



Institutional Quality, Export Performance and Income

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Acronyms

2SLS	Two Stage Least Square
AGOA	African Growth and Opportunity Act
BERI	Business Environment Risk Intelligence
BLUE	Best Linear Unbiased Estimator
c.i.f.	Import Costs Inclusive of Insurance and Freight
CC	Control of Corruption
CES	Constant Elasticity of Substitution
CIA	Central Intelligence Agency
CIESIN	Earth Science Information Network
COMESA	Common Market for East and Southern African Countries
CTR	Collected Tax Ratio
CSA	Central Statistical Agency of Ethiopia
CTS	Constructed Trade Share
EPRDF	Ethiopian People's Democratic Front
EU	European Union
f.o.b.	Import Costs Exclusive of Insurance and Freight
FDI	Foreign Direct Investment
FMA	Foreign Market Access
GDP	Gross Domestic Product
GE	Government Effectiveness
HO	Heckscher-Ohlin
ICRG	International Country Risk Guide
IMF	International Monetary Fund
IV	Instrumental Variable
LN	Natural Logarithm
NAFTA	North Atlantic Free Trade Association
NBE	National Bank of Ethiopia

NIE	Newly Industrialized Economies
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
PAs	Peasant Associations
PPP	Purchasing Power Parity
PV	Political stability and Absence of Violence
RL	Rule of Law
RMSE	Root Mean Standard Error
RQ	Regulatory Quality
SLI	State Led Industrialization
SM	Settler's Mortality
SSA	sub-Saharan Africa
TFP	Total Factor Productivity
UK	United Kingdom
UN	United Nations
UNCOMTRADE	United Nations Commodity Trade Statistics
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
USD	United States Dollar
VA	Voice and Accountability
WB	World Bank
WGI	World Governance Indicator
WTO	World Trade Organization

Chapter I

Introduction

There is extensive theoretical and empirical literature supporting the notion that openness and integration into the world economy is essential to realize the potential gains from trade. Given constant returns to scale, perfect competition and the absence of distortions, traditional trade theory suggests that there are considerable welfare gains from market integration through trade (Borrmann et al. 2006). Though the majority of empirical studies confirm this outcome, the findings are not always robust and may depend on the sample period or the methodology applied. For the same degree of openness some countries are more likely to benefit from trade than others as it has been observed in cross-country variations.

Husted and Melvin (2001) study that with a few exceptions, trade couldn't bridge the income and wage gap between the developed world (North) and developing countries (South). This income discrepancy between North and South would trigger a question: 'what are the prerequisites for a positive linkage between trade and growth and thus a successful trade liberalization strategy'? A 2004 World Trade organization (WTO) document indicates a number of policy prerequisites to harness the benefits of trade. Countries that have better macroeconomic management (stability), well-functioning infrastructure and competitive markets may trade more than countries where these conditions are not met (cited in Borrmann et al. 2006). Having good quality of institutions could be one more important factor for trade to have a positive impact on growth.

Levchenko (2007) argues that an important feature of North-South trade is that it occurs between strikingly dissimilar countries and one of an important source of dissimilarity is institutional quality. Rodrik and Subramanian (2003, p. 31) argue that even though geography and integration into the global market give guidance why there is huge difference in average incomes across countries, the quality of institutions has statistically significant impact in explaining the determinants of economic growth.

The literature on the interaction of institutional quality, trade and economic growth has recently been the subject of a number of econometric studies. Most of the researches are limited to cross-country observations. But case studies targeting a particular economy are very limited. There are no sufficient theoretical models which help to analyze the relations between institutions, export and economic growth in a particular economy level. Therefore, the stake for a case study is high. Ideally,

case studies can generate novel hypothesis to address institutional quality issues within a given economy. According to Rodrik et al. (2002), one advantage of case studies is that they can provide a richer account of where good institutions come from, the shape they take and how they need to evolve to support long-term growth.

Therefore, this research is aimed at conducting both cross-country observation and case study. It develops a theoretical model and methodology in the study of the impact of institutional quality on export performance and extends the measure to assess the impact of both export and institutions on long-term income growth. By doing so, it corroborates the cross-country findings with micro-level evidences.

Finally, the research is aimed at suggesting new ideas for further cross-national test and contributes to scientific writing in the field of institutional economics, international trade and economic development. The research investigates: how the degree of institutional quality differences affects the performance of the export sector and hence the gain from trade based on selected econometric identification techniques. The research is unique in a way that it first investigates the relation between institutions and export; then analyses how both institutions and export partially as well as interactively influence income levels; and corroborates cross-country results with case study assessments.

The research has the following specific objectives:

- Provide a thorough literature review on institutions, international trade and economic growth and their interrelationship.
- Adopt measurement techniques to test the impact of institutions on export and economic growth.
- Provide empirically supported hypothesis about the impact of institutional quality on export performance and income.
- Contributes to the policy debate on: 'do institutions matter and how?'

The research is organized in 8 chapters. Chapter 2 provides a thorough literature survey about the interaction of the three deep determinants of growth i.e. institutions, integration and geography and their impact on income. It defines the term 'institution' and discusses the different techniques used by the empirical literature to measure it. It identifies major theoretical and empirical literatures and discusses the main weaknesses of the researches. Finally, it outlines the research gaps and discusses the possible contribution of this research.

Chapter 3 discusses the conceptual and theoretical foundations for the interaction of institutions, export and income growth. It presents a model to show the channels through which institutions affect export. It gives theoretical foundations for the application of the new growth model in the estimation of the impact of export and institutions on income. By doing so, it paves the ways for the identification of the base equations used in the estimation of the trade and growth models.

Chapter 4 and 5 are the empirical sections of the cross-country observations. Chapter 4 uses the gravity model of bilateral trade to measure the impact of institutions on export performance. In doing so, it discusses the empirical validity of the gravity model and outlines the methodology. Based on the specified model, it presents the major results of the estimations. Chapter 5 uses the new growth model as implemented by Hall and Jones (1999) and others to measure the impact of the various determinants of income.

Chapter 6 provides a survey result about the state of the institutional environment in Ethiopia. It analyses how the institutional environment is framed and in turn influences economic performance including export. It provides the historical account of the various trade policies adopted by successive governments and their ramification for export diversification and growth. Chapter 7 provides estimation results from a simulation exercise of the possible increase in export as a result of improving the institutional quality. It also provides estimation results of the relationship between export expansion decisions and the perceived level of institutional environment based on survey data. The last chapter concludes and presents the most important policy implications of the research.

Chapter II

Economics of Institutions, Trade and Economic Performance

In recent years the idea that ‘institutions matter’ became a core belief among economists and multi-lateral aid organizations. The channels through which institutions influence economic performance are the central issue of the discussions. This chapter reviews the various major theoretical and empirical works linking institutional quality, international trade and economic performance. The chapter identifies major gaps in the empirical literature and outlines the possible contributions of this research.

2.1. Proximate versus fundamental causes of growth

The neoclassical growth theory which is largely due to the work of Robert Solow (1956) assumes that capital has diminishing return, meaning the return to capital reduces as more and more capital is employed in production. This leads to the condition that countries’ per capita income growth is inversely related to their initial level of income. If economies are similar in respect to preferences and technology, capital poor economies grow faster than capital rich economies due to the assumption of the diminishing return to capital (Olson et al. 2000).¹

Technology in the neoclassical model is assumed to be given exogenously. Thus taking the saving and population growth rates as constant, the model predicts countries to converge into similar steady states level. This conditional convergence to similar steady states level is usually referred as the β convergence (Barro 1991). But since the saving and population growth rates vary across countries, different countries reach different steady states levels. Hence, diminishing returns to physical capital is a force that leads countries to converge into income equability when they reach similar steady states levels (Barro and Sala-i-Martin 1991, 1992). Although, the neoclassical model can explain international differences as a result of conditional convergence, it cannot explain the reason why the income gap between rich and poor countries is still widening (Mankiw 1995).

¹ In the neoclassical model, capital is thought to be tangible assets such as the economies stock of equipment and structure.

Due to the less convincing empirical relevance of the neoclassical model, most recent researches took a more radical approach to the study of economic growth. The goal of the new approach has been to develop models of persistence growth that gives up the assumption of exogenous technological change (Mankiw 1995, Weil 2005). The new approach goes by the name '*endogenous growth theory*' embraces diverse body of theoretical and empirical works that emerged in the 1980s, following the path pioneered by Arrow (1962). Notable contributions include but not limited to Romer (1986), Lucas (1988), and Robelo (1991). Endogenous growth theory assumes constant return to capital, meaning doubling capital would double output.² Technological advance is assumed to be endogenous. Because of the assumption of constant instead of diminishing returns to capital, endogenous growth model predicts the gap between rich and poor countries to remain the same or even growing wider (Lucas 1988, Pritchett 1997 cited in Olson et al. 2000, Mankiw et al. 1992). Though empirical findings don't fully support it, the theory of endogenous growth has two important contributions in advancing economic theory. First, it helps in explaining the existence of worldwide technological progress, which the neoclassical model takes as exogenous. Second, it offers a more relevant explanation of the role of research and development in economic growth. Although the contribution of knowledge is important, endogenous growth model has succeeded little in explaining cross-country income differences because growth is a complex phenomenon which cannot only be explained by the theory of the creation of knowledge (Mankiw 1995).

Hence, one could argue that neither of the two approaches captures the striking fact of the contemporary cross-country growth differences. Empirical facts confirm that only some initially poor countries (mostly from South East Asia and recent success stories such as China, India and Vietnam) are able to achieve higher income growth and skip the poverty trap but the general level of cross-country income differences stays the same. Something has been missing in both theories, to explain why the fastest growing countries are a subset of developing countries and at the same time there is no tendency for general convergence (Olson et al. 2000).

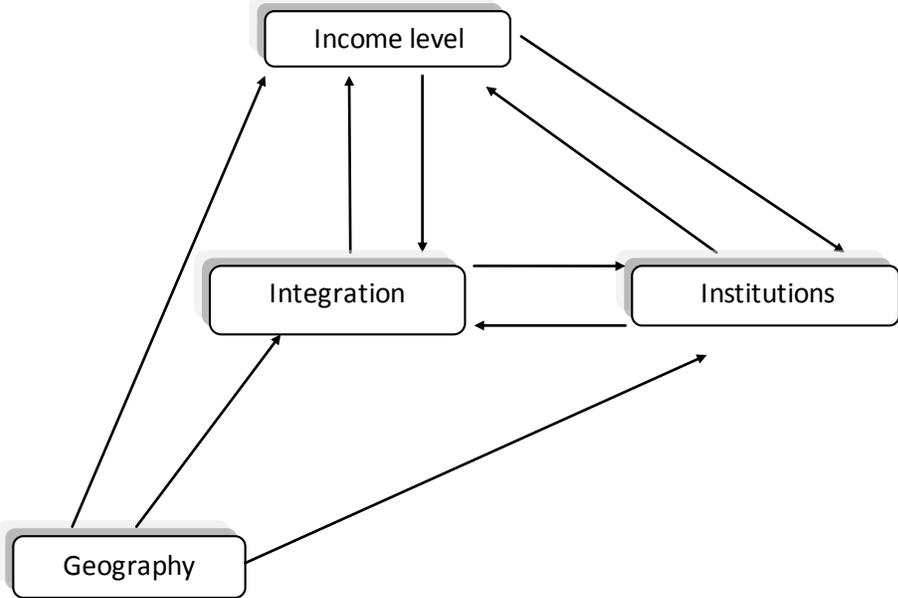
The aggregate production function which both growth theories rely on assumes that economic growth is a result of increasing physical capital, human capital and productivity. There is widespread agreement among economists that rich countries are those that invest in large fraction of their wealth in accumulating capital and skills as well as using these factors productively (Hall and Jones 1999). But the model doesn't offer sufficient explanation why in the first place some countries are so rich and continue

² Capital in the endogenous growth theory is broadly interpreted to include both physical and human capital.

to be richer while others stagnating or even falling behind. Both theories have never given a compelling explanation nor proposed a solution for a way out from stagnation to sustained economic growth. The main problem is that both the neoclassical and endogenous growth theories focus on the ‘proximate determinants’ of growth that appear in the aggregate production function (Bloch and Tang 2004).

Recently there is a growing belief among economist that physical and human capital and productivity are just proximate causes of growth. Hence, any explanation based on technology and accumulation of capital appears to be incomplete (Acemoglu 2009)³. Therefore, filling the theoretical void is viewed as necessary condition by recent growth literatures. Hence, recent developments in growth theory focus on examination of the deep determinants of growth to explain why some countries manage to accumulate higher physical and human capital and others not and why some countries acquire better technology and able to increase productivity than others (Hall and Jones, 1999).

Figure 2.1: The interaction of income and the three deep determinants of growth



Source: Adopted from Dani Rodrik and Arvind Subramanian (2003)

Deep determinants are the fundamental causes of growth that influence the decision to invest on technology, physical and human capitals. There is no lack of candidates for deep determinants of growth. Large number of factors has been proposed by different scholars⁴. But prominent recent works

³ As North and Thomas (1973, p. 2 cited in Acemoglu et al. 2005) put: “the factors we have listed (innovation, economies of scale, education, capital accumulation, etc.) are not cause of growth; they are growth”.

⁴ Ahlfeld et al. (2005) for example, mentioned a list of 60 different deep determinants or variables of growth proposed by contemporary literature.

offer three-fold explanations based on the hypotheses of: (1) institutions, (2) geography, and (3) integration (openness) (Hall and Jones 1999, Easterly and Levine 2003, Acemoglu 2009, Frankel and Romer 1999, Dollar and Kraay 2002, Bloch and Tang 2004). Figure 2.1 above gives a visual presentation of how the three deep determinants of growth interact with income and among each other.

As one can see from the directions of the relationships in the graph, geography is the only exogenous variable that influences income, integration and institutions but not affected by a reverse causation. Geography influences income through its effect on the disease environment and productivity. Geography also influences institutions through its effect on shaping institutional formation which come through two important ways. First, it influences how the Western European colonial powers settle in the new colonies and adopt different forms of institutions. Second, it determines the formation of grabbing institutions in countries where there are high resource endowments. The influence of geography on integration is through its impact on international trade cost and dissemination of ideas.

Between income, trade and institutions, causality can run three ways. Integration for example, has an impact on both income levels and institutions. Trade can influence income but equally important higher trade could be the result of higher income. Integration can lead to better institutions but in the same way higher institutional quality is a necessary condition for higher trade performance.

Institutions can influence income level and integration while equally similarly both influence institutions. Higher institutional quality particularly secured property rights, contract enforcement and rule of law are vital for citizens to participate in productive activities and get the benefit of their investments. In the same way, citizens in rich countries demand for institutional improvements and these countries have better capacity to pay for any institutional change. Better institutions are good for integration through its effect on trade cost and by creating openness and transparency. And in countries where there is higher trade, investors could lobby for a better institutional change. The remainder of the chapter gives a thorough literature survey and analysis about the interaction of these three variables.

2.2. Three fundamental causes of growth

2.2.1. Institutions

2.2.1.1. Overview and definition

Following seminal contributions by North and Thomas (1973), Matthews (1986), and North (1990), economists in recent years have stressed the idea that good economic institutions particularly

private property rights and the rule of law are instrumental to growth. While earlier work on growth takes the existence of institutions as exogenous, more recent work unveiled the weakness of such approach. Particularly the weakness of both the neoclassical and endogenous growth models, leads a large number of economists to consider other fundamental factors that are necessary in explaining economic growth and cross-country income differences. To this end, economists incrementally advanced the idea that proper incentive mechanisms supported by high quality of institutions are required to invest in any productive activities and bring about higher economic growth.

The new institutional economic theories are highly associated to the work of Nobel Prize winner economist Douglass North (1990, and 1994). It enriched by the work of Sokoloff and Engerman (2000, p. 228) who argue that substantial inequality in wealth, human capital and political power which were rooted in factor endowment intensities in South and North Americas are the sources of institutional difference between the two continents. It received careful econometric consideration from Keefer and Knack (1997), Knack and Keefer (1995), Hall and Johns (1999), Olson et al. (2000), Acemoglu et al. (2001, 2005) La Porta et al. (1997, 1999), Rodrik et al. (2002), Easterly and Levine (2003). A large number of other related works contribute to the discussions.

Douglass North (1990, p.3) defines institutions as: *“humanly devised constraints that shape human interactions”*. Institutions consist of both formal (such as statutory law) and informal constraints (such as customs, and traditions). Both the formal and informal aspects of institutions define the incentive structure in a society particularly whether to engage in productive activities or not.

Acemoglu and Robinson (2008, p. 2) identify three important features of institutions. First, they are humanly devised constraints. Second, they are the rules of the game with certain enforcement mechanisms. And third, they determine the incentive structures. Since institutions are key determinants of the incentive to invest, they should have a major impact on economic performance including economic development, growth, inequality and poverty. Such important role of institutions is acknowledged by the economics profession through the formation of a new school of thought by the name: *“The New Institutional Economics”*.

2.2.1.2. The New Institutional Economics perspective

During 1950s and 60s the mainstream economists focused their attention on developing models and expanding the theoretical foundation of what is called ‘neoclassical economics’. Neoclassical economics based its analysis on institutionally neutral assumption. As Joskow (2008, p. 4) discusses, the

basic underlying legal institutions that are widely assumed to be necessary to support the behavioral assumptions and market structures such as credible property rights, enforceable contracts, well functioning capital markets and corporate governance system were either implicitly assumed to exist without cost or were completely ignored. The exclusion of institutional factors from the neoclassical analysis has both advantages and disadvantage. The advantage is that constant institutional factors or assumption of zero transaction cost was useful because it helps the neoclassical model to be easily testable (Furubotn and Richter 1998). The weakness is that the assumption is not realistic in the real world, because transaction cost constitutes a significant proportion of the total cost of any final goods in real world. Ignoring this important component of cost may affect any growth model from omitted variables bias (Joskow 2008, p. 2).

The shortcomings of the neoclassical and its predecessor classical economic theories were of course well known to the earlier generation of economists. Furubotn and Richter (1998) document the strong reaction of the German historical school such as Roscher, Hildebrand, and later Schmoller against the English classical economics. Matthews (1986) informs about the opposition of the so called institutionalist school of thought in America to Marshall's 'theory of the interaction of unchanging utility-maximizing individuals in a given institutional structure'⁵. These oppositions however, had little impact because the doctrines of the institutionalists were too ill-defined. They agreed that there was something wrong with the classical and neoclassical economics and that was the only clear message they conveyed (Matthews 1986, p. 903, Hodgson, 1998, p. 166).

In the last three decades however, things changed substantially. The discussion of institutions became one of the hottest areas in the economics discipline and brought economists closely in touch with other social scientists. A growing number of economists agree on two issues: (1) institutions affect the performance of economies; and (2) the determinants of institutions are susceptible to analysis by the tools of economic theory (Matthews 1986, p. 903; North 1990, p. 3).

The limitations of the neoclassical economics are now widely recognized and mainstream economics has moved forward to address them. The new approach is aimed at extending and building on models which were effectively used by the mainstream economics. A growing number of scholars are engaged in theory making and empirical research to respond to these limitations under the banner of the 'New Institutional Economics'. Important contributions including Ronald Coase (1937, 1960),

⁵ Matthews (1986, p.903) argues that Marshall had well understood the role of institutions and his assumption to hold institutions constant is well understandable from the simplifying assumption point of view.

Douglass North (1990, 1994), Oliver Williamson (1971, 1975, 1985), and Alchian and Demsetz (1972), etc. are instrumental in broadening knowledge and invoking research questions that need to be addressed by further research. These scholarly works strive to fully integrate institutional analysis into advances in economic theory, empirical methods, and applications. In the last 2 decades there are growing numbers of ongoing debates to fill the weakness of the standard growth model. The views of including institutional factors in economic analysis also became the point of discussion among trade economists and economists who are concerned about the curse of natural resources⁶. There is ongoing theory making and empirical research to formalize the knowledge base in the area despite the difficulties of measuring institutional quality.

2.2.1.3. The institution hypothesis

There is a long held view that society needs peaceful order in order to prosper. If anarchy and violence prevails, the society not only loses what it has produced through theft and diversion but also the incentive to produce. In the absence of peaceful order, there is little or no production (Olson 1993, p. 567). This view leads to a hypothesis that: *“countries with better institutions and more secure property rights are fairly better in economic performance than countries with worse institutions* (Engerman and Sokoloff 2002).

Governments can play an important role in creating secure and peaceful society through shaping the economic life of a country in a variety of ways such as: “protecting or grabbing property, allowing or suppressing dissent, serving or abusing the public through its agents” (La Porta et al. 1999, p. 225). Good government which protects property right, governed by the rule of law and constrained itself from diversion is vital for economic development.

Supporters of the institution hypothesis mention the divergent paths pursued and its economic consequences by North and South Korea and East and West Germany during the Cold War as a classical example of the importance of institutions. Another prominent example is Singapore which was an impoverished tropical country before the British colonists introduced property rights. But for the last 40 years it registered a remarkable growth rate (Rivera-Batiz 2002, p. 226). Sierra Leon, Democratic Republic of Congo, Venezuela and Angola are just few bad examples where years of civil war initiated by competition for control of abundant diamond and other natural resources going unchecked for decades. Nigeria’s successive military dictatorship, the most notable one being General Sani Abacha robed a large

⁶ See for example Alcalá and Ciccone (2002), Dollar and Kraay (2002), Bolaky and Freund (2004), Alesina et al. (2004), Levchenko (2007), Borrmann et al. (2006), Mehlum et al. (2002) and Nunn and Puga (2009).

sum of oil revenue that could have been invested in productive activities (Sala-i-Martin and Subramanian 2003). Many more examples can be given to shade a light on the importance of institutions. Large numbers of theoretical and empirical literatures give support to the above institution hypothesis.

2.2.1.4. Review of major empirical works

Recent growth literature focuses on investigating how institutions affect economic performance. These researches mainly focus on cross-country analysis to measure variations in 'institutional quality' to identify whether causality runs from institutions to growth. Most of these researches find strong associations between institutional quality and economic growth. There are relatively few micro-level studies that investigate the relation between measures of property rights protection and investment or output (e.g. Timothy Besley, 1995; Christopher Mazingo, 1999, Johnson et al. 1999; cited in Acemoglu et al. 2001).

