preferred model. The explanatory variables of the model are found to turn up with the expected signs and are statistically significant except the per capita income difference (PCDIFF) and real bilateral exchange rate (RBER) variables. For the prediction of the trade potentials of Ethiopia among IGAD member states, the coefficients of the preferred FEM were used. According to the finding, Ethiopia's trading potential with IGAD member states in the sample appeared to have exhausted except with Uganda. An in-depth examination as to why the three countries are over and Uganda is under trading relative to the predicted trade value should be undertaken. The recommendation underscores the importance of joining IGAD FTA as a stepping stone for the wider FTAs such as the COMESA and the COMESA-EAC-SADC Tripartite FTA.

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Fig. 1 IGAD Member States Map (highlighted)

I. Introduction

The Intergovernmental Authority on Drought and Development (IGADD) established in 1986 by the then drought afflicted six Eastern African countries of Djibouti, Ethiopia, Kenya, Somalia, Sudan and Uganda. The State of Eritrea was admitted. All member states are categorized under LDCs with the exception of Kenya.

Although IGADD was originally conceived to coordinate the efforts of member states to combat drought and desertification, it became increasingly apparent that the Authority provided a regular forum where leaders of the Eastern African countries were able to tackle other political and socioeconomic issues in a regional context. Realizing this, Heads of State and Government of Djibouti, Eritrea, Ethiopia, Kenya, Sudan and Uganda, at an extra- ordinary Summit on 18 April 1995, resolved to expand the mandate of IGADD and made a declaration to revitalize IGADD and expand cooperation among member states. The revitalized IGADD was renamed as the Intergovernmental Authority on Development (IGAD) at the 4th Summit of Heads of State and Government in Addis Ababa, September 1993.

The IGAD region stretches over an area of 5.2 million square km and population size of over 160 million comprising the countries of Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan and Uganda. Some 80% of the region is arid and semi arid lowlands which receive less than 400 mm of rainfall per year. The rest of the region has great variety of climates and landscapes including cool highlands, swamp areas, tropical rain forests and other features typical of an equatorial region. Farmlands account for 7% of the total land area; forests 19% and 28% are permanent pastures. The remaining 46% of the land is apparently unproductive. The rainfall pattern is unreliable, both spatially and temporally. The region is prone to recurrent droughts and dry spells making it one of the most vulnerable regions on the African continent to climatic variations (IGAD, 2009).

The economic mainstay of the region is agriculture, both livestock and crop production that provide the basis for food supplies and export earnings as well as employment for over 80% of the population. The contribution of industries to the national economies is about 15-20% on average. Since they produce similar commodities, the level of intra-state trade remains low and markets are neither inter-dependent nor inter-linked (IGAD, 2009).

Though established to address the drought, peace and security situation, there is a move towards forming an economic integration. Besides the direct benefits of trading among FTA members, established bodies of empirical literatures confirmed the positive spillover effects of trade relations between neighboring countries. One among which is the peace and stability effects between trading partners. Experiences show that a well connected and trading partner have less probability to go into war with each other. The links between international trade and security have been recognized since long. According to earlier belief, peace is a, "natural effect of commerce. Recent empirical studies also seem to confirm the adage that countries that trade with each other (on equitable terms) are less likely to fight each other[1]. Thus, while investigating into costs and benefits of joining a regional free trade area, the non-economic benefit of ensuring peace and security should not be neglected. It is believed that establishing FTA and hence common market among IGAD members can bring peace and security into the Horn of Africa.

In an effort to establish FTA, it is vital to assess the trading potentials among IGAD member states. Indeed, there are indications as to the presence of complementarity among IGAD member states. For instance, Ethiopia is believed to have comparative advantage in agriculture and related activities; Kenya is a relatively advanced country among IGAD member states and hence can supply manufactured products to member states; Sudan is rich in oil and can supply it to the member states, and Djibouti can provide port services to land locked Ethiopia. Kenya and Uganda are already in East African Community (EAC) FTA.

