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Trade and Institutions  
Evidence from Regional Studies

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*Abstract*

This paper studies the relationship between trade and institutions in regions for the period 1980 to 2010 using the generalized method of moments estimation technique and other instrumental variable estimation technique such as two stage least square and two stage generalized least square in order to ensure validity of our GMM estimates. The study finds that, consistent with past literature, institutions do have a significant effect on trade. Different measures that capture domestic and international institutions were used. It was found that domestic institutions had a more significant effect on trade than international institutions. Domestic institutions were also found to be more inward looking and protectionist in nature and were probably increasing average tariffs in order to protect domestic trade, while international institutions were probably more concerned about regional integration, tariff reduction and trade facilitation in general. Using different measures of economic policy, we find from our results that institutions that affect trade do not differ significantly from one another. The effectiveness of domestic institutions in promoting trade was examined through interacting domestic institutions with access to local and foreign markets (market access), market potential (market size) as well as regional average tariffs, the result was that domestic institutions increase cost of international trade through increasing tariffs but decrease transportation to markets and were not developing regional specific market potential, the results for international institutions were a reduction of all three factors i.e. tariffs, cost of transportation to market and market size.

Keywords: Exports, international trade, institutions, market size and transaction cost

JEL Code: F13, N2, D40, D23

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## *1.0 Introduction*

Exports and institutions can have strong consequences for growth and development in regions. The study of how institutions affect international trade is likely to provide an insight, on how regional specific institutions affect export oriented growth. A number of studies have shown that institutions in many developing countries are weak, and as such have strong and negative consequences on growth and development in many of such countries. While the more developed countries of the World have better established and effective institutions. Therefore institutions can have a strong effect, on trade since it is likely to affect investor's perception and subsequently the flow of international investment to countries. Few regional studies have undertaken the task of studying the impact of institutions on trade from a regional centric point of view. Studies by Mauro (1995) and Keefer and Knack (1995) argue that weak institutions are often responsible for slower growth. Others have posited that weak institutions are many a time responsible for lower factor productivity and lower per capita income see Hall and Jones (1999), Olson et al (2000), Acemoglu (2001) using instrumental variable estimation to account for the endogeneity.

The debate on how exactly institutions can affect the overall economy of a country remains vague, since many studies have not till date arrived, at some specific channels through institutions impact growth. A host of variables have been found to be adversely affected by institutions, some include foreign direct investment (Wei, 2000), capital accumulation, total investment and other specific forms of public investments etc. Till date not many papers have thoroughly dealt with the dynamics between trade in commodities and institutions, Anderson (2001) observed the risk of predation due to contract default and states that imperfect enforcement of contract has a negative effect on foreign trade flow.

However, other in-depth studies such as Dollar and Kraay (2002) find that institutional quality is highly correlated with trade, this made them to be primarily concerned with long term decadence growth, which they attributed to be affected by trade oriented growth and institutions. They also attributed rising income and falling poverty to perceived liberalization expansion in countries arguing that such expansion are in fact responsible for trade growth and economic growth on the long run.

After studying liberalization regimes Wacziarg and Welch (2003), find that trade growth is strongly related to economic growth and investment. Although the paper, by Rodrik et al, (2004), does not find a direct relation between trade and income, they find that there exist a complex relationship between institutions, trade and growth in a host of countries. They also argue that institutions have a direct effect on incomes, meaning that trade has an indirect effect on incomes through institutions.

Institutions, on the other hand have the tendency to promote integration, while integration is likely to affect institutional quality in a positive manner. Other papers such as Freund and Bolaky (2004) have studied the dynamics of trade and growth and stress that labour and business regulation are also quite important. Chiang et al (2005), provide evidence from panel studies that a broad domestic mix of policy, institutions and infrastructure plays a significant role in moderating trade impact on growth in countries. Development agencies on the other hand have focused extensively on growth and trade facilitation processes, development assistance, regional integration and offered strong recommendation for sustained institutional development, thereby arguing that development is interlinked with the political economic reforms, institutional development, past colonial ties and history, development assistance as well as North-South trade relationship.

The paper by Wilson et al (2004) capture the effects of trade facilitation using four major components of trade facilitation efforts namely, ports efficiency, customs, regulation, and e-business (which was used as a proxy for telecommunication, financial intermediation and service sector impact on trade facilitation). They find that trade facility reforms gains are enormous, with a huge benefit accruing to exporting. Institutional quality is strongly linked with infrastructure quality, past papers e.g. Limao and Venables (2000) state that infrastructure has a strong link to transportation cost, they argue that transportation accounts for up to 40% of trade cost for coastal countries and about 60% of trade cost for landlocked countries. Livenchenko (2004) studies the differences in institutional quality and find that differences in institution quality were a source of comparative advantage and that institutional differences in countries had a strong effect on trade patterns. Therefore country specific infrastructural provisions are often a reflection of institutions.

The study by Bougheas et al (1999) investigated the impact of institutions on trade cost after endogenizing, transport cost and infrastructure formation using the DSF Ricardian trade model and find that there exist a positive relationship between infrastructure and trade volumes in countries that were found to be optimal to invest in infrastructure in using a host of European countries in their sample. Anderson and Marcoullier (2002), find that trading partner's institutional quality had a positive effect on bilateral trade volumes. The paper by Ranjay and Lee (2003) study various aspects of institutional quality such as contract enforcements and their probable impact on trade volumes, after constructing a theoretical model to show trade volumes can be affected negatively through ineffectual contract enforcements, they find that ineffective enforcements of contracts does affect trade volumes for both differentiated goods and homogenous goods but that the effect were strong for differentiated goods than for homogenous goods.

Finally, Depken and Sonara (2005) study intensively, the impact of economic freedom on US consumer exports and imports and find that institutional quality of partner countries has a positive effect on US exports to such countries. Since international trade is not likely to be homogenous, developed countries that exports finished goods will continue to have a strategic trade advantage over countries that export primary goods. This assertion is supported by Hirschman (1958) and Seers (1964) who argue that it will be more beneficial for a country to have more externalities coming from manufacturables, than from natural resource sectors in their economy. Araujo, Mion and Ornealas (2012) have investigated the factors that promote exporting as a measure of international trade from one country to another and found that weak institutions cannot simply be considered as extra sunk or fixed cost to exporting firms but they also affect firm trade volumes significantly

This paper investigates the relationship between trade and institutions using a sample of data from seven regions which include Sub Saharan Africa, European Union, North America, Latin America, Australia, Middle-East and North Africa and South East Asia Pacific. We use different measures of institutions obtained World Development Indicator (WDI) data. Two different set of institutional quality index were constructed for domestic and international measures of institutions, we created this index using principal component analysis which uses Eigen-values matrix to generate a variable from a set of closely related variables.

We identify a host of exogenous measures that are likely to affect trade, such as country specific market size (GDP per capita), market access (access to both domestic and foreign markets) and average tariffs, access to capital, aggregate commercial bank lending, exchange rate and foreign direct investment. We also consider the extent of institutional effectiveness on market access and average tariffs using interactive variables to determine how effective institutions are in promoting trade, since past literature already posits that institutions have a strong positive effect on trade. We also account for regional specific effects that can affect trade as well as fluctuation in output productivity in years using regional dummies and year. We run four different model specifications using ordinary least square (OLS), two stage least square (2SLS), two stage generalized least square (2SGLS) and generalized method of moments (GMM), to estimate various variants of our trade-institution equations.