The most important cross-country studies include Keefer and Knack (1997), Knack and Keefer (1995) who empirically investigate the effect of institutions on countries' ability to convergence to their steady state level. They use data collected by the International Country Risk Guide (ICRG) and the Business Environment Risk Intelligence (BERI)⁷. The main hypothesis of their research is: "the ability of poor countries to catch up is at least partially determined by the institutional environment in which economic activity in these countries takes place" (Keefer and Knack 1997, p. 590). The research provides statistically significant evidence that the ability of poor countries to catch up with advanced economies depends significantly on the quality of their institutions. The finding suggests that "[c]ountries that constraint their executives, grow three and a half times faster in response to a one-unit increase in the gap⁸ than countries that do not, and countries that score best on the International Country Risk Guide Index grow more than four times faster" (Keefer and Knack, 1997, p. 599).

Another seminal contribution is Hall and Jones (1999). Hall and Jones argue that analysis based on aggregate production function provides some insights into cross-country income differences. However, these analyses don't answer the questions: 'why in the first place some countries manage to accumulate higher physical and human capital and acquire better technology while others not'. They argue that including institutional variables in the production function will provide sufficient answer to

⁷ International Country Risk Guide and Business Environment Risk Intelligence data sets are collected by two institutions specialized in offering country risk assessments for international investors.

⁸ Here the gap refers to the one unit difference between countries on their International Country Risk Guide index.

the above question. They discuss that “differences in capital accumulation, productivity, and therefore output per worker are fundamentally related to differences in *social infrastructure* across countries” (Hall and Jones 1999, p. 84)⁹. A social infrastructure (institutional quality) favorable to high output per worker and hence higher growth is the one that provides incentive for individuals to accumulate capital and skills and encourages entrepreneurs to engage in inventions and technological transfer.

Hall and Jones (1999) use the ICRG index and the Sachs and Warner (1995b) openness index to measure their social infrastructure variable to test the impact on output per worker across 127 countries. Accordingly, they find strong association between output per worker and social infrastructure. The finding suggests that countries that provide solid social infrastructure favorable for productive activities rather than diversion produce much more output per worker.

Hall and Jones (1999) are credited for introducing two exogenous variables to instrument for controlling the possible endogeneity between institutions and income. These instruments are geographic (distance from the equator) and linguistic (the extent to which the primary languages of Western Europe – English, French, German, Portuguese and Spanish are spoken as a first language) variables which characterize the settlement pattern of Western Europeans in former colonies (Hall and Jones, 1999, p. 101). The main argument behind the selection is: First, Western Europeans migrated and settled in countries where the environment is similar to their original countries. These are countries which have temperate climate and far from the equator. Second, countries which receive large migrants some 300 years ago should have large proportion of people who speak one of the languages as a mother tongue. The ultimate objective is to find instruments that are correlated to colonial time institutions but exogenous to current institutions. The two instruments fulfill the requirement and got wide acceptance by the research community. The instruments are available for a large number of countries and offer a better chance for researchers who would like to do cross-sectional analysis with large sample size.

Another influential contribution to the study of institutions is La Porta, Lopez-de-Silanes and Shleifer (1999, 2008). La Porta et al. (1999, p. 233) provide a theoretical analysis of: “[h]ow did some countries come to have good government and others did not? How does history influence government

⁹ Social infrastructure in this context is defined as the institutions and government policies that determine the economic environment within which individuals accumulate skills and firms accumulate capital and produce output (Hall and Jones 1999, p. 95).

performance?¹⁰". The broader economic, political and cultural theories of good government have been used to provide scientific description of the theory of good government.

Based on the broader political, economic and cultural theories of government, La Porta et al. (1999) introduce ethno-linguistic fractionalization, legal origin and religious affiliation variables to study the impact of these variables on government effectiveness. La Porta et al. (1999, 2008) are well known for introducing the legal system of countries as an effective measure of government effectiveness. According to their analysis, there are three systems of laws that are dominating the world. These are common law (developed in England to protect the parliament and property owners against the expropriation attempt of the monarchy); civil law (originated in France as an instrument for state building and controlling of economic life) and socialist law (originated in former Soviet Republic as instrument for ultimate control of economic activities by the state). These three systems of law are disseminated across the world either by conquest, ideological influence or voluntary adaptation. The intuition is common law is good for institutional development as it protects the rights of individuals against the risk of expropriation by the monarchy. Scandinavian and German civil laws are basically similar in concept with French civil law but they are better for government effectiveness since professional bureaucracy is running the government. Socialist is worst for good government as it is a clear manifestation of the state to control resources and power.

La Porta et al. (1999) measure the impact of the above three variables on government effectiveness. Government effectiveness is proxy by the scale of government intervention; government performance; output of public goods; size of the public sector; and political freedom of citizens. By using the proposed indexes as a dependent variable and per capita income and distance from the equator as control variables, they find that "[r]ich nations have better government than poor ones. Ethno-linguistically homogeneous countries have better governments than the heterogeneous ones. Common law countries have better governments than French civil law or socialist law countries. Predominantly Protestant countries have better governments than either predominantly Catholic or predominantly Muslim countries" (La Porta et al. 1999, p. 265). They believe that government quality is partially determined by economic growth but it is also partly determined by systemic variation in the history of the individual countries.

¹⁰ Good government performance can have a broader meaning but economists are concerned with security of property rights, lack of intervention by the government, benign regulation and low taxation as the crucial measure for good performance (La Porta et al. 1999, p. 223).

The main weakness of the La Porta et al. (1999) work is it doesn't directly test the impact of good government (institutional quality) on income growth. They have strong belief that the quality of government is endogenous and finding an exogenous variable to instrument for institutions is not easy. However, the perception that economic institutions are not easy to test could not be a saleable idea given the large list of available instrumental variables in the literature.

Acemoglu, Johnson and Robinson (2001) is most cited research on the study of institutions and economic growth. Acemoglu et al. note that most researches connecting institutional quality and economic performance are marred by reverse causation problems. They argue that as institutions may affect growth, feedback may also come from growth to institutions. To control for the possible endogeneity problem they proposed a plausible instrumental variable based on the colonial history of nations. The proposed instrument is "settler's mortality" in former colonies and is considered as an important contribution to the empirical literature on the relation between institutions and growth.

The instrument is based on the history of colonization of the world by Western European powers. They argue that European colonizers created two systems of colonies. In most part of Africa, Latin America and Asia they create a system of extractive states exemplified by the Belgian colonization of the Congo. In another part of the world, Europeans settled permanently in large numbers, example USA and replicate the system of European institutions with strong emphasis for checks and balances on government and private property rights for "a broader section" of the society¹¹.

The choice to permanently settle or not was influenced by the disease environment. In most part of Africa, Latin America and Asia, Europeans faced high mortality rates because they did have less immunity to tropical diseases such as malaria. Hence, in these areas they didn't settle permanently and didn't introduce European institutions. In areas where the disease environment is not bad such as North America, Australia and New Zealand they settled permanently and created settler's institutions. These colonial time institutions persisted after independence and have high correlation with current institutions. The settlement pattern is correlated with colonial time institutions but not with current institutions except through its impact on colonial time institutions. Since the settlement pattern was influenced by the mortality rates, the later could fulfill the criteria to be a plausible instrument.

¹¹ "Broad section of the society" is emphasized here because in societies with the worst institutions the property rights of the elite are often secure but the vast majority of the population do not enjoy such rights (Acemoglu et al. 2001).

Settler's mortality rate has received wider acceptance as good instrumental variable by many empirical researches. Data is available from a systemic recording of the mortality rates of bishops, soldiers and sailors between the seventieth and ninetieth century by the British, French and US governments. The shortcoming of this instrumental variable is data is not available for large number of countries.

Settler's mortality is a good instrument that has some desirable statistical properties but the attempt by the author's to give a picture that they are developing a theory of 'the colonial history of development' is the weakness of the work. The main achievement of the work is developing a plausible instrument.

Paolo Mauro (1995) is known to study the role of institutions from the perspective of the relationship between corruption and investment. Mauro is known to use for the first time a subjective measure of institutional quality using indices of corruption, the amount of red-tape, the efficiency of the judicial system and various categories of political stability for a cross-section of countries.

Many more writers such as Clague, Keefer, Knack and Olson (1999), Olson, Sarna and Swamy (2000), Esfahani and Ramirez (2003), Glaeser, La Porta, Lopez-de-Silanes and Shleifer (2004), Jones and Olken (2005), Kogel (2005), Masters and McMillan (2001) are most cited cross-country studies in the subject. Other researches such as Rodrik et al. (2002), Easterly and Levine (2003) are known to run a horse race between the three deep determinants of growth: institutions, geography and openness.

The larger part of the cross-country studies mentioned above provide persuasive evidence that long-term growth is faster in countries where there is good governance, rule of law, property right protection, and higher level of trust. These researches effectively control for endogeneity by utilizing geographic, linguistic and historical instruments. Therefore, the literature on institutions and income largely meets its purpose. As Pande and Udry (2005) suggest it is essentially complete. Therefore, it might be useful to extend the research areas of the economics discipline. One possible area is the relation between institutions and export performance. The cross-country analysis can also best be furthered by micro-level studies than has typically been the norm in the growth literature.

2.2.1.5. Measuring institutional quality

Measuring institutional quality has been the most difficult task for economists. Till today there are no clear cut yardsticks that can be applied universally. The main problem is the fact that institutions are

not something tangible. However, economists use various data collected by organizations for other purposes as a proxy for institutional quality measure.

a) Objective measures

Earlier contributions such as Barro (1991) use objective measures. These objective measures include factors such as: whether the country ever been socialist, number of political assassinations, revolutions and coups per year. These factors are assumed to negatively influence property rights and thereby investment and growth. Another similar measure is the Gastil measures of political freedom and civil liberties (Gastil 1983, 1986 cited in Knack and Keefer 1995, p. 208). The World Bank doing business data set could also be classified under the objective measure category. The advantage of objective measures is one can get actual figures on these variables. The disadvantage is they capture incomplete information on the threats faced by entrepreneurs on protection of property and contractual rights. Objective measures incorporate much more information regarding political stability but give little idea with regard to the structure of the incentive mechanisms and are arguably highly endogenous — as several researchers using these variables have acknowledged (Knack and Keefer 1995). Due to these limitations economists tend to use more direct but subjective measure of institutions.

b) Subjective measures

The first systemic attempts to use subjective measures of institutions are Paolo Mauro (1995) and Knack and Keefer (1995). Mauro uses a data set collected by a private organization called Business International (BI). The data set covers indices proxying for corruption, political stability, probability of opposition group takeover, and relationship with neighboring countries. Similar subjective measures are compiled by two private organizations specialized in assessing international investment risks i.e. International Country Risk Guide (ICRG) and Business Environmental Risk Intelligence (BERI). These two indices are first applied by a series of studies conducted by Keefer and Knack (1997), Knack and Keefer (1995) and later by large group of institutional and growth economists. The information gathered by these two organizations is for sale for international investors who are seeking information about the prospect of investing on a foreign country. Evidence for the reliability and accuracy of the indices are the willingness of private firms to pay considerable amount to get the information (Mauro 1995).

The most recently used subjective data sources is the annual publication of the Worldwide Governance Indicator (WGI) compiled by Kaufmann and his colleagues on behalf of the World Bank. This data set is compiled from 35 various institutional measures collected by 33 different organizations throughout the world and recently used by many researches (Kaufmann et al. 2009).

Another interesting data is the 'Global Competitive Index' of the World Economic Forum. The index covers a wide area of institutional factors including the state of property rights, corruption and government quality. The index is widely publicized measure of competitiveness since it covers various aspects of the economic condition of countries'. Other organizations such as Freedom House, The World Justice Project, Transparency International, etc. collect information on various measures of institutions.

The institutional indices collected by the above organizations are believed to be collected following proper reliability and validity procedures. The advantage of the subjective indices is that they capture the perceptions that shape the incentive structure rather than the facts (Mauro 1995). The disadvantage is the information is limited to the formal and urban sector of the economy and misses important facts about other sectors which might be crucial for institutional development like communal land holding and management (Pande and Udry 2005). The correspondents and evaluators of the data might be influenced by the level of economic development of the country when scaling the indices. So it might be susceptible to the subjective judgment of the evaluators. Moreover, good economic progress might positively influence institutions regardless of how the institutional variables are measured.

2.2.2. Impact of geography on institutional change, trade and growth

Geography is considered as a key determinant of growth through its influence on the disease environment, natural resource endowments and soil fertility. Geography can also play a fundamental role by influencing transport cost and dissemination of ideas and technologies. Notable recent works on this direction include Jared Diamond and Jeffrey Sachs.

The study of the role of geography on growth started way back to the works of Machiavelli in 1519, Montesquieu in 1748 (cited in Easterly and Levine 2003) and Huntington in 1925 (cited in Ahlfeld et al. 2005). Machiavelli (1519) for example, argues that the climate of the tropics is fertile and offers an easy environment to collect food so there is no need to work hard, produce and achieve any economic success. This in turn leads: "fertile countries ... apt to making men idle and unable to exercise any virtue" (cited in Easterly and Levine 2003, p. 7).

The most plausible attempt to explain long-term development in geographic considerations comes from the recent work of Jared Diamonds. Diamonds (1997) disputes the earlier climate hypothesis not only on moral ground but also on the rigorous findings of the shared generic inheritance of all human societies. David Landes (1990) emphasizes the importance of land as the crucial determinant of cross-country growth differences. He argues that because of the work of God,

geographic features such as land and climate are unequally distributed. Hence, nations which are highly endowed with resources were bound to be richer.

Geographic factors influence economic performance through a number of channels. The climate condition of the tropical regions for example, is not conducive for soil fertility or agricultural productivity and has high disease burden. The tropics is known for its high prevalence of infectious diseases most notably malaria¹². Malaria reduces man's ability to work and the incentive to invest in human capital.

Geography influences growth through its impact on international trade. Countries which are close to major international markets with reliable water and land transport access have better propensity to trade than distant and/or landlocked countries. Geography could also influence trade through its impact on the availability of natural resources. In addition, geographic factors put persistent influence on shaping the institutional environment of a country. The following sub-sections reviews the different discussions connecting economic geography with international trade and institutional development.

2.2.2.1. Location, transport cost and dissemination of ideas and technologies

The most important area of geographic influence on economic growth is through its impact on location and access to international waterways. Both geographic factors influence economic growth mainly through their impact on international trade. Transport cost incurred in international trade is the most directly observable cost associated with distance and access to sea. Gallup et al. (1999) note that transport cost measured by the International Monetary Fund (IMF's) estimate of c.i.f./f.o.b. is an important determinant of trade performance¹³. Using the c.i.f./f.o.b. margins, the transport cost of countries' imports can range from zero to 30-40 % of trade cost for the most remote and landlocked countries particularly to those of sub-Saharan Africa. Being landlocked raises transport cost by an additional 50% (comparing the median landlocked country with the median coastal economy) and additional 1 kilo meter (km) inland transport, costs as much as 7 sea km transport cost (Limao and Venables 1999 cited in Henderson et al. 2001). Therefore, transport cost of this magnitude has severe impact on trade.

¹² Malaria could also be a proxy to the availability of other fatal tropical diseases such as dengue fever, yellow fever, lymphatic filariasis, schistosomiasis, trypanosomiasis, etc.

¹³ c.i.f./f.o.b. measures the ratio of import costs inclusive of insurance and freight (c.i.f.) to import costs exclusive of insurance and freights (f.o.b.) (Henderson et al. 2001).

The notion that access to sea is vital to economic growth is very plausible given the fact that recent economic success stories was possible in mainly coastal East Asian economies through the effective introduction of export oriented industrialization. According to Gallup et al. (1999), without exception, rapidly growing developing countries based their economy with labor intensive manufacturing export. And such activities expanded in port cities and export processing zones. Almost all countries which achieved greater economic success through export led industrialization in recent decades have their entire population within 100 km of the coast (Radelet and Sachs 1998)¹⁴.

It is evident that countries near the core economies of the World generally have low transportation cost than distant economies implying that growth is likely to diminish in direct proportion to distance from the core markets (Gallup et al. 1999). A small marginal difference in transport cost involving import of intermediate goods and re-export after domestic processing might severely affect the success of manufacturing exports. Or it might compromise labor and environmental standards of countries when industries within these countries strive to be competitive through cost reduction.

The real consequence of being far from major trading centers and landlocked status include using up scarce resources that might otherwise be used for other productive purposes and substantial reduction in international trade due to less competitiveness associated with higher transportation cost. Gravity estimates of bilateral trade flows using distance as proxy for transport costs finds that the elasticity of trade volumes with respect to distance is between -1 and -1.3. This is a large effect in which doubling distance cuts trade volumes between half and two thirds (Henderson et al. 2001). Doubling transport cost reduces trade volume by about 80% and the median landlocked country has 40% less trade volume than the median coastal country (Henderson et al. 2001). This trade reducing effect of distance is much stronger for transport intensive goods particularly for products that involve the use of imported intermediate goods and for final products which are dependent on export markets for sale.

Empirical evidence supports the notion that distance and landlocked status have negative impact on economic growth. Gallup et al. (1999) find that distance to major trading centers and the percentage of population living within 100 km of the coast explains differences in growth patterns. In general, both theoretical explanations and empirical findings support the idea that higher transport cost derived from distance and lack of access to international waterways is associated with slow economic growth.

¹⁴ China and India probably would be the only exceptions in this regard.

Locating close to the core economies of the world could help to stimulate external trade and growth through knowledge spillover and diffusion of skills and technologies (Landes 1990). Geography might also influence trade through its impact on natural resources abundance. The discovery of mineral resources in a given country might result in higher rent seeking behavior or dramatically change the structure of the country's international trade.

2.2.2.2. Natural resource endowments and the Dutch disease

There is an old popular impression that availability of natural resource endowments is good for economic development. Countries such as the USA, Australia, Canada and Sweden are resource rich countries and they registered persistent economic growth over long period of time (Sachs and Warner 1995a, Husted and Melvin, 2001).¹⁵ An influential work by Habakkuk (1962, cited in Sachs and Warner 2001) points out that natural resource endowments in the USA help to explain why it surpassed England in the 19th century¹⁶. There is still wide belief that resource endowments could help growth.

Contrary to this belief however, many empirical researches confirm that there is high correlation between natural resource abundance and poor economic performance. Sachs and Warner (1995a) document that resource poor the Netherlands outperformed Spain despite the latter got a wealth of gold and silver from its colonies. Resource poor Japan and Switzerland bypassed resource rich Russia. In the last 30 years, the highest economic performers of the world are the resource poor Newly Industrializing Economies (NIE) of East Asia. The negative impact of natural resource abundance on economic development is referred as 'resource curse'.

Important works on resource curse include Gelb (1988), Auty (1990, 2001), Berge et al. (1994), Sachs and Warner (1995a, 1997, 2001). These studies empirically show the failure of resource based growth in the 1970s and 1980s. Corden and Neary (1982) provide systematic analysis of the adverse effect of resource abundance on industrialization on the basis of a worldwide comparative study of growth. Additional works investigating the impact of resources abundance on the competitiveness of the tradable sector includes, Krugman (1987), Gylfason (2001), Gylfason and Zoega (2006).

¹⁵ Sachs and Warner (2001) argue that even though these countries have higher economic growth they never reached to the level of resource intensity we see today in the Gulf-States.

¹⁶ Sachs and Warner (2001) note that Habakkuk's argument could be credible for the earlier periods where cheap transport for coal was more technologically essential for development. But with the advent of cheap energy from petroleum based products and revolution in global transportation, cheap energy can be transported today in a way that was impossible earlier which essentially reduce the importance of natural resources for economic development.

Three channels of causation from resource endowments to poor economic growth are identified in the economics literature. The first one lies on the political economy environment of a nation. Natural resources lead to more extreme corruption and rent seeking behavior because of the availability of extra income from the vast natural resource endowments (particularly mineral resources) (Mauro 1995, Sachs and Warner 2001, Lane and Tornell 1995, Leite and Weidmann, 1999, Mehlum et al. 2002). Because of the desire for higher rent extraction, there is strong incentive to control power through violence which might trigger rebellion and armed conflicts. This situation considerably increases the chance of civil war.

The second cause is strictly economical which is widely referred as the Dutch Disease. The Dutch Disease is a tendency for the real exchange rate to overly appreciate in response to windfalls from export of resources which leads to the contraction of the tradable sector and expansion of the non-tradable sector. This could lead to less competitiveness of the manufacturing sector because of the rise in the cost of labor and other inputs due to expansion of the non tradable sector (Auty 2000, Corden and Neary 1982, Gylfason and Zoega 2006). Decline in the manufacturing sector which is usually regarded as superior because of greater division of labor, learning by doing and other externalities would have a direct negative impact on long-term growth.

The third one is associated to the exposition of resource based countries to market volatility in commodity prices which could have a negative impact on growth through an external commodity price shock (Sala-i-Martin and Subramanian, 2003).

2.2.2.3. Role of geography in shaping institutions and policies

A recent study by Nunn and Puga (2009) confirms that terrain ruggedness in Africa plays an important role in maintaining traditional institutions and harmony within society by providing natural protection and hiding spots for those who could be potential victim of raid during the slave trade. Slave trade could affect the process of economic development by weakening ties between villages, thus discouraging the formation of large communities and broader ethnic identities. It played a role in developing weak institutions and stateless societies causing long-term political instability, which resulted in weakened and fragmented states. It is known that terrain ruggedness has a negative impact on growth by hindering trade and other productive activities. But Nunn and Puga (2009) find that the positive indirect role of terrain ruggedness in Africa surpasses the direct negative impact on growth. Thus geography through providing protection to societies living in rugged terrains helps to keep the integrity, traditional values and institutions of the society.

Geography also plays an indirect role in shaping institutions through influencing the pattern of Western European settlement during colonization as discussed by Hall and Jones and Acemoglu et al. (section 2.2.1.4. above). There is some belief that geography may also affects the choice of economic policies by altering the trade-offs facing governments. According to Gallup et al. (1999, p. 206) a “coastal economy may face a high elasticity of output with respect to trade taxes, whereas an inland economy does not”. Faced by these circumstances, revenue maximizing inland state may impose harsher trade taxes while a coastal sovereign would not. Empirical investigation on the effect of geography on the choice of trade policy from 1965 to 1990 confirms that coastal economies are more likely to adopt open trade policies. In general the notion that geography plays an important role in shaping institutions through its impact on altering the settlement pattern is resonating.

