EXPORT PERFORMANCE: A COMPARATIVE STUDY OF LANDLOCKED AND OTHER DEVELOPING COUNTRIES

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Abstract

This paper examines the determinants of export performance in developing countries with emphasis on landlocked developing countries (LLDCs) compared with that of other developing countries (DCs). The paper begins with an overview that compares the export performance of the two groups. This is followed by an econometric analysis of the determinants of trade flows within the standard gravity modelling framework employing state-of-the-art estimation techniques. The findings suggest that the conventional wisdom that export performance is aided by economic openness also applies to LLDCs. However, distance is found to be a bigger problem for LLDCs than trade liberalization. There is evidence to suggest that African LLDCs have maintained relatively higher export performance compared to other LLDCs. Having a common border is more important than having a common language with bigger trading partner to boost the LLDCs' exports.

JEL Code : F130, F110, F120 and O50

Key Words: Exports Performance, Comparative Advantage, Trade Models and Landlocked Countries

1 INTRODUCTION

Most of the developing countries have witnessed major changes in trade policies: making more trade friendly economies by reducing trade barriers. The exports data suggest that exports from landlocked developing countries (LLDCs) grew by almost one percentage less compared to other developing countries over the duration from 1960 to 2009.[1] In this background, whether the trade policies adopted by LLDCs, in addition to their geographic constraints, have caused their poor export performance, is not clear.

Because of these scenarios, the export performance in LLDCs is a crucial issue that directly affects to the majority of bottom billion poorest people in the World. Landlockedness imposes exogenous costs in export, consequently, the prices of exports are uncompetitive; thus their exports become uncompetitive. Behar & Venables (2010) studied the trade flows, considering different aspects of transportation costs, including landlockedness and other factors related to economic geography. They found that landlockedness increases the trade costs by almost 50 percent, more than the distance, and reduces trade volumes by 30 percent to 60 percent. Limao & Venables (2001) suggested a median landlocked country trades 30 percent less than other countries.

There are many studies highlighted the role of exports on economic development in the literature.Stiglitz (1996) listed export performance as one of the main reasons for the EAM, which was strongly supported by a range of policies. Bhagwati (2000) suggested that trade is the engine of economic growth. A number of empirical studies have explored the strong and positive relationship between exports and economic growth for different periods, some representative studies include Balassa (1985), Krueger (1990), Sengupta & Espana (1994), Ekanayake (1999) and Athukorala (2011). These representative studies show the role of export performance in economic development and find supports for export led growth hypothesis.

Only few studies of export performance of developing countries at the global or regional level have focused on the relative export performance of some landlocked countries. For example, Coe & Hoffmaister (1999) and Söderbom & Teal (2003) studied the export performance of African countries, including the landlocked countries in the region. Other studies, such as Munoz (2006) and Ng & Yeats

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[1]Developing countries refers to low income, lower middle income and upper middle income countries based on the data WB (2010)

([2003](#)) have included Zimbabwe and Lesotho respectively in the country coverage of their studies. But so far no systematic analysis has been carried out of the export performance of all LLDCs from a comparative perspective.

The main objectives of this study are: first, to undertake a comparative analysis of export performance of developing countries noting the differences between the export performance of LLDCs and non-landlocked developing countries. Second, more specifically, to investigate whether trade policies or geographical constraints such as landlockedness and transportation costs are the major constraints for poor export performance of LLDCs. Third, to assess whether African LLDCs are unusual; in the context that Africa experienced slow growth for almost two decades, most countries in the region initiated trade reforms in the 1990s and now has an investment flow from China and other developing countries.

The organization of this study is as follows: the following section presents the policy contexts in LLDCs. Section 3 explains their export performance, comparing the export trends and patterns, disaggregating the data for landlocked developing countries. Section 4 develops the research methodologies and presents the results. The final section concludes.

2 POLICY CONTEXTS

It is widely considered that trade liberalization is a necessary prerequisite for better export performance [Weiss (1999), Awokuse (2008) and Athukorala (2011)]. Some of the developing countries initiated liberalisation and reform since late 1970, but most of these countries started reform since early 1990s. Most of the LLDCs also belong to the later category. Trade liberalisation is normally explained in the literature based on two broad sets of indicators of openness to international trade: first, Sachs–Warner binary index updated following Wacziarg & Welch (2008); and second, average tariff rate. In part, the tariff rate is included in the Sachs-Warner index too, but the tariff rate itself has a direct relationship to exports and explains much about the trade policies of a country. Each of these measures has its own limitations, but taken together they enable us to conclude with reasonable confidence whether an economy is generally open.

Landlocked developing countries are scattered in five regions. East Asia and Pacific (EAP) has two, Eastern Europe and Central Asia (ECA) has 12, Latin America and the Caribbean (LAC) has two, South Asia (SA) has three, and Sub Saharan Africa (SSA) has 15 countries. Table 1 presents the tariff rate structure in the devel-

oping countries classified into the regions. Only in the EAP region, the average tariff rate in LLDCs is slightly higher compared to non-landlocked developing countries over the period from 1995 to 2010. This average rate for LLDCs is low compared to non-landlocked developing countries in the ECA, LAC, SA, and SSA region. It shows that in terms of trade reform, LLDCs are more open compared to non-landlocked developing countries for the entire duration. The data for duration of 2005-2010 show that the tariff rate for landlocked countries are not substantially higher compared to other developing countries.

Table 1: REGIONAL TARIFF STRUCTURE IN DEVELOPING COUNTRIES

Region		year 1995-99	year 2000-04	year 2005-10	Average % 1995-2010
EAP	Landlocked	NA	12.6	7.4	10.0
	Non-landlocked	12.1	8.3	5.4	8.4
ECA	Landlocked	4.2	5.1	3.7	4.3
	Non-landlocked	5.9	4.9	3.1	4.5
LAC	Landlocked	9.0	8.8	4.1	7.1
	Non-landlocked	11.5	9.2	6.3	8.8
SA	Landlocked	15.3	14.4	11.4	13.5
	Non-landlocked	33.2	17.2	10.6	19.7
SSA	Landlocked	15.4	11.1	9.4	11.8
	Non-landlocked	17.7	11.8	9.3	12.7

Source: Based on data compiled from WB (2012b), NA refers data are not available

To cover more countries and longer period, I updated Sachs-Warner index to 2009 for all LLDCS.[2] Based on this index, Table 2 shows the liberalization status of all LLDCs. The data shows that 23 landlocked developing countries are open and 11 of them still remain closed. The non-tariff barrier data has classified Lao PDR, Belarus, Kazakhstan, Kosovo, Serbia, Turkmenistan, Uzbekistan, Bhutan, Afghanistan, and Central African Republic as closed. Zimbabwe also remains closed because

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[2]Sachs-Warner index defines a country is liberalized when it has: average tariff rates not more than 40%, a black market premium rate not more than 20%, non-tariff barriers rates are not more than 40%, it does not have state monopoly on major exports, and does not have the socialist economic system.

of the black market premium rate that exceeds the 20 percent criteria. Only five countries; Chad, Lesotho, Malawi, Rwanda and Swaziland pass all the criteria to be classified as open since 1999. As seen in the same table, based on the average tariff rate, only Zimbabwe has a tariff rate greater than 20 percent, followed by Bhutan 18 percent, Central African Republic and Lesotho about 15 percent. The rest of the landlocked developing countries have average tariff rates less than 15 percent. Notably, only seven countries have an average tariff rate of less than five percent. Turkmenistan has the lowest average tariff rate of 1.4 percent; however, because of other criteria it is still classified as a closed economy.