Our results show that institutions is contributing to exports promotion in regions, however we had mixed results using the interaction variables which showed that institutions were in fact not as effective as it seemed in promoting trade particularly in the areas of facilitating access to markets and in tariffs reduction. The rest of the paper is divided into four sections. The first section focuses on stylized facts on trade and institutions, and problems with measuring institutions. The second section addresses the theory and methodology, data and sources. The third section of the paper centers on empirical analysis and results and finally the last section conclude the study.

## *2.0 Regional Exporting and Institutional Quality*

Regions can benefit enormously from international trade, by strategically positioning themselves to exploit the advantages arising from international trade in commodities. Export oriented growth and trading in the global market has the capacity to alleviate poverty and support entrepreneurship in many developing countries while it has the tendency to drive growth and promote learning and transfer of technology in many cooperating developed economies.

Institutions can also play a vital role in reducing the overall cost of trade in regions since reducing the cost of transportation to local and foreign markets can be a strong incentive for exporters. There are many ways through which trade is likely to contribute to the overall growth and development of a country. Exports can for instance serve as a source of income to a country

thereby boosting the exporting countries GDP. While relations accruing from trade, can help in the facilitation of transfer of technology, from developed countries to developing countries.

Output productivity varies differently with regions. Regional climatic differences often mean, agricultural products and jobs sectors are often different across regional divide. For instance the services sectors accounts for a greater percentage of labor market participation in developed countries in Europe and North-America while most developing countries in Africa and Latin America often depend more on agriculture.

Exports from Latin America are mainly in basic food items, consumer goods and building materials see UN statistics 2010. Trade in regions today is been facilitated by various regional trade alliances, the North American economy for instance is divided into three major blocks which include the North America Free Trade Association (NAFTA), the Caribbean Community and Common Market (CARICOM), the Central American Common Market (CACM). Canada and the United States already concluded one of the Worlds bilateral trade treaties that have the total elimination of tariffs in goods and services across their borders. With Mexico recent qualification for tariff free trade with the United States through the NAFTA agreement trade among the three major North America countries has increased by over 24% since 2010 see World Trade Organization (WTO) statistics 2011.

In 2012 the European Union economy had a combined GDP of 16.07 trillion dollars, see OECD 2012 data. Credit Suisse Global Wealth report 2012 also states that the EU has the highest net wealth in the World and currently consist of 33% of the total global net wealth. It currently consists of 28 countries with a single common market which makes up the European Economic Community consisting of three non member countries which are Norway, Switzerland and Liechtenstein (UNCTAD Statistics 2012).

Australia also has the fifth highest per capita GDP and the twelfth largest economy in the world. Owing to a balance in exports of manufactured products and commodities, Australia is the only OECD country not to have experienced a recession during the 2008/2009 global economic prices. However Australian economy has persistently been affected particularly by the non mining sub-regions, whose economies have entered into recession despite the GDP growth of

3.5%. Most of Australia's trade is with Japan and China with the United States and New Zealand a distant third and fourth.

According to the World Bank statistics 2012, the African economy is endowed with natural resources and has the capability of feeding and sustaining its population. While Africa continues to export primary commodities, trade among African countries is often lacking. In 2005 Africa's economy grew by 5%. However the sub-Saharan region of Africa, has been the least successful in poverty reduction, with more than 50% of the population, living below the poverty line see UN statistics 2012. UNESCO World review 2000, also state that nearly 52% of the children in sub-Saharan Africa were enrolled in primary schools this was the lowest compared to other continents particularly Europe and Australia. The obvious implication is that, with a considerable percentage of unskilled manpower, its exports are likely to be considerably in primary goods.

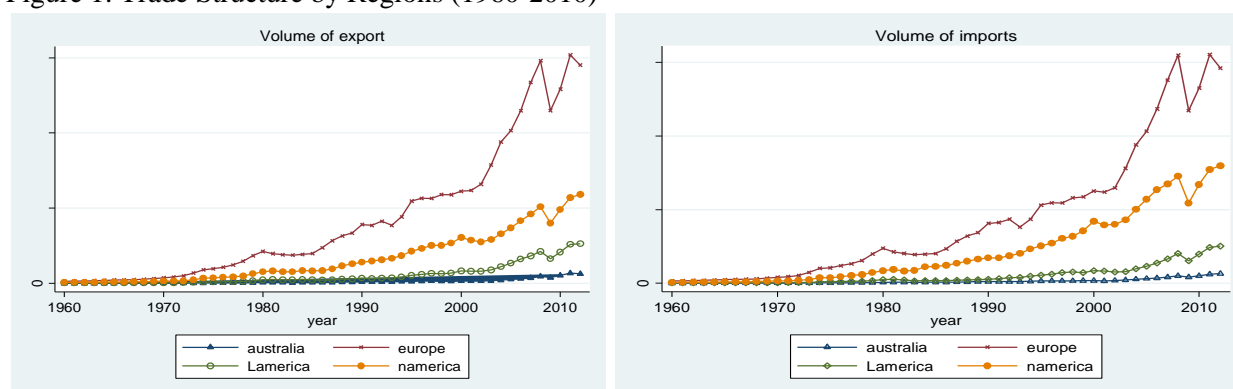
Other regions such as Latin America and South East Asia, have are also heavily reliant on agriculture and mineral exports. Tourism has also thrived in the South East Asian, while countries like China and Japan export a considerable amount of manufactured goods (UNCTAD Statistics 2012).

### *2.0 Some Stylized Facts on Regional Trade and Institutions*

International trade in goods has not returned to the rapid growth rate of the years preceding the crisis (see figure 1&2). On the contrary, it decelerated further in 2012, and while the outlook for world trade remains uncertain, the first signs in 2013 do not point to an expansion. After a sharp fall in 2008–2009 and a quick recovery in 2010, the volume of trade in goods grew by only 5.3 per cent in 2011 and by 1.7 per cent in 2012. This slower rate of expansion occurred in developed, developing and transition economies alike, see table 1 (Trade and development Report, 2013).



Figure 1: Trade Structure by Regions (1960-2010)