The objective of this paper is to examine Ethiopia's trading potential in the IGAD member economies and put forward policy recommendations that would inform

[1] Humphreys, *Economics and Violent Conflict*, p. 8 also Mansfield, 2003, p. 222

policy making in joining IGAD FTA. To that end, the study employed used descriptive as well as econometric analysis approaches. In the descriptive approach, attempt was made to depict the trends in trade flows between Ethiopia and IGAD member states. The results are presented in graphic and tabular forms. On the econometric approach, the study employed augmented gravity model since it is one of the most popular empirical tools used to model bilateral trade flows. Countries in the sample are the major trading partners of Ethiopia in terms of being origins of imports and destination of exports. The major partners are Djibouti, Egypt, Kenya, Sudan, Uganda, South Africa, China, India, France, Germany, Italy, Japan, Netherlands, Saudi Arabia, United Kingdom and USA.

Data on the bilateral trade between Ethiopia and trading partners in the panel are obtained from National Bank of Ethiopia (NBE). For some countries, the data is extracted from the raw database obtained from Ethiopian Customs Authority. Data on GDP figures, Population size, share of manufactured exports in the total merchandise exports and Exchange rate (converted to bilateral exchange rate by the researcher) are obtained from the World Bank database. The bilateral distance between Addis Ababa (capital of Ethiopia) and the capital cities of trading partners in the panel are obtained from the indo.com and Travelmath.com websites.

The rest of the paper is organized as follows. Section two presents the integration status and Ethiopia's trade performance in the IGAD member states. Section three discusses model specification, estimation and prediction of the trade potentials of Ethiopia in the IGAD. The last section wraps up the study report with conclusions and recommendations.

2. Integration Status and Ethiopia's Trade in IGAD

2.1 Regional Integration Status of IGAD Member States

All IGAD members are also COMESA members, except Somalia. However their level of commitment is at varying degrees; Kenya, Sudan, and Djibouti are members of COMESA FTA, Eritrea and Uganda have reduced tariff by 80 per cent while Ethiopia has reduced only by 10 per cent. Kenya and Uganda have agreed to the COMESA common external tariff while the rest have not. Even though the COMESA customs union is under preparation none of the IGAD member states have joined it.

IGAD member states except Somalia have been negotiating EPA. The negotiation covered development issues, market access, agriculture, fisheries, trade in services, and trade related issues thus covering supply side constraint as well as tariff and non tariff barriers. All non-LDCs and the EAC members signed the EPA. However, some refused to sign for the main reason that the negotiated EPA does not address supply side constraints.

Ethiopia and Sudan have signed bilateral agreement on elimination of tariff and non-tariff barriers on trade in goods. Further they have agreement on transport, energy connectivity, fiber optic connectivity, port utilization, etc. Thus, they have more than a free trade area arrangement in place. Ethiopia and Djibouti have also more or less a free trade area arrangement in goods except for few sensitive products. There is also freedom of movement for Djiboutian and they have a special right of residence in Ethiopia.

Following the collapse of the Doha round WTO negotiation, the regional or bilateral economic integration negotiation alternative has been getting greater

momentum. The plan among IGAD member states is to bring IGAD under one common market arrangement in phased manners. Yet IGAD is still operating at the level of harmonizing policies among member states in the move towards FTA.

2.2 The Structure of IGAD Member States' Economies

The structure of the economies of IGAD member countries depicts a low manufacturing value added share in the total GDP. The least share of the manufacturing value added in DGP is witnessed by Djibouti with average 2.2 percent of GDP. In the absence of agriculture activities, over 97 percent of Djibouti's GDP is generated from the service sector. Among the member states, Kenya stood first with manufacturing sector value added share accounting for, on average, about 10.2 percent of GDP, followed by Uganda(7.0 %), Sudan(6.1%) and Ethiopia(4.5%) in order of importance (table 2.1). This low manufacturing share entails limited trading potentials among the member states.