Table 2 about here

3   EXPORTS: TRENDS AND PATTERNS

3.1   EXPORTS: TRENDS

Developing countries' merchandise exports have grown much faster than that of world exports, but they still account for just one-third of total exports. Figure 1 shows that the average export growth was much higher in non-landlocked developing countries compared to LLDCs through out the period with exception after 2007. With exception of this period, despite the policy reforms in LLDCs, LLDCs' share of exports in GDP remain poor, however, there is substantial improvement in exports growth since early 1990s. Due to global financial crisis (GFC), LLDCs' rate has recorded higher than that of other developing countries indicating poor integration with the World economy. This figure excluded nine of the landlocked countries, which were introduced as separate countries after the dissolution of the United Socialist States of Russia (USSR).[3]

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[3]These countries include Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan and Uzbekistan (Idan & Shaffer 2011)

Figure 1: SHARE OF MERCH. EXPORTS IN GDP-DEVELOPING COUNTRIES
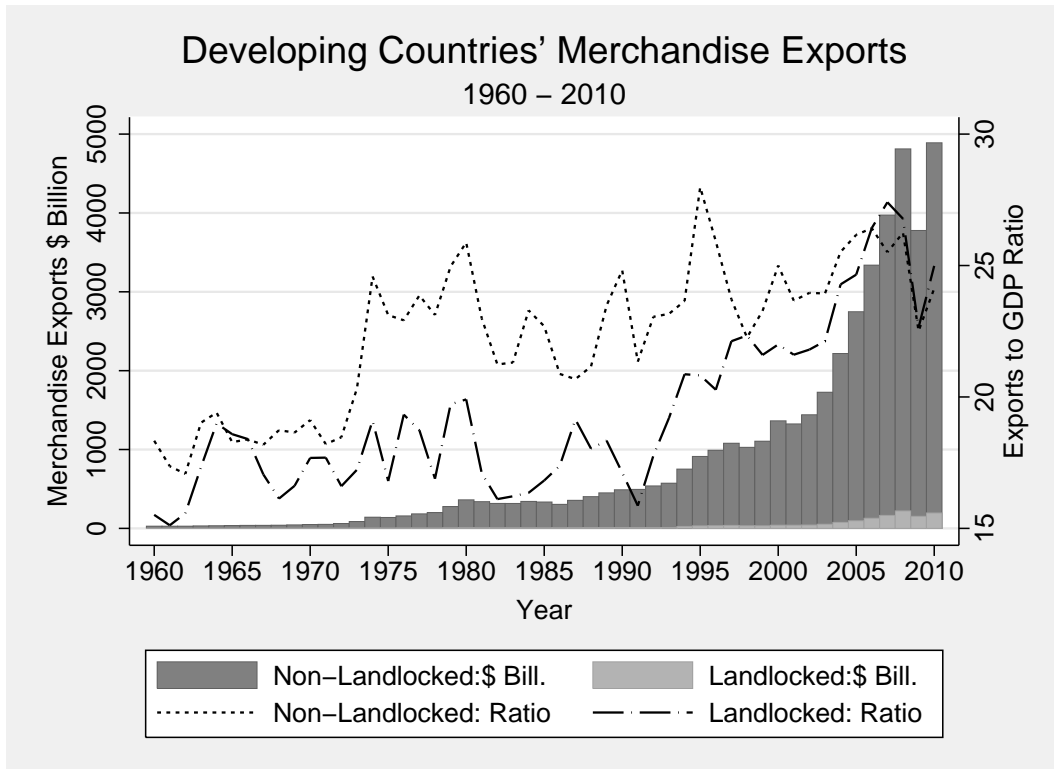
Source: Based on data compiled from WB (2012b).
Note: To make the number of countries similar for the entire period, Post Soviet countries are droped on this occassion.

Figure 1 reveals an important point that LLDCs' export is growing much faster compared to other developing countries after 1990s, but still LLDCs's level of exports is poor compared to other developing countries. Figure 2 shows that per capita exports in LLDCs is about US$ 450 compared to US$ 725 for other developing countries in 2010. This is visible that LLDCs' per capita GDP and per capita exports are poor compared to other developing countries for entire period from 1960 to 2010.

Figure 2: PER CAPITA GDP AND EXPORTS: DEVELOPING COUNTRIES
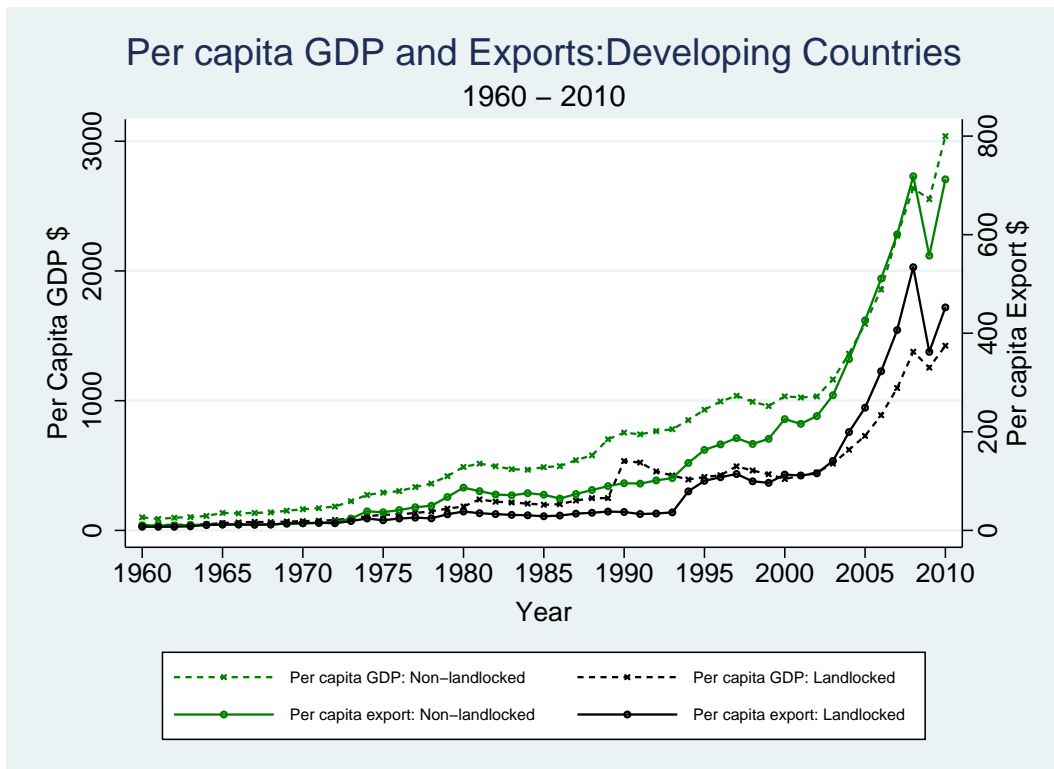
Source: Based on data compiled from (WB 2012c).

In Figure 3, as can be seen from the LLDCs in ECA, which includes nine LLDCs formed after the dissolution of the USSR, have dominantly higher share of exports in GDP. Since 1990, ECA's share has been declined substantially, although it still remains higher than that of others with very few exceptions. A notable point is that the LLDCs in all regions have increased the share of exports in GDP since 1990 except ECA, with some fluctuations caused by the Asian Financial Crisis (AFC) and the GFC.