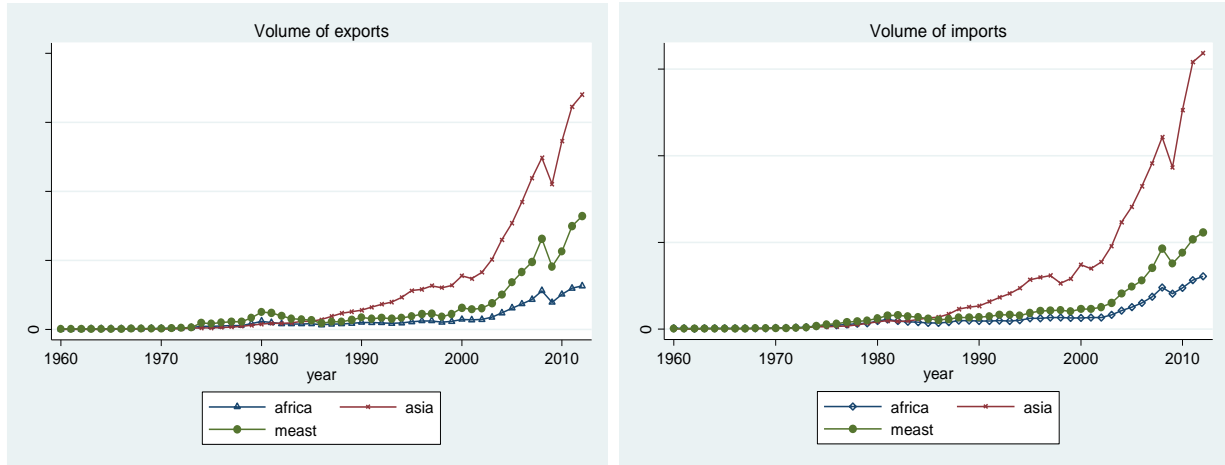


Sluggish economic activity in developed economies accounted for most of the slow down in international trade (See table 1). In 2012, european imports of goods shrank by almost 3 percent in volume and by 5 percent in value. Extremely weak intra-european trade was responsible for almost 90 percent of the decline in european exports in 2012. Likewise, Japan’s exports have not yet recovered from their sharp fall caused by the earthquake of 2011, while the volume of imports has continued to grow at a moderate pace. Also, among the developed economies, only the United states maintained a positive growth rates in its international trade, although this appears to be slowing down in 2013. Trade also decelerated considerably in developing and transition economies. Both exports and imports grew sluggishly in 2012 and the first months of 2013 in most developing regions. The sole exception was Africa, where exports recovered in countries previously affected by civil conflict. Export growth declined to 4 per cent in the developing countries as a whole. This slowdown included Asian countries that had previously played a major role in boosting international trade.

The crisis of 2008–2009 has altered trade patterns in both developed and developing countries. Imports by all developed regions remain below their pre-crisis level, and only the United States has managed to increase its exports to a higher level than their previous peak of August 2008 (see figure 1). On the other hand, exports from the group of emerging market economies were 22 per cent above their pre-crisis peaks, while the corresponding figure for their imports was 26 per cent higher (see figure 2&3). However, the pace of growth of trade of these economies has slowed down significantly: during the pre-crisis years, between 2002 and 2007, their export volume grew at an average annual rate of 11.3 per cent, but fell to only 3.5 per cent between

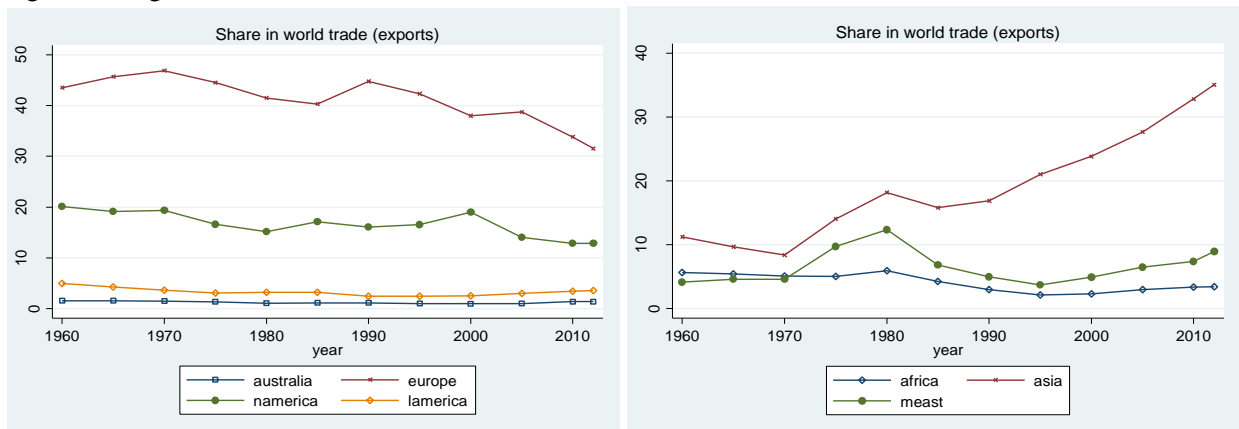
January 2011 and April 2013. Growth in the volume of their imports also slowed down from 12.4 per cent to 5.5 per cent over the same period (UNCTAD Report 2013).

Figure 2: Trade Structure by Regions (1960-2010)



Trade growth also decelerated considerably in developing and transition economies in 2012, though the figures remained positive for most countries. In the transition economies, the rate of growth of the volume of exports was 1 per cent in 2012, down from 4.2 per cent in 2011, and that of imports was 3.9 per cent in 2012, down from 15.7 per cent in 2011. Likewise, in developing countries the rate of growth of exports fell from 6 per cent in 2011 to 3.6 per cent in 2012, and that of imports from 7.4 per cent in 2011 to 4.5 per cent in 2012.

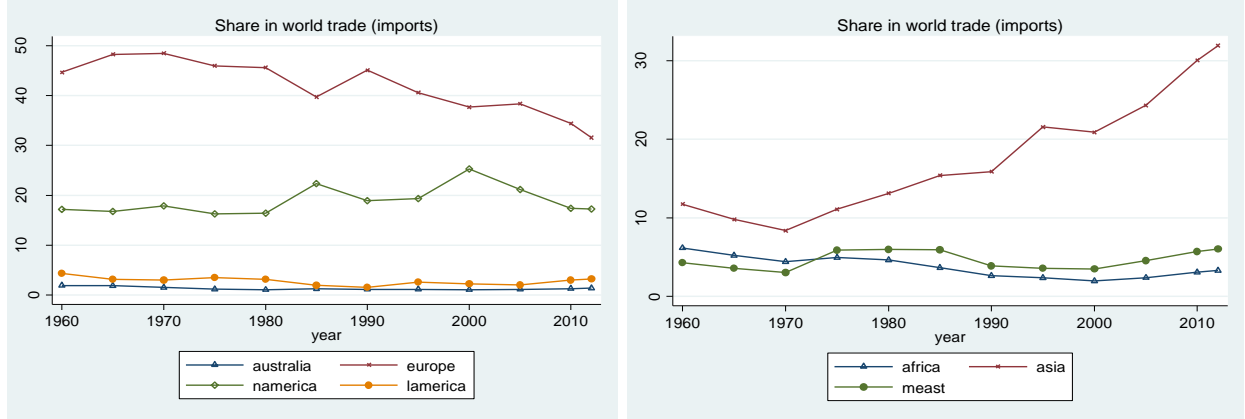
Figure 3: Regional Share in World Trade 1960-2010



At the sub-regional level, two notable exceptions stand out from this general pattern of developing country trade. The first is the recovery of trade in some North African economies

from low levels in 2011, which contributed to higher trade growth in Africa as a whole. The second is the absolute decline in the volume of exports from South Asia, explained mainly by a reduction of oil exports from the Islamic Republic of Iran, though India’s export volumes also fell, by 2.5 per cent. This was largely due to the economic slowdown in Europe, which accounts for almost one fifth of India’s total exports, as well as weak exports to China.

Figure 4: Regional Share in World Trade 1960-2010



Inefficient institutions, in contrast, can lead to serious obstacles for trade. Bigsten et al. (2000), for instance, describe how the absence of an efficient legal system hinders interaction between manufacturing firms in a number of African countries and potential foreign importers (see table 1). It is shown that contractual flexibility is pervasive and that it is a rational response to risk: the riskier the environment, the higher the incidence of contract non-performance, and the higher the probability of renegotiation of a contract. Complete contract breaches and the use of lawyers and courts to enforce the original contract are rare, simply because of the absence of an efficient legal system. Instead, suppliers and clients fulfill their contracts but in a "flexible" way: supplies occasionally arrive late or their quality is different from what was ordered, and clients sometimes pay late. In their dealings with African firms, trading partners are often taken by surprise by contractual delays and calls for contractual renegotiation. Those who are used to functioning in a very different environment may find it hard to understand that the somewhat unpredictable behaviour of African firms in such cases is a rational response to an inefficient system (Marion and Norda, 2004). This may explain why foreign firms find it difficult to deal with African partners and why African manufacturers have a hard time breaking into export markets.