2.2.3. Integration (openness to trade)

There has been long debate concerning the impact of trade on economic development. Liberal economists dating back to Adam Smith and David Ricardo support free trade on the view that it would facilitate greater division of labor, efficient allocation of factors and bring higher economic welfare to trading countries. As supporters of free trade stressed, trade promotes growth through a number of channels i.e.: “increased specialization, efficient resource allocation based on comparative advantage, diffusion of international knowledge, and heightened domestic competition as a result of international competition” (Sachs and Warner 1995b, p. 3). Poor countries could import capital goods and technologies through open economic policies and integration to the world market (Sachs and Warner 1995b, Ben-David and Loewy 1998). However, this stylized fact is not universally accepted. Some economists argue that protectionism might help countries to perform better than market openness. Starting the 1950s, many developing countries doubted openness and pursued import substitution policies with the notion that it will bring better chance of closing the income gap with advanced economies.

2.2.3.1. Import substitution policies

At the end of World War II many nations were following closed economic system due to several reasons. The main reasons were associated to currency inconvertibility influenced by the impact of the Great Depression and the distraction of the international economic system due to World War II (Sachs and Warner 1995b). But many advanced economies started liberalizing and by the 1950s almost all industrialized economies fully integrated into the world economy. Most developing nations of Africa,

Latin America and part of Asia, however, followed closed economic policy until the early 1990s. There were several political economy reasons for the advancement of a closed economic system.

According to Baldwin (2003) the most widely accepted view among economists and policy makers to developing countries including the newly independent states of sub-Saharan Africa was to achieve industrialization by adopting import-substitution policies. The main goal of industrialization through import substitution policy was to stop the import of manufactured goods for which domestic demand is available, promote domestic production of these goods and use the foreign exchange earnings from export of commodities to purchase capital and intermediate goods necessary for the local production of goods (Barkey 1989, Bruton 1998). Many proponents of import substitution policy believe that advanced countries achieved industrialization through protection of their industries during the early days of industrialization. Examples of early protectionist countries include the USA, Germany and France in the later part of the 19th century and Japan after 1900, Soviet Union in the 1920s and 1930s and China after 1949.

The main promoters of import substitution policy were Raul Prebisch (1950) and Hans Singer. Both advance the closed economic policy argument from the point of view of the infant industry protection perspective. The commodity price shocks of the 1920s and the utter collapse of the terms of trade from intense protectionist policy of the USA after the Great Depression convinced these scholars and policy makers of developing nations to think that relying on commodity export is not a viable alternative (Bruton 1998, Sachs and Warner 1995b). Moreover, the continuous decline of commodity prices and the low income elasticity of demand for primary goods (the export goods of developing nations) against manufacturing (the export goods of advanced countries) made expansion in the production of the former unattractive choice. The production of labor intensive manufacturing products such as textiles and apparels were not viewed as good alternatives because there were high barriers in the developed nations restricting the import of these goods. A diversified industrial structure which existed in the developed world was considered as the only viable venture to achieve the goal of closing the per capita income gap.

As a result, many countries in Latin America pursued import substitution policies which were followed by other developing nations in Asia and Africa. Sachs and Warner (1995b) document that by the 1950s nearly a third of the world population lived in socialist countries and nearly 50% of the world population lived in countries where government proclaimed a third way between capitalism and socialism i.e. 'state led industrialization' (SLI). The protectionist policy of import substitution was

endorsed by the United Nations system (Regional Economic Commissions) as well and was adopted largely by the United Nations Conference on Trade and Development (UNCTAD).

Economists agree that import substitution policies worked well at the very beginning (see for example Barkey 1989, Silva 2007, Bruton 1998). Since these industries were engaged in assembling (example cars) and other less skill intensive manufacturing activities, the adverse effect on economic efficiency did not offset the positive growth effect at the very early stages (Bruton 1998). Moreover, in the early periods the overvalued domestic currencies resulting from tight exchange rate controls did not reduce earnings from primary commodities export significantly but kept import prices of the needed capital goods and intermediate inputs relatively low (Baldwin 2003).

But later the problem of such policies became apparent when the hardship faced by the export sector began to be realized (Sachs and Warner 1995b). An overvalued currency means the number of units of foreign exchange received by exporters reduced while they are forced to purchase more and more intermediate inputs from local producers at higher prices. As a result, the profit prospects of exporting firms declined and in most cases forced them to bankruptcy. In addition, the expansionary policy of the government results in higher inflation leading to large balance of payments and budget deficits (Baldwin 2003). These deficits were often met by still tighter controls over exchange rates and import quotas and more government interventions in the economy. The net outcome was dramatically slowing down growth and leading to macroeconomic crises.

Given the fact that the policy had wider intellectual support, one might ask what went wrong on the analysis in the first place and why so many economists got it wrong. Baldwin (2003) argues that a number of mistakes were made when economists uncritically accepted the infant industry protection argument. The first problem is there was no sufficient reason to justify protectionism on efficiency ground. The second problem is the wrong presumption about technological externalities associated with the learning process. Import substitution policy assumes that the imposition of import duty will help local entrepreneurs to undertake additional investment in knowledge acquisition. However, an individual entrepreneur who pays the cost of discovering new production system cannot exclude others from using it. As Romer (1986) asserts the information will be available free of cost for others as well. Under this circumstance, imposition of duty is not a guarantee that inventors of new knowledge and skills will benefit from the new inventions in the long-run.

Unfortunately, it was the macroeconomic and financial crises of countries' in the late 1980s that pushed governments to abandon import substitution policies than the realization of the serious resource

misallocation effect of the policies (Baldwin 2003). After the crisis, international organizations such as the World Bank and IMF pushed countries to reform their economy to be more open in exchange for loan and development assistance under the so called 'Washington Consensus'¹⁷. As a result, by the late 1990s many countries open their economy and pursued more outward looking policies.

2.2.3.2. Is openness good for growth?

The debate on whether openness is good for growth is still open despite the fact that most developing economies today integrate their economies and the world observes unprecedented trade liberalization in history. Despite the debates, many recent growth success stories are achieved by countries which made an early shift from inward looking to outward orientation policies. While simple correlation tells this fact, until recently theoretical models are not able to link trade and growth. Moreover, the empirical literature suffered from data and measurement problems (Edwards 1998).

Major contribution of endogenous growth models such as Grossman and Helpman (1991), Romer (1992) and Barro and Sala-i-Martin (1995) find that open economies have great ability to absorb technological advances created in leading countries. Endogenous growth models assume that world growth depends on new discoveries in the leading economies.¹⁸ Poor countries tend to copy the innovations made in leading economies because copying is cheaper than innovating. Barro and Sala-i-Martin (1997) demonstrate that in two countries (one advanced and one developing) the equilibrium rate of growth in the poorer country depends on the cost of imitation and the stock of human capital. If the cost of imitation is less than the cost of innovation, the poorer country will grow faster than the advanced one and there will be a tendency for conditional convergence. By intuition, if a country is closed it lacked access to technological advances created in developed economies and hence has no chance of copying. On the contrary, more open economies have a great tendency to grasp new ideas developed in the technologically leading economies (Obstfeld and Rogoff 1996).

Motivated by the intellectual support of the new growth theory, many writers contribute to the debate on the role of trade on growth. Using different measurement techniques and empirical approaches recent contributions such as Ben-David (1993), Sachs and Warner (1995b), Edwards (1993 and 1998), Frankel and Romer (1999) Dollar and Kraay (2002), Alcalá and Ciccone (2002, 2003), Bolaky

¹⁷ The term 'Washington consensus' was initially used by John Williamson in 1989 to explain a set of 10 policy prescription set by the Washington based organizations such as the World Bank, IMF and US treasury department to help resolve the economic crises of the late 1980s. For details see: <http://www.iie.com/publications/papers/paper.cfm?researchid=486>

¹⁸ See for example Barro and Sala-i-Martin (1997).

and Freund (2004), Lee et al. (2004) and many more find that integration into the world market through trade liberalization brings a positive impact on growth.

However, these findings are not free from criticism because there is long held concern among economists regarding the measurement of the openness variable. Two well known contributions are usually cited for their attempt in resolving the measurement problems. Sachs and Warner (1995b, p. 22) develop measure of openness from 5 indicators identified. Accordingly, a country is closed if one of the following 5 conditions holds true over the period 1970-89: (a) nontariff barriers covering 40% or more of trade, (b) average tariff rates of 40% or more, (c) a black market exchange rate that is depreciated by 20% or more relative to the official exchange rate, on average, during the 1970s or 1980s, (d) a socialist economic system and, (e) a state monopoly on major exports.

The second attempt was demonstrated by Sebastian Edwards (1998). Edwards argues that earlier contribution such as Balassa (1982), Sachs and Warner (1995b), Michaely et al. (1991) etc. relied on one or two openness indexes¹⁹. He believes that this narrow measure of openness opens the door for criticism from skeptics of trade. Alternatively he develops 9 indexes of trade policy used by earlier contributions. The indexes include: (a) Sachs and Warner Openness Index, (b) World Development Outward Orientation Index, (c) Leamer's Openness Index, (d) Average Black Market Premium, (e) Average Import Tariff on Manufacturing, (f) Average Coverage of Non Tariff Barriers, (g) The Heritage Foundation Index of Distortions in International Trade, (h) Collected Trade Taxes Ratio (CTR), and (i) Wolf's Index of Import distortions²⁰.

Both the Sachs and Warner (1995b) and Edwards (1998) openness indexes are criticized by skeptic of trade such as Rodriguez and Rodrik (2000) on the ground that some of the strength of the Sachs and Warner (1995b) index for example, is derived from the combination of two of the variables i.e. black market premium and the state monopoly export variables. Moreover, the Edward's indexes are based on data that suffered serious anomalies and subjectivity bias. Example, the Heritage foundation Index was calculated for trade restrictions existing in 1996, whereas Edwards uses it to measure its effect on trade in the whole 1980s. From the above it can be determined that economists are still in disarray about having the right openness measure. Due to lack of viable alternative measures, most researches use the conventional i.e. export plus import over GDP measure of openness.

¹⁹ For a full empirical review see Edwards (1998, pp. 383-386).

²⁰ For detail description of the various indexes see Edwards (1998, p. 389).

In addition to measurement problems, recent researches on trade are plagued by endogeneity and multicollinearity problems. For example, a regression on trade to GDP ratio typically finds a moderate positive relationship between trade and income per person. But this relationship doesn't reflect the actual impact of trade on growth because the trade share might be endogenous. According to Sala-i-Martin (1991) countries that adopt free trade policies may also adopt policies that are conducive for domestic free trade and stable fiscal and macroeconomic policies. Since these policies are also likely to affect income, countries trade policies are likely to be correlated with other factors that are omitted from the growth equation. Therefore, they cannot be used to identify the impact of trade on income.

To resolve these problems, Frankel and Romer (1999) propose an alternative instrument for trade based on the gravity model. They argue that countries geographic characteristics are exogenous. There is no direct role for geography to affect income except through its impact on trade. Simply knowing how far a country is from major world markets can provide a lot of information about its trading prospects. Thus countries' geographic characteristics could be used as an exogenous variable to obtain instrumental variable estimate of trade's impact on growth.

Hence, by using countries geographic characteristics such as: country size, distance, common border or landlocked status, Frankel and Romer (1999) develop an exogenous variable called '*constructed trade share*'²¹ which is used as instrument for trade. Using this instrument, Frankel and Romer (1999) find no evidence to support the hypothesis that the positive association between trade and growth arises because countries whose incomes are higher for other reasons engage in more trade.

The finding of Frankel and Romer (1999) faces some criticism for lack of consistency in alternative instruments. For example, Rodriguez and Rodrik (2000) rerun the regression by introducing three additional variables: distance from the equator, the percentage of countries' land area in the tropics and regional dummies. They find that once the three additional variables introduced, the IV estimate is losing its significance and reduced below the OLS estimates. The new variables show high coefficient suggesting that non-trade effects of geography are the main driving force behind the Frankel

²¹ This ensures that the instrument depends only on countries' geographic characteristics, not on their incomes or other factors.

and Romer finding. Despite this criticism a number of economists acknowledge the Frankel and Romer constructed trade share as a plausible instrument²².

Despite the concerted efforts, economists are still striving for a common understanding of the actual impact of trade on growth. Earlier empirical contributions could not provide persuasive evidence regarding the actual impact of trade on growth. Alternatively, recent contributions are trying to find the impact of trade on growth by looking into the individual as well as the interactive terms of trade and institutions on income.

2.2.3.3. Relative importance of trade and institutions in determining growth

Recent contributions connecting trade and growth argue that trade does not stimulate growth in highly regulated countries. This argument is supported with the empirical fact that though many countries in recent years put unprecedented effort to dismantle the formal and informal barriers to trade, for the same degree of openness some countries could exploit the benefit of trade while others not. So many recent researchers argue that better regulatory environment and higher institutional quality are prerequisites for trade to impact growth. Even though these recent researches accept a positive impact for both trade and institutions on growth, the degree and the channels through which institutions and trade impact growth is still an open question. One of the challenges to measure the individual impacts of trade and institution is the fact that both variables are determined by geography.

Economists are trying to address this open question by developing various econometric models and estimation strategies. Notable among them are Dollar and Kraay (2002) who try to shed a light on the relative importance of trade and institutions on growth based on historical accounts of growth divergence of countries over the past 200 years and the relative acceleration of growth in some poorest countries over the past 20 years. They argue that since both trade and institutions have the same determinants, it is difficult to identify the partial effects of institutions and trade on growth separately. Countries that trade more are countries that have good institutions. Similarly countries that have better economic geography conducive for trade are also countries in which better institutions are developed.

They argue that the identification strategy of the existing literature trying to isolate the partial effects of the two variables is not correct. Ordinary Least Square (OLS) regression finds a strong impact of institutions and trade on growth but two stages least square regressions based on geographic,

²² For example, Rodrik et al. (2002) use the instrument to run a horse race between institutions, geography and openness impacts on growth.

linguistic and historical instrumental variables as used by recent literature are not consistent since there is strong multicollinearity between the instruments. To resolve this problem they suggest two strategies. The first strategy is to focus on within-country (rather than cross-country) decadal changes in growth rate and decadal average change on trade share and institutional quality using lagged levels trade and institutional quality as instrument to control for endogeneity. The second strategy was to introduce additional and more objective measure of institutional quality such as average number of revolutions, Freedom House measure of political freedom and fraction of the population killed in wars. They also introduce period dummies to control for shocks such as commodity price shock.

Using the above strategy and datasets they find strong association between changes in trade and growth but only modest evidence on the partial effects of changes in institutions on growth (Dollar and Kraay, 2002, p. 4). They argue that the above finding constitutes evidence of an impact for trade on growth in the short-run. But in the very long-run both trade and institutions have impact on income.

Another contribution is Alcalá and Ciccone (2002, 2003) who introduce the idea of real openness [defined as trade to GDP share in purchasing-power-parity US\$ (PPP GDP)] as a best measure of trade than the one mostly used by literatures i.e. trade share to GDP in nominal prices²³. By using real openness, they claim that the effect of trade on labor productivity and income is highly significant and extremely robust even to the inclusion of institutional quality and geography controls. They also find that trade affects income through the channels of both physical and human capital accumulations.

However, their conception of 'real openness' as measure of trade, is not well received by the empirical literature. So the claim for 'trade significantly affects income per capita' using this measure faced serious opposition from critics such as Rodríguez and Rodrik (2000) and Rodrik et al. (2002). More recent works such as Bolakway and Freund (2004) and Borrmann et al. (2006) stick to the conventional measure in their empirical analysis citing the problems associated to the real openness measure.

Another highly cited article in attempt to unravel the effect of geography, trade and institutions on growth is Rodrik et al. (2002). Rodrik et al. estimate the respective contributions of trade, geography and institutions in determining cross-country income differences using recently developed instruments. Rodrik et al. argue that the Dollar and Kraay (2002) claim that there is high multicollinearity between the instruments of trade and institutions is not a correct one as the findings by rerunning regression using the same data do not suggest that. Second, the case that multicollinearity blurs the individual effect of

²³ Real openness is measured as the US dollar value of imports and exports to GDP share in purchasing power parity (PPP) UD dollars. For details see Alcalá and Ciccone (2002, 2003).

institutions and trade is a hard one to make. By running a horse race between integration, institutions and geography, Rodrik et al. (2002) find that institutions trump geography and trade. Geography has strong indirect effect on income through institutions but weak direct effect on income controlling for institutions. Similarly controlling for institutions, trade has a negative though insignificant direct effect on income. However, it has a positive direct effect on institutional quality.

This finding of Rodrik et al. (2002) also faced harsh criticism from supporters of the geography hypothesis such as Jeffrey Sachs. Sachs (2003) argues that by using alternative measure for geography i.e. malaria transmission, which is strongly influenced by ecological conditions, geography has a direct effect on income after controlling for institutions. Therefore, the recent competing researches do not provide any useful conclusive information regarding the relative role of trade and institutions on income. Even though empirically inconclusive there is still wide belief that trade is the 'engine of growth'. Trade could positively influence income growth through such as learning by doing, technology transfer etc.

2.2.3.4. Trade as engine of growth

Economists do not agree about the form of relationships between openness and growth. The key reason for the disagreement seems to relate to differences on what they mean by the concept of openness. For some, openness is policy induced measure of the reduction of import duties and non-tariff barriers²⁴. For others it is much more than that. For example, Bhagwati-Krueger and Papageorgiou-Michaely-Choksi (cited in Baldwin 2003) specifically focus on exchange rates as well as trade barriers and the different macroeconomic and regulatory policies that accompanied market opening or market closing episodes. Despite the conceptual differences these researches couldn't show beyond doubt that openness is good for economic growth across the board.

Baldwin (2003) writes that while many researchers generally favor the reduction of tariff and non-tariff barriers there is also a need for other policy changes aimed at eliminating large government deficit, controlling inflation, maintaining market-oriented exchange rates, increasing competition, reducing corruption, improving institutions and education system. The above conditions need to be fulfilled for trade to have a positive impact on growth. Therefore, as Baldwin (2003) mentions, it is important to look beyond tariff and non-tariff barriers. One area of interest could be the 'quality of institutions'. Institutions can affect growth either directly by shaping the incentive structure or

²⁴ See for example Rodriguez and Rodrik (2000).

indirectly, through its effect on trade performance. The next section reviews some of the empirical literature dealing with institutions and trade and identifies the major research gaps in the literature.

2.3. Institutional quality as determinant of trade performance

Research on institutions and trade is a rapidly growing area of study. Recent literatures recognize the importance of other trade barriers beyond tariffs and quotas. Rauch (2001) for example, focuses on the importance of information costs that are related to trading in physically (and culturally) distant places. Deardorff (2001) argues that trade patterns to a large extent are influenced by unobservable trade costs, instead of factor endowments and technology. Obstfeld and Rogoff (2000) highlight the possible role of unobserved trade costs in explaining some of the puzzles of the missing international trade as observed by the high omitted variables bias in trade equations. Levchenko (2007) proposes a system in which institutional differences are modeled within the framework of incomplete contract theory. The model assumes institutional differences as sources of comparative advantage which means that among other things, developed economies are abundant in institutions and have comparative advantage in the production of goods highly dependent on institutional quality. Using data on US imports disaggregated by country and industry, Levchenko finds evidence that institutional differences are important determinants of trade patterns.

Anderson and Marcouiller (2002) and Groot et al. (2003), use the gravity model to study the effect of institutional quality on bilateral trade flows. Both researches find that better institutional quality leads to higher trade volume implying that advanced countries tend to trade more among themselves than with developing countries. Anderson and Marcouiller (2002) argue that trade is undermined by hidden transaction cost associated with the security of exchange in international trade. Contracts are difficult to enforce across boundaries, shipments may even be hijacked and bribes may be required by custom officials. Using structural equations model, they find that trade is expanded dramatically when it is supported by strong institutions specifically by a legal system capable of enforcing contracts and by an impartial formulation and implementation of government policy.

Using a panel of countries over 1920 and 2000, Meon and Sekkat (2006) find that manufacturing export is negatively affected by high levels of corruption, bad rule of law, poor government effectiveness and political violence. However, the above institutional variables don't have any impact on export of non-manufactured goods. Similarly, Francois and Manchin (2006) find that in combination with geographic determinants, institutional quality not only affects export but also the propensity to export. Desroches and Francis (2006) develop a theoretical model which proposes that institutions determine

the underlying comparative advantage of countries, where institutionally good countries export relatively capital intensive goods compared to institutionally poor countries. Trade can magnify the effect of institutional quality on income leading to high income divergence if countries stay in autarky. In a cross-country study of manufacturing establishments drawn from 188 cities, Elbadawi et al. (2006) find that in African adverse economic geography and poor institutional quality might have led to lower market access and lower supply capacity.

Redding and Venables (2004a and 2004b) develop a theoretical model using the gravity model to identify the determinants of export performance. The model proposes that the aggregate demand for import of goods particularly from closer countries and the internal supply response capacity of the exporting country are two main determinants of export performance. The two determinants are coined with phrases: 'foreign market access' and 'supply capacity' respectively. Using the model, they make an empirical test and find that poor external geography, poor internal geography and poor institutional quality contribute in approximately equal measure in explaining the poor export performance of sub-Saharan Africa counties.

The above contributions are major works establishing the linkage between institutional quality and trade under different scenarios and using different data sources. Some of the contributions such as Levchenko (2007), Anderson and Marcouiller (2002) and Redding and Venables (2004a and 2004b) provide a plausible theoretical model explaining the channels through which institutions influence trade. This study builds on these theoretical models to develop the conceptual and theoretical framework to test the linkage between institutional quality and export performance.

2.4. Major gaps in the empirical literature and the contribution of this research

2.4.1. The institutions, integration and income nexus

As one can learn from the discussions, the notion that 'institutions rule' becomes a core belief among economists. The large body of discussions presented above confirms that overall economic performance is affected by the institutional quality of countries. Bad institutions are associated with slower growth (example Mauro 1995) or Knack and Keefer (1995), lower total factor productivity (Hall and Jones, 1999 and Olson et al. 2000) and lower per capita income growth (Acemoglu et al. 2001, Rodrik et al. 2002, Dollar and Kraay 2002 and Sachs 2003). Many of these researches give persuasive

evidence that causation run from institutional quality to growth thanks to the different instrumental variables applied to control for endogeneity issues as discussed in the earlier sections.