Figure 3: SHARE OF MERCH. EXPORTS IN GDP-LLDCs
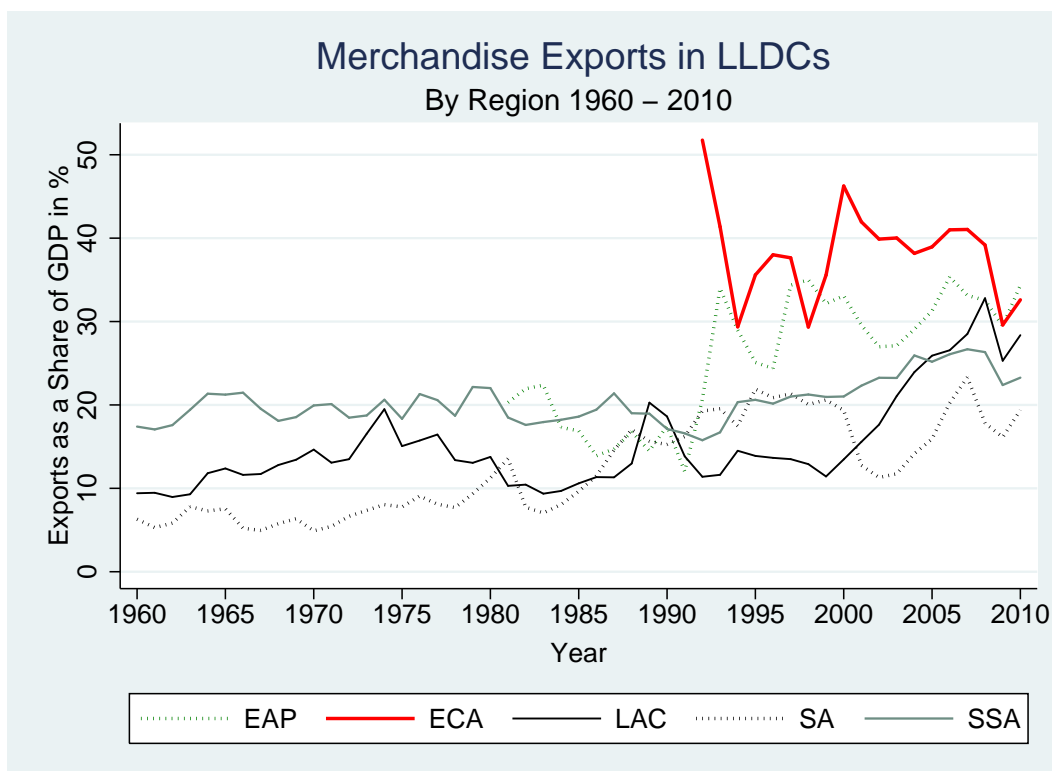
Source: Based on data compiled from (WB 2012c) and COMTRADE (2012).

3.2 EXPORTS PATTERNS

Since the early 1990s, the share of exports to GDP in LLDCs has increased sub-
stantially but it accounts for about 19 percent only. This figure in case of other
developing countries is about 23 percent. The rate of growth of exports is different
for countries in different income groups. In the aggregate level of exports in LLDCs,
the dominance of oil exporters, Azerbaijan, Kazakhstan and Bolivia, is apparent. In
these countries, the share of non-oil exports has declined to 51 percent in 2009,
from 80 percent in 1999, which is contrary to the experience in the export trade in
other developing countries. The sources of exports are not unique in all landlocked
developing countries. The shares of manufacturing and primary exports were 22
percent and 29 percent respectively in 2009, declining from 37 and 43 percent in
1999; while these sectors' share is recorded 63 percent and 19 percent in other
developing countries in 2009, slight declined from the share in 1999 (Table 3).
These data show that the level of manufacturing exports in LLDCs is low compared
to non-landlocked developing countries.

Based on the data in 2009, among the 34 landlocked developing countries
Kazakhstan is the largest exporter, but 70 percent of its exports come from the oil
sector; it is followed by Belarus, also an oil exporter (27 percent of merchandise

exports). Azerbaijan and Bolivia are the other notable oil exporters.

Primary commodities dominate the exports structure of most landlocked developing countries. Only three countries: Macedonia, FYR; Nepal and Botswana had a contribution of more than 50 percent from manufacturing exports in their export trade in 2009 (Armenia and Belarus also in 2007). The contribution from manufacturing has increased in 2009, compared to 1999 in only five countries, i.e. Bhutan, Niger, Rwanda, Uganda and Zimbabwe.

Table 3 about here

4 EXPORT PERFORMANCE: DETERMINANTS

4.1 MODELLING THE EXPORT COSTS

I argue that the volume of exports is highly influenced by landlockedness and trade costs, and develop a simple function to represent it as in equation (1). Landlockedness imposes the exogenous trade costs, thus has a negative impact on exports or positive impact on trade costs.

$$Exports = f(Landlockedness, Costs)......... \tag{1}$$

Then, I further classify the trade costs into two categories: transport costs and tariffs as in equation (2). Transport costs are proxied by distance between the trading partners' major business cities in the basic gravity model as well. Tariffs costs are represented by the weighted average tariff rates for all products as a proxy for trade policy reforms.

$$Exports = f(Landlockedness, Distance, Tariffs)......... \tag{2}$$

Based on equation (2), I use the gravity modelling framework. These major three variables are used in the full model specifications.

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4.2 METHODOLOGY: GRAVITY MODELLING FRAMEWORK

The empirical analysis is made using the standard gravity modelling framework employing state-of-the-art estimation techniques. Tinbergen (1962), in the initial model, introduced a trade flow equation focusing on the GDP of partner countries and distance, suggesting that the trade between two countries is determined by some gravitational forces, such as exporter's and importer's income levels and the distance between them, as in equation (3). The argument made here is that distance represents the trade costs. The concern is that transportation and transit costs are growing gradually, associated with the geographical and other economic factors, such as landlockedness, common border and language, access to international markets and the level of infrastructure. These costs are significant, ranging from 30 percent to 60 percent, as in Limao & Venables (2001), Anderson & Wincoop (2004), and Behar & Venables (2010). Linnemann (1966) for the first time used an augmented gravity model to study the trade flows. There were many criticisms about the theoretical base of the model. Later, Anderson (1979), Bergstrand (1985) and Deardorff (1995) contributed to the theoretical base. Coe & Hoffmaister (1999) , Clark et al. (2004), Fugazza (2004), Helpman et al. (2008), Manova & Zhang (2012) and Berman et al. (2012) are other notable studies using the gravity model.[4]

$$Ln(X_{ij,t}) = \alpha + \beta_1 Ln(GDP_{i,t}) + \beta_2 Ln(GDP_{j,t}) + \beta_3 Ln(Dis_{ij,t}) + \epsilon_{ij,t}......... \quad (3)$$

The basic model does not have any variable to represent the relative price aspects, which is an important factor for trade flows. Thus, the basic model (3) has been augmented by including some other relevant variables with the following specification:

$$Ln(X_{ij,t}) = \alpha + + \beta_1(Llock_i) + \beta_2(OPEN_{i,t}) + \beta_3 Ln(GDP_{i,t}) + \beta_4 Ln(GDP_{j,t})$$
$$+ \beta_5 Ln(DIS_{ij}) + \beta_6 Ln(RER_{i,t}) + \beta_7 Ln(GDPPC_{i,t})$$
$$+ \beta_8 Ln(GDPPC_{j,t}) + \beta_9(LAN_{ij,t}) + \beta_{10}(BOR_{ij,t})$$
$$+ \beta_{11} Ln(RFE_{i,t}) + \beta_{12}(RTA_{ij,t}) + \epsilon_{ij,t}......... \quad (4)$$

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[4]See Bergeijk & Brakman (2010) for a comprehensive survey of the methodological and theoretical advances of the Gravity Model.