Table 1: Trend of trade, institutions and economic growth

Region/year	Share in world non-oil export		Per capita income		GDP growth rates		Share in world population		Strength of legal right		No. Of days to execute contract		No. of major countries
	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	
Australia	0.32	0.27	33379	38837	2.00	1.91	0.31	0.32	9	9	395	395	1
Africa	0.67	0.87	965	1257	3.44	4.85	13.23	14.81	4.6	4.65	625	651	61
Asia	24.14	35.41	1499	2577	6.76	8.70	57.05	56.97	4.7	6.1	476	493	51
Europe	39.91	38.51	25929	28669	3.92	2.13	7.89	7.28	6.7	7.0	568	549	27
Latin America	4.15	3.53	4804	5843	4.48	6.02	7.58	7.59	3.9	5.4	710	711	26
Middle east	1.30	2.50	3899	4998	5.39	6.33	6.02	6.47	3.4	3.5	661	670	17
North America	20.54	12.71	31198	32916	4.41	2.61	6.81	7.00	8	8	435	435	3

Source: Authors' compilation

Inefficient institutions represent a cost factor for domestic exporters and thus lower their international competitiveness with negative repercussions on export flows; transaction costs due to inefficient institutions also raise the final consumer price of imported goods with negative repercussions on a country's import flows. Evidences from empirical and theoretical literature suggest that lower institutional quality has a substantially negative effect on trade (Anderson and Marcouiller 2002); likewise, De Groot et al. (2004) discovered that better quality of formal institutions tends to coincide with more trade and that similarity between trading partners in the quality of their institutions promotes trade.

### 3.0 Theory and Methodology

A simple theory that analyses the effect of exporters' perception in regions (a reflection of institutions) on regional exports is presented in this section. While there are several theories however to choose from we stick by the theory presented by Francois and Manchin (2012) which examines the effect of different factors trade flows. We do not use the gravity model since our focus is trade in regions; we as well adopted a partial log model specification. Francois and Manchin (2007) examined bilateral trade flows particularly for cases of zero bilateral trade using a sample selection gravity trade model specification. This involved specifying a sample selection model that takes into account the censoring process that leads to zero bilateral trade flows. Other similar papers such as Fabelmayr and Kohler (2004), also estimated bilateral trade flows and trade volumes using Tobit estimator to examine bilateral zeros. Araujo, Mion and Ornelas (2012) after describing how institutional environment both domestic and international affect home exports, develop a two empirical strategy model, in one specification they used firm year fixed

effects to control for time varying firm specific characteristics, while in the other they model selection using two step Heckman procedure using the augmented gravity model variables as exclusion restrictions obtaining the same predictions using both methods.

Using the model first presented by Araujo and Ornelas (2007), the methodology we employ is one, in which the institutional environment will affect exporting in regions, having implication for the private sector of an economy which we extend to include other factors that affect trade.

This can happen for two reasons; first there will be a direct effect of institutions on exporting such that local producers or exporters will receive back their invested revenue in trade, this will make local producer export more. Secondly, due to gains accruing from exports as result of good institutions new producers are likely to want to take to exporting and establish trade partnerships.

The model will therefore depict one in which export volume will vary either positively or negatively, with trading partnership this will be particularly true since the nature of partnership will depend on institutions. If a trade contract then implies a contract where  $k > 0$ , where  $k$  is profits in this case, we can evaluate some probable scenarios and make prepositions based on these. Firstly, how exporters and distributors partnership relationships begin and terminate, secondly, how at equilibrium such partnership are likely to be formed, thirdly how profit maximization goals of distributors and importers can sustain partnership and finally how exporters positive gains will maintain trade relationships. Detailed explanation of the prepositions concerning the trade partnerships are contained in appendix I

### *3.1 Model Specification*

#### *3.1.1 Trade Equation Estimated Using OLS*

The OLS variant of the trade equation is one in which regional trade (exports in constant US dollars) depends on institution and a set of vectors of exogenous variables  $X_{it}$  which affect trade, this include region specific market size (GDP per capita), tariffs (exports duties and import duties), market access (cost of transportation to both local and foreign markets), exchange rate, commercial bank lending, foreign direct investment and regional specific economic policy. It also includes regional specific trends in exporting and the squared and cube of average tariffs and exchange rate as expressed in equation 7 where  $i$  is the index for regions and  $t$  is the index for time.

$$Exports_{it} = \alpha_0 + \alpha_1 Inst_{it} + \alpha_2 X_{it} + \epsilon_{it} \quad 7$$

We control for fixed effect by including the fixed effect dummy, this controls for regional specific technological endowments that are likely to affect exporting and the time dummy ‘year’ is to control for time trend, this allows us to control for regional specific time varying productivity differences in years. In other instance where included, the squared and cube of exchange rate and average tariffs as controls was used to test for the robustness of the regression estimates.

### 3.1.2 Trade Equation using Two Stage Least Squares (2SLS)

We also present the two stage least squares simultaneous equation model variant of the trade equation in equations 8 and 9. The trade equation is a linear specification where  $i$  is the index for regions and  $t$  is the index for time. We conduct instrumental correction for institutions in equation 8 due to the assumption that institution is endogenous.

$$Inst_{i,t} = \alpha_0 + \alpha_1 LogPop_{i,t} + \alpha_2 X_{i,t} + \epsilon_{i,t} \quad 8$$

$$Log Exports_{i,t} = \lambda_0 + \lambda_1 \widehat{inst}_{i,t} + \lambda_2 X_{i,t} + c_i + \mu_{i,t} \quad 9$$

Here once again in equation 9, exports, our measure of trade depends on institutions and the vector of exogenous variables  $X_{i,t}$  that affect trade. This include regional market size (GDP per capita), tariffs (exports and import duties), market size (GDP per capita), market access (cost of transportation to both local and foreign markets), exchange rate, commercial bank lending, foreign direct investment and regional specific economic policy.

In this variant of the trade model, we control for endogeneity of the institution variable by conducting instrumental correction of institutions in the first stage of the model (see equation 8) and using this correction in the second stage of the model (see equation 9). In this section we establish why we believe that our exclusion restriction will hold, since they are typically theoretical, the restriction we impose on our trade equation is that our instrument ( $I_{i,t}$ ) the logarithm of population should be highly correlated with institutions in equation 8 but not with trade (Exports) in equation 9, as shown in equation 10. That is, the correlation between the error term and the instrument should be identically equal to zero. Therefore instruments  $LogPop_{i,t}$  is not correlated with the disturbances ( $u_i$  and  $\epsilon_i$ ) and if the exogenous component of institutions is not correlated with the disturbances we can identify the variation in the dependent variable exports as the slope of the institution coefficient

$$E/Log Pop_{i,t} . u_i = 0$$

10

This shows that there is sufficient variation between the instrument and institutions which is non-zero as shown in equation 11.

$$Cov (Inst_{i,t} \cdot Log Pop_{i,t}) \neq 0 \quad 11$$

In other words the exclusion restriction is such that the logarithm of population will have strong effect on institutions in the first stage of regression but not on trade in the second stage. This is justified by the fact that institutions will actually use population growth projection (Logarithm Population) for planning purposes, allowing logarithm of population to have a strong effect on institutions but not with exports.