Table 2.1: Manufacturing Value Added to GDP ratio (in %)

Countries					
Djibouti					
Ethiopia					
Kenya					
Sudan					
Uganda					

Source: World Bank Database and author's calculation

2.3 Ethiopia's Trade in IGAD

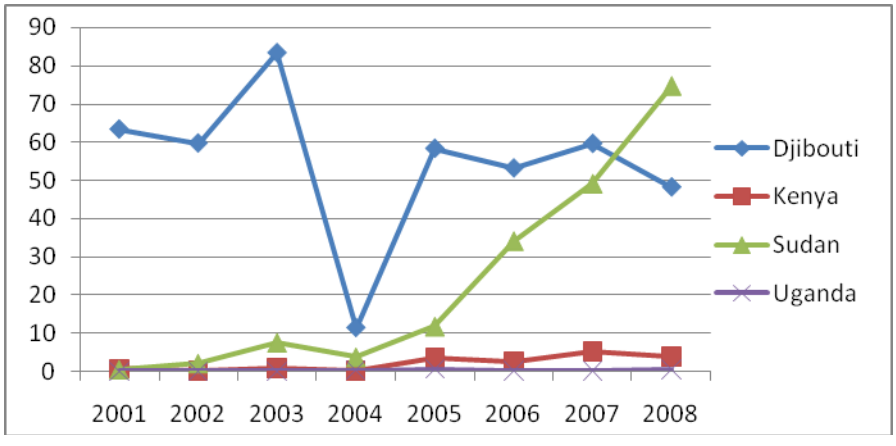
Ethiopia has been trading with all IGAD member countries for a long period of time. Trade with Eritrea has been on rise since its independence in 1991; however, it brought to an end due to the 1998/99 devastating border conflict. Somalia has been among the major trading partners of Ethiopia particularly in terms of receiving

Ethiopia's exports. However, due to lack of data on its GDP and Population (which are the basic variables in the gravity model), it is excluded from sample countries.

2.3.1 Ethiopia's Exports to IGAD Member States

According to figure 2.1, the sum of the export receipt from all other members of IGAD do not add up to equal the export receipt from Djibouti up until 2007 thereby indicating how significant Djibouti has been to Ethiopia. Ethiopia's export to Djibouti has been fluctuating from year to year, registering significant fall in 2004. While Ethiopia's exports to Sudan has been rising from year to year since 2004. The value of Ethiopia's export to Uganda and Kenya are insignificant and remained stable over the period.

Figure 2.1 Exports to IGAD Member States



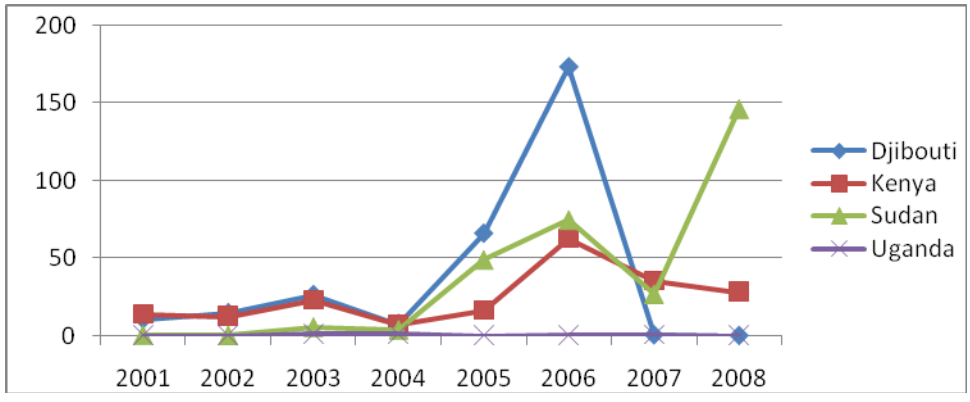
Source: NBE and Author's Computation

2.3.2 Ethiopia's Imports from IGAD Member States

Ethiopia's overall import from IGAD member countries has been increasing mainly due to increased import from the Sudan. Ethiopia's import from Djibouti has been declining since 2007, partly due to the correction of data organization method by customs authority. Commodities imported from Djibouti have been registered as if they are produced in Djibouti despite the fact that Djibouti was country of

consignment. Imports from Uganda have been insignificant while imports from Kenya have been increasing since 2004.