Where, Ln is natural log of the variables, subscripts i and j refer to the exporter and the partner country in bilateral trade and t refers to the time period. The variables have been listed below with their details and the postulated sign of the regression coefficient for the explanatory variables in brackets:

X   Real non oil exports between trading countries, the dependent variable

Llock   Landlockedness, binary dummy (-)

OPEN   Openness measured by weighted average tariff rate (-)

GDP   Real gross domestic product (GDP), a measure of the economic size (+)

DIS   The distance between the business cities of country i and j (-)

RER   Real exchange rate (Its domestic currency/US$) (+)

GDPPC Per capita GDP of exporters and partners (+)

AFRICA If the country is in Africa, binary dummy (-)

LAN   Common language, a measure of cultural affinity (+)

BOR   Common border of trading countries (+)

RFE   Relative factor endowment (+, -), either H-O or Linder hypothesis

RTA   Regional Trade Agreements, binary dummy (+)

The error components structure is:

$$\epsilon_{ij,t} = \mu_{ij,t} + \theta_t + \upsilon_{ij,t}.......... \qquad (5)$$

Where, μ_i is an individual effect that might be correlated with explanatory variables in (5), θ_t is the time-specific effects common to all cross section units, and $\upsilon_{ij,t}$ is a error term uncorrelated across cross-section units and over time periods.

AFRICA and USSR are used as the additional variable in equation (4). AFRICA is measured with a binary dummy i.e. 1 if country is in Africa region and 0 if the country located in the other regions. It is believed that African landlocked countries are different to other landlocked countries in relation to trade; the expected sign for this variable is negative or positive. Similarly, USSR is another binary dummy variable i.e. 1 if a country was in the USSR and has been formed as a separate country since the dissolution of the USSR and 0 otherwise. The expected sign for this variable is positive, as these countries are better in terms of export performance.

Landlockedness is a binary variable i.e. 1 for landlocked developing countries and 0 for non-landlocked developing countries. The expected sign for this variable is negative based on the literature. OPEN is proxied by weighted average tariff rate for all products, expecting negative sign, meaning that lower the tariff rate, higher the export performance. The variables: landlockedness, OPEN and Africa are of major interest of this study. The variable GDP of exporting and partner countries

has been widely explained in the literature and do not need further explanation.

Language (LAN) is also a binary dummy variable, i.e. 1 if trading countries have a common official language and 0 otherwise. Similarly, border (BOR) is a binary dummy variable representing if the trading countries share a common border. Trade reform (OPEN) is measured by weighted average tariff rates as it helps to compare the level of openness of a country best in terms of international trade. The variable OPEN has been replaced by Sachs and Warner openness index.[5]

The dependent variable is Non-oil exports (X) measured in US$ in the log form. The reasons to select non-oil exports are; first, the oil price is highly fluctuates and it makes the estimation more volatile, second, export of oil products depend on geography and does not really explain the role of policies taken by the country, and third, there are only few countries that export oil products in the LLDCs group. Nominal exports have been converted into real exports by deflating them with the annual US import price index for non-oil commodities for the base year 2000. Real GDP has been measured in US$, distance (DIS) is measured in kilometers and shows the distance between the most populated cities (business capitals) of partner countries.

RER is real exchange rate, which is defined as: $RER_{i,t} = NER_{i,t} (P^w/P^d)$. Here, NER is the index of official exchange rate in domestic currency per partner's currency, based year 2000. P^w is measured by the partner's GDP deflator with base year 2000, as a proxy of the world price. P^d is measured with the GDP deflator of exporting countries, constructed by using the relationship between nominal and real GDP, in local currency for the base year 2000, as a proxy of domestic price. The ideal proxy for domestic and world prices would be the wholesale price indicator, but these series are not long enough and are not available for many countries. Many previous works have used consumer price inflation (CPI) as this proxy, but this is basically dominated by non-tradable goods. However, an assumption can be made that the tradable and non-tradable prices move together. Even in this situation, the GDP deflator has substantially more observations than the CPI.

GDPPC is the real per capita GDP of exporters and trading partners. Relative factor endowment (RFE) is the absolute difference between the per capita GDPs of importers and exporters. This variable is included to show the structure of trade between similar income level countries. It helps to know whether the trade in these countries supports the Linder hypothesis or H-O theory.[6] If RFE is positive it will

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[5]These have not been reported as the results are not substantially different for our interest variable and tariff rate is preferable over these two.

[6]The H-O hypothesis suggests that more trade occurs if their endowment levels are different. On

support H-O theory and a negative RFE will support the Linder hypothesis.

4.3 ECONOMETRIC METHODOLOGY

Most of the previous studies have estimated the gravity equation using either a pooled ordinary least squares (POLS) estimation, a fixed effect estimation (FE) or a random effect (RE) estimation. One important assumption made in the literature is that the country specific effects (individual effects) $\mu_{ij,t}$ in (3) are uncorrelated with all regressors. This assumption has been rejected in most of the empirical works. Therefore, among these three methods, FE is the preferred method in the literature to reduce the bias caused by this assumption. The problem with FE is that we cannot estimate the coefficients of time invariant variables, which are the main variables in the gravity modelling framework. In our case, the main variable of interest, landlockedness, is time invariant. There are more issues that affect the estimations from a gravity model for trade flow, especially when dealing with a large heterogeneous sample. Because of extensive heterogeneity in a large panel of trade data, Hausman & Taylor (1981) instrumental variable estimation as in Brun et al. (2005) and Shin & Serlenga (2007), does not work.

Also, there are some issues with the log linearization and missing data, as some countries' data are not available for the dependent variable. Because of this situation, if a gravity model is estimated using any of the OLS-based approaches it does not give consistent results, as suggested by Silva & Tenreyro (2006). The reason behind this is that the log-linearization of the gravity equation changes the property of the error term. This leads to inefficient estimations due to the presence of heteroskedasticity, which is a common feature of trade data, thus, even if the coefficients are still unbiased, the variance of the estimated parameters becomes inconsistent resulting in doubtful t-statistics.[7]

Alternative methods to redress these problems are: the Non-linear Least Squares (NLS) method, Feasible Generalized Least Squares (FGLS), the Heckman sample selection model and the Gamma Pseudo Maximum Likelihood (GPML) and Poisson Pseudo Maximum Likelihood (PPML). Among these, the PPML method is preferred over the others for three reasons: (i) it assigns equal weight to all missing observations and provides unbiased estimates in the presence of heteroskedasticity;

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the other hand, a negative sign for this variable would support the Linder (1961) hypothesis, which suggests that the different levels of endowment affect trade negatively, meaning that more trade occurs where countries are in almost the same income category

[7] See Silva & Tenreyro (2006) and Herrera (2010) for details.

however, it has some limitations, for example it may lead to dependent variable bias when many observations are missing, (ii) it fits well in the semi-log model, so that the countries with small quantity of exports would not be penalized in the data, and (iii) it allows us to estimate the coefficients for time invariant variables [see Herrera (2010) for detail]. Therefore, additional estimations are made using the PPML method, following Silva & Tenreyro (2006). In sum, the empirical analysis is made using POLS, RE and FE initially and then the HE and PPML estimation methods, using a gravity model. I found the results of HT and PPML estimations are qualitatively similar in most cases. PPML fits well in case there is a problem of heteroskedasticity and allows us to estimate the time invariant variables. Further, it copes comparatively better where there are missing observations of dependent variables, which is always the case when data rich and data poor countries are mixed.