### 3.1.3 Trade Equation using 2SGLS with the Interactive Variable

In this section we present a different variant of our trade model. Here we use the 2SGLS random effect model. We include an interactive variable “interact” in each case in the model. The vectors of exogenous variables remain the same as the variables for the 2SLS. We also conduct the instrumental correction for institutions using the same instrument  $I_{i,t}$  (logarithm of population) in the first stage in equation in equation 12. The predictive values of institutions are now used in the second stage of the equation.

$$Inst_{i,t} = \alpha_0 + \alpha_1 I_{i,t} + \alpha_2 X_{i,t} + \epsilon_{i,t} \quad 12$$

$$Log Exports_{i,t} = \lambda_0 + \lambda_1 \widehat{Inst}_{i,t} + \lambda_2 X_{i,t} + v_i + \epsilon_{i,t} \quad 13$$

The use of interactive variable allows us to determine the effectiveness of institutions in promoting trade by interacting institutions with market size, market access and average tariffs. Market size is likely to affect trade in a significant manner if market potential plays a significant role in attracting trade to regions by attracting potential investors while the presence of good institutions can also reduce the transaction cost of trade such as tariffs and cost to destination markets significantly.

### 3.1.4 Trade Equation Using GMM

The difference and system generalized method of moment (GMM) provide a useful way of overcoming the issues of endogeneity. They are also particularly suitable for studying long-run dynamics. The GMM estimator allows us to handle modeling concerns such as fixed effects that are likely to affect exporting and the presence of endogenous regressors; thus allowing us to

resolve the issues of endogeneity of the institutional variable while avoiding panel bias. It also handles unbalanced panel and multiple endogenous regressors (Arellano, Bond 1998; Doornik, Arellano, Bond 2002; and Roodman 2009). Both the system and difference GMM fit the one dependent variable  $Log\ Exports_{i,t}$ , model using linear GMM as shown below in equation 14, where  $i$  represent indexes for regions, and  $t$  is the index for time. The vector of explanatory variables is given by  $X'_{i,t}$  and  $(\alpha - 1)$  is the lagged value of the dependent variable. The disturbance term  $\epsilon_{i,t}$  has two orthogonal components the fixed effects  $\mu_{i,t}$  and the idiosyncratic shocks  $v_{i,t}$ .

$$LogExports_{i,t} = (\alpha - 1)LogExports_{i,t-1} + \alpha_2 X'_{i,t} + \epsilon_{i,t} \quad 14$$

The system GMM augments the difference GMM by estimating simultaneously in differences and levels, the two equations been distinctly instrumented. The GMM has some obvious advantages such as, it is not restricted by choice of functional form and it overcomes issues of endogeneity by using all explanatory variables as instruments and the estimates are robust even in the presence of heteroscedatic errors.

### 3.2 *Data Sources and Measurements*

A panel of seven regions was used for a period of 1980 to 2010, representing 31 years. All data are obtained from World development indicator (WDI) database and others sources, unless otherwise stated.

#### *Dependent Variables*

Our dependent is exports in constant US dollars. We take the log of exports due to the noisy nature of exports. Exports are a measure of total exports of goods and services from countries in regions.

#### *Explanatory Variables*

Other explanatory variables include the various measures institutions, these include infrastructural measures (number of telephone lines), judicial measures (strength of legal rights) and civil administrative measures (time to execute contract in no of days) these were used as measures for domestic institutions, also two measures for international institutions were also used these were multilateral official development assistance (ODA) that captures aid agencies



specific aid disbursement policy particularly to trade and other economic policy conditionality, and the dummy for signatory of world trade organization membership, which measure the influence of the world trade organization on regional specific trade institutions. These measures were also used to construct an index for both domestic and international institutions respectively using principal component analysis. An index for economic policy was constructed using principal component analysis and regression component approach; respectively see Burnside and Dollar (2001) Abeyasekera (2004) and Schlenz (2009), for further discussions on index construction. Exchange rate was used to capture fluctuations in the global economy that are likely to affect trade; this is the average local currency to dollar exchange rate in countries, while market size was measured using GDP per capita. Access to credit facilities was measured using regional specific aggregate commercial bank lending in constant US dollars and transaction cost of trade is the cost of transportation of goods and services to both local and foreign markets (captured using crude oil price) multiplied by regional size in square kilometers. We present the table data in table 1 in the appendix.

#### *4.0 Empirical Analysis and Results*

##### *4.1 Do Institutions Promote Trade?*

In this part of the paper we try to answer if indeed institutions affect trade. The intuition for this study is one that tries to portray a situation where institution provides the adequate enabling environment for trade. Exporters or producers are likely to develop strong ties with distributors and buyers in importing countries due to good enabling environment. This is likely to lead to an increase in exporting making institutions to have the potentials of promoting trade.

We find no reason to dispute this fundamental intuition since countries that have poor institutions are likely to have very few trade ties internationally. The only way therefore, institutions is likely to be related to trade is through strong ties based on trust and guarantees of quick and fair redress in case of disputes between exporters and buyers.

The role of institutions therefore will be one that helps in the trade facilitation process. We present four different variants of the reduced form trade equation model. In the first variant using OLS, trade depends on institutions and host of endogenous variables that we identify to affect trade. In the second variant, we present a set of simultaneous equations since we estimate the two stage least squares model on the premise of the presence of endogenous regressors in this

case we assume that institution is indigenous therefore it is likely that the OLS estimates are likely to be biased. The third variant of our trade equation is estimated using the Arellano-Bond GMM and System GMM dynamic panel method. This also allows us to control for the presence of endogenous regressors in our model specification and long run effects that affect trade.

#### *4.1.2 Results- Using ordinary least square*

The results using OLS is presented in tables 2 to 6 for our measures of domestic and international institutions using the RCA (regression component approach) and PCA (principal component approach) indexes for policy. The results in table 2 and 3 are almost similar; it shows that the measure of infrastructure for institution was not having any significant effect on exporting. Legal rights and contract length had a negative and positive significant effect respectively on exporting in regions. Average tariffs had a negative effect on exports while market size had a positive effect on exports. The index constructed from the three measure of domestic institutions show that domestic institution was affecting trade in exports negatively in regions. The results for the measures of international institutions are presented in table 4 and 5. The dummy for World Trade Organization had no significant effect on trade; however the influence exerted by international multilateral organizations was positively contributing to exports in a significant manner. Economic policy had a positive effect on trade using the different indexes while; market access which is the cost to local and international markets had a significant effect on exporting. The squared and cube of average tariffs and market size were included as variables in the model to test for robustness of the OLS estimates the results were found to remain the same.

#### *4.1.2 Results- Using two stage least square*

Our model is exactly identified since we use only one instrument Logarithm of population ( $\text{Log Pop}_{i,t}$ ) for institutions. Testing for over-identifying restrictions was however not necessary since our model is exactly identified. In the model  $c_i$  represents time invariant unobserved effects on trade and  $\mu_{it}$  represents time varying unobserved effects on trade. The test for endogeneity of the institution variable was conducted; the Hausman-Wu test rejected the null hypothesis with a p-value of 0.01. Therefore using institution as an independent variable could lead to bias results. We used fixed effect method of estimation because it allows us to control for unobservable heterogeneity and omitted variable bias in our model specification.