Figure 2.2 Imports from IGAD member countries

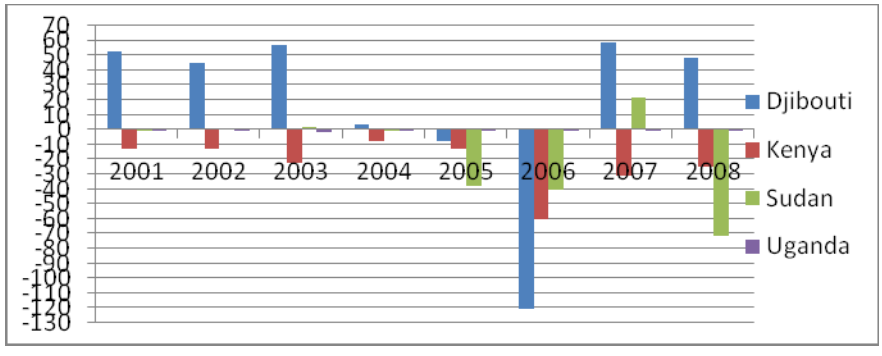


Source: NBE and Author's computation

Trade Balance

The trade balance position is an important indicator as to see whether the trade relations between countries are in favor or otherwise. The overall trade balance between Ethiopia and the rest of IGAD member states shows deficit in favor of the members, except Djibouti. However, the deficit is so small in percentage terms except balance with the Sudan which become widening (figure 2.3).

Figure 2.3 Trade Balance between Ethiopia and IGAD members



Source: NBE and Author's computation

3. Estimation of Trade Potentials Using Gravity Model

3.1 The Gravity Model Specification

For the econometric analysis, the study employed gravity model. Gravity model is the most popular empirical tools used to model bilateral trade flows. Since Tinbergen's (1962) application of the gravity equation to analyze international trade flows. The model has been extensively used in international trade research for the last 40 years because of its considerable empirical robustness and explanatory power(Konstantinos Kepaptsoglou, et al, 2010).The gravity model relates trade between country i and country j to the proportion of the product of both countries' GDP and to the distance between them.

The mathematical form of the basic gravity model is given as:

$$TRADep = \alpha \left(\frac{Ye * Yp}{DISTep} \right)^{\beta} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where:-

TRADep is the value of the bilateral trade between Ethiopia and partner country, Ye and Yp are Ethiopia's and partner country's respective gross domestic product (national incomes). DISTep is the bilateral distance between the capital of Ethiopia and capital of trading partner measured in kilometers, β is elasticity and α is a constant of proportionality.

Taking logarithms of the basic gravity equation 1 above, we get:

$$\mathbf{Ln\ (TRADep_{ij}) = \alpha + \beta_1 Ln\ (Ye*Yp) - \beta_2 Ln\ (Dist_{ij}) + U_{ij}} \quad \ldots\ldots\ldots\ldots\ldots\ldots(2)$$

Where: α, β_1 and β_2 are coefficients to be estimated. The error term (Uij) captures any other shocks and chance events that may affect bilateral trade between the two

countries. This equation is the basic gravity model where bilateral trade is predicted to be a positive function of GDP but a negative function of distance.

On top of the basic gravity variables, researchers have included bilateral trade explaining variables. Following their works, PpPe (the product of population of Ethiopia and partner) which indicates the scale of an economy is included in addition to the other size indicator-GDP. Linnemann (1966) as quoted in Shiro Armstrong (2007) was the first to extend the gravity model of Tinbergen (1962) to include other trade explanatory variable such as population.