4.4 Data Sources and Method of Compilation

I have estimated the gravity model using country-pair annual data over the period 1995-2010. The variables have been regressed interacting with the landlockedness dummy to know the coefficients of the variables in case of LLDCs. The developed countries are not included as the objective of the study is to compare the export performance of non-landlocked and landlocked developing countries. The focus of this study is solely on merchandise exports. Services exports are effectively excluded from the context because of the unavailability of the required data for the majority of the countries. The data for exports, real GDP in US$, real GDP and nominal GDP in local currency, used to calculate the GDP deflator, nominal exchange rate, weighted average tariff rate and GDPPC, are collected from *WB (2012a)*.

The nominal exchange rate data for European Union countries were collected from the website of the European Central Bank [ECB (2012)] and converted to $US using the nominal exchange rate of local currency to match the series for other countries. The distance, language and border data were compiled from CEPII (2012). The data for regional trade agreements (RTA) were collected from de Sousa (2012); they are based on the regional trade agreements reported to the WTO by the relevant countries. The data for weighted average tariff rates are for non-oil products and are linearly interpolated.

4.5   RESULTS

Descriptive statistics and correlation matrix tables are presented in Appendix A (Table A.1 and Table A.2). First, the model is estimated as specified in equation (3), and then, the interaction terms are added in the estimation as specified in the equation (6).

Table 4 presents the estimated results for the augmented gravity model for all developing countries. The initial analysis is made to select a suitable estimation method, for this; POLS, RE and FE results are compared and the Hausman test is conducted. The results confirm FE as the preferred method over RE for the estimation. Here, the major problem with FE is that the main variables of interest are dropped from the estimation. The estimation results for the variables: landlockedness, openness, exporter's and partner's GDP, exporter's and partner's per capita GDP, real exchange rate, and relative factor endowment have the expected sign in all estimation methods. Distance, common border, and common official language variables have the expected sign in POLS and RE, while they are also dropped in the FE estimation.

Table 4: AUGMENTED GRAVITY MODEL: DEVELOPING COUNTRIES

Dependent Variable.: exports (log)	(POLS)	(RE)	(FE)
Landlockedness (llock-dummy)	-0.489***	-0.370***	dropped
	(0.022)	(0.058)	
Openness (Tariff Rate %)	-0.027***	-0.006***	-0.004***
	(0.001)	(0.001)	(0.001)
Exporter's GDP (log)	1.089***	1.109***	-1.140***
	(0.004)	(0.012)	(0.125)
Partner's GDP (log)	0.958***	0.982***	1.847***
	(0.004)	(0.011)	(0.099)
Distance (log)	-1.072***	-1.225***	dropped
	(0.011)	(0.028)	
Regional Trade Agreement (RTA)	1.181***	0.325***	0.159***
	(0.027)	(0.028)	(0.029)
Relative Factor Endowment	-0.052***	-0.081***	-0.071***
	(0.007)	(0.011)	(0.013)
Bilateral RER (log)	0.156***	0.279***	0.310***
	(0.021)	(0.017)	(0.017)
Per Capita GDP (log)	-0.049***	0.106***	2.214***
	(0.008)	(0.021)	(0.112)
Partner's per capita GDP (log)	0.031***	0.064***	-0.188**
	(0.008)	(0.017)	(0.093)
Common Border	0.796***	1.122***	dropped
	(0.045)	(0.127)	
Common Language	0.873***	0.977***	dropped
	(0.020)	(0.055)	
Africa-dummy	-0.343***	-0.309***	dropped
	(0.020)	(0.052)	
Post Soviet Countries	0.121***	0.209***	dropped
	(0.028)	(0.075)	
Number of observations	107,499	107,499	107,499
Number of country groups		11,258	11,258
F-Statistics	10,933.26		471.01
R-squared	0.59		0.09
Corr.			-0.78

*Note: ***, ** and * indicate the significance levels at 1%, 5 % and 10% level of significance. The figures in parentheses are standard errors.*

Instrumental variable Hausman-Taylor (HT) estimation allows us to estimate the time invariant variables, such as landlockedness, common border and common official language. For this reason, I conducted the empirical analysis using HT estimation. Because of the heterogeneities of trade data, the estimation could not pass the post estimation normality test (Sargen-Hansen P-value rejects the null hypothesis of "no correlation and heteroskedasticity"). This situation indicates that T-statistics are not reliable and the coefficients may not be accurate. Hence, these results are not reported.[8] The remainder of the empirical analysis follows the PPML as a preferred estimation method. The coefficients of PPML estimations are elasticities, if the independent variables are in the log (Genc 2013).

Table 5 presents the estimations for developing countries under PPML estimation method. The results in column (1) of this table suggest that holding other variables constant in the model, landlocked developing countries export about 30 percent less than other developing countries.[9] This result for landlockedness is is similar to in previous studies in the literature.[10] The results for openness has expected sign, suggesting that on average, a one percentage point decrease in the tariff rate results increases the exports level by 0.08 percent in non-landlocked developing countries and only about 0.02 percent for LLDCs. [11] These results confirm that trade reform is important in both sets of developing countries but the major cause of poor exports level in LLDCs is not the trade policy. On the other hand, "More open developing countries export more" is explained by these results.The bilateral exchange rate has a positive significant impact on exports suggesting a export friendly exchange rate policy.

Exporter's and partners' GDP are highly significant as expected and indicate that own GDP is more crucial to boost export performance in non landlocked developing countries, while partners' GDP is more important for LLDCs, holding other things same in the model. Distance has a significant negative impact as expected: on average the negative impact is about 60 percent on export performance for non-landlocked developing countries, while this is found to be almost 80 percent for LLDCs. This result of distance confirms that the major cause of export stagnant in LLDCs is the trade and transportation costs.

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[8]Available on request

[9]The real coefficient for landlockedness for this model in specification (2) comes about -0.229 (6.372+ coefficients of interaction term with landlockedness *mean of the variables from descriptive statistics)

[10]The formula to compute this coefficient is $(exp^c - 1)$ x 100%, where c is the estimated coefficient.

[11]To calculate the coefficients for LLDCs, sum of the coefficients of (2) with the respected interaction variables. For example, for openness, -0.082+0.037= -0.045.

I found some important differences between the estimated results for non-landlocked developing countries and LLDCs. The variable of relative factor endowment supports the H-O hypothesis indicating that a one percent increase in the difference in factor endowment results to increase exports by 0.08 percent on average, holding other things same in the model. But in the case of LLDCs, the results support the Linder hypothesis, suggesting that LLDCs export with the similar income level countries. Regional trade agreement contributes more to LLDCS compared to non-landlocked countries, however it has positive significant impact on export performance for both type of developing countries. Bilateral exchange rate has more important role to play in LLDCs compared to non-landlocked developing countries. However, the coefficients are small in both occasions. Per capita GDP of own and partners' contribute positively for LLDCs.

Common language and border's estimates are positive and significant. Having a common border enables a developing country to export almost one times more, holding the other variables constant in the model. More importantly, having a common border is more beneficial than to have a common official language for developing countries.