The results of the two stage least square estimates are presented below in table 6. The instrument logarithm of population performs well in general. It had a strong significant effect on institutions. Our argument is that the logarithm of population has no direct effect on exports. To prove this we put the logarithm of population into the OLS model and found that it had not significant effect on exports as discussed earlier. The second stage results are displayed below. The 2SLS estimation method differed from those of the OLS estimates, Domestic institutions was found to be contributing to exporting by 49 percentage points as opposed to the negative effect obtained from the OLS estimates, while international institutions were affecting exporting in a negative manner by 17 percentage points (see Column 5 and 6 of Table 6). These results show the importance of controlling for the endogeneity of institutions using 2SLS. Market size had no significant effect on exporting while market access and tariffs had a positive effect on exporting in regions. The implication of these findings is that cost of transportation to local and foreign markets was contributing in a positive manner to doing across regions while tariffs were favorable to trade.

#### *4.1.3 Results- Using two stage generalized least square (2GLS)*

The results using the interactive variables are presented in tables 7 and 8. The results shows that domestic institution were ineffective in promoting market size effectiveness in increasing exports in regions, was probably increasing cost of transportation to markets and not reducing tariffs on trade in general, since the interactive effect of institutions on market size which depicts market potential moved from having a positive significant effect to a negative significant effect on exporting in regions (see column 1 table 8, here market size was contributing 5 percentage point to exporting while the interactive variable (domestic institutions\*market size) was reducing exporting by 5 percentage points). Domestic institutions were also probably not helpful in reducing tariffs since our results shows that the interactive effect domestic institutions\*tariffs was reducing exports by 17 percentage points (see table 8 column 3 where tariffs contribution to trade moved from 6 to -11 percent) , this was also the same for market access.

International institutions were more effective in promoting markets contribution to trade since the interactive variable (international institutions\*market size) had an increased positive significant effect on exports by 10 percentage points (from 5 to 15 percentage points see table 8 column 2). International institutions were also more effective, in reducing tariffs and promoting exporting in regions, the interactive variable (international institutions\*tariffs) increased

exporting by 44 percentage points (see table 8 column 4), this was also true for cost of transportation to destination market.

#### 4.1.4 *Results- using generalized method of moments (GMM)*

The Arellano-Bond mis-specification test for auto-correlation was run and the a null hypothesis indicating the absence of auto correlated errors in the underlying levels variables in the regression estimates was accepted, see Arellano-Bond (1991) for further discussion on auto correlated errors in underlying levels variables of regression estimates. We also test the over-identification restriction since the system GMM uses all explanatory variables and the lagged values of the explanatory variables as instruments, implying that we have more instruments than explanatory variables, and accept the null hypothesis that the regression residuals are not correlated with the set of exogenous variables allowing us to state that the instruments are strictly exogenous see Sargan (1958), Hansen (1982) and Bowsher (2002) for further discussion. We present the test results in Table 8. We also present the results of the exports regressions below in Table 9 for the model using system GMM. The results show that our measures of domestic institution (legal right strength and phone lines) are weakly significant in promoting exporting in regions. The index for domestic institution also has a weak significant effect on exporting. The dummy for WTO membership had a weak significant effect on exports while the flow of multilateral aid had no significant effect on exporting. The index for international institutions had a weak significant effect on exporting in regions. The implication of our results using this model is that institutions were in general having a significant effect on exporting in regions although this effect was weak.

#### 4.2 *Summary of results*

1. Institutions were actually significant in promoting export in regions. However the results from the OLS, 2SLS and GMM estimation methods were mixed. The assumption that the institutional variable was endogenous actually led us to doubt the OLS estimates that domestic institutions were probably reducing exporting from regions even though the result was significant.
2. The assumption that domestic institution was probably promoting exporting than international institutions were likely true since the results of our 2SLS estimates point out

that domestic institution was contributing to exporting while international institutions were reducing exporting in regions.

3. Market size of importing and exporting did not affect regional exports significantly
4. Transaction cost had a significant effect on exports from regions the results are mixed. The 2SLS results show that market size has a positive significant effect on exports while the GMM estimates show weak and negative significant effect on exports.
5. Domestic institutions were reducing the effect of market size on trade (see table 8 column 1) while international institutions were increasing the effect of market size on trade (see table 8 column 2). Therefore institutions were having an effect on the development of markets in both exporting and importing countries in regions.
6. Domestic institutions were increasing the negative effect of transaction cost through increase in tariffs on trade; it is likely that domestic institutions were probably more welfare like in nature and firms particularly in the private sector is profit maximizing in nature. International institutions were actually making tariffs have a positive effect on exports by tariff reduction.

## 5.0 *Conclusion*

This paper studies the effect of institutions on trade; it also tries to answer if institutions are effective in developing market potential and reducing trade tariffs in regions. It was found that institutions were probably significantly affecting exports in regions even though our different results show mix findings.

The results after accounting for endogeneity of the institution variable show that institutions were promoting exporting however the extent of the effects of institutions in promoting exports were mixed. The results of Institutional quality effectiveness (i.e. the interactive variable) in promoting exports were also mixed. It was found that although international institutions was probably improving market size through developing regional market potential, domestic institutions were not, also domestic institutions were also increasing the negative effect of tariffs on exporting in regions, while international institutions was promoting regional integration through tariffs reduction.

The implication of our findings are that institutions in general matters in export promotion across regions, but that international institutions are probably more successful in promoting bilateral

trade across regions than domestic institutions. Domestic institutions are also more protectionists, in nature, therefore issues of decrease in tariffs are often of less concern to domestic institutions unlike international agencies.

This paper also contributes to the body of knowledge through offering an insight on the difference of domestic institution effect on trade from those of international institutions thereby examining if there are differences in their contribution to regional trade promotion to which this paper concludes exists.

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## Appendix

### Appendix i

#### *Proposition I.*

We assume that exporting partnership will breakdown when trade partnership frizzles out, therefore at the end of each period  $1-n \in (0, 1)$ , this implies that partnership will cease due to exogenous reasons where  $n$  depicts exogenous factors that affect trade.

*Preposition II.*

Every exporter at equilibrium will form a partnership whenever they meet a buyer or distributor, therefore an exporter will only terminate any existing relationship only when a buyer defaults, but will continue the relationship if the buyer or distributor complies with terms of business subject enforcement. According to Araujo and Ornelas (2007), the exporter posterior beliefs will be a function of their a-priori belief and the distributor default tendencies.

$$\theta_k = \sum_0^k \frac{\lambda^k \theta_0}{\lambda^k \theta_0 + 1 - \theta_0} \quad 1$$

Where  $\theta_k$  is posterior belief that producers or exporters are short sighted,  $\theta_0$  represents apriori belief of producers and exporters and  $\lambda$  captures the distributors default rate.

*Preposition III.*

Since producers or exporters pay the cost of production distributors or buyers gain are always positive in nature, reducing the likelihood to default among distributors and buyers.

*Preposition IV.*

The producer or exporter will decide to terminate or not to terminate as long as his gain is positive which will depend on production cost, cost of transportation, demand for his products in importing countries, exchange rate fluctuations, importing country tariffs on foreign goods, access to capital to meet production demand etc.