The channels through which institutions affect economic performance are the central point of the discussions. But the exact channels of causation between institutions and trade as well as the partial and joint effects of the two on growth are not yet undisputedly identified. Researches linking bad regulatory and institutional quality with export performance are not yet comprehensive. These kinds of researches would have given crucial insights to policy makers of developing nations to identify the bottlenecks for an effective integration to the world market. Researches tailored to address issues that are necessary to countries which are striving to diversify their export from primary commodities to higher value added products would have benefited from this kind of researches (Meon and Sekkat 2006). In general, recent studies suggest that for countries to benefit from integration to the world market, institutional improvement is crucial. But there is no clear consensus on what channels and in which magnitude institutional quality affects export performance. Some argue that institutional quality affects overall current export as well as future potential for export [example Francois and Manchin (2006)]. But others suggest that institutional quality only affects manufactured goods or capital intensive export goods [example Meon and Sekkat (2006), Desroches and Francis (2006) and Levchenko (2007)]. While Anderson and Marcouiller (2002) suggest that lack of effective contract enforcement across boundaries is the channel through which institutional quality affects international trade. Redding and Venables (2003 and 2004b) suggest that institutional quality affects export through its impact on domestic supply capacity and foreign market access.

These writers use different measures of institutional quality collected by different organizations as well as different empirical strategies which might lead to different research outcomes. Moreover, none of these researches undertake a closer look at the impact of institutions on export through micro-level country case study. Therefore, it is necessary to reestablish the cross-country empirical facts by developing a plausible theoretical model and testing the model with more recent and comprehensive data. It is also important to corroborate the claims made by the cross-country studies through additional micro-level country case study.

2.4.2. Reestablishing the empirical facts

This research is aimed at achieving four broader goals. The first goal is to contribute to the literature on institutions by empirically investigating the relation between institutional quality and export performance. Second, the research will assess the joint role of institutions and export on

economic performance. Third, it investigates if higher export to GDP share is bad for growth in highly regulated and low institutional quality countries. In all the above cases, the research will use cross-country analysis. In the last stage the research conducts micro-level study to supplement the cross-country analysis with some evidence from Ethiopia.

The research will use the gravity model of bilateral trade to reestablish the empirical link between the institutional and export variables. The research uses the six dimensions of the Kaufmann et al. (2009) institutional measures and tests the impact of each of the dimensions separately. The research also utilizes the World Bank doing business data set as well as the legal system of countries as additional institutional measures. As recommended by the gravity model, the research employs different explanatory variables to avoid any omitted variables bias. This will provide a more robust finding and makes the research unique in its application of various institutional quality measures. To the knowledge of this author, there are no other contributions which give so much emphasis on the relations between institutions and export by applying different dimensions of institutional quality measures.

This research is also unique in extending the study to investigate the joint significance of institutions and trade on income as well as in analyzing if trade openness is bad for growth in low institutional quality countries. The research builds on a number of similar studies such as Frankel and Romer (1999), Dollar and Kraay (2002), Alcalá and Ciccone (2002), Bolaky and Freund (2004) and Bormann et al. (2006) to reassess what are the cause effect relationships between the export, institutions and income variables.

The main contributions of the research are: (1) explaining the relations between institutions and export; (2) identifying the independent and joint impact of institutions and export to GDP share on income; (3) utilizing various dimensions and measures of institutional quality in the research; (4) testing if good institutional quality is a prerequisite for higher export to have a positive impact on income; (5) by using cross-country estimation result, forecast the possible gains to export from improving institutional quality taking Ethiopia as a case; and (6) supporting the cross-country claims with micro-level evidences from Ethiopia.

2.5. Concluding remarks

This chapter provides a comprehensive review of the important contributions linking institutional quality and economic performance. In the first sections, it reveals that the institutional neutrality assumption of the neoclassical model was considered as the most striking weakness of the past studies

in the field. Institutions are regarded as the most crucial underlining factor in explaining why some countries are able to achieve sustained economic growth and others not. Economists realize the fact that institutional variables are measurable and applicable for economic analysis. By recognizing this fact, there is growing empirical literature connecting institutions and economic growth. All of these literatures reveal that institutional quality has a positive impact on economic performance.

The chapter explains that the studies linking institutions with economic growth are susceptible to measurement and endogeneity problems. These problems raise concerns on the validity of the claims that institutions matter for growth. The chapter discusses the different exogenous variables that could be used to instrument for institutions. It shows that by utilizing the proposed instrumental variables, most researches confirm the fact that causality runs from institutions to income growth.

The chapter also gives detail literature review on how openness, institutions and income are interacting. Moreover, openness is viewed as the best policy instrument available for developing countries to take advantage of globalization. As a matter of fact many countries today are more open than in the early 1990s. But even though countries are more open today, some countries particularly those in sub-Saharan Africa are marginalized and left out of globalization.

Empirical researches linking trade openness to income in general are inconclusive. Cross-country studies running a horse race between institutions, geography and openness suggest that institutional quality is the most crucial determinant of income. Openness has only indirect impact on income through institutional quality. Such conclusions are opposed by trade fundamentalists. Therefore, this research aims at reassessing the existence of a linking between institutional quality and export performance by utilizing more recent and comprehensive data. The research also utilizes the results from cross-country analysis to establish inference on how Ethiopia could benefit from improving its institutional quality and try to substantiate the cross-country claims with micro-level studies.

Chapter III

Theoretical and Conceptual Framework

As it has been broadly discussed in chapter 2, supporters of the three hypotheses of integration, institutions and geography give detailed theoretical and empirical justifications on how each of the deep determinants growth influences economic performance. But empirical researches are not yet conclusive on identifying the channels through which each of these determinants affect economic performance. In this chapter, the research outlines a theoretical and conceptual framework on the link and channels through which institutional quality influences export performance and how both institutions and export independently as well as jointly affect income.

3.1. Beyond formal and informal barriers to trade

The notion that international trade is good for welfare increasing specialization has broader acceptance by scholars and policy makers. Based on this notion, most nations are trying to engage in more trade by eliminating the formal and informal barriers to trade. But international trade is much more constrained than can be explained by tariffs, quotas and informal impediments to trade. Recent researches in international trade give considerable emphasis to the question: “Why is there so little international trade? Why there is less North-South trade than one would expect given differences in relative factor endowments” (Anderson and Marcouiller 2002, p. 342). Formal trade barriers fail to account for the missing international trade because changes in tariff and non-tariff barriers over the last several years had little impact on international trade performance (Anderson 2000). Transport cost accounts for some portion of the missing figure but is not able to account for the whole because even closely integrated economies still trade too little among each other (Anderson and van Wincoop 2004).

Economists in recent years realize that a number of other factors influence trade. Among the factors, trade economists such as James Anderson and Douglas Marcouiller (2002), James Rauch (2001), and Alan Deardorff (2004) argue that bad institutional quality negatively influences trade through raising trade costs.

In another perspective, growth economists view institutional quality as an important factor for developing countries to facilitate international trade and thereby help for the transfer of new technologies invented in leading economies and help to achieve catch-up growth (see for example Barro and Sala-i-Martin 1997). Trade basically helps to disseminate ideas and technologies from leading

economies to developing countries. Institutional quality in this regard creates a level playing field and helps developing countries to take advantage of their underdevelopment by encouraging viable enterprises to engage in more international trade and pushing out those enterprises that are engaged in the production of wrong goods in which the country has no comparative advantages. Moreover, better institutional quality is also needed to create an incentive structure for attracting foreign direct investments and for domestic investors to engage in profitable export activities. Institutional quality therefore, plays a connecting role between trade and growth. It also facilitates export to have a positive role on growth and could also influence growth through other channels. Finding out the exact cause effect relationships as well as identifying the independent and joint impact of export and institution variables on income is a very promising area of research. In the next sections, the research spells out a theoretical and conceptual framework to identify the pattern and directions of the interaction of export, institutional quality and growth variables.

3.1.1. Institutional quality as determinant of the pattern of trade

The biggest mystery on international trade is that nations appear to trade too much with themselves and too little with each other (McCallum 1995, Trefler 1995, Helliwell 1998, and Rauch 2001). International trade is much more constrained by unobserved trade costs. Eaton and Kortum (2000) find that “zero gravity” (no geographic barriers to trade) increases international trade by fivefold. According to Anderson and van Wincoop (2004), trade costs are too large even for apparently highly integrated economies such as Canada and the US despite the fact that the two are neighboring and proximate countries. So it is evident that there are other components of trade costs which are missing from the overall trade cost accounting.²⁵ Recent decomposition and accounting for trade costs was possible thanks to the advent of progress in data collection and structural modeling of costs (Anderson and van Wincoop 2004). However, some trade costs are clear and easily measurable but others such as information and contract enforcement costs are hidden and not easily measurable.

Attempts to explain the puzzle of missing trade gives special focus on the role of informal barriers to trade. Anderson and Marcouiller (2002, p. 342) contend that trade is reduced by higher transaction costs associated with the insecurity of international exchange: “contracts may not be enforceable across jurisdictional boundaries, bribes may be extorted by customs officials and shipments even be hijacked”.

²⁵ Trade costs are costs incurred to deliver export goods or services from the producer to final consumer. It includes transport cost, costs associated to policy barriers such as tariff and non-tariff, information and contract enforcement cost, costs associated to the conversion of foreign currency, legal and regulatory costs and distribution costs to wholesalers and retailers (Anderson and van Wincoop, 2004, pp. 691-692).

Rodrik (2000, p. 179) argues that “when one of the parties reneges on a written contract, local courts may be unwilling-and international courts unable-to enforce a contract signed between residents of two different countries”. Thus, this might obstruct the possibilities for effective contract enforcement, leaving international transactions hostage to an increased risk of opportunistic behavior. Under this circumstance, traders face higher expenses to search for information about the sources and the different attributes of goods they are trading; to negotiate and enforce contracts; to safeguard international exchange or even bribe a corrupt custom official. Trade only expands dramatically when it is supported by strong institutions particularly on a legal system capable of enforcing commercial contracts and impartial and efficient execution of legal proceedings by an independent court. In general, economists realize that for trade to take place at less transaction cost, partner countries’ institutional environment needs to be perfect. Anderson and Marcouiller (2002) argue that imperfect contract enforcement in importing countries has the same effect as raising tariffs and hence increases trade costs by the same proportion to tariffs.

Hence, empirical work that ignores the impact of institutional quality on trade performance suffers from an important omitted-variables bias. Anderson and Marcouiller (2002, p. 342) find that “the share of expenditure devoted to traded goods falls as income per capita rises. When institutional variables are excluded from the regression, however, as in most of the existing gravity literature, traded goods expenditure shares appear to be positively associated with income per capita”. This means when institutional quality is excluded from a growth regression, higher import and export share is significantly associated with higher income per capita. The significance level is diminished when the institutional quality variable is included in the model. The bias is due to the positive correlation between institutional quality and income per capita variables (Anderson and Marcouiller 2002).

Business and social networks and intermediaries that operate across boundaries usually help in overcoming the problem of informal barriers to trade through providing vital information about international trading opportunities. Firms that have connections in other countries whether it is formal or informal are in a better place to learn and get information about trading opportunities and to take advantage of them (Deardorff 2001). Therefore, networks surely play a role on which enterprises and which countries succeed in penetrating a particular foreign market.

In countries where networks do not play such a connecting role, trading partners basically depend on the formal aspect of the institutional environment. Anderson and Marcouiller (2002) point out that trade is severely affected by the perception of importers about the level of institutional quality of their

trading partners. This stylized fact has been overlooked by the literature dealing with the pattern of trade flows. To the knowledge of this study, there are only few recent works trying to investigate the connection between institutions and the pattern of trade flows (see for example Anderson and Marcouiller 2002, Groot et al. 2003, Koukhartchouk and Manuel, 2003 and Li and Samsell 2009).

Moreover, the literature on institutional quality and trade performance lacked formal theoretical modeling until Anderson and Marcouiller (2002) introduced a structural equation model linking corruption and imperfect contract enforcement in the importing country to poor international trade performance. The model predicts a situation where predation by thieves or corrupt officials generates a price markup equivalent to a hidden tax or tariff. Price markups could significantly constraint trade in countries where commercial contracts are poorly enforced and economic policy lacks transparency and corruption and theft are rampant. The Anderson and Marcouiller model builds a structural model of import demand in an insecure world. The model estimation finds that a 10% increase in countries index of transparency and impartiality leads to a 5% increase in import volume other things being equal. The model suggests that good institutions support trade among high income countries, lower transaction cost and consequently encourage high quality institution and capital abundant countries to disproportionately trade with each other and trade less with low institutional quality countries. But this stylized fact does not imply that low income countries should trade disproportionately high among themselves.

The main weakness of the Anderson and Marcouiller model is its emphasis on the demand side of the international trade equation leaving the supply side literally unexplained. Poor institutional quality could curtail international trade by negatively influencing export performance which means influencing the supply side of the international trade equation. There are a number of possible channels through which institutional quality could impact export supply. For example, cumbersome customs procedure could derail the speed of international transaction and could prompt demand for bribe by custom officials. Poor legal protection and contract enforcement may discourage firms not to vigorously engage in export business. Rigid labor law could hamper the movement of labor across industries. Moreover, partiality and favoritism on export license provision could limit the number of exporting firms and hence prohibits free competition. All these institutional factors could increase the transaction cost of export items and hence reduce the international competitiveness of an exporting country.

Formalizing the channels through which institutional quality influences international export supply would complement the Anderson and Marcouiller model. Redding and Venables (2004a, 2004b) provide

an alternative theoretical model that associates institutional quality with measures of comparative cost of an exporting sector based on the notion that transaction cost (costs associated with incomplete contract enforcement) constitutes part of the international trade costs. The research builds on the Redding and Venables (2004a, 2004b) theoretical model to develop the first part of the conceptual framework (i.e. the interaction of institutional quality and export performance) of this research. It uses the gravity model to empirically test the theoretical and empirical specifications of the interaction of institutional quality and export performance. The second part of the research investigates whether high export performance is associated with higher economic growth under different institutional quality scenarios. This means the research tests if increasing export is contributing to growth in both high and/or low institutional quality countries at similar fashion. It also investigates how export and institutional quality jointly influence economic growth. Detail theoretical outline of the second part of the empirical framework will be spelled out in section 3.1.3.

3.1.2. Determinants of export performance

Export performance is varied across countries despite unprecedented trade liberalization by many countries over the last few years. According to Fugazza (2004), world export has increased by almost 220% in the last two decades. East Asian and Pacific countries have contributed the lion share to this impressive export growth while sub-Saharan Africa performed very poorly in all measures of export performance. The export growth rate of South East Asia and Pacific countries was 720% while sub-Saharan Africa export growth rate was merely 80% over this period (Fugazza 2004).

This divergent export performance to a large measure is determined by external and internal factors. External factors are related to the demand for imports created in other countries. Import demand is determined among others by external geography such as distance between countries, whether they share a common border or belong to the same trade blocs. Countries that are close to regions where demand for import is rising are in a better condition to export more than countries that are far from these growth centers due to high transport cost. Internal factors are related to the supply response capacity of exporting countries. In countries where there are no efficient infrastructural networks or sea port or navigable river trade cost is higher compared to countries where these conditions are good. Internal factors are also related to size of the economy. Small countries trade more internationally than large countries because in these countries simply there are not many citizens to trade with. Economic policy could also affect the supply capacity of countries by affecting factor prices. A relatively closed economy faces higher capital and intermediate good prices than an open economy

which in turn raises its overall cost of export goods when high proportion of imported goods are used in its production. The higher trade cost limits its competitiveness in the international market.

Redding and Venables (2004a and 2004b) provide an econometric model which outlines how external factors such as higher per capita income of importing countries, distance and local supplier capacity jointly determine the supply response of an exporting country. The model is based on a new trade theory model of international inequality to investigate the channels through which internal and external geography and institutional quality affect export performance. The model proposes two channels through which export performance can be influenced. The first is 'foreign market access' which is a proximate weighted measure of the size of export markets. The second is 'supplier access'²⁶, which is measured as an index of the cost at which firms acquire their inputs. The main identifying assumption of the model is the existence of a pecuniary demand effect across countries in the presence of trade cost and product differentiation. This means an increase in import spending in some countries increases the demand for export goods in other countries. And because of trade costs the size of this effect is much higher to neighboring countries than to distant places.

3.1.2.1. The basic model

Redding and Venables (2004a) use the gravity model to offer an explanation of countries trade flows. The gravity model simplifies the explanation of the pattern of countries trade flows in terms of importer and exporter country characteristics and between country information such as whether countries share common language, common border, ethnic identity, and distance between them. It helps to decompose how many of the international trade effect is due to external factors or internal supply conditions or both. The model is developed based on product differentiation assumption derived from a constant elasticity of substitution (CES) demand structure.

According to the model, the world is consists of $i = 1 \dots N$ countries whose tradable-goods sector produce a range of symmetric differentiated product varieties. The range of products produced in different countries and their price is assumed to be given exogenously. Demand is represented in a conventional symmetric constant elasticity of substitution way implying utility function of the form:

$$U_j = [\sum_i^R n_i x_{ij}^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}, \quad \sigma > 1 \quad (3.1)$$

²⁶ Supplier access is defined as the sum of the supply capacity of all other countries weighted by the measure of bilateral trade in reaching the supplier i . It measures proximity to sources of export supply (Redding and Venables 2002, pp. 4-5).

Where: n_i is the number of varieties produced in country i ; x_{ij} is product varieties produced in country i and demanded in country j ; and σ is the elasticity of substitution between any pairs of country i products.

The dual of this quantity aggregator is the price index in country j and is defined by the price of each variety:

$$G_i = [\sum_i^R n_i p_{ij}^{1-\sigma}]^{1/(1-\sigma)} \quad (3.2)$$

Where: p_{ij} is the price of a variety produced in i and sold in j .

Given country j 's total expenditure on differentiated products and applying Shephard's lemma to the index, the demand for each variety is given as:

$$x_{ij} = p_{ij}^{-\sigma} E_j G_j^{\sigma-1} \quad (3.3)$$

Where: E_j is aggregate expenditure in country j ; and from which it can be seen that σ is the own price elasticity of demand for each variety. $E_j G_j^{\sigma-1}$ gives the position of the demand curve of country j which exporters of country i face when exporting to country j .

Assuming that each variety of country i 's products have the same producer price (p_i), then adding the transport cost to deliver the product from i to j , gives the total export price (p_{ij}) to be:

$$p_{ij} = p_i t_i T_{ij} t_j \quad (3.4)$$

Where, t_i is trade cost to transfer the goods from the production site to port of exit in country i and t_j is trade costs in getting the product from the port of entry to distribution site in country j , while T_{ij} is the cost of shipping between the two countries. Hence t_i and t_j reflect internal geography and T_{ij} reflects external geography. The value of $(t_i T_{ij} t_j)^{1-\sigma}$ is the proportion of total cost spent in transporting the export good from production to distribution sites. The value of total exports from country i to country j can therefore, be computed as,

$$n_i p_i x_{ij} = n_i p_i^{1-\sigma} (t_i T_{ij} t_j)^{1-\sigma} E_j G_j^{\sigma-1} \quad (3.5)$$

The term $E_j (G_j/t_j)^{\sigma-1}$ is the market capacity of country j (henceforth m_j). It depends on internal transport cost and total expenditure in country j and on the number of competing varieties and their price indexes.

On the supply side, the term $n_i (p_i t_i)^{1-\sigma}$ reflects the supply capacity hereafter (s_i) of the exporting country i . It is the product of the number of varieties (n_i), their price competitiveness (p_i); and

internal transport cost (t_i). From the above it can be seen that given market capacity, doubling supplier capacity doubles the value of total export.

From (3.5) the value of total exports from country i to country j can be calculated as the product of supply capacity, market capacity, and the international transport cost component such that:

$$n_i p_i x_{ij} = s_i (T_{ij})^{1-\sigma} m_j, \quad (3.6)$$

Empirically (s_i) reflects all observed and unobserved characteristics of an exporting country i that affects its bilateral trade relations with all importing countries. In the same way, (m_j) reflects all observed and unobserved country characteristics of an importer country j that affects its bilateral trade relations with all exporting countries.

From the above, the export performance or in other words the value of country i 's total export to all destinations can be computed between supplier capacity and foreign market access such that:

$$V_i = n_i p_i \sum_{j \neq i} x_{ij} = s_i \sum_{j \neq i} (T_{ij})^{1-\sigma} m_j = s_i M_i, \quad (3.7)$$

Where: (V_i) is value of total export and (M_i) is the foreign market access of country i respectively.

Foreign market access (M_i) is the sum of the market capacities of all other importing countries j , weighted by the measure of bilateral trade cost. It can be computed from equation (3.6) as follows:

$$M_i \equiv \sum_{j \neq i} (T_{ij})^{1-\sigma} m_j \quad (3.8)$$

Analogous to the concept of foreign market access is the notion of foreign supplier access, (S_i). Supplier access can be derived by summing up the supply capacity of all other countries weighted by the measure of bilateral trade cost in transporting the goods from each individual supplier j to an exporting country i such that:

$$S_i = \sum_{j \neq i} (T_{ij})^{1-\sigma} s_j \quad (3.9)$$

Analogous to Foreign Market Access, finding the value of supplier access (S_i) would help to calculate the total import value of country i . From (3.5) and (3.9) the value of total import of country i (Z_i) can be computed as the product of market capacity and foreign supplier capacity:

$$Z_i = m_i S_i \quad (3.10)$$

Redding and Venables (2004a and 2004b) outline that equations (3.7) through (3.10) are composed of $4N$ equations with $4N$ unknowns (m_i, s_i, M_i and S_i for all i s) given the value of total exports (V_i), total imports (Z_i) and measure of bilateral trade cost (T_{ij}) ^{$1-\sigma$} . They use this model to

calculate the supply capacity (s_i) and foreign market access (M_i) of countries across regions. This declassification is necessary to identify which component of the bilateral trade equation is more important in the overall trade performance. The model suggests that countries which are close to where there is higher demand for imports could have higher foreign market access to export. Though the notion that international trade flows are determined by the mass of trading partners' income and inversely related to their distance, the Redding and Venables model provides an empirical method to calculate the estimated foreign market access for a cross-section of countries given each country's trading partners' spending on import and measure of bilateral trade cost²⁷.

Redding and Venables arrive at almost similar conclusion to the prediction of the standard gravity estimation. This research however, is interested in developing a theoretical model that associates institutional quality with export performance which is not well identified by the gravity model. It is expected that institutional quality impacts export performance on the channels of both local supplier capacity (s_i) and foreign market access (M_i). The next step is outlining a theoretical model of the determinants of local supply capacity and identifies where institutional quality fits in the model.