Table 5: Aug.Gravity Model: PPML Estimation- Developing Countries

Dependent Variable: exports	(1)	(2)	Interactions	contd...(2)
Landlockedness (llock-dummy)	-0.256***	5.381***		-
	(0.000)	(0.001)		-
Openness (Tariff Rate %)	-0.082***	-0.082***	Openness*llock	0.037***
	(0.000)	(0.000)		(0.000)
Exporter's GDP (log)	1.067***	1.065***	GDP*llock	-0.256***
	(0.000)	(0.000)		(0.000)
Partner's GDP (log)	0.802***	0.801***	Partners' GDP*llock	0.031***
	(0.000)	(0.000)		(0.000)
Per Capita GDP (log)	-0.336***	-0.342***	Per Cap. GDP*llock	0.526***
	(0.000)	(0.000)		(0.000)
Partner's per capita GDP (log)	0.020***	0.012***	Part. Per.Cap.GDP*llock	0.119***
	(0.000)	(0.000)		(0.000)
Bilateral RER (log)	0.146***	0.149***	Bilater RER*llock	-0.018***
	(0.000)	(0.000)		(0.000)
Relative Factor Endowment (RFE)	0.115***	0.134***	RFE*llock	-0.438***
	(0.000)	(0.000)		(0.000)
Distance (log)	-0.586***	-0.577***	Distance*llock	-0.211***
	(0.000)	(0.000)		(0.000)
Common Border	1.108***	1.111***	Com.Border*llock	-0.227***
	(0.000)	(0.000)		(0.000)
Common Language	0.836***	0.840***	Com. Language*llock	-0.475***
	(0.000)	(0.000)		(0.000)
Regional Trade Agreement RTA	0.266***	0.250***	RTA*llock	0.913***
	(0.000)	(0.000)		(0.000)
Number of observations	107,499			107,499
Pseudo R-squared	0.88			0.87
RESET test p-values	0.27			0.29
Year Effect	Yes			Yes

Note 1: To know the coefficients of LLDCs, all variables have been interacted with landlockedness in the column (2).

*Note 2: ***, ** and * indicate the significance levels at 1%, 5 % and 10% level of significance. The figures in parentheses are standard errors.*

Is Africa Unusual ?

There are growing concerns among the development economists that Africa is unusual in many respects such as economic growth, climate, economic geography and trade. Collier (2007) suggested that Africa is set back due to conflict, bad neighbours of landlocked countries, bad governance and misuse of resources. In terms of trade, Coe & Hoffmaister (1999) found unusually low level of trade in the Africa region is caused by economic size, geographical distance and population. Most recently, Bosker & Garretsen (2012) found that improving the market access has improved the manufacturing trade flows in the Africa region.Maehle et al. (2013) concluded the reform in Sub-Saharan Africa has worked to enhance the economic development in the region. Motivated by these studies, I tried to identify whether Africa is unusual in terms of export performance. This question makes its relevancy not only because of Africa has slow growth for almost two decades, but also Africa initiated policy reforms in early 1990s. And, recently, lots of investment efforts going on from China and other countries. For this reason, an alternative model specification has been estimated adding AFRICA and USSR dummy variable.

The result perhaps reflects the liberalisation reforms undertaken by a number of African LLDCs since the early 1990s, the impact of which is not adequately captured by the explanatory variables used in the model. These results suggest that Africa is different in terms of export performance. In the column (1) of Table 6 , the estimations for all variables reflect the estimation of Table 5 . The result for AFRICA is negative and statistically significant. This result suggests that African developing countries, on average, have about 25 percent lower export performance than the developing countries in other regions, other things remain the same. In this estimation, the results are robust to previous results such as of Coe & Hoffmaister (1999). Similarly, post Soviet developing countries have about 15 percent lower performance compare to rest developing countries.

Yes, Africa is unusual. If we compare the African developing countries with other developing countries, African developing countries' performance is poor. But if we compare the African LLDCs with other LLDCs, the African LLDCs, on the contrary, ceteris paribus have average export levels about 125 percent higher than the average level for other landlocked developing countries, holding other variables constant in the model (Table 8). Almost similar story holds in case of post Soviet LLDCs.

Table 6: Aug. Gravity Model: PPML Estimation- Developing Countries

Dependent Variable: exports	(1)	(2)	Interactions	contd...(2)
Landlockedness (llock-dummy)	-0.204***	4.424***		-
	(0.000)	(0.001)		-
Openness (Tariff Rate %)	-0.083***	-0.083***	Openness*llock	0.063***
	(0.000)	(0.000)		(0.000)
Exporter's GDP (log)	1.048***	1.045***	GDP*llock	-0.360***
	(0.000)	(0.000)		(0.000)
Partner's GDP (log)	0.801***	0.799***	Partners' GDP*llock	0.048***
	(0.000)	(0.000)		(0.000)
Per Capita GDP (log)	-0.346***	-0.351***	Per Cap. GDP*llock	0.668***
	(0.000)	(0.000)		(0.000)
Partner's per capita GDP (log)	0.017***	0.010***	Part. Per.Cap.GDP*llock	0.058***
	(0.000)	(0.000)		(0.000)
Bilateral RER (log)	0.101***	0.093***	Bilater RER*llock	0.077***
	(0.000)	(0.000)		(0.000)
Relative Factor Endowment (RFE -log)	0.118***	0.137***	RFE*llock	-0.358***
	(0.000)	(0.000)		(0.000)
Distance (log)	-0.577***	-0.571***	Distance*llock	-0.172***
	(0.000)	(0.000)		(0.000)
Common Border	1.113***	1.116***	Com.Border*llock	-0.167***
	(0.000)	(0.000)		(0.000)
Common Language	0.847***	0.842***	Com. Language*llock	-0.570***
	(0.000)	(0.000)		(0.000)
Regional Trade Agreement (RTA)	0.259***	0.237***	RTA*llock	1.227***
	(0.000)	(0.000)		(0.000)
Africa-dummy	-0.316***	-0.296***	africa*llock	1.207***
	(0.000)	(0.000)		(0.000)
Post Soviet Countries	-0.138***	-0.183***	Post Soviet*llock	1.052***
	(0.000)	(0.000)		(0.000)
Number of observations	107499			107499
Pseudo R-squared	0.8799			0.87
RESET test p-values	0.27			0.29
Year Effect	Yes			Yes

Note 1: To know the coefficients of LLDCs, all variables have been interacted with landlockedness in the column (2).

*Note 2: *** , ** and * indicate the significance levels at 1%, 5 % and 10% level of significance. The figures in parentheses are standard errors.*

Also, noting the economic development phase of Botswana in African region, alternative estimation is conducted removing Botswana from estimation. The estimation results remain qualitatively same, hence have not been reported here.

Robustness Check

In addition to estimating the model in various specifications, further estimations have been made including partner country specific effect in the model, to check wheter the results are robust. The results for all variables are consistent with the main results presented in Table 5. Also, the results reported in Table 7 are not substantially different form the results presented in Table 6, thus, suggest the robustness of the estimations.

Table 7 about here

5 CONCLUSIONS

The results suggest that, although landlocked developing countries have been making some progress in export expansion over the past four decades, their export performance remains poor compared to other developing countries. While landlockedness remains a constraint, there are opportunities for these countries to improve their export performance by creating a more trade-friendly environment through lowering tariffs, reforming exchange rates and involving themselves in regional trade agreements. Both demand and supply side factors play a significant role in determining the export performance of LLDCs, as indicated by their own and their partners' GDPs. The real exchange rate is a significant determinant of export performance.