If the producers are short sighted seeing no gains from exporting we can write initial exports as a change in exporting with respect to the short sighted distributors and buyer belief where  $R$  is revenue.

$$\frac{\partial Q_0}{\partial \lambda} = \frac{[\theta_0 - (1 - \lambda) \frac{\partial \theta_0}{\partial \lambda}] R' (Q_0)}{[1 - \theta_0(1 - \lambda) R'' (Q_0)]} > 0 \quad 2$$

The direct effect of a change in exports with respect to producers belief will be obtained by taking the first order conditions of equation 1 and setting,  $\frac{\partial Q_0}{\partial \lambda} = 0$

$$\frac{\partial Q_0}{\partial \lambda} = 0 \frac{[\theta_0] R' (Q_0)}{[1 - \theta_0(1 - \lambda) R'' (Q_0)]} > 0 \quad 3$$



Since producer belief  $\theta_k$  is shaped by distributor's ability to default without incurring cost  $(1 - \lambda)$  export growth will be a factor of  $Q_K = \text{Export volume at the } (k+1)^{\text{th}} \text{ period of partnership}$  therefore the optimal export quantity will increase as the short sighted distributor or buyer belief decreases we can express this below as

$$\frac{\partial Q_K}{\partial \theta_K} = 0 \frac{[1 - \lambda] R' (Q_k)}{[1 - \theta_k(1 - \lambda) R'' (Q_k)]} > 0 \quad 4$$

Therefore the ongoing partnership without default causes a situation where the volume of trade increases overtime which can be expressed as shown in equation 5.

$$\frac{\partial Q_K}{\partial K} = \frac{\partial Q_K}{\partial \theta_K} \cdot \frac{\partial \theta_K}{\partial K} > 0 \quad 5$$

We now extend this model by inserting other factors that affect trade therefore exports is a function of,  $f(\theta_K, M_K, T_K \text{ and } Z_K)$ , change in environment  $\theta_K$ , and these other factors that we identify affect trade, these include market size  $M_K$ , tariffs  $T_K$  and other exogenous variables  $Z_K$ . that affects trade allowing us to rewrite equation 5, in equation 6, by extending the model.

$$\frac{\partial Q_K}{\partial K} = \frac{\partial Q_K}{\partial \theta_K} \cdot \frac{\partial \theta_K}{\partial K} + \frac{\partial Q_K}{\partial M_K} \cdot \frac{\partial M_K}{\partial K} + \frac{\partial Q_K}{\partial T_K} \cdot \frac{\partial T_K}{\partial K} + \frac{\partial Q_K}{\partial Z_K} \cdot \frac{\partial Z_K}{\partial K} > 0 \quad 6$$

Based on the model 6 above, the empirical outcome of this study would help in ascertaining the under-listed hypothesis. The hypothesis to be verified include (1) Institutions can either promote or reduce exporting in countries depending on institutional quality in both exporting and importing countries, (2) Domestic institutions are likely to affect exporting in a different manner from international institutions in countries since domestic institutions is likely to have a more far reaching effect on trade than international institutions, (3) Market size of importing and exporting countries is likely to affect exporting since this can have strong implications for cost of inputs for production as well as market demand for exporter's goods in importing countries, (5) Transaction cost will have a negative effect on the final cost of exports and thus have a negative significant effect on exporting, (5) Institutions can either improve or reduce the impact of market size on exporting, since institutional quality is likely to affect the development of markets in both exporting and importing countries, And (6) Institutions can either increase or reduce the negative effect of transaction cost on trade depending on the quality of institutions in the exporting and importing countries.

## Appendix ii

Table 2 Impact of Domestic Institutions on Exporting Using RCA Measures of Policy

VARIABLES	(1) Lnexports	(2) Lnexports	(3) lnexports	(4) lnexports
Phone lines	0.01 (0.01)			
legal rights		-0.45*** (0.04)		
Contract length			0.01*** (0.001)	
Domestic Institution				-0.48*** (0.06)
Average tariffs	-0.13*** (0.02)	-0.18*** (0.02)	-0.18*** (0.02)	-0.17*** (0.02)
Exchange rate	-0.01** (0.003)	0.001 (0.003)	-0.01** (0.003)	-0.002 (0.003)
Lending rate	-0.01 (0.01)	-0.01*** (0.01)	-0.01*** (0.01)	-0.01*** (0.01)
FDI	-5.33*** (0.001)	-0.11*** (0.001)	-0.13*** (0.01)	-0.21*** (0.001)
Market access	0.32*** (0.94)	0.41*** (0.76)	0.21*** (0.78)	0.33*** (0.81)
GDP per capita	-0.03*** (0.01)	0.01 (0.01)	-0.01 (0.01)	0.01 (0.01)
Policy index (RCA)	0.81*** (0.0959)	0.72*** (0.0776)	0.93*** (0.0798)	0.85*** (0.0831)
Fixed effects	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Observations	210	210	210	210
R-squared	0.738	0.830	0.823	0.804

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### Appendix iii

Table 3 Impact of Domestic Institutions on Exporting Using PCA Measures of Policy

VARIABLES	(1) Lnexports	(2) lnexports	(3) Lnexports	(4) lnexports
Phone lines	-0.004 (0.01)			
Legal rights		-0.48*** (0.04)		
Contract length			0.01*** (0.001)	
Domestic institution				-0.48*** (0.06)
Average tariff	-0.15*** (0.0190)	-0.18*** (0.02)	-0.18*** (0.02)	-0.18*** (0.02)
Exchange rate	-0.01** (0.003)	0.0003 (0.003)	-0.01* (0.003)	-0.003 (0.003)
Bank lending	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
FDI	-0.60*** (0.01)	-0.60*** (0.01)	-0.60*** (0.01)	-0.60*** (0.01)
Market access	0.47*** (10.4)	0.55*** (0.82)	0.36*** (0.93)	0.47*** (0.89)
GDP per capita	-0.04*** (0.01)	-0.01 (0.01)	-0.03*** (0.01)	-0.02** (0.01)
Policy index (PCA)	0.49*** (0.07)	0.45*** (0.05)	0.51*** (0.06)	0.51*** (0.06)
Fixed effects	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Observations	210	210	210	210
R-squared	0.72	0.82	0.79	0.79

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix iv

Table 4 Impact of International Institutions on Exporting Using RCA Measures of Policy

VARIABLES	(1) Lnexports	(2) Lnexports	(3) lnexports
WTO dummy	-0.05 (0.19)		
Multilateral Aid		-0.0001*** (0.28)	
International institution			-0.326*** (0.09)
Average tariff	-0.14*** (0.02)	-0.16*** (0.02)	-0.15*** (0.02)
Exchange rate	-0.01** (0.003)	-0.01** (0.003)	-0.01** (0.003)
Bank lending	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
FDI	-0.05*** (0.01)	-0.05*** (0.01)	-0.05*** (0.01)
Market access	0.33*** (0.94)	0.43*** (0.92)	0.37*** (0.92)
GDP per capita	-0.02*** (0.01)	-0.02*** (0.01)	-0.02*** (0.01)
Policy Index (RCA)	0.81*** (0.10)	0.79*** (0.09)	0.79*** (0.09)
Fixed effects	Yes	Yes	Yes
Year effect	Yes	Yes	Yes
Observations	210	210	210
R-squared	0.73	0.76	0.75

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix V

Table 5 Impact of International Institutions on Exporting Using PCA Measures of Policy