3.1.2.2. Determinants of local supply capacity

The above decomposition is based on the proposition that country i 's export is the function of its supply capacity (s_i) and foreign market access, FMA (M_i)²⁸. Redding and Venables (2004a, p. 112) argue that supply capacity is determined by a number of underlying country characteristics including country size, natural resource endowments, and internal geography. It also depends on the foreign import demand elasticity of income since foreign import demand is one of the variables that determine the potential return on exporting. They outline the following mathematical model to derive the determinants of internal export supply capacity and thereby try to account how economic geography and institutional quality influence export performance.

The underlying assumption of the model is that when the demand for import increases, the quantity of export produced in the exporting country increases, leading to higher production cost since the export sector is bidding up for resources with import competing and non-tradable sectors. Higher

²⁷ One could argue that the terms 'foreign market access' and 'foreign supplier access' are nothing than synonymous to the terms 'total market demand for import' and 'total export supply'.

²⁸ Foreign market access (FMA) is analogues to the notion of aggregate foreign import demand weighted by the measure of total trade cost (T_{ij}), where $T_{ij} = 1$, when trade is costless, and $T_{ij} - 1$ is the proportion of output lost in shipping export goods from i to j .

export cost leads to higher price of the export product (Redding and Venables 2004a, p. 112). Using the previous analysis (equations 3.5 and 3.8) then, the quantity of export demanded from country i ,

$n_i x_i = n_i \sum_{j \neq i} x_{ij}$ is given by:

$$n_i x_i = \frac{s_i M_i}{p_i} = n_i (p_i)^{-\sigma} (t_i)^{1-\sigma} M_i \quad (3.11)$$

The supply relationship of equation (3.11) could be specified by a function Ω such that:

$$n_i x_i = a_i \Omega(p_i/c_i), \text{ where, } \Omega' > 0 \quad (3.12)$$

It is assumed that the supply relationship function Ω is the same for all countries but other country specific trade parameters such as (a_i) and (c_i) varies. These country specific parameters represent the main variables of a standard trade equation where (c_i) is the measure of comparative cost or in other words is marginal input requirement in the export sector of country i and (a_i) is measure of size of the economy (such as GDP, population or its area size). This is a general equilibrium relationship capturing the opportunity cost of resources used in the export sector. Meaning that higher demand for export moves the economy around the production possibility curve, resulting in higher production of export goods.

By logarithmically differentiating equations (3.11) and (3.12), it is possible to get estimation of a linear relationship of cross-country variation of the form:

$$\hat{x} = -\sigma \hat{p} + (1 - \sigma) \hat{t} + \hat{M}, \quad (3.13)$$

$$\hat{n} + \hat{x} = \hat{a} + \omega(\hat{p} - \hat{c}),$$

Where (ω) , is the price elasticity of export supply, and $(\hat{\cdot})$ is a proportional deviation (percentage change) from some reference point. Eliminating the price term from 3.13 gives,

$$\hat{x}(\omega + \sigma) + \sigma \hat{n} = \omega[\hat{M} - \sigma \hat{c} + (1 - \sigma)\hat{t}] + \sigma \hat{a} \quad (3.14)$$

Hence, total export volume $(V_i) = s_i M_i$ (equation 3.7) varies according to

$$\hat{V} = \hat{n} + \hat{p} + \hat{x} = \hat{a} - \hat{c}\omega + [\hat{M} + (1 - \sigma)\hat{t} - \hat{x}] \frac{(1+\omega)}{\sigma}, \quad (3.15)^{29}$$

One further step required, is to specify whether export volume varies through the number of varieties, (n) or through output per variety (x) . According to Redding and Venables (2004a) in standard

²⁹ The right hand side of this equation uses (3.11).

monopolistic-competition equilibrium, output per commodity is a constant $\hat{x} = 0$; in this case equation (3.15) can be rewritten as:

$$\hat{V} = \hat{a} - \hat{c}\omega + [\hat{M} + (1 - \sigma)\hat{t}] \frac{(1 + \omega)}{\sigma}, \quad (3.16)$$

On the other extreme, if the number of products produced in a country is fixed such that: $\hat{n} = 0$, then using (3.14) and (3.15) provides:

$$\hat{V} = \frac{\{(\sigma-1)(\hat{a} - \hat{c}\omega) + [\hat{M} + (1 - \sigma)\hat{t}](1 + \omega)\}}{(\sigma + \omega)}, \quad (3.17)$$

These equations provide the basis for an econometric investigation in the form provided by cross-country observations. The coefficient on FMA generally is not equal to unity suggesting the endogeneity of supply capacity where an increase in FMA is not always matched by an equal response in the supply capacity. This is because, if σ is large relative to ω (or in case of (3.17), if $\sigma > 1$), then the coefficient on \hat{M} is less than one, leading to the situation that higher levels of FMA are matched by less than proportional increase in export. This is because increased demand for export encounters diminishing returns in the domestic supply response as a result of bidding up prices and then an eventual higher export price (p_i). For low value of ω (the elasticity of export) the coefficient on \hat{M} is smaller leading to a more tightly curved production possibility curve and lower supply elasticity.

Other terms in the cross-country variation enter as follows. Variation in internal geography is captured by \hat{t} , entering with negative coefficient provided $\sigma > 1$. Higher domestic market size \hat{a} , leads to higher export volume though not necessarily proportionately. Finally a high comparative cost export sector, $\hat{c} > 0$, leads to lower volume of export for a given price.

Comparative cost could be defined as additional trade costs that are different from standard trade costs such as production, transport and, marketing costs. Higher comparative cost \hat{c} reduces export because it raises total costs and hence limits the local supply capacity of an exporting firm. According to Redding and Venables (2004a) the empirical counter part of comparative cost \hat{c} could be the institutional environment under which enterprises operate in a country. This cost could take any form such as losses due to exchange rate volatility or costs related to transaction. Some of these trade costs could be captured by distance as measure of trade cost but others not³⁰.

³⁰ Long distance voyage definitely put the transfer of goods at relatively higher risk because the probability that shipments could be hijacked would increase as distance increases. Distance therefore, could be a good proxy for not only transport cost but also for additional trade cost components.

In general, comparative cost could be used as proxy for the quality of institutions of an exporting country. This is because in countries where the institutional quality is lower, businesses engaged in the production of export goods should invest a proportion of their income to protect their businesses from diversion and other predatory activities which increases the cost of export goods.

The above model suggests that higher comparative cost could hamper export performance by influencing the export supply capacity of local firms. However, the model doesn't formalize under which specific channels of the local supplier capacity these additional comparative costs influence export performance. One could suggest that transaction costs associated with safeguarding any contractual relations could be one of the channels.

In their recent work, Redding and Venables (2004b) complement their previous work of linking comparative costs with local supplier capacity by introducing additional model which dissects the different cost components. This approach is further elaborated and used in firm level empirical analysis by Elbadawi et al. (2006). In the following section, this research follows Redding and Venables (2004b) in identifying the different channels through which institutional quality affects export.

3.1.2.3. Channels of institutional quality effect on export

According to Redding and Venables (2004b), export equation decision can be further elaborated by bringing the supply side relationship into play. From the supply side, the profits (π_i) of a firm in each country i is given by:

$$\pi_i = \sum_{j=1}^{N_i} P_{ij} x_{ij} / T_{ij} - G_i^\alpha w_i^\beta k_i^\gamma c_i [F + x_i] \quad (3.18)$$

The total output of each firm is $X_i \equiv \sum_i x_{ij}$. The right extreme terms of equation (3.18) are costs, where $c_i F$ is a fixed cost component signifying an increasing returns; c_i is marginal input requirement. Technology is assumed to be Cobb-Douglas type where three inputs i.e. (1) internationally immobile composite primary factor which could be interpreted as labor obtained at a price w ; (2) an internationally mobile primary factor with price k ; and (3) a composite intermediate inputs of price G_i are combined in the production of an export good. The exponents α, β , and γ are factor shares such that $\alpha + \beta + \gamma = 1$. As mentioned in the earlier sections, T_{ij} is an iceberg transport cost.

Faced with the demand function (see equation 3.2), a profit maximizing firm set a Freight On Board (f.o.b.) price (p_i) such that:

$$p_{ij} = p_i T_{ij} \quad (3.19)$$

Where:

$$p_i = \frac{\sigma}{\sigma-1} G_i^\alpha w_i^\beta k_i^\gamma c_i \quad (3.20)$$

Equation (3.19) states that the selling price of a given variety varies between exporting firms in different countries according to transport cost. Equation (3.20) implies that the aggregate f.o.b price has a uniform markup over marginal cost. Rewriting the export demand equation (3.3) in terms of f.o.b. price p_i and summing over $j \neq i$ gives:

$$X \equiv \sum_{j \neq i} p_i x_i = p_i^{1-\sigma} \sum_{j \neq i} T_{ij}^{-\sigma} E_i G_i^{\sigma-1} \quad (3.21)$$

Where X_i is total export of firms in country i and can be written in terms of the two geographic concepts of market access and supplier access. Substituting for p_i in equation (3.21) from equation (3.19) and using (3.7) and (3.8), total export value (V_i) can be given as:

$$V_i = a_i (SA)_i^\alpha (FMA)_i = s_i M_i \quad (3.22)$$

Where, SA is supplier access, FMA is foreign market access and $a_i = \left(\frac{\sigma w_i^\beta k_i^\gamma c_i}{1-\sigma} \right)^{1-\sigma}$

The above decompositions would help to understand the different cost components faced by an exporting firm. This would help to complement the earlier finding of Redding and Venables (2004a) who suggests that institutional quality impacts export through its influence on comparative cost (\hat{c}), hence by analogy on local supplier access. As can be seen from the above supply side relationship, institutional quality influences export performance either more directly or through local supplier access. Certain aspects of institutions could influence trade cost and hence T_{ij} . Other aspects of institutional quality could influence export exclusively through the number of varieties produced (n_i) and by implication indirectly through supplier access (Elbadawi et al. 2006). Institutions could also influence export directly. More direct influence could be observed through any of the determinants of a_i that means through their effects on factor prices G_i , w_i and k_i or on productivity, c_i (Elbadawi et al. 2006). Hence, institutional quality influences export performance in a number of channels which influence the supplier capability of an exporting country. Such influence could be estimated by standard bilateral trade equation.

The above model provides good justification on how institutional quality impacts export performance. The model could be a good complement to the 'additional price mark' model of Anderson and Marcouiller (2002) who suggest that low institutional quality influences international trade through

raising import prices on the demand side as traders invest proportion of their cost on safeguarding international transactions.

This study suggests that institutional quality impacts export performance directly as well as indirectly through its impact on local supplier access and foreign market access. Such direct and indirect influence of institutional quality on export performance can be estimated using a standard gravity equation in a cross-country observation. Details of the application strategy and how the gravity model of bilateral trade can be used in this particular research will be discussed in the model specification section.

3.2. Impact of trade and institutions on economic growth

In this section the research provides a theoretical explanation to the claim that institutional quality (together with good export performance) is vital for growth performance. As thoroughly discussed in chapter 3, starting from Adam Smith and David Ricardo's view of absolute and comparative advantages to the new trade theory of specialization based on product differentiation and the conception of increasing returns and endogenous technological progress, economists interested in growth have always been interested in trade. The need for trade liberalization has been a core policy advice to developing countries seeking to close the income gap with industrialized nations. Despite the strong effort to disentangle the channels through which trade impacts growth, there is little persuasive evidence to support the claim that trade has a strong positive impact on growth. However, economists continue the debate since the issue is still an open question.

The main obstacle in identifying the exact relationship between trade and growth is that trade share may be endogenous. Countries which grow faster for reasons other than trade might trade more. Using countries trade policies in place of trade share or as an instrument in a cross-country observation doesn't help to solve the problem as well. Causation is particularly a problem in regressions that relate openness to growth using the widely used openness measure of export plus import over GDP (Winters 2004). The share of trade to GDP is clearly endogenous because the import and export share likely to vary with income levels.

To resolve some of the challenges of the endogeneity problems, recent instrumentation via lags or other exogenous variables such as distance from the equator could provide a valid alternative. But they still could not be a final solution because lagged values might serially correlate or the alternative geographic instrumental variables could affect income as much as trade in other channels. For example Dollar and Kraay (2002) estimate their regression by using lagged values of openness as instrument,

which appears uncorrelated with other factors influencing changes in growth. “They do so by estimating both levels regression and regressions where the dependent variable is the change in the growth rate of income” (Rodrik et al. 2002 p, 19). Unfortunately, the simultaneity bias can extend over time in the case under consideration (Lee et al. 2004). Hence, using lagged values of openness as instrument does not offer a reliable solution as well. As discussed in chapter 2, the Frankel and Romer (1999) geography based constructed trade share is the best available instrument economists have at the moment. But its validity is still under scrutiny because geographic variables can relate with the quality of institutions and/or affect income through other channels such as morbidity, agricultural productivity and with the availability of natural resources. Case-studies would help in avoiding some of the problems of cross-country studies but they cannot be confidently replicated and are heavily affected by country idiosyncrasies (Lee et al. 2004).

Indeed no economist rejects the hypothesis that openness has a positive impact on growth. The only exception to the knowledge of this researcher is Rodrik et al. (2002) who find a positive relationship between trade and growth under first order OLS regression but once controlling for institutional quality, trade has a negative albeit insignificant effect on income suggesting that trade has an indirect impact on income through institutional quality. In general, economists agree that trade liberalization is good but for a variety of reasons discussed above the level of proof remains a little less than straight.

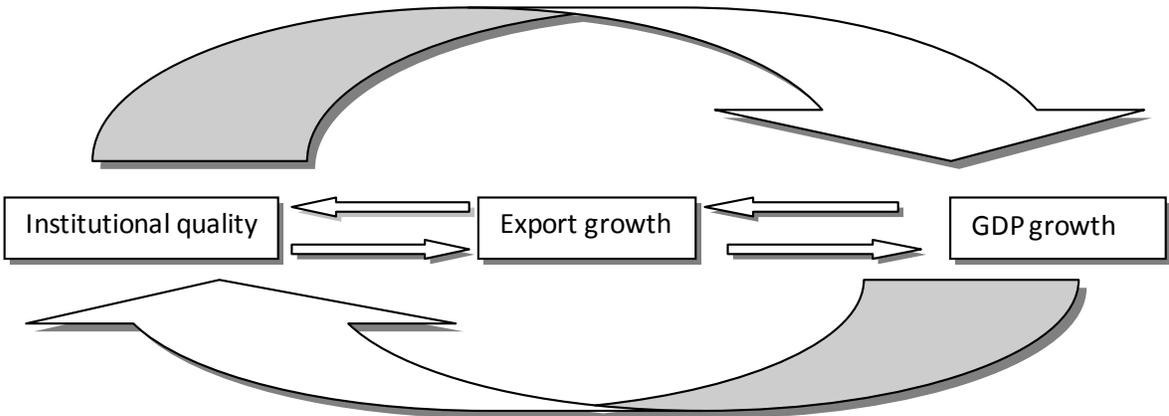
The notion that trade liberalization affects growth only indirectly is an indication that there are connecting channels between trade and growth. According to Winters (2004), investment promotion policies are one best example of the connection line between openness and growth because access to foreign knowledge facilitated by FDI has a positive effect on total factor productivity. Another area where policy can help is through trade liberalization. Reduction in trade barriers through trade liberalization policy is followed by significant increase in productivity because of increased import competition and it is common knowledge that competition stimulates technical efficiency. High technical efficiency is good for export performance because only efficient firms can overcome the severe competition on export markets. Therefore, better policy environments will increase both imports of capital goods and the supply capacity of exports. Other important policy areas to harness the benefits of trade to growth are setting up better macroeconomic management and well functioning infrastructure (Borrmann et al. 2006).

Though crucial, good policy environment are not only enough for trade liberalization to be beneficial for growth. Institutional quality is another important factor that directly or indirectly

influences the linkage between trade and income growth. Good institutions decrease uncertainties that arise due to asymmetric information about the behavior of individual trading partners. When institutions are good, market exchanges will be easier because transaction cost of exchange will be less. This facilitates comprehensive, repeated and mutually cooperative exchange among market agents. And it "... promotes the establishment of new businesses, facilitates the emergence and the functioning of markets and contributes to higher efficiency" (Borrmann et al. 2006, p. 346). The increase in productivity in turn improves competitiveness, facilitates structural change and contributes to better division of labor. If the structure of the economic activity is rigid due to bad regulatory and institutional environment, market could lose its role of coordinating exchanges. Therefore, it will have little impact on efficient allocation of resources.

It is possible that free trade can influence countries to improve their institutions. The channels of causation work as follows. When countries liberalize trade they are trading more internationally. This motivates domestic investors to be more active in international trade. To stay competitive in the international market, investors would lobby for an improvement in institutional quality. Therefore, trade liberalization would have an indirect impact on growth by influencing the quality of institutions. But causation could run the other way around. Expanded trade could mainly be the result of improved domestic institutions rather than the cause of it.

Figure 3.1: Hypothetical relationship of institutional quality, export and growth



As figure 3.1 shows, there could be a web of interrelationships and causation and reverse causation from GDP growth to higher institutional quality and higher export or from export growth to higher institutional quality to higher GDP growth.

Identifying the impact of institutions and/or trade on growth became the most daunting task for economists. Despite many efforts there is no fundamental agreement. So the most viable alternative is to run a joint test of institutions and trade on growth. This would help to effectively test a null hypothesis of the form: 'trade is beneficial for growth in highly regulated and low institutional quality countries'. Unable to reject this null hypothesis would confirm that better institutional quality is a prerequisite for trade to have a positive impact on income growth.

There are only two recent literatures trying to address the joint impact of institutions and trade on growth. Bolaky and Freund (2004) address the question through a cross-country analysis to check if trade is bad for growth in highly regulated countries. Borrmann et al. (2006) extend the research by focusing on institutional quality rather than just regulation only by adding a highly disaggregated (cross-country) analysis using the six core categories of the Kaufmann et al. (2002) institutional quality measures to understand which one of the six institutional measures matters most for the interaction of trade and growth.

This study builds on Bolaky and Freund (2004) and Borrmann et al. (2006) to investigate if export is positively contributing to growth in highly regulated and low institutional quality countries. It is different from Bolaky and Freund (2004) and Borrmann et al. (2006) in two important ways. First it tries to find out if institutional quality is a determinant of export performance. Then it extends the research to find out if export is good for growth under different regulatory and institutional frameworks. It investigates if institutional quality helps to translate good export performance into tangible economic success. Therefore, it diverts from Bolaky and Freund (2004) and Borrmann et al. (2006) in its focus on export rather than measures of openness only.

It also follows a different approach for the following reasons. First, it measures if higher institutional quality is good for export. Then, it investigates the line of causations between institutions, trade and growth. It assesses if export is good for growth under different institutional scenarios. Finally, it tries to find out which specific institutions matter for export through conducting micro-level study in Ethiopia to answer the question 'is export growth in Ethiopia related to the perceived level of trust in the legal and institutional environment' and which export sector i.e. manufacturing or commodity will be severely affected by the institutional environment.

Most macro-level researches assessing the relationships of institutions, trade and income growth use aggregate production function to measure the magnitude and direction of causation of the variables of interest. This research is not interested to derive a theoretical model that links institutions

and trade with income growth. Since these kinds of models are well specified by other researchers, it is not necessary to repeat them³¹. As most other studies, this study uses the new growth model to empirically assess the individual and joint impacts of institutional quality and trade on income in chapter 5. Such an approach is used by the influential work of Hall and Jones (1999), Acemoglu et al. (2001) among others.

3.3. Micro Level Evidence from Ethiopia

Almost all researches dealing with institutional quality and trade or economic growth are based on cross-country regression evidences. The main advantage of cross-country study is that data are available for a large number of countries and it is possible to control for endogeneity, measurement and multicollinearity problems using instrumental variables. But because of its broader nature, cross-country data could not effectively be used to answer concerns about country specific issues. Particularly it is not easy to make conclusions from cross-country regressions about the effect of specific institutional channels on trade or growth (Pande and Udry 2005). Therefore, it is important to validate cross-country regressions on institutional quality and export performance through additional micro-level evidences. The micro-level research would help to assess if export growth in any specific country in the past few years is related to the perceived quality of the institutional environment.

Ethiopia is selected for the micro-level study for the following two reasons: First, Ethiopia has registered a huge increase in its export volume over the last few years. Therefore, this situation makes it an interesting case to assess if there is any relation between the huge export growth and institutional improvement. Second, Ethiopia is striving to further expand and diversify its export base. To this end, it has introduced new policies and incentive packages to attract foreign and domestic investment in non-traditional agricultural and manufacturing sectors. This research might help in achieving this goal by pinpointing the crucial institutional and policy issues or problems that are vital to the success of this export expansion and diversification endeavor.

The micro-level assessment of the relation between export performance and institutional quality could be done by using both qualitative and quantitative data. One possibility is to measure if export expansion decisions are influenced by the perceived level of institutional quality. There is lack of theoretical support to explain the determinants of exporting firm growth. As Kaufmann et al. (2002) note a number of key variables do appear to matter for the growth of a firm. The most notable ones are

³¹ For a thorough review of such models see for example Hall and Jones (1999), Mankiw et al. (1992), Mankiw (1995).

macro-economic and financing constraints. Furthermore, institutional quality could be one determinant of firm growth as well. Besides that firm age, size and other initial conditions also matter for the growth of a firm (Variyam and Kraybill 1992).

This researcher agrees with Kaufmann et al. (2002, p. 28) who are aware of “the likely noise in such variable (which inter alia refers to a very narrow time frame, while the independent variables of interest are of a more structural nature in the longer term)”. So it is necessary to caution that the results derived from this kind of micro-level study are an indicative in nature, with a primary purpose of providing additional support for the results of cross-country analysis. This micro-level study is aimed at presenting the exporters opinion about the facts instead of the facts themselves. But it is ‘self-fulfilling prophecy’³² that current opinions shape future expectations or normally confirm the expectations. So one could draw inference from current opinions about future direction of facts. With this note in mind, the research is hypothesized that ‘export expansion decision is a function of institutional quality, macroeconomic and financial constraints and other determinants’ (see for example Lan Ha 2005). Such relationship can be captured by the function that:

Real Export growth in value = f (Institutions, macroeconomic and financial constraints, and other control variables)

Or in equation form it can be put as: $\hat{X}_i = f(IQ_i, MFC_i, Cnt_i)$

Where: \hat{X}_i is total real export growth in value by firm, IQ_i is the perceived level of the institutional quality of the country by the firm, MFC_i macroeconomic and financial constraints faced by the firm and Cnt_i is other control variables.