The RBER (real bilateral exchange rate) is included to show the relative competitiveness of economies in trade. Real exchange rate is then calculated using the formula RER = E*CPIp/ CPIe. Where E is the bilateral nominal exchange rate, CPIp is the consumer price index of the foreign country and CPIe is the domestic consumer price index of Ethiopia.

lntradeYpR is the ratio of imports to GDP and it serves as a proxy for openness is included. It can also serve as a proxy for tariff since most countries levy tariff on imports not on exports to protect domestic industry. Sarkera and Jayasinghe (2007) and Kepaptsoglou et al (2009) both quoted in Konstantinos K. et al (2010) included openness and tariff in their respective gravity models.

The per capita income difference (PCDIFF) is added following Carlos Carrillo and Carmen A Li (2002), to test whether the Heckscher Ohlin or the Linder hypothesis holds in explaining the trade flows between countries.

In addition, the share of manufactured exports in the total merchandise exports is included to serve as proxy to trade compelemntarity between trading partners. Trade complementarity index is included by Sohn (2005) as quoted in Konstantinos K. (2010) included trade complementarity index.

CMBR -The adjacency dummy is additional to the inclusion of the distance variable to account for the possibility of centre- to-centre distance overstating the effective distance between neighboring countries that may often engage in large volumes of border trade.

Taking into account the above variables, the estimable equation is given as:

$$\mathbf{lnTRADep = \alpha_0 + \beta_1 lnYeYp + \beta_2 lnPpPe + \beta_3 lnRBER + \beta_4 lnManfX \pm \beta_5 lnPCDIFF + \beta_6 lntradeYpR - \beta_7 ln(DISTep) + \beta_8 (cmbr) + u_{ij}} \quad \mathbf{.....(3)}$$

Where:-

TRADep is the Value of total bilateral merchandize trade (export plus import) between Ethiopia and a partner. YeYp is the product of Gross Domestic Product (GDP) of Ethiopia and a partner, PpPe is the product of the population of Ethiopia and a partner. RBER is the real bilateral exchange rate. ManfX is the share of manufactured exports in the total merchandise exports. PCDIFF is per capita income difference between Ethiopia and a partner. TradeYpR is import value to GDP ratio. DISTep is the Distance between the capitals of Ethiopia and a partner. CMBR is common border (dummy variable which takes 1 if Ethiopia shares border and zero otherwise). U_{ij} is error term, α_0 and $\beta_{1\text{-}7}$ are parameters to be estimated, and ln is the natural logarithm.

The Rationale and Expected Signs of the Coefficients

YeYP and PpPe are considered as economic sizes indicating variables. Since countries seem to export more or import more (that is, bilateral trade

volume increases) as their sizes (Population and GDP) increase. Thus, β_1 and β_2 are expected to turn positive.

RBER is included to depict the relative competitiveness of Ethiopia and a partner. The more competitive the economy, the more trade flows between them. Hence, $\beta 3$ is expected to turn positive.

ManfX is the share of manufactured export indicating the degree of commodity composition. Since a high degree of complementarity would be associated with a large difference in factor endowment, trade flow increase with rising the degree of complementarity in a Heckscher-Ohlin model. A complementarity index shows how the commodity compositions of two trading partners would complement each other or not. The increase in the share of manufactured export in the total trade increases trade between Ethiopia and partners since Ethiopia mainly exports primary commodities but imports manufactured ones. Hence, β_4 is expected to turn positive.

PCDIFF is Per Capita GDP Difference between Ethiopia and a partner. It has been included to explore whether Heckscher-Ohlin or Linder hypothesis dominates the bilateral trade in the Ethiopian case. The Heckscher-Ohlin hypothesis predicts that countries with dissimilar levels of per capita income will trade more than countries with similar levels while the Linder hypothesis predicts that countries with similar levels of per capita income will trade more with each other, as they will have similar preferences for differentiated products. Thus, the sign of the coefficient is indeterminate. If Linder hypothesis holds, $\boldsymbol{\beta_5}$ will turn negative but if Heckscher-Ohlin hypothesis holds, $\boldsymbol{\beta_5}$ will turn positive.