The results for the relative factor endowment variable (measured by the absolute difference between the per capita incomes of trading partners) confirm the Linder hypothesis that trade links are much stronger among countries with similar income levels. The coefficients for the distance variable suggest that distance-related trade costs restrict export performance more in landlocked developing countries than in other developing countries. Having a common border is more important than having a common language for export performance in these countries. There

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is no evidence to suggest that African landlocked countries are disadvantaged compared to other landlocked countries in world trade. On the contrary, ceteris paribus, the average export levels for these countries are about 125 percent higher than the average level for other LLDCs, holding other variables in the model constant. This result perhaps reflects the liberalisation reforms undertaken by a number of these countries since the early 1990s, the impact of which is not adequately captured by the explanatory variables used in the model.

Unlike other studies that just used the landlockedness dummy, apart from this, I estimated the export performance for landlocked developing countries in a separate sample. Based on the narrative analysis, it can be said that the immediate trade policy challenge is to create a more trade friendly environment and to improve the quality of infrastructure and logistic performance, to improve the supply side factors in the international trade of LLDCs. However, the advantage from trade liberalisation is not equally beneficial to LLDCs compared to non-landlocked developing countries. These countries need to find potential export avenues, such as becoming involved in a global production sharing network, product specialization, and building up strong infrastructure for the comparative size of their economies. The empirical analysis suggests that these countries need to create a more trade-friendly environment in the economy, by reducing tariff rates and making exchange rate policies that favour exports.

The major policy inference from this study is landlocked countries have a constraint but LLDCs can improve their export level by creating more export friendly environment and maintaining export friendly exchange rate system. Trade related cost is more crucial to improve the export performance in LLDCs than the trade liberalisation. There is a benefit from trade liberalisation in LLDCs too but when compared to other developing countries, the benefits are low.

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Table 2: Liberalization Status: Landlocked Developing Countries

Region/Country	Lib. Status	Updated Sachs-Warner Criteria of Liberalisation for 1999-2009				
		Av. tariff %	NTB Rate %	B-M Prm. %	Exp. Mkt. Board	Socialist State
EAP						
Lao PDR	-	11.3	na	na	0	0
Mongolia	1997	4.8	0	0	0	0
ECA						
Armenia	1995	2.2	0	0	0	0
Azerbaijan	1995	4.9	0	0	0	0
Belarus	-	6.3	na	0	0	0
Kazakhstan	-	4.4	na	na	0	0
Kosovo	-	na	na	na	0	0
Kyrgyz Republic	1994	4.3	0	0	0	0
Macedonia, FYR	1994	5.3	0	0	0	0
Moldova	1994	2.3	0	0	0	0
Serbia	-	6.6	na	na	0	0
Tajikistan	1996	5.3	0	0	0	0
Turkmenistan	-	1.4	na	na	0	0
Uzbekistan	-	6.6	na	0	0	0
LAC						
Bolivia	1985	7.5	0	0	0	0
Paraguay	1989	7.7	0	0	0	0
SA						
Nepal	1991	15	0	0	0	0
Bhutan	-	18.0	na	0	0	0
Afghanistan	-	5.5	na	22	0	0
SSA						
Botswana	1979	7.9	0	0	0	0
Burkina Faso	1998	11.2	0	0	0	0
Burundi	1999	13.2	0	0	0	0
CA Republic	-	15.5	na	0	1	0
Chad	2001	14.1	0	0	0	0
Ethiopia	1996	12.6	0	0	0	0
Lesotho	2001	15.3	0	0	0	0
Malawi	2001	13.1	0	0	0	0
Mali	1988	9.8	0	0	0	0
Niger	1994	11.1	0	0	0	0
Rwanda	2001	12.5	0	0	0	0
Swaziland	2001	7.0	0	0	0	0
Uganda	1988	7.7	0	0	0	0
Zambia	1993	9.3	0	0	0	0
Zimbabwe	-	20.3	0	29	0	0

Source: Author's Calculation following Wacziarg & Welch (2008)
Note: (1) Updated Sachs Warner criteria; (a country is liberalized when it has no more than 40% of NTB , no more than 40% of average tariff rate, no more than 20% of black market exchange rate and does not have export marketing board and socialist state), (2) "na" not available, but believed the figures exceed the given criteria making these countries remain closed, (3) lib., Av., CA, B-M prm., Exp. Mkt., and NTB stand for liberalization, average, Central African Republic, black market premium, export market and non-tariff barriers. "-" refers remain close.

Table 3: Export % of Merchandise in 1999, 2007 and 2009

Regions / Countries	Year	Total Non-oil Exports (%)	Manufacturing Exports(%)	Primary Exports(%)	Total Exports (US$ million)
EAP					
Lao PDR	1999	-	-	-	-
	2007				
	2009	-	-	-	-
Mongolia	1999	100	20	80	358
	2007	91	5	86	1887
	2009	-	-	-	-
ECA					
Armenia	1999	92	59	32	232
	2007	99	56	43	815
	2009	100	31	69	586
Azerbaijan	1999	21	9	13	929
	2007	19	6	12	6058
	2009	7	3	4	14689
Belarus	1999	91	75	16	5909
	2007	65	53	12	24275
	2009	63	48	15	21282
Kazakhstan	1999	56	24	33	5871
	2007	34	13	21	47748
	2009	30	13	17	43196
Kosovo	1999	-	-	-	-
	2007	-	-	-	-
	2009	-	-	-	-
Kyrgyz Republic	1999	88	20	68	454
	2007	88	35	53	904
	2009	97	19	78	1178
Macedonia, FYR	1999	98	66	32	1191
	2007				
	2009	99	51	48	2692
Moldova	1999	100	27	73	428
	2007	100	32	68	846
	2009	100	23	77	780
Serbia	1999	-	-	-	-
	2007	-	-	-	-
	2009	-	-	-	-
Tajikistan	1999	87	13	74	692
	2007	-	-	-	-

Continued on next page

Table 3 – *Continued from previous page*

Region / Country	Year	Total Non-oil Exports (%)	Manufacturing Exports(%)	Primary Exports(%)	Total Exports (US$ million)
	2009	-	-	-	-
Turkmenistan	1999	36	12	24	1187
	2007				
	2009	-	-	-	-
Uzbekistan	1999	-	-	-	-
	2007	-	-	-	-
	2009	-	-	-	-
LAC					
Bolivia	1999	95	38	56	1402
	2007	52	7	45	4813
	2009	61	6	55	5297
Paraguay	1999	100	15	85	741
	2007	100	13	87	2817
	2009	100	11	89	3167
SA					
Afghanistan	1999	-	-	-	-
	2007	-	-	-	-
	2009	100	18	82	403
Bhutan	1999	58	40	18	116
	2007	63	38	25	675
	2009	58	41	16	496
Nepal	1999	100	77	23	524
	2007	-	-	-	-
	2009	100	67	33	886
SSA					
Botswana	1999	100	90	10	2763
	2007	100	73	27	5073
	2009	100	76	23	3456
Burkina Faso	1999	99	15	84	236
	2007	100	7	93	453
	2009	100	6	94	796
Burundi	1999	100	0	100	62
	2007	96	21	76	156
	2009	99	15	83	113
Central African Republic	1999	100	61	39	110
	2007	100	22	78	131
	2009	100	3	97	81
Chad	1999	-	-	-	-
	2007	-	-	-	-
	2009	-	-	-	-