The above function could provide an empirical model which can be estimated using OLS regression since the dependent variable is a continuous variable. The dependent variable in this relationship is firm level export growth in the past five years. The independent variables are institutional quality, macroeconomic and financial constraints; as well as other control variables. The full empirical model, estimation methodology and empirical issues are presented in chapter 7.

The above theoretical presentations would help to draw empirical hypotheses which could be tested using appropriate data. These empirical tests either support or refute the following hypotheses:

³² In sociology or psychology the term ‘self-fulfilling prophecy’ is a prediction that directly or indirectly causes itself to become true, by the very terms of the prophecy itself, due to positive feedback between belief and behavior.

Hypothesis 1: Institutional quality is an important determinant of export performance. Countries with better institutional quality tend to trade more among themselves than with low institution quality countries. Low institutional quality countries trade less among themselves but trade proportionally more with high institutional quality countries.

Hypothesis 2: Institutional quality plays an important role in connecting trade openness and export performance to income growth. Hence, in countries where the quality of institution is higher, higher export to GDP share positively contributes to higher income.

Hypothesis 3: Export growth in Ethiopia in the past five years is related to the perceived level of trust in the legal and institutional environments.

3.4. Concluding remarks

International trade theory suggest that trade is much more constrained than explained by tariff, quotas and formal impediments to trade. This missing trade is usually referred by the term ‘border effect’. Empirical research by Frankel and Rose (2002) for example, finds that trade among Canadian provinces are higher than trade between closer provinces of Canada and the USA even when differences in factor endowments are apparently high. This difference is partly attributable to differences in currencies of the two countries and partly it could be explained by the customs procedures that could be faced when goods are transported from one country to the other.

In general, trade theories suggest that trade is reduced by higher transaction cost associated with the security of international exchange. Higher transaction cost might raise the total trade cost and reduces countries competitiveness in international market.

Anderson and Marcouiller (2002) are the first to formally introduce a model linking institutional quality to trade performance. According to the model, insecurity and lack of transparency in the government policies are assumed to bring additional price markups on trade. These markup prices are equivalent to hidden taxes on import and could reduce trade significantly. The model is complimented by the recent contribution of Redding and Venables (2004a and 2004b) who try to bridge the gap by offering a theoretical explanation on the channels through which institutional quality impacts export performance. According to this theoretical model, institutional quality affects export performance in two important channels i.e. supply capacity and foreign market access.

Institutional quality could affect trade by imposing higher comparative cost, limiting the number of firms or the competitiveness of export businesses. Such influence of the institutional environment on trade is either direct or indirect. The most direct influence is through the cost of intermediate goods.

Many researches connecting trade and economic growth support the hypothesis that trade is beneficial for growth. But this finding suffers from endogeneity and measurement problems that plugged trade and income variables. So the question that trade is good for growth is still an open question. Based on the discussions outlined above, the research develops a theoretical framework explaining the impact of institutional quality on export performance. It also outlines a model explaining the relationships between export performance, institutional quality and economic growth. To support the macro-analysis with micro-level evidences, the study will provide a survey result about the micro-level determinants of export performance with survey based evidences from Ethiopia. This micro-level study would help to test and corroborate the validity of the claims made by the cross-country analysis.

In general, by employing macro and micro-level data, the research will test the three empirical hypotheses mentioned above and either supports or refutes the theoretical prediction that 'institutions matters for both export performance and economic growth'.

Chapter IV

Institutional Quality and Export Performance

The literature on institutions, trade and growth suggests that Institutional quality has a positive impact on countries' international trade performance. But such linkage is not persuasively established by the empirical literature. This chapter therefore, is devoted to analyzing the impact of institutional quality on export performance, using the gravity equation. The gravity method is considered to be one of the best empirical tools to analyze the flow of capital goods, migrants and international trade. The model has theoretical support from the new trade theory of specialization on product differentiation as well as the Heckscher-Ohlin (HO) theory of comparative advantage.

4.1. Gravity model

In empirical economics, there are two main approach of measuring the impact of the different determinants of international trade. One of these approaches is running cross-sectional or time-series regression on trade data of a single country trading with the rest of the world. Another approach is using the gravity model of bilateral trade which depicts the flow of trade between each trading partners.

Most recent empirical studies dealing with international trade use the gravity model. The model predicts that trade between a pair of bilateral trading countries is an increasing function of their national income and a decreasing function of their distance (Frankel 1997, Frankel and Rose 2002). The model is performing well empirically and used by many international trade researchers under different scenarios. It is an empirical success story with a significant explanatory power.

The gravity model utilizes gravitational force concept as analogy to explain the pattern of trade, capital flows and migration among countries or regions of the world. It gets its concept and name from the famous Newton's Law of Gravity. Newton's Law of Gravity states that every massive particle in the universe attracts every other massive particle with a force that is directly proportional to the product of their masses and inversely proportional to the square of the distance between them. In a simplified equation form, the notion can be expressed as:

$$F_{ij} = \frac{M_i M_j}{D_{ij}^2} \quad i \neq j \quad (4.1)$$

In this equation, gravitational force between i and j (F_{ij}) is proportional between the masses of their object M_i and M_j and inversely related to the squared distance (D_{ij}^2) between them.

In the same way, international exchange between countries can be well described by the gravity model, in which bilateral trade flows are a log linear function of the sum of the trading partner's income and difference of their distance (Feenstra et al. 2001)³³. In empirical applications, the handling of the masses M_i and M_j is associated with the Gross Domestic Product (GDP) of the origin i and destination j countries. Distance (D_{ij}) is usually measured in the great-circle distances³⁴ of the capital cities of the trading partners. In some other instances, population or country size is substituted or jointly used with GDP to implicate mass. Some other researches include income per capita with measures of GDP, population or area size.

According to Bergstrand (1985), Anderson (1979), and Matyas (1997) bilateral gross aggregate flows are explained commonly using the following specification:

$$X_{ij} = \beta_0 (Y_i)^{\beta_1} (Y_j)^{\beta_2} (N_i)^{\beta_3} (N_j)^{\beta_4} (D_{ij})^{\beta_5} (A_{ij})^{\beta_6} u_{ij} \quad (4.2)$$

Where X_{ij} is the monetary value of the flow from country i to country j , Y_i (Y_j) are the monetary value of the nominal GDP and N_i (N_j) are the number of population of country i and j respectively. D_{ij} is the distance between the economic centers of i and j , A_{ij} is any factor(s) either aiding or resisting trade in i and j and u_{ij} is a log-normally distributed error term with $E(\ln u_{ij}) = 0$.

Empirical application of the above specification produces consistent and significant statistical explanatory power³⁵. However, despite its empirical success the gravity model suffers from the absence of strong theoretical foundations. Efforts to provide sound theoretical justification have been made since the very first empirical application of the model by Tinbergen (1962). An earlier justification for the use of the model was based on the claim that the model is a "reduced form from a four-equation partial equilibrium model of export supply and import demand" (Bergstrand 1985, p 474). This assertion was not widely accepted because it is judged as "loose" justification and does not explain the multiplicative functional form³⁶.

³³ When a model like equation 4.1 is estimated in terms of natural logarithms (ln), the multiplication function is changed to addition and the division becomes subtraction. Hence, the linear natural logarithm translation of equation 4.1 would take the form: $\ln F_{ij} = \ln M_i + \ln M_j - 2 \ln D_{ij}$, $i \neq j$

³⁴ The great-circle distance or orthodromic distance is the shortest distance between any two points on the surface of a sphere measured along a path on the surface of the sphere (as opposed to going through the sphere's interior). Source: http://en.wikipedia.org/wiki/Great-circle_distance

³⁵ Notable application of the above specification includes but not limited to Tinbergen (1962) and Abrams (1980).

³⁶ See for example (Anderson 1979, p. 106) and Bergstrand (1985, p. 474).

Alternative theoretical approaches evolve later. Anderson (1979) was the first such attempt to formally provide a theoretical justification based on what is called the “Armington assumption” which suggests that products were differentiated by country of origin. By specifying demand in these terms, he helps to explain the presence of income variables in the gravity model as well as their multiplicative form (or log linear form). Bergstrand (1985) develops a model based on Anderson’s product differentiation assumption but focus more on the supply side economics. He includes price in the gravity estimation in the form of GDP deflator.

In most recent researches, the monopolistic competition model of the new trade theory has proclaimed to have a sound theoretical justification for the use of the gravity model (Bergstrand 1989 and Helpman 1987). As Feenstra et al. (2001) note, the gravity equation arises from a model in which countries are fully specialized in the production of differentiated goods. In general, recent theoretical justifications seem to support to the monopolistic competition explanation of intra-industry trade.

However, empirical application of the model fits to any kind of trade data. Particularly, the model works well when developing countries are included in the sample. This implies that the applications can fit for both the flow of differentiated manufacturing goods and primary commodities. It means the model can empirically work well for both advanced countries which specialize in the production of differentiated manufactured goods and developing countries which specialize in the production of homogenous primary goods. In other words, it could work in monopolistic competition framework or comparative advantage models.

Because of this empirical evidence, Deardorff (1998) and Feenstra et al. (2001) introduce the gravity model to check if the gravity equation supports the Heckscher-Ohlin (HO) model. Again, the model supports the Heckscher-Ohlin model similar to it does for the monopolistic competition model³⁷. In general, it is presumed that any plausible model of trade, be it product differentiation by country of origin, monopolistic competition or the HO model would yield something like the gravity equation, “whose empirical success is therefore, not evidence of anything, but just a fact of life” (Deardorff 1998, p. 12).

The above arguments justify the fact that the model can work well in different alternative theoretical underpinnings. The model can be extended either by introduction of new variables into the equation such as institutional quality or insert a dummy variable to identify the effect of certain

³⁷ Deardorff (1998, p. 12) notes that this does not mean the model lends greater support for HO model than it does for the monopolistic competition model.

characteristics such as being landlocked. The gravity model provides such great flexibility in theoretical approaches and empirical applications. It can provide a natural benchmark to which a number of additional explanatory variables can be added (Groot et al. 2003).

This study will benefit from the flexibility and wide applicability of the gravity model. When it comes to measuring the relationship of institutional quality and export performance, the gravity model has great explanatory power. Only few researches dealing with institutions and trade use the gravity equation³⁸. The model offers a strong empirical basis to identify the effect of institutional quality on bilateral trade flows. The options to add any variable of interest could also help to measure if comparative advantage based on institutional differences is a source of advantage or disadvantage for export performance. Option to add any variable that supports or distracts trade is tremendously important to introduce a variable to measure the effects of certain important conditions.

4.2. Model specification

Motivated by the theoretical proposition of Chapter 3, section 3.1.1 and 3.1.2 as well as the merits behind using the gravity model stated in section 4.1, this study utilizes the following empirical specification to measure the impacts of the different determinants of export performance. The model is similar to the standard gravity equation with special emphasis to measuring the overall impact of institutions on trade. Besides institutional quality (the main variable of interest), the model includes two additional dummy variables (institutional similarity and OECD/developed countries institution dummy) to measure whether institutional difference is a source of comparative advantage for trade between developed countries (North) and developing countries (South). These variables are important to test the hypothesis of Anderson and Marcouiller (2002) which states that: ‘institutional differences are the reason for North countries to trade more among themselves than with South and South countries to trade more with North than among themselves’. The model also includes additional variables such as whether countries in the sample are landlocked and share common colonial history. Specification of the base equation looks as follows:

$$\ln E_{ij} = \beta_0 + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \ln D_{ij} + \beta_4 A_{ij} + \beta_5 I_i + \beta_6 I_j + \beta_7 ISim_{ij} + \beta_8 Idummy_{ij} + \beta_9 legOr_{ij} + \beta_k Factor_k + \varepsilon_{ij} \quad (4.3)$$

³⁸ See for example Groot et al. (2003), Li and Samsell (2009), Anderson and Marcouiller (2002), Koukhartchouk and Maurel (2003).

Where³⁹:

- The dependent variable ($\ln E_{ij}$) is the natural log of 5 years average value of total export from country of origin i to destination j from 2002-2006 as recorded by the International Monetary Fund (IMF) direction of trade statistics⁴⁰.
- $\ln Y_i$ and $\ln Y_j$ are the natural log GDP of country i and j respectively.
- $\ln D_{ij}$ is the natural log of distance between country i and j .
- A_{ij} is a dummy variable which takes value 1 if the two countries share a common boarder and 0 otherwise.
- I_i and I_j is measure of the institutional quality of country i and j respectively which are the main variables of interest⁴¹.
- $ISim_{ij}$ is a dummy variable which takes value 1 if the two countries belong to the same institutional quality category i.e. both are members of the Organization for Economic Cooperation and Development (OECD) and/or both are non-member countries and 0 otherwise⁴².
- $IDummy_{ij}$ is a dummy variable which takes 1 if the exporter is member of the OECD (in other words if it is a Northern country) and 0 if it is a Southern country⁴³. The above two institutional dummy variables are intended to achieve two different objectives. The first one is useful to test if institutionally similar countries in general trade more with each other than institutionally different countries, example North trade more with North and South trade more with South.

³⁹ See appendix 1 for detail description and sources of data .

⁴⁰ This trade flow data set is from the IMF direction of trade statistics compiled by "Correlates of War", an organization specializes in collecting, organizing and distributing trade data for research purpose (downloaded on 10/01/2011). The IMF and United Nations Commodity Trade Statistics (UNCOMTRADE) provide comprehensive raw data about the flow of trade which needs some resources to organize. Using trade data compiled by Correlates of War in this regard saves a lot of time and resources. For details visit: <http://correlatesofwar.org/>

⁴¹ See section 4.5. below for detail description of the six Kaufmann et al. (2009) institutional measures.

⁴² The classification of countries according to North and South category for institutional similarity comparison purpose is used by Levchenko (2007, p. 817)

⁴³ The intuition behind using this category is the presumption that OECD member countries (which sometimes referred as North) are group of highly industrialized countries with high institutional quality. If institutional quality is assumed to make any difference on trade, then being member of this group should have an impact on export.

The second one is used to test if institutional similarity in developed countries (North) has different impact than institutional similarity in developing countries (South).

- $legOr_{ij}$ is a dummy variable which takes value 0 if both countries share British legal origin and 1 for the other alternative legal origin. The other alternative legal origins are French, German, Scandinavian and Socialist. The base legal origin is British which is expected to be superior to others. British legal origin will be tested against the 4 alternative legal origins one at a time. The inclusion of legal origin is not customary in standard gravity equation. However, since this research is interested in measuring the impact of institutional quality on export it is interesting to closely monitor the impact of legal origin⁴⁴.
- $Factor_k$ is a set of additional explanatory variables which include the different measure of size of the economy of the trading partners i.e. population, area size and income per capita all measured in natural log. It also includes additional dummy variables to control for linguistic and historical links such as whether the two trading partners share common colonizer/colony, are member of the same preferential trade agreement, as well as whether countries are landlocked or not .
- ε_{ij} is a log-linear error term which assumed to behave properly.

Estimation of the base regression is expected to produce the following coefficient signs. $\beta_1, \beta_2 > 0$; $\beta_3 < 0$, meaning that higher GDP in both the exporter and importer countries positively influence export. Distance as proximate measure of trade cost is expected to negatively influence trade. $\beta_4 > 0$, indicates that adjacency is expected to influence trade positively. $\beta_5, \beta_6 > 0$, suggest that higher institutional quality in both the exporter and importer countries is related to higher export performance. $\beta_7 > or < 0$, implies that institutionally similar countries trade more among themselves. But this might not be true always because institutionally similar countries in the South might not trade more among themselves. $\beta_8 > 0$, implies that higher institutional quality in the OECD member countries helps these countries to have high propensity to export. $\beta_9 < 0$, suggests that a legal system different from British legal system is negatively influencing trade. But the size of the magnitude is different for different legal origins. Socialist is the worst, followed by French, Scandinavian and German legal systems as stated in La Porta et al. (1999, 2008).

⁴⁴ Legal origin could be proxy for measure of the quality of institutions.

The coefficients on β_k would have different signs depending on the type of the variable. Being member of a preferential trade agreement or regional trade bloc for example, is expected to increase export suggesting a positive coefficient. Being landlocked would significantly reduce export, resulting in negative sign. All linguistic and historical similarities increase trade, hence produce a positive coefficient. Income per capita would influence export positively. The alternative measures of size also produce different signs. The population parameter produce positive sign but area size should have negative sign since bigger countries trade more within because of economies of scale and higher transport cost. As Medin (2003) discusses a small country has a higher share of exporting firms than a large one because a large foreign market creates large demand for imports, and hence give better export possibilities for firms from countries with relatively small markets.

4.3. Some econometric issues

In empirical literature, standard gravity equation is usually estimated with ordinary least square estimation (OLS) method. The OLS is assumed to be the best unbiased linear estimator. It chooses slope estimators $\beta_0, \beta_1, \beta_2 \dots \beta_k$ ⁴⁵ so as to minimize the sum of squared residuals, $\sum_i \sum_j e_{ij}^2$. According to Wooldridge (2009), the OLS is consistent, unbiased and efficient estimator if the following Gauss-Markov assumptions hold.

- Samples should be randomly selected n observations from the population parameter.
- The underlying model relating the dependent and independent variable is linear.
- In the sample (and therefore in the population), none of the independent variable is constant, ruling out any multicollinearity among the independent variables.
- The disturbance term (ε) is an independently normal error term with zero mean and constant variance (homoscedasticity).
- The error term (ε) has an expected value of zero given any values of the independent variables.

If the above conditions hold true, it could satisfy that the estimates are reliable and the hypotheses tests are informative. If not, the estimates are not reliable. But all problems are not equal. In this research, heteroscedasticity can easily be dealt with robust standard error test. Multicollinearity problems can be fixed by pretesting that the explanatory variables are not perfectly correlated. When

⁴⁵ The OLS slope estimators are often referred as Best Linear Unbiased Estimator (BLUE) in the literature. See for example, Wooldridge (2009).

this is the case, the researcher will either drop the variable(s) and test one variable at a time or make joint significance test.

One could expect that there might be reverse causation from export to income, creating some endogeneity problems. However, endogeneity is ruled out as a problem in the gravity equation because income of both the importer and exporter countries is assumed to be given exogenously. This is a condition for bilateral trade equation to be gravity model by definition (Bergstrand 1985)⁴⁶. Therefore, endogeneity is not a practical as well as theoretical concern in the gravity analysis.

All estimations in this chapter are cross-sectional i.e. bilateral export from the origin i to destination j countries at one point in time. Panel data would have produced a better combination of cross-sectional and time-series estimations. It could also be helpful to measure the individual country effects in the sample. Unfortunately, there is not enough time-series data for the institutional quality variable to run a panel data regression.

The total number of countries in the sample is 55, producing a total of 2942 bilateral trade observations⁴⁷. The countries in the sample include 27 European Union (EU) member countries, 2 North Atlantic Free Trade Association (NAFTA) member states, 16 Common Market for East and Southern African (COMESA) members, 10 other countries which are not member of specific trade blocs such as Japan, China, Australia, Saudi Arabia, etc. but are active trade partners of the country of interest, Ethiopia. Once the variables are defined and the data is ready, the next step is to run a regression and measure the economic and statistical impacts of the explanatory variables on the dependent variable. Before the estimation, however, it is worth to explain how “institutional quality”, the main variable of interest in this research is measured.

4.4. Measurement and empirical application of the institutional quality variable

This research uses the institutional quality measure due to Kaufmann, Kraay and Mastruzzi (2009). This institutional measure is the latest available composite indicator computed from 35 data sources collected by 33 different organizations around the world. It is based on several individual variables

⁴⁶ Some researchers still try to contain possible problems of endogeneity in the gravity model. For example Cyrus (2010) finds that endogeneity does seem to exit after running two stage least square estimation using physical capital, human capital and labor accumulation rate as instruments. However, instrumenting on income in gravity regressions only slightly alters the effect of income and other explanatory variables on the dependent variable (trade).

⁴⁷ The actual number of observation in the different regressions might be less than 2942 because the econometrics application, STATA automatically corrects for missing data and zero values when the observation real value is converted to natural log values.

measuring respondent's perception of the institutional quality. It is a standardized measure ranging from -2.5 (low institutional quality) to +2.5 (high institutional quality). The indices cover six dimensions of governance quality from 1996 to 2008. Each dimension captures some related aspect of the quality of institutions. The dimension either reflects the political process, the quality and capacity of the state apparatus and policies and the respect for citizen's economic and political rights.

Like any perception based indicator, the Kaufmann et al. (2009) institutional measure has its own limitations. However, this research prefers to use it for the following reasons: First it is available and comparable for a large number of countries. To this writer's knowledge, no other source of data set covers such large number. Second, since it is computed from different data sources, any error or bias in the data computation is likely to be reduced in comparison to other data sources (Borrmann et al. 2006). The six indicators are the most proxy institutional measures regarding insecurities associated with international transactions and the linkage between trade and income growth.

It is evident that the six institutional quality variables are highly correlated with each other. Such perfect correlation between these variables might blur the estimation result. A corrective measure is necessary to avoid the danger of multicollinearity. To this end, this research uses each institutional dimension one at a time to investigate their impact on export performance. It also uses the aggregate composite institutional measure to understand the overall impact of the six dimensions together. The aggregate composite institutional measure is calculated as the weighted average of the six institutional measures.

The six Kaufmann et al. (2009) institutional quality measures include:

- a) *Voice and accountability (VA)* – measures the extent to which citizens are taking part in selecting their government as well as entitled to freedom of association and expression. It also reflects the extent of press freedom.
- b) *Political stability and absence of violence (PV)* – indicates the perceived likelihood that political instability shocked the government or government is overthrown by unconstitutional and violent means, including politically motivated unrest and terrorism.
- c) *Government effectiveness (GE)* – refers to public opinion about the quality of the public service, including the effectiveness of the bureaucracy and the degree of its independence from political interference, the process of government policy formulation and implementation as well as credibility to policy reforms.