TradeYpR is import to GDP ratio which is a proxy for openness. High tariff countries are less open than low tariff countries. The more open the economies of countries in trade, the higher the flow of trade. Thus, $\boldsymbol{\beta_6}$ is expected to turn positive.

DIST is the distance between capital of Ethiopia and the capital of a trading partner. Transport costs are proxied by distance. So, distance between a pair of countries naturally determines the volume of trade between them. The longer the distance, the lower the flow will be. Hence, β_7 is expected to turn negative.

CMBR is a dummy variable for common border. It is believed that countries sharing common borders are likely to have more trade than countries without common border. Hence, β_8 is expected to turn positive.

3.2 Model Estimation and Results

The specified model is estimated using panel data since it is superior to other approaches. It is believed that panel data increases the efficiency of estimations over the cross section approach because unobserved heterogeneous individual effects and their correlation with both time-varying and time-invariant effects are dealt with more effectively. To this end, Matyas[2] (1997) noted that bilateral trade flows are naturally represented through a three way specification which includes time, exporter and importer characteristics. And hence, excluding an important source of variation such as time, could lead to inconsistent modeling results. Ghosh and Yamarik[3] (2004) also showed that gravity models based on cross-sectional data yield unstable results. Moreover, according to Nowak-Lehmann et al. (2007)[4], panel data offer several advantages such as the possibility of capturing relationships over variables in time and observing individual effects between trading partners.

[2] Mátyás L. Proper econometric specification of the gravity model. World Econ 1997; 20(3): 432-4.

[3] Ghosh S, Yamarik S. Are regional trading arrangements trade creating? an application of extreme bounds analysis. J Int Econ 2004; 63(2): 369-95.

[4] Nowak-Lehmann F, Herzer D, Martinez-Zarzoso I, Vollmer S. The impact of a customs union between Turkey and the EU on Turkey's exports to the EU. JCMS. J Common Market S 2007; 45(3): 719-43.

For the analysis of the study, both random effect and fixed effect models are estimated. With regards to the time varying variables no difference is observed between the two models regarding the signs of the coefficients but there are some slight differences with regard to the level of significance. For example, PCDIFF was highly significant under REM but insignificant under FEM.

As fixed effect model (FEM), wipes out the time invariant variables, cannot provide any output for these variables, one random effect model can be consulted.

According to the REM, distance turned negative as expected and is significant in magnitude giving distance due importance in explaining trade flows. Frankel (1997) argues that longer distance is likely to induce a stronger impact on agricultural commodities and raw materials rather than manufacturing products due to relatively high transportation costs. Since Ethiopia's export products consist largely of agricultural commodities and raw materials, distance matters. Indeed, Ethiopia's exports flow are largely to nearby trading partner countries while import originates from distant countries as nearby trading partners do not produce manufactured goods- what Ethiopia imports.

According to the REM, the coefficients of the common border turned up positive as expected but insignificant in magnitude thereby suggesting the lower importance of having common border for the bilateral trade flow (table 3.1).

Since individual effects are included, it has to be sorted out whether they are treated as fixed or as random. From an a priori point of view, the random effects model (REM) would be more appropriate when estimating typical trade flows between randomly drawn samples of trading partners from a larger population. While FEM would be a better choice than REM when one is interested in estimating typical trade flows between an ex-ante predetermined selection of nations (Egger, 2000). Since the sample counties are selected non-randomly from Ethiopia's trading partners due to their significant trade share, a fixed effect specification looks more relevant. However, the Hausman test is conducted to check whether the REM is

more efficient that the FEM model. This will be the case under the null hypothesis of no correlation between the individual effects and the regressors. In order to discriminate between the two models, the author tested the null hypothesis that the explanatory variables and the individual effects are uncorrelated using a Hausman test. REM will be preferred if the null hypothesis hold, otherwise FEM will be preferred. Since the probability that chi2 is 0.0 is less than 0.05, the null hypothesis that the preferred model is the random effect model is rejected (see annex 1). Hence, FEM is used to predict the trade potential of Ethiopia in the IGAD.