Table 3 – *Continued from previous page*

Region / Country	Year	Total Non-oil Exports (%)	Manufacturing Exports(%)	Primary Exports(%)	Total Exports (US$ million)
Ethiopia	1999	100	7	93	449
	2007	100	13	87	1277
	2009	100	8	92	1587
Lesotho	1999	100	95	5	336
	2007	-	-	-	-
	2009	-	-	-	-
Malawi	1999	100	9	91	438
	2007	100	11	89	868
	2009	100	9	91	1188
Mali	1999	100	5	95	472
	2007	100	3	96	1441
	2009	100	4	96	1930
Niger	1999	100	2	98	181
	2007	99	6	92	494
	2009	99	4	94	628
Rwanda	1999	100	3	97	57
	2007	100	4	96	154
	2009	100	20	80	237
Swaziland	1999	-	-	-	-
	2007	99	70	29	1086
	2009	-	-	-	-
Uganda	1999	100	3	97	506
	2007	99	21	78	1099
	2009	99	26	73	1085
Zambia	1999	99	18	81	1063
	2007	99	13	87	4618
	2009	99	10	89	4312
Zimbabwe	1999	98	27	71	1887
	2007	99	48	51	3185
	2009	99	33	66	2179
Landlocked Developing	1999	80	37	43	24803
	2007	58	28	30	114228
	2009	51	22	29	110312
Other Developing	1999	87	65	21	979690
	2007	82	64	18	3550952
	2009	82	63	19	3439865

Table 3 – *Continued from previous page*

Region / Country	Year	Total Non-oil Exports (%)	Manufacturing Exports(%)	Primary Exports(%)	Total Exports (US$ million)
Developed	1999	96	81	14	3988681
	2007	91	74	17	8345468
	2009	91	71	20	7230073
World	1999	93	77	16	5175221
	2007	87	70	17	12700000
	2009	86	67	19	11400000

Table 7: Robustness : PPML Estimation- Developing Countries

Dependent Variable: exports	(1)	(2)	Interactions	contd...(2)
Landlockedness (llock-dummy)	-0.181***	3.508***		-
	(0.000)	(0.001)		-
Openness (Tariff Rate %)	-0.075***	-0.075***	Openness*llock	0.062***
	(0.000)	(0.000)		(0.000)
Exporter's GDP (log)	1.042***	1.040***	GDP*llock	-0.327***
	(0.000)	(0.000)		(0.000)
Partner's GDP (log)	1.474***	1.454***	Partners' GDP*llock	0.047***
	(0.000)	(0.000)		(0.000)
Per Capita GDP (log)	-0.325***	-0.333***	Per Cap. GDP*llock	0.626***
	(0.000)	(0.000)		(0.000)
Partner's per capita GDP (log)	-0.322***	-0.308***	Part. Per.Cap.GDP*llock	0.097***
	(0.000)	(0.000)		(0.000)
Bilateral RER (log)	0.168***	0.178***	Bilater RER*llock	0.058***
	(0.000)	(0.000)		(0.000)
Relative Factor Endowment (RFE -log)	0.083***	0.104***	RFE*llock	-0.301***
	(0.000)	(0.000)		(0.000)
Distance (log)	-0.655***	-0.648***	Distance*llock	-0.201***
	(0.000)	(0.000)		(0.000)
Common Border	0.730***	0.736***	Com.Border*llock	0.164***
	(0.000)	(0.000)		(0.000)
Common Language	0.384***	0.360***	Com. Language*llock	-0.032***
	(0.000)	(0.000)		(0.000)
Regional Trade Agreement (RTA)	0.315***	0.286***	RTA*llock	1.063***
	(0.000)	(0.000)		(0.000)
Africa-dummy	-0.168***	-0.137***	africa*llock	0.851***
	(0.000)	(0.000)		(0.000)
Post Soviet Countries	-0.124***	-0.156***	Post Soviet*llock	0.859***
	(0.000)	(0.000)		(0.000)
Number of observations	107499			107499
Pseudo R-squared	0.91			0.91
RESET test p-values	0.27			0.31
Partner Country fixed effect	Yes			Yes
Year Effect	Yes			Yes

Note 1: To know the coefficients of LLDCs, all variables have been interacted with landlockedness in the column (2). The Column contd...(2) is the continuation of the results for model specification (2).

Note 2: *** , ** and * indicate the significance levels at 1%, 5 % and 10% level of significance. The figures in parentheses are standard errors.

Table A.1: DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
Exports (log)	141848	9.322	3.602	-4.90	21.76
Bilateral RER (log)	134121	4.626	0.341	1.59	8.06
GDP (log GDP i,t)	138903	23.281	2.029	16.24	28.62
Partners GDP (log GDP j,t)	139679	24.563	2.207	19.04	30.09
Per Capita GDP (log)	138903	7.035	1.104	4.06	9.58
Partners per capita GDP (log)	139679	8.291	1.567	4.69	10.94
Openness (Tariff Rate %)	113688	9.943	6.673	0.00	112.57
Relative Factor Endowment (log)	136801	8.105	1.730	-3.82	10.94
Distance (log D i, j)	141689	8.651	0.828	4.45	9.89
Common Boarder (Dummy)	141689	0.03	0.17	0	1
Landlockedness	141848	0.19	0.39	0	1
Common Language (Dummy)	141689	0.17	0.38	0	1
Regional Trade Agreements	141848	0.09	0.28	0	1
Africa	141848	0.29	0.45	0	1
USSR	141848	0.10	0.30	0	1

Table A.2: CORRELATION MATRIX

	lexports	lreer	lgdp	lgdp-p r	lgdppc	lgdppc r	tariff	lrlf	ldist	contig	llock	comlan f	rta	africa	USSR
lexports	1.00														
lreer	0.01	1.00													
lgdp	0.46	0.04	1.00												
lgdp-partner	0.40	-0.04	-0.19	1.00											
lgdppc	0.17	0.10	0.34	-0.08	1.00										
lgdppc-par r	0.20	-0.03	-0.11	0.54	0.00	1.00									
tariff	-0.10	0.01	-0.08	0.00	-0.17	-0.03	1.00								
lrlf	0.16	0.01	-0.05	0.45	0.08	0.78	-0.03	1.00							
ldist	-0.14	0.04	0.14	0.18	0.07	0.10	0.00	0.16	1.00						
contig	0.16	-0.01	0.02	-0.05	-0.03	-0.13	-0.02	-0.16	-0.39	1.00					
llock	-0.17	-0.09	-0.37	0.12	-0.43	0.06	-0.08	0.02	-0.09	0.04	1.00				
comlang-off	0.01	-0.01	-0.14	-0.12	-0.03	-0.08	0.12	-0.08	-0.25	0.15	0.01	1.00			
rta	0.17	-0.02	-0.04	-0.08	0.06	-0.07	-0.08	-0.12	-0.44	0.28	0.02	0.15	1.00		
africa	-0.20	-0.07	-0.36	0.07	-0.50	-0.01	0.12	-0.02	-0.03	0.02	0.23	0.18	-0.01	1.00	
ussr	0.05	-0.20	-0.03	0.04	-0.04	0.03	-0.24	0.01	-0.18	0.04	0.27	-0.14	0.03	-0.20	1.00

Note: For details of variables, see Table A.1. Variables are in the same order.