- d) *Regulatory quality (RQ)* – refers to the capacity of the government to formulate and implement sound policies and regulations that promotes and protects private sector development.
- e) *Rule of law (RL)* – measures the extent to which citizens are confident and abide by the rules of the game in public and private interactions. It is about the quality of the legal system particularly citizens trust on the quality of contract enforcement, property rights protection and effectiveness and independence of courts.
- f) *Control of corruption (CC)* – measures respondent’s perception on the extent to which public power is used for private benefit. It refers to the extent of lawless and unfair behaviors in public private interactions.

In addition to the Kaufmann et al. (2009) good governance measure, this research also uses the World Bank Doing Business Dataset which provides an objective measure on government regulations. The latest Doing Business Dataset is for 2008/2009 available for a total of 152 countries (World Bank 2010) which gives rank ordering of countries for each institutional indicator. The indicators are comparable across economies and indicate the regulatory cost of business. The measure is applicable for this research as it provides objective measure on the business environment including custom clearance and trading across borders. Unlike the perception based institutional measures, objective measures are less influenced by the level of economic growth. The 10 sub indices of the Doing Business Dataset provide a quantitative measure of regulatory quality for: (a) starting a business, (b) dealing with construction permits, (c) employing workers, (d) registering property, (e) getting credit, (f) protecting investors, (g) paying taxes, (h) trading across borders, (i) enforcing contracts and (j) closing a business— as they apply to domestic small and medium size enterprises (World Bank 2010).

The Doing Business Dataset is used in place of the aggregate composite institutional quality measure of Kaufmann et al. (2009) to evaluate how the results from subjective institutional measures are different from the objective measures. It would be beyond the scope of this research to address each of the 10 variables of the doing business measure in the regression. Therefore, the research uses the average overall index of the 10 objective measures in the regression replacing the composite index of the Kauffmann et al. governance quality measure.

Table 4.1 presents the summary statistics of the six institutional variables of Kaufmann et al good governance measure. In all cases, the worst institutional quality countries are from sub-Saharan Africa which represents the developing world of South. The highest scorers are the OECD members of highly industrialized countries of North. Therefore, classifying country groups as institutionally homogeneous

based on membership or non-membership to the OECD has good merit. With regard to issues of multicollinearity, each of the six institutional quality measures are highly correlated with a minimum correlation coefficient of 0.80 i.e. between voice and accountability and control of corruption and a maximum coefficient of 0.97 i.e. between rule of law and government effectiveness variables⁴⁸. These higher correlations warrant separate treatment of each one of these variables to avoid the highest likelihood of multicollinearity.

Table 4.1: Summary statistics of the six institutional variables

Variable	No. obs.	Mean	Std. Dev.	Min by Country		Max by Country	
Voice and Accountability	55	0.332179	1.05942	-1.77	Sudan	1.53	Sweden
Political stability	55	0.214701	0.987277	-2.44	Sudan	1.52	Luxemburg
Government effectiveness	55	0.571366	1.07595	-1.89	DRC	2.55	Singapore
Regulatory quality	55	0.61603	1.01134	-2.18	Zimbabwe	1.92	Singapore
Rule of law	55	0.541373	1.028634	-1.81	Zimbabwe	1.92	Denmark
Control of corruption	55	0.520245	1.073138	-1.49	Sudan	2.34	Finland

Source: Kaufmann et al (2009) and calculated by the author.

4.5. Results

As stated in most gravity literature, the natural place to begin the analysis of trade flows between a pair of countries is to measure the economic and statistical significance of the main determinants of trade. Therefore, this research starts the estimation with a regression of the natural log value of average 5 years export as dependent variable and the natural log of GDPs of the exporting and importing countries and distance between them as explanatory variables. The assumption is higher income in the exporting and importing country is the main driving force for higher export. Distance is a proxy for transport and other costs related to the transfer of goods from the exporting to importing countries. Results are reported in table 4.2 column 2. As can be seen from the table, other things being equal, a one percent increase in the income of the exporter is associated with a little above one percent increase in average export. A one percent increase in the income of an importing country is associated with a slightly less than unity (0.91) percent increase in average export. Distance as proxy for transport cost has a negative impact on overall export. A one percent increase in distance is associated with a 1.24% reduction on average export other things being the same.

⁴⁸ See annex 3, for the full result of the correlation coefficient of each of the independent variables used in the regressions in this chapter.

Table 4.2: The effects of income and transport cost on export performance

Dependent variable: Natural log of average export from 2002-2006

Variables	(1)	(2)	(3)	(4)
Log exporter's GDP	1.04*** (.01)	.98*** (.02)	.98*** (.02)	.98*** (.02)
Log importer's GDP	.91*** (.01)	.92*** (.02)	.91*** (.02)	.92*** (.01)
Log distance	-1.24*** (.03)	-1.20*** (.03)	-1.20*** (.03)	-1.01*** (.06)
Exporter's institution		.24*** (.04)	.25*** (.04)	.26*** (.04)
Importer's institution			.02 (.04)	
Common membership in reg. trade agreements				.30** (.11)
Common boarder				1.01*** (.12)
Common colonial history				.70*** (.10)
Adj, R ²	0.79	0.79	0.79	0.80
Observations	2778	2778	2778	2774
F-statistics	3414.60	2605.26	2084.00	1558.24
RMSE	1.67	1.66	1.66	1.62

*Note: Standard errors are in parenthesis; *, **, *** are statistically significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level.*

The overall fit of the model in the first estimation is quite good. Nearly 80% of the variation in the dependent variable is explained by the variation in the three independent variables. The coefficient estimates are correctly signed and statistically significant in all cases. The overall significance of the model is also quite good with a joint F-statistics of 3414.60 which is quite good size to reject the null hypothesis that 'the three variables together don't impact export'. Estimation 2 includes the exporter's institution in the regression. The estimation suggests that a one unit increase in the average composite institutional quality index of the exporter, multiplies export at the factor of 1.27 ($\exp(0.24) = 1.27$)⁴⁹. Similarly, the point estimate indicates that a difference of .01 in institutional quality index is associated with a difference in export of .24%. When exporter's institution is included in the model, the goodness of fit of the model is strong with an adjusted R² equals to 0.79. It means that nearly 80% of the variations in the dependent variable are explained by the variations in the independent variables. The

⁴⁹It is important to know the difference between linear (arithmetic) and exponential (geometric) growth rates. Most applied economics use linear growth rates when they interpret log-level relationships. The usual practice is the fitted values of the coefficient estimators $\widehat{\beta}_k$ are multiplied by 100 to convert the estimated value to elasticity to predict the percentage change in the dependent variable as a result of 1 percent change in one of the explanatory variable other things being constant. For detail see Wooldridge (2009, pp. 41-46). In this research, both linear and exponential estimation methods are used to interpret results. Exponential change refers to multiplicative continuous percentage change like a compound interest rate. Linear is constant change over time.

sign and significance of the importer's GDP and distance variables remain the same. Only slight change (from 1.04 to 0.98) in the coefficient of the exporter's GDP variable is observed.

The inclusion of the importer's average composite institutional quality variable in Estimation 3 doesn't change the coefficients in the other variables at all. However, the null hypothesis that 'importer's institutional quality doesn't play any role in export performance' could not be rejected. Since this research fails to reject the null hypothesis, it can't be sure that the average composite institutional quality of the importer's country has an impact on export.

In estimation 4, additional three important determinants of the bilateral trade flows are included. Accordingly, membership in regional trading agreements, such as NAFTA, COMESA or EU multiplies export by a factor of 1.35 ($\exp(0.30) = 1.35$) other things being equal. Ceteris paribus, common boarder multiplies average export by a factor of 2.75 ($\exp(1.01) = 2.75$)⁵⁰. This is tantamount to saying that sharing a common border increases export by more than 100%. Sharing common colonial history multiplies export by 2.01 ($\exp(0.70) = 2.01$) over time other things stay constant. All variable estimates are statistically significant. The common border dummy is still statistically significant with a p-value of nearly zero ($p = 0.009$).

The inclusion of the above three variables doesn't change the overall estimation significantly. Both the exporter's and importer's income coefficient don't change. Slight change is observed in the distance coefficient. Given the fact that common boarder and regional trading blocs are highly related to the distance variable, the reduction of the distance coefficient at the inclusion of these variables is reasonable. Common boarder and membership at regional trading blocs don't influence trade through transport cost only. Regional trading blocs, for example, influence trade mainly through tariff and other informal trade barriers reduction. In case of EU membership for example, trade might be high due to the use of Euro as a common currency⁵¹. Hence, common border and regional trading agreements may also influence export indirectly through the use of common currency.

The first order observation of the above estimation suggests that export is highly related to the economic forces of the original (exporting) and destination (importing) countries and inversely related to their distance. Inclusion of other factors in the regression provides a lot of information about the

⁵⁰ One should keep in mind that membership in trading blocs don't affect every country equally. Membership in NAFTA is by far beneficial for trade than membership in COMESA for many other reasons. One of these reasons may be lack of efficient transport network in the COMESA member states.

⁵¹ For detail research about the impact of common currency on trade and economic performance see Frankel and Rose (2002).

direction and magnitude of the export flow. The low values of the standard errors would result in higher T-statistics (not reported) value, which is quite good enough to reject the null hypotheses at the optimal 5% rejection level in almost all cases except in one (importer's institutional quality). As can be seen from the above regression results, the overall impact of the composite institutional quality index of the exporting country has statistically significant impact on export performance. In the next step, this study reviews the independent impacts of the six institutional quality measures separately.

4.5.1. Individual impacts of the six institutional quality measures on export

In the next procedure, a regression with the six institutional measures included one at a time has been run. This would help to separately identify the impact of each of the six institutional variables on export. The institutional variables included are for both the exporting and importing countries. Table 4.3 below presents the results. The column names indicate that the regression is run using that specific institutional variable in place of the composite institutional variable. For example, in column 2 a regression is run with voice and accountability (VA) institutional variable. Column 3 is political stability and absence of violence (PV), etc.

As can be seen from table 4.3 below, all of the six institutional variables of the exporting countries (exporter's institutions) have a positive and statistically significant impact on export performance. But, the impact of the institutional variables of the importing countries (importer's institutions) is ambiguous. The impact of importer's institutions is statistically insignificant in almost all cases except for government effectiveness variable. In this case, .01 differences in government effectiveness (GE) index is associated with .09% difference in export performance. All the other five out of six institutional quality measures are statistically insignificant.

Therefore, it is not possible to reject the null hypothesis that 'importer's institutional quality has no impact on export performance'. The failure to reject this null hypothesis casts doubt on the 'theory of additional price markup' of Anderson and Marcouiller (2002) which is widely explained in chapter 3. According to this theory, low institutional quality in importer's country is equivalent to hidden tax and would be matched-up by additional price markup on imports. As we can see from the above estimation, the institutional quality of the exporter's country consistently and significantly impacts export performance but the importer's country institutional quality has unclear impact. Therefore, the suggestion that institution affects export through raising import prices due to additional price markup in the importing country is doubtful.

In case of exporter's institutional environment, government effectiveness (GE) has the highest impact on export performance. Controlling for other variables, a 1 unit increase in government effectiveness, multiplies export by a factor of 1.42 ($\exp(.35) = 1.42$). In arithmetic terms, .01 differences in government effectiveness results in difference of export by .35%. This is quite a large economic effect. Political stability and control of violence (PV) index has the second biggest impact on export. Other things being the same, .01 difference in government effectiveness results in difference of export by .26%. Similarly, .01 difference in the rule of law (RL) index increases export by .25% other things staying constant. In the same way, .01 difference in control of corruption (CC) and regulatory quality (RQ) variables increases export by .23% each. The smallest impact is coming from the voice and accountability variable. A .01 difference in voice and accountability (VA) index, increases export by .10% ceteris paribus.

Table 4.3: The impact of the different institutional variables
Dependent variable: Natural log of average export from 2002 to 2006

Variable	VA	PV	GE	RQ	RL	CC	Av_Insti
Log exporter's GDP	1.03*** (.02)	1.01*** (.01)	.94*** (.02)	.99*** (.02)	.98*** (.02)	.99*** (.02)	.98*** (.02)
Log importer's GDP	.93*** (.02)	.92*** (.01)	.89*** (.02)	.91*** (.02)	.90*** (.02)	.90*** (.02)	.91*** (.01)
Log distance	-1.01*** (.04)	-1.03*** (.06)	-1.02*** (.06)	-1.00*** (.06)	-1.01*** (.06)	-1.02*** (.06)	-1.02*** (.06)
Exporter's institution	.10*** (.04)	.26*** (.04)	.35*** (.04)	.23*** (.04)	.25*** (.04)	.23*** (.04)	.27*** (.04)
Importer's institutions	-.03 (.04)	0 (.04)	.09** (.04)	.03 (.04)	.06 (.04)	.06 (.04)	.04 (.04)
Common membership in reg. trade agreements	.37*** (.12)	.26** (.12)	.25** (.11)	.33** (.12)	.30*** (.12)	.32** (.11)	.28** (.12)
Common boarder	.95*** (.18)	1.01*** (.18)	1.07*** (.18)	1.02*** (.18)	1.04*** (.18)	1.01*** (.18)	1.03*** (.18)
Common colonial history	.69*** (.10)	.71*** (.10)	.69*** (.10)	.70*** (.10)	.69*** (.10)	.70*** (.10)	.071*** (.10)
Adj, R ²	0.79	0.80	0.80	0.80	0.80	0.80	0.80
Observations	2774	2774	2774	2774	2774	2774	2774
F-statistics	13451.97	1369.14	1390.68	1353.73	1363.07	1362.58	1363.83
RMSE	1.63	1.63	1.61	1.63	1.63	1.63	1.63

*Note: Standard errors are in parenthesis; *, **, *** are significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level.*

The regression results suggest that all institutional variables in an exporting country influence export positively, meaning that higher institutional quality influences export performance positively. The magnitude of the influence however, varies across the different institutional quality measures. It gives sense, when government effectiveness variable has the biggest impact. Because, higher bureaucratic red tape slows down transfer of goods from place to place, whether it is raw materials needed for production of export goods, importing of intermediate goods or lengthy custom procedures to export final goods. However, it is difficult to conclude from the results that one institutional quality measure in

the exporting country is much important than the other. In reality, most institutional factors are interdependent and therefore, it is not right to presume that one factor is more influential than the other. The most important thing is the confirmation that all institutional quality measures have a positive impact on export performance.

As discussed in chapter 3, Redding and Venables (2004a and 2004b) suggest that institutional quality influences export through a variety of channels. One of these channels is for public officials to limit the number of firms entering into export business. In another instance, business cost may be higher for firms specialized in export because of high uncertainties in contract enforcement and property rights protection. Corruption may be rampant to the extent that payment of bribe could constitute the highest share of a business cost. Lengthy bureaucratic procedures to import capital and intermediate goods needed for the production of export items constitute higher transaction cost. Therefore, the above finding is a proof that institutions influence export performance according to the theoretical reasoning.

In the next section, this study further elaborates the impact of institutional quality on export by including some additional institutional variables and measure of income per capita. Theoretically it is suggested that income per capita as measure of economic growth plays an important role in export. It is also expected that countries with similar institutional quality level trade more among themselves, because it is easy for exporters to deal with their counterparts in institutionally similar countries due to knowledge about the similar institutional setup. Therefore, it is important to see how the average composite institutional quality variable responds when income per capita, institutional similarity and developed country institutions dummy variables are included in the regression model.

4.5.2. Interaction of income per capita and institutional quality in the gravity equation

Most gravity models exclude institutional quality variables. This results in serious omitted variable bias. Anderson and Marcouiller (2002) argue that in standard gravity estimation when the institutional quality variable is often excluded, the share of expenditure on traded goods (total value of trade share) appears to be positively related to income per capita. In contrast when the institutional variable is included in the model, the share of expenditure on traded goods and income per capita will have an inverse relationship. The reason is due to higher correlation between institutional quality and income per capita. Table 4.4, presents regression results of export performance, where income per

capita, institutional quality, institutional similarity and developed country institutional dummy⁵² are included in the model to test this presumption⁵³.

Table 4.4: Measure of income per capita and institutional similarity
Dependent variable: Natural log of average export from 2002 to 2006

Explanatory variables	(1)	(2)	(3)	(4)
Log exporter's GDP	.95*** (.02)	.95*** (.02)	.98 *** (.02)	.99*** (.02)
Log importer's GDP	.89*** (.02)	.89*** (.02)	.92*** (.01)	.91*** (.01)
Log exporter's income per capita	.18*** (.03)	.18*** (.06)		
Log importer's income per capita	.06** (.03)	.06** (.03)		
Log distance	-.97*** (.07)	-.97*** (.07)	-1.00*** (.07)	-.95*** (.08)
Exporter's institution		0 (.10)	.27*** (.06)	.32*** (.06)
Institutional similarity			.14** (.07)	.18** (.07)
Developed country institution dummy				.23** (.11)
Common membership in reg. trade agreements	.31** (.13)	.30** (.13)	.27** (.13)	.31** (.13)
Common boarder	1.12*** (.19)	1.12*** (.19)	1.00*** (.19)	1.12*** (.19)
Common colonial history	.72*** (.11)	.72*** (.11)	.69*** (.11)	
R ²	0.80	0.80	0.80	0.79
Observations	2774	2774	2774	2774
F-statistics	1384.14	1232.16	1409.36	1993.55
RMSE	1.62	1.62	1.63	1.64

Note: Robust standard errors are in parenthesis; *, **, *** are significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level.

In Table 4.4 estimation 1 above, regression result of the main gravity variables including income per capita of both the exporting and importing countries is reported. The standard errors of this estimation as well as all other estimations in table 4.4 are robust standard errors to control for any bias in the estimation due to heteroscedasticity⁵⁴. When standard errors are robust, the econometrics software STATA usually reports only the R² (measure of goodness of fit) instead of the Adjusted-R². The regression result in estimation 1 suggests that the main gravitational forces i.e. exporter's and

⁵² A country is assumed to have a developed country institution if it is member of the OECD as discussed above.

⁵³ Here, the research only applies exporter's institution since earlier test of the importer's institution didn't produce statistically significant result.

⁵⁴ In applied economics homoscedasticity assumption not always holds true. Therefore, it is important to control for heteroscedasticity. One of the easiest means for controlling heteroscedasticity is using robust standard error instead of normal standard error. Robust standard error put some restrictions and accounts for heteroscedasticity by putting higher rejection rules than the normal errors.

importer's GDP variables reduce their impact slightly from the previous estimations when income per capita variable is included in the model. For example, the percentage increase of average export reduces from nearly unity to 0.95% for 1% increase in exporter's GDP when income per capita variable is included. But it is still statistically significant. This minor reduction in impact of the export's and importer's GDP is probably due to the fact that the income per capita variable has a population and income components in it. The common border, membership in trade blocs, distance and colonial history variables influence keep intact at the inclusion of income per capita variable. According to this estimation, 1% increase in the exporter's income per capita increases average export by 0.18%. Similarly, 1% increase in the importer's income per capita raises average export by .06%.

In the next step (Estimation 2) the regression includes income per capita and export's institutional quality variables in the model. The coefficients estimate of both the exporter and importer countries income per capita stays the same. However, the robust standard error of the exporter's income per capita increases a bit from (.03) to (.06). But the statistical significance of both exporter's and importer's income per capita stays intact. The most attention-grabbing change is observed in the exporter's institutional quality coefficient. This variable has lost its coefficient from the previous estimation of 0.27 to almost zero (with negative sign). It is no more statistically significant with p -value = 1.0 ($p > |t| = 0.99$). The main reason for the loss of significance of the institutional variable is due to higher correlation between the income per capita and institutional quality variables. The correlation coefficient of these two variables is staggering at 0.91.

This finding is strange because the institutional quality variable lost its significance rather than the income per capita variable. Gravity based researches such as Anderson and Marcouiller (2002), Groot et al. (2003), and Li and Samsell (2009) find that after the institutional variable is introduced, the coefficient of income per capita is changed from significantly positive to significantly negative. These writers suggest that wealth is anti-trade biased. When income per capita raises the expenditure on traded goods falls. The writer of this study however, has the opinion that this suggestion is only correct when trade as a whole or expenditure in import is used as a dependent variable but when export is the dependent variable income per capita has always a significant positive impact. The loss of significance of the institutional quality variable is an indication that institutional quality, export performance and income per capita have a strong association with each other. But the direction of causation needs further investigation.

In estimation 3 and 4, institutional similarity and developed (North) countries institutional dummy are included in the estimation. Both variables are developed based on OECD membership as discussed in the model specific section above (Institutionally similar countries are assumed to be either both OECD members and/or both OECD non-members. Group match of OECD members and non-members are assumed to be institutionally different). The main idea is to test the hypothesis that 'institutionally similar countries in the North trade more among themselves but institutionally similar countries in the South trade less among themselves but trade more with the North'. The institutional similarity variable is intended to test if similarity helps to boost trade. The developed country institutional dummy would help to test if higher institutional quality in the developed world is the reason for the hypothesis that 'North-North trade is higher than South-South trade despite differences in factor endowments in the two regions'. At this estimation, the income per capita variable is dropped from the model due to its correlation with the exporter's institution variable.

In estimation 3, it is found that institutional similarity increases trade by 14%. This is equivalent to an exponential multiplication of trade by 1.15. This is an overall indication that institutional similarity is good for overall trade. But it is not an indication that the increase is due to higher trade among institutionally similar North-North than among institutionally similar South-South countries. To separate these two impacts, developed country institutional dummy variable is included in estimation 4. Accordingly, estimation 4 proved that having institutional quality of the developed world-North increases export by 23%. This is equivalent to an exponential multiplication of trade by 1.26 units. This finding gives a very good tacit support for the hypothesis that institutionally similar countries in the North trade more among themselves but institutionally similar countries in the South do not do the same. Rather Southern countries trade more with the North but less with themselves.

In general, the inclusion of these two institutional variables gives good explanation on why North-South trade is less than North-North trade despite differences in factor endowments. This missing trade is partially explained by differences in institutional quality and is in line with the finding of Anderson and Marcouiller (2002), Levichenko (2007) and the likes. To wind up the discussion about the role of institutional quality on export, the next section will introduce a new variable called 'legal traditions'. This variable would help to test if adopting a legal system of one of the leading European countries has an impact on export or not.

4.5.3. Legal traditions

Many empirical growth literatures suggest that countries which follow the British common law are advancing much better in economic performance than countries with civil or socialist legal system. The main intuition is that the British common law tradition is a pro-business system with full protection for property rights of individuals against the government. Contrary to this, the civil law which evolved mainly in French, German and Scandinavian countries is designed to guarantee the state apparatus to extend its power through a more constrained way than the common law system. Socialist legal system is the full control of the economic activities of a nation by the state with no individual property rights. It is assumed that the British common law is good, German and Scandinavian civil laws are in the middle between the British and French legal systems. Socialist law is the worst form with absolute denial for private property rights and freedom.