The F-test which checks whether the overall coefficients of the variables in the FEM are statistically different from zero is found to hold. Thus, the model is proved to fit the data well registering the within R-Square of 68 percent, which is pretty reasonable for a panel data estimation result.

YeYP and PpPe both turned positive and significant suggesting the larger the scale of the economies in trade, the larger the bilateral trade flows between them.

The coefficient of the per capita difference happened to turn positive thereby confirming the Heckscher-Ohlin hypothesis that countries with dissimilar levels of per capita income will trade more than countries with similar levels instead of the Linder hypothesis. This is true because Ethiopia substantially trades with richer countries than poorer ones like herself.

The coefficient of openness appeared positive and significant in magnitude implying the more open the economies in trade, the more trade flows between them. It goes without saying that if Ethiopia opens its import (or lower its tariff rate on import) the volume of import will increase dramatically.

The estimated coefficient for the real bilateral exchange rate (lnRBER) happened positive as expected and but in significant thereby indicating the low importance of price competitiveness in determining the bilateral trade flows between Ethiopia and

its trading partners. This goes in line with the fact that substantial percentage of the Ethiopian imports and exports are price inelastic.

The coefficient of the trade complementarity(lnManfX) variable appeared positive and significant implying that the higher degree of trade complementarity the higher the volume of trade flows, i.e., a factor endowment difference between Ethiopia and its trading partners is one of the dominant driving forces behind trade flows. Thus, Ethiopia's trade pattern is more consistent with a conventional Heckscher-Ohin trade model with inter-industry trade as is also depicted by the positive per capita income difference.

Table 3.1 Random and Fixed Effects Regression Results

Variables	Coefficients	
	REM	FEM
lnYeYp	.30112(	.25355(
lnPpPe	.91710(	1.85700(
lnPGDPDIF	.58173(	.20127(
lntradeYpR	.25650(	.23070(
lnRBER	.04315(	.04779(
lnManfX	.68316(	.67018(
cmbr	1.22852(	
lndist	-1.78951(-	
constant	-7.01540(-	-31.15252(-
Number of observations		
R-sq: Within	0	0
Between	0	0
Overall	0	0
Wald chi2	489.05(prob=0	86.64, Prob >F =
sigma_u	.9	3.6
sigma_e	.6	.6
rho	.6	.9

t- statistics in parenthesis

3.3. Prediction of Ethiopia's Trade Potential in the IGAD

Trade potential is the value of trade that the model predicts, given the average effects of all trade determinants. The trade potential is said untapped (high) if actual trade is less (greater) than the predicted amount. In other words if the value of Actual/Predicted is less than one, then there is potential for expansion of trade with the respective country. This will provide useful insight for the undergoing trade negotiations among members to form IGAD FTA.

For the prediction of trade potentials of Ethiopia, the coefficients of the preferred FEM are used. The finding shows that the ratio of actual to predicted trade value for the five years(2004-2008) less than one for Uganda while it is greater than one for the rest thereby implying the exhaustion of the potential to expand trade with the three member countries. While Djibouti is at the top of the countries' list with which trade possibility came to exhaustion, Kenya is at the bottom of the list over the five year period (table 3.2).

Table 3.2 Ethiopia's IGAD Trade Potential

	Actual Trade Value /Predicted Value ratio				
Member stat					
Djibouti					
Kenya					
Sudan					
Uganda					

4. Conclusions and Recommendations

4.1 Conclusions

The gravity model is estimated on panel data on 16 partner countries over the period 1991-2008. Compared to the REM, FEM is found to fit the data very well and is used to predict Ethiopia's trade potential among its trading partners, especially IGAD member states.