VARIABLES	(1) Lnexports	(2) Lnexports	(3) lnexports
WTO dummy	-0.08 (0.20)		
Multilateral aid		-0.0001*** (2.93)	
International institution			-0.31*** (0.10)
Average tariff	-0.14*** (0.02)	-0.17*** (0.02)	-0.16*** (0.02)
Exchange rate	-0.01** (0.003)	-0.01** (0.003)	-0.01** (0.003)
Bank lending	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
FDI	-0.68*** (0.04)	-0.57*** (0.04)	-0.58*** (0.01)
Market Access	0.60*** (0.01)	0.56*** (0.01)	0.57*** (0.01)
GDP per capita	-0.04*** (0.01)	-0.04*** (0.01)	-0.04*** (0.01)
Policy Index (PCA)	0.48*** (0.07)	0.46*** (0.06)	0.46*** (0.06)
Fixed effects	Yes	Yes	Yes
Year effect	Yes	Yes	Yes
Observations	210	210	210
R-squared	0.721	0.742	0.734

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix vi

Table 6 Impact of Domestic Institutions on Exporting

VARIABLES	(1) lnexports	(2) Lnexports	(3) lnexports	(4) lnexports	(5) lnexports	(6) lnexports
Phone lines	0.01 (0.01)					
Legal rights		0.73 (0.74)	0.73 (0.55)			
Contract length				-0.01 (0.01)		
Domestic institutions					0.49** (0.21)	
International institutions						-0.17** (0.08)
Average tariff	0.03*** (0.01)	0.02 (0.02)	0.02 (0.02)	0.05*** (0.02)	0.04*** (0.0120)	0.05*** (0.01)
Exchange rate	0.001 (0.001)	0.0004 (0.001)	0.0004 (0.001)	-0.0004 (0.002)	0.001 (0.002)	0.001 (0.001)
Bank lending	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01* (0.01)	-0.01 (0.01)	-0.01 (0.01)
FDI	0.01 (0.01)	0.01 (0.01)	0.01** (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Market access	0.14*** (0.10)	0.01 (0.10)	0.01 (0.72)	0.16*** (0.57)	0.22*** (0.01)	0.21*** (0.01)
Market Size	0.004* (0.002)	0.01** (0.01)	0.01** (0.004)	0.01*** (0.002)	0.002 (0.002)	0.003 (0.002)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	210	210	210	210	210	210
R-squared	0.94	0.90	0.90	0.92	0.93	0.92

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix vii

Table 7 Impact of Interactive Measures on Exporting

VARIABLES	(1) Lnexports	(2) lnexports	(3) Lnexports
Average tariff	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)
Exchange rate	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Bank lending	0.01 (0.001)	-0.01 (0.001)	-0.01 (0.001)
FDI	0.01 (0.001)	0.01 (0.001)	0.01 (0.001)
Market access	-0.29*** (0.001)	-0.29*** (0.001)	-0.29*** (0.001)
Market size	0.14*** (0.01)	0.24*** (0.01)	-0.40*** (0.02)
Phone lines*market size	-0.004*** (0.0002)		
Legal rights*market size		-0.03*** (0.001)	
Contract length*market size			0.001*** (0.33)
Policy index	0.52*** (0.05)	0.52*** (0.05)	0.52*** (0.05)
Year effect	Yes	Yes	Yes
Observations	210	210	210

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix viii

Table 8 Impact of Interactive Measures on Exporting

VARIABLES	(1) Lnexports	(2) lnexports	(3) lnexports	(4) Lnexports
Average tariffs	-0.06*** (0.01)	-0.06*** (0.01)	-0.05*** (0.02)	-0.05*** (0.02)
Exchange rate	0.001 (0.002)	0.001 (0.002)	0.0004 (0.003)	0.0004 (0.003)
Bank lending	-0.01 (0.001)	-0.01 (0.001)	-0.01 (0.001)	-0.01 (0.001)
FDI	0.43 (0.01)	0.43 (0.01)	-0.53*** (0.01)	-0.53*** (0.01)
Market access	-0.29*** (0.73)	-0.29*** (0.73)	-0.21*** (0.73)	-0.21*** (0.73)
Market size	0.05*** (0.003)	0.05*** (0.003)	0.06*** (0.01)	0.06*** (0.01)
Domestic Inst.*Market size	-0.05*** (0.002)			
International inst*Market size		0.16*** (0.01)		
Domestic Inst.*average tariff			-0.11*** (0.01)	
International inst*average tariff				0.39*** (0.03)
Policy index	0.52*** (0.05)	0.52*** (0.05)	0.61*** (0.08)	0.61*** (0.08)
Year effect	Yes	Yes	Yes	Yes
Observations	210	210	210	210

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



VARIABLES	(1) lnexports	(2) lnexports	(3) lnexports	(4) lnexports	(5) lnexports	(7) lnexports
Average tariffs	-0.0639*** (0.0107)	-0.0639*** (0.0107)	-0.0522*** (0.0180)	-0.0522*** (0.0180)	-0.144*** (0.0222)	-0.144*** (0.0222)
Exchange rate	0.00110 (0.00182)	0.00110 (0.00182)	0.000356 (0.00287)	0.000356 (0.00287)	-0.00744** (0.00373)	-0.007** (0.00373)
Bank lending	-0 (0)	-0 (0)	-0 (0)	-0 (0)	0 (0)	0 (0)
FDI	0 (0)	0 (0)	-5.25e-11*** (0)	-5.25e-11*** (0)	-5.86e-11*** (0)	-5.86e-11*** (0)
Market access	-2.92e-10*** (0)	-2.92e-10*** (0)	-2.10e-10*** (7.27e-11)	-2.10e-10*** (7.27e-11)	-1.75e-10 (1.34e-10)	-1.75e-10 (1.34e-10)
Market size	0.0454*** (0.00349)	0.0454*** (0.00349)	0.0596*** (0.00654)	0.0596*** (0.00654)	0.0183** (0.00782)	0.0183** (0.00782)
Policy	0.516*** (0.0538)	0.516*** (0.0538)	0.610*** (0.0828)	0.610*** (0.0828)	0.712*** (0.110)	0.712*** (0.110)
D. institutions*mar s	-0.0458*** (0.00186)					
Int. Institutions*ma s		0.160*** (0.00651)				
D.institutions*ave.			-0.111*** (0.00956)			
Int. Institutions *ave				0.389*** (0.0334)		
D.institutis*mar ac					-4.80e-10** (2.38e-10)	
Int. Institons*ma ac						1.68e-09** (8.30e-10)
Year effect	Yes	Yes	No	No	Yes	Yes
Observations	210	210	210	210	210	210

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix ix

Table 9 System GMM Results of the Impact of Institutions on Trade Using

VARIABLES	(1) lnexports	(2) Lnexports	(3) Lnexports	(4) lnexports	(5) lnexports	(6) lnexports
Legal right strength	2.23* (1.33)					
Phone lines		0.92* (0.48)				
Domestic institutions			4.21* (2.50)			
WTO dummy				11.45* (6.78)		
Multilateral Aid					0.0002 (0.0001)	
International institutions						1.75* (1.04)
Exchange rate	0.01 (0.01)	0.01* (0.01)	0.01 (0.01)	0.09* (0.05)	0.02 (0.01)	0.03* (0.02)
FDI	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)
Market Access	-0.31 (0.37)	0.33** (0.14)	-0.23 (0.36)	-0.03* (0.16)	-0.04 (0.37)	-0.95* (0.56)
Market size	0.33 (0.22)	-0.01* (0.01)	0.35 (0.22)	1.54* (0.79)	0.40* (0.22)	0.71** (0.34)
A-B (ar2) test (p- value)	0.65	0.24	0.62	0.73	0.49	0.83
Sargan Test (p-value)	1.00	1.00	1.00	1.00	1.00	1.00
Observations	210	210	210	210	210	210

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1