Many past empirical researches investigating the impact of legal systems focus on the relations between legal origin and government effectiveness [see for example La Porta et al. (1999, 2008)]. In this research, the writer would like to transfer this notion to the context of export performance and test if the legal tradition of countries has any influence on export. The writer has the opinion that if the legal system of countries' influences government effectiveness, the system of government might in turn influence international trade, through for example extended bureaucracy at customs offices. Countries with better legal tradition should be in a better place to trade more than countries with bad legal system. In table 4.5 below estimation results of the impact of French, German, Scandinavian and Socialist legal origins are presented. Each of the above legal system is compared against the British legal system which is considered as the standard bearer legal system by the empirical literature.

The explanatory variables in table 4.5 include the standard gravity estimators including the natural log of income per capita of both the exporter and importer countries. All measures of the institutional quality are excluded from the model due to their correlation with the income per capita variable. Estimation 1 (in table 4.5.) indicates that the French legal system is not helping export performance. Countries which adopt French legal system on average have 39% less export than countries with the British legal system. This is equivalent to an exponential reduction of export by 0.68 units over time. This result confirms the suggestion by La Port et al. (1999) that the French legal system is bad for efficient economic exchange particularly when it is implemented in a third world country.

Estimations 2 and 3 present the impact of the German and Scandinavian legal origins as compared to the British legal system. The coefficient estimates in both cases have a positive sign. But

the estimates are not statistically meaningful. There might be many reasons for the difference in performance between the German and Scandinavian civil law system in the one hand and the French civil law system on the other hand. One reason might be the suggestion that even if all the French, German and Scandinavian implement civil laws, the latter two are mainly used by countries with professional bureaucracy based on armies and professional civil servants rather than aristocrats and clerics. The French law in contrast is used by countries with strong Catholic background such as Spain, Portugal, Italy, etc. In these countries the bureaucracy is largely unconstrained and powerful. In the earlier centuries the bureaucracy was mainly run by unprofessional clergy men. This bureaucratic tradition still persists and may be one main reason for the poor performance of countries which follow the French style civil law.

Table 4.5: The impact of legal systems in export
Dependent variable: Natural log of average export from 2002 to 2006

Independent variables	French (1)	German (2)	Scandinavian (3)	Socialist (4)
Log exporter's GDP	.85*** (.03)	.86*** (.04)	.85*** (.03)	1.01*** (.03)
Log importer's GDP	.90*** (.03)	.94*** (.03)	.93*** (.03)	.92*** (.03)
Log exporter's income per capita	.28*** (.03)	.13*** (.05)	.16*** (.05)	-.01 (.04)
Log importer's income per capita	-.02 (.03)	-.05 (.04)	-.06 (.04)	.06 (.04)
Log distance	-.92*** (.09)	-.61*** (.13)	-.64*** (.13)	-.96*** (.11)
Legal origin	-.39*** (.09)	.12 (.11)	.15 (.13)	-.33*** (.10)
Common membership in reg. trade agreements	.39** (.16)	.92*** (.26)	.82*** (.25)	.64*** (.21)
Common boarder	1.29*** (.28)	1.10*** (.39)	1.33*** (.48)	1.33*** (.31)
Common colonial history	.52*** (.09)	.22 (.14)	.22 (.14)	.31** (.14)
R ²	0.76	0.77	0.75	0.76
Observations	1827	1073	1026	1440
F-statistics	785.13	519.31	439.56	603.67
RMSE	1.78	1.69	1.70	1.64

*Note: Robust standard errors are in parenthesis; *, **, *** are significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level.*

Estimations 2 and 3 show some additional interesting attributes. When the legal origin variables are introduced in both cases, the distance, membership in trading bloc and the common colonial history variables show significant change in their coefficient. The common colonial history variable for example, reduces its coefficient value from 0.52 in French case to 0.22 in both German and Scandinavian cases. It also loses its statistical significance in both cases. This is probably the result of the fact that countries that follow the German and Scandinavian legal origins did not have many colonies and therefore, do not

have significant trade with former colonies. Coefficient of membership in trading bloc increases from 0.39 in French cases to 0.92 and 0.82 percent in German and Scandinavian cases respectively. This significant increase in coefficient is probably the result of higher trade due to membership in the EU. Many of the countries which adopt the German and Scandinavian legal systems are in Europe and probably are members of the EU. In contrast many of the countries which adopt the French legal system are developing countries which are located mainly outside of Europe. Similarly, the distance coefficient increases its value from -0.92 in French cases to around -0.60 in both German and Scandinavian cases. This is an indication that transport cost has little negative impact on trade in countries that follow the latter two legal systems. This is again the result of the fact that many of the countries which follow the German and Scandinavian legal systems are located close to each other mainly in the continent Europe.

In the last column, the socialist legal system is used for the estimation. As expected, having a socialist legal tradition decreases export by 33% as compared to the British legal system. This is equivalent to an exponential reduction of export by 0.72 units. The low export performance of former socialist countries as compared to countries that follow the British legal system is the result of the inefficiencies created by the socialist system coupled by the lack of respect for individual human and property rights.

In general, this research confirms that institutional quality has a significant impact on export performance. The result is economically strong and statistically significant in all alternative measures of the quality of institutions. It is also confirmed that countries that follow the British legal system significantly fare better in export than countries that follow the French or socialist law. The model estimation produces consistent and significant result to the inclusion of all relevant variables. In the next section, the research will make a robustness check to the inclusion of other determinants of trade.

4.5.4. Sensitivity analysis

In this section, the study tests the robustness of the result with additional alternative variables such as population size and surface area of the exporting and importing countries as well as the World Bank doing business dataset institutional quality measure as an alternative to the Kaufmann et al. (2009) governance indicator. The sensitivity analysis also includes a dummy variable to measure the trade cost impact of being landlocked. Table 4.6 below presents the robustness analysis. The standard errors reported in all cases are robust standard errors.

The first estimation begins with a regression that includes measures of GDP, population, country area size and income per capita. It also includes a dummy variable to measure the impact of being landlocked. It excludes all measures of institutional quality due to concern to higher correlation between income per capita and institutional quality variables.

The estimation results confirm that higher population in both the exporter and importer countries significantly increases export. A one percent increase in the population size of the exporting and importing countries results in 0.95 and 0.89 percent increase in export respectively. The positive and highly significant impact of the population parameters confirms the notion that population could be taken as an alternative economic force measure in addition to GDP.

Table 4.6: Robustness test to alternative measures
Dependent variable: Natural log of average export from 2002 to 2006

Independent variables	(1)	(2)	(3)	(4)
Log exporter's GDP	.26*** (.09)	.90*** (.06)	.18** (.09)	
Log importer's GDP	.21** (.08)	.91*** (.02)	.23*** (.08)	
Log exporter's country size	-.21*** (.02)	-.18*** (.02)	-.20*** (.02)	-.18 (.04)
Log importer's country size	-.16*** (.02)	-.14*** (.03)	-.15*** (.02)	-.25 (.04)
Log exporter's population	.95*** (.10)	.28*** (.07)	1.00*** (.10)	1.01 (.05)
Log importer's population	.89*** (.09)	.16*** (.04)	.88*** (.09)	1.10 (.05)
Log exporter's income per capita	.83*** (.09)		.70*** (.08)	
Log importer's income per capita	.72*** (.08)		.82*** (.09)	
Log distance	-.73*** (.07)	-.99*** (.03)	-.77*** (.07)	-.95*** (.09)
Exporter's institution		.35*** (.10)		
Log exporter's doing business rankings			-.23*** (.04)	-1.28 (.05)
Common membership in reg. trade agreements	.67*** (.13)	.32** (.13)	.70*** (.13)	1.48*** (.19)
Common boarder	1.25*** (.20)	1.04*** (.20)	1.18*** (.19)	.49*** (.28)
Common colonial history	.91*** (.11)	.79*** (.11)	.84*** (.11)	-.18 (.16)
Landlocked dummy	-.12 (.08)	-.28*** (.09)	-.04 (.08)	-.56 (.13)
R ²	0.81	0.80	0.82	0.55
Observations	2774	2774	2722	2722
F-statistics	903.50	935.89	883.32	366.65
RMSE	1.55	1.60	1.52	2.45

*Note: Robust standard errors are in parenthesis; *, **, *** are significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level.*

Area size of both the exporting and importing countries has a negative coefficient. One percent increase in the area size of the exporting country is associated with 0.21% decrease in export. Similarly a 1% increase in area size of the importing country is associated with 0.16% decrease in export. These findings are also in line with the theoretical prediction that small countries trade more than big countries because in large countries there are more citizens to trade internally than in small countries⁵⁵. Large countries also face higher transport cost because an average citizen lives further away from the center than an average citizen of small countries. The landlocked dummy variable has produced a negative coefficient. The estimation, however, is statistically insignificant.

The inclusion of the above additional factors (country size, population and income per capita), reduce the fitted coefficient values of the GDP from what used to be nearly unity in the previous estimations to nearly a quarter in both the exporter's and importer's GDP cases. Contrary to this, the coefficient of the fitted values of the income per capita has increased from what used to be nearly a quarter from previous estimation to three quarter in the current estimation. This is basically the effect of the inclusion of the population parameter in the model.

Estimation 2 excludes income per capita variable and includes the Kaufmann et al, composite institutional quality measure. Again the regression produces a consistent and significant result in all cases. The landlocked dummy shows significant change. In this case, being landlocked reduces export by 28%. In estimation 3, the institutional quality measure is replaced by the World Bank doing business ranking order. The lower value means the country has better institutional quality and vice versa. This estimation also supports the hypothesis that 'institution matters for export'. A one unit decrease in the ranking order of an exporting country increases export by 0.23%. Estimation in the last column drops the traditional measure of economic size (GDP and income per capita). Again the estimation produces a consistent result. The goodness of fit measure (R^2) falls from 0.80 to 0.55. This is an indication that excluding GDP from the gravity model might result in severe omitted variable bias.

The robustness check confirms that the previous gravity estimations are consistent to inclusion of alternative measures of economic forces, trade cost and institutional quality. The result confirms that besides income and transport cost, institutional quality plays an important role on export performance.

⁵⁵ One needs to take caution when interpreting economic size since it has various meanings. Here the concept of size is to implicate area size of countries' and number of population. But size in trade theory is the comparative advantage the country has in producing certain products. China for example, is large when it comes to textile production but it is small when it is compared with Germany in automobile production.

The joint significance or F-test in all cases also confirms the hypothesis that all variables together influence export significantly.

4.6. Concluding remarks

By applying the gravity model, this research investigated the impact of institutional quality on export performance. The estimations of the models have produced consistent and significant results in all cases. The traditional gravity variables such as GDP, distance, common border, membership in trade blocs and colonial history variables produce the expected results. The variable estimations are statistically significant both individually as well as jointly with higher T-statistics and F-test values. In almost all cases, institutional quality estimations have produced the desired result. Particularly, the institutional quality of the exporting countries produces economically and statistically significant results.

The research finds that institutionally similar countries trade more among each other than with institutionally different countries. Moreover, having institutional quality of the North significantly increases export. The above findings would help to answer the question 'why developed countries disproportionately trade with each other than with developing countries despite the fact that there is differences in factor endowments?' The findings successfully prove that difference in institutional quality is the main reason for this disproportionate trade.

Legal system of countries has been used as an alternative measure of institutional quality. The estimation result suggests that having French and Socialist legal systems as compared to British common law significantly reduces export. The impacts of the German and Scandinavian legal systems are undefined because of insignificant statistical results.

The study conducts further analysis to check the robustness of the estimations to alternative measures of size (gravitational forces) such as population and land area as well as alternative institutional quality measure such as the World Bank Doing Business institutional measure. All of the robust estimators produced the expected signs and proved to be statistically significant in most cases. Particularly, estimation using alternative institutional quality indicator suggests that higher ranking in the Doing Business index increases export. In general, the findings support the two alternative hypotheses which are outlined and stated in the theoretical framework section (chapter 3) of this research.

Chapter V

The Effects of Trade and Institutions on Income

In the previous chapter (chapter 4), it was found that institutional quality is an important determinant of export performance. By applying the gravity model of bilateral trade, it was derived that causality runs from institutional quality to export performance. In this chapter, the study attempts to broaden the investigation and tests how export promotion and institutional quality influence income levels.

Since geography is the common determinant of both trade and institutions, it could not be easy to separate the independent impacts of trade and institutions on income. Devising a strategy to test the joint impact of the two variables would help to generate more reliable information than running an independent test. This chapter is devoted to make a joint test on the impacts of institutional quality and export to GDP ratio on income. This would help to assess if better institutional quality is a prerequisite for export to have a positive impact on income or not. It could also help to test if expanded export has only direct impact on income or an indirect one. The answer to these questions would help to establish the linkage between export promotion and income growth and identifies the prerequisites (if any) necessary to benefit from integration to the world market through expanded export.

5.1. Some notes on the interaction of trade, institutions and income

Traditional trade theory gives good reason to think that international trade has considerable advantage for income growth. Given perfect competition, absence of distortions and constant returns to scale, classical trade theory suggests that there is considerable advantage from trade through welfare increasing specialization. New trade theory makes this claim more realistic by introducing roles for increasing returns to scale, trade in imperfect substitutes, and endogenous technology (Frankel and Rose, 2002). The new trade theory supports the idea that trade is not only good for higher income levels but is necessary for long-term income growth since interaction with foreign companies would spur the benefit of innovations to be absorbed by countries that follow open trade policies.

Empirical applications of the connection between openness and income growth produce strong association between the two variables. Simple regression of trade to GDP ratio and income growth could result in high correlation between the two variables. But this does not always lead to the interpretation of the results as causal because trade share is endogenous to income. As stated in the

earlier chapters, higher trade could result in higher income growth, but countries that grow for some other reasons could also have higher trade. This creates severe simultaneity bias on regression results that relate trade with income growth. Some researchers use trade policies instead of trade to GDP share as measure of openness hoping that trade policies are exogenous. But countries that follow free trade policies could have also free trade domestic policies. Therefore, beyond the difficulty of measuring trade policies, the problem of endogeneity still remains (Barro and Sala-i-Martin 1991).

There are many attempts to solve the problem of simultaneity bias. As Frankel and Rose (2002) reveal some have applied Granger-causality test to the problem while others tried the simultaneous equation approach but none has resolved the issue. To overcome the problem, one needs to find a plausible instrumental variable which is exogenous to the trade variable but correlates with trade. As vigorously demonstrated by Frankel and Romer (1999), the gravity model offers a widely accepted instrumental variable based on geographic parameters.

The notion that trade has a positive impact on trade is scrutinized by supporters of the institution hypothesis who suggest that trade does not have a direct impact on income. Rather it has an indirect impact through institutional quality. This argument faces strong opposition from trade fundamentalist who claim that trade has strong short-term impact on income⁵⁶.

Regression that takes both institutions and trade as explanatory variables would show that the trade variable loses its coefficient and significance level once the institutional quality variable is introduced. Though this empirical finding suggests that trade has insignificant and indirect impact on growth, it is risky to give the entire starring role to institutional quality. The complex interaction of trade, institutional quality and growth as well as the multi-channels through which trade and institutions influence growth could not easily be captured by simple regression of the two variables. Under this situation, it might be more appropriate to estimate the joint significance of trade and institutions rather than relying on individual estimations. Given reliable instrumental variables which could be used in two stage least square estimation, the joint interactive term test would give us an idea how trade and institutional quality separately as well as jointly affect income. This could also help to check if higher institutional quality is a necessary condition for export to have a positive impact on income or not.

The empirical strategy in this section is to use the standard growth model specified in equation (5.1) and evaluate the interaction of export and institutions on income. Before proceeding to the

⁵⁶ See for example Dollar and Kraay (2002), Alcalá and Ciccone (2002).

model's specification and estimation procedures, it is worthy to give some briefing about the growth model.

5.2. Growth model

As broadly discussed in chapter 2, analysis based on aggregate production function gives some insights on how economic growth varies across countries. According to the aggregate production function, income differences across countries are attributable to differences in physical capital, human capital and productivity, an approach used by neoclassical growth model such as Mankiw et al. (1992). The model predicts that countries which invest a large proportion of their income in human capital and physical capital and use these resources productively are the one which attain higher economic performance.

Moreover, neoclassical growth model argues that per capita income growth of countries is inversely related to their initial level of income per person. Particularly when countries tend to be similar in structural parameters for preferences and technology then there is a tendency for poor countries to grow faster than more developed countries (Barro 1991). This convergence force is 'the low initial level of capital to labor ratio in low income countries' because in countries where capital is scarce investment in capital generates higher marginal productivity. The convergence hypothesis dictates that income at the end of a period depends on income at the beginning of a period with a tendency gradually towards some long-run steady-state level (Barro 1991). Since convergence is conditional on variables such as saving to GDP ratio, population growth and technology, different countries would have different steady-state levels.

The standard neoclassical growth model, however, does not answer the fundamental question: 'why some countries in the first place are able to accumulate high human and physical capital and are more productive in using these resources than others'. Providing persuasive answer to these questions has been the focus of scholars concerned about the role of institution on economic growth.

The empirical specification of this study is in line with the approach followed by Acemoglu et al. (2001), Hall and Jones (1999), Frankel and Romer (1999), and Easterly and Levine (2003) among others who are using institutional quality and trade variables as endogenously determined in the growth equation. Essentially it depends on the theoretical and empirical justification of Hall and Jones (1999) who dissects the various components of the neoclassical growth model including the residual to understand the contribution of physical capital, human capital and productivity on output growth based

on the simplest Cobb-Douglas approach. In the decomposition, it is found that 1 unit differences in capital intensity and human capital per worker contributed to factors of 1.8 and 2.2 units to output respectively. One unit differences in productivity, however, contributed to a factor of 8.3 units to output growth (Hall and Jones 1999, p. 92). Therefore, differences in accumulation of human and physical capital explain only a modest difference in output per worker across countries while productivity explains the largest difference.

Hall and Jones suggest that differences in institutional quality may explain such large difference in productivity because in economies with an institutional environment not conducive to efficient production, some resources may be used in protecting diversions rather than used for productive activities. Capital may be used to invest in security cameras rather than in productive machineries. Difference on costs to protect predatory activities may be the source of differences in productivity and income across countries.

Since productivity differences are the most important determinant of income differences, one needs to take this into account when studying growth differences. The empirical specification used in this study, therefore, should be in line with the new growth model since it includes sources of productivity differences such as institutional quality and trade on income as endogenous variables.

To examine the quantitative importance of institutional quality, export performance and other determinants of income, the study employs the new growth model specified in equation (5.1). The model specification uses income levels as dependent variable instead of changes in income growth.

The use of levels in growth regression has strong support from Hall and Jones (1999) who forward the following reasons: First, differences in levels capture long term economic performances that are relevant for welfare. Second, differences in growth rates across countries may be transitory so levels explain long-term economic performance very well. And third, technology transfer keeps countries to drift indefinitely far from each other. In this condition, difference in levels is the most interesting variable to explain. Therefore, the use of levels has strong intellectual support. By exploiting levels data this research tries to explain differences in long-term economic performance emanated from differences in institutional quality and export performance as well as other long-term determinants of economic performance.

The model specification includes a number of additional (control) variables instead of limiting the estimation on the three fundamental determinants of growth i.e. trade, institutional quality and geography only. Controls in the growth models are initial income, investment in physical and human

capital and population growth. In this research, some of the controls particularly those which influence accumulation of human and physical capitals will be omitted. As Hall and John (1999) indicate, factor accumulation variables may be endogenous. Frankel and Rose (2002) suggest that including these variables in the regression might have down-ward bias effect on the estimated coefficients of our variables of interest particularly when some of the effects come through factor accumulation. Excluding them might have the danger of generating biased results and could be expected to produce too large an effect to our variables of interest. Therefore, utmost care will be taken when including and dropping controls. Most importantly, alternative regressions will be run, one with controls and another without them throughout the estimation procedures. By using per capita income levels adjusted for purchasing power parity, this study could estimate the impact of the explanatory variables on the long-term impact of growth.

When choosing control variables, this study takes a number of factors into consideration. For example, as discussed in the previous chapters, geography influences income by shaping the institutional environment, by influencing soil fertility or morbidity. A more ethno-linguistically fractionalized country is prone to civil and political conflicts and therefore, impacts growth negatively. Countries with large markets could benefit from their size effect due to economies of scale. Moreover, whether countries have access to sea or not has a big impact on growth. Therefore, it is important to control for the effect of these variables in the growth regressions.

5.3. Model specifications

Motivated by the theoretical presentation of section 3.1.3 of chapter 3 as well as the logic behind applying the new growth model stated in section 5.2 above, this research utilizes the following model specification. The estimation strategy follows two procedures. In the first procedure, the research estimates the independent impacts of the export to GDP share; institutional quality and other control variables on income per capita. This procedure can be estimated using the following empirical specification:

$$\ln y_i = \beta_0 + \beta_1 \ln(X/Y)_i + \beta_2 I_i + \beta_3 Z_i + \varepsilon_i \quad (5.1)$$

Where: the dependant variable ($\ln y_i$) is a natural log of income per capita in country i at constant 2005 US dollars in Purchasing Power Parity (PPP) terms for 2008.

The independent variables respectively are:

- $\ln(X/Y)_i$ is export to GDP ratio (hereafter export) in nominal US Dollar. Higher export to GDP ratio is expected to lead to higher income per capita as discussed in sections 2.2.3.4 and 3.2.
- I_i is the Kaufmann et al. (2009) measure of good governance (composite institutional quality).
- Z_i is a set of control variables which include: Distance from the equator (measured as absolute value of latitude of the country's capital city); Dummy for landlocked countries; Market size measured by number of population and size of the country; and Ethno-linguistic fractionalization (such as the probability that 2 randomly selected individuals speak 2 different languages) as advanced by La Porta et al. (1999).
- ε_i is the standard error term which captures all other omitted effects and assumed to be well-behaved.

The above equation is aimed at measuring the first order magnitude of export and institutional quality variables on income per capita. The expected signs of the coefficient of the base equation (5.1) are β_1 and $\beta_2 > 0$ ⁵⁷. Both higher export and institutional quality are expected to influence income per capita positively. The coefficients on (Z_i