The results of the estimated gravity model show that GDP and population are found to be positive and significant thereby implying the importance of the scale variables in explaining the flow of trade between Ethiopia and its partners. The per capita income difference between Ethiopia and its trading partners turned positive confirming the Heckscher-Ohlin hypothesis that countries with dissimilar levels of per capita income trades more than countries with similar levels. This finding is also supported by the finding regarding the share of manufacturing exports in the total merchandise exports. The coefficient representing the structure of trade is found to be positive and significant implying trade flow increases as commodity composition defers among trading partners.

Openness of an economy (the lowness of import tariff) is important for trade to flow between economies. According to the result, the coefficient of openness turned up positive and significant suggesting the direct relationship between openness and the magnitude of trade flow.

The relative competitive of an economy is critical for trade to flow between countries. Of the price competitiveness measure, real exchange rate is the one. Competitiveness of Ethiopia relative to its major trading partners is assessed using the bilateral real exchange rate. According to the result, the coefficient of the bilateral real exchange rate (BRER) is found to be positive but insignificant implying the low importance of price competitiveness in determining trade flows

between Ethiopian and partners. This finding seems to agree with the fact that both imports and exports of Ethiopia are price inelastic.

The coefficients of the estimated FEM are used to predict the trade potentials of Ethiopia with its trading partners. According to the estimation result, Ethiopia's actual trade is found to exceed the predicted magnitude for all IGAD members in the sample for the year 2004-2008 except for Uganda for which there is the potential to expand trade. This implies that Ethiopia has almost exhausted its trading potential with the three IGAD members but can expand trade with Uganda.

4.2 Recommendations

- According to the findings of the study, the trade potential that Ethiopia may exploit by joining IGAD FTA is meager. However, since gravity model is a partial equilibrium analysis, its findings does not give the full economy wide effects. However, there is no alternative to estimating and using gravity model these-days since there is no Computable General Equilibrium (CGE) model, to my knowledge, in which all IGAD member states are included with updated data. An in-depth examination as to why the three countries are over and Uganda is under trading relative to the predicted trade value should be undertaken.

- Ethiopia has to go for IGAD FTA owing to variety of the following reasons. First, Ethiopia has almost exhausted its trade potential in IGAD member states and hence no significant trade may flow due to the FTA.

- Second, Ethiopia has already sighed FTA with a major trading partner in the IGAD block-the Sudan which in turn is the member of COMESA FTA;

- Third, it has near FTA trade relationship with Djibouti and Ethiopia has nothing to be troubled about the possible adverse impacts from Djibouti (service economy) as long as it takes care of and enforces the appropriate rules of origin.

This is because Djibouti serves as country of consignment for many imports finding their ways into Ethiopia, and

- Fourth, joining IGAD FTA would also serve as a stepping stone for strengthening itself to join the wider FTAs including COMESA FTA and the ongoing COMESA-EAC-SADC tripartite FTA.

- The only threat Ethiopia may face in the IGAD FTA is the one from Kenya. In reality, since a country cannot avoid all the risks of joining FTA, it has to weigh the positive spillover effect against the risks due to the FTA. One very crucial outcome of equitably concluded IGAD FTA would be its positive spillover effects such as bringing the highly demanded peace and security in the horn of Africa.

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Annexes

Annex 1: Hausman test for Specification

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	re	Difference	S.E.
lnYeYp	.25356	.30112	-.0475719	.0130229
lnPpPe	1.85700	.91710	.9399002	.2037405
lnPGDPDIF	.20129	.58173	-.3804459	.0913742
lntradeYpR	.23070	.25650	-.0257999	.0066877
lnRBER	.04779	.043145	.0046413	.018712
lnManfX	.67018	.68316	-.0129784	.045132
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 30.21				
Prob > chi2 = 0.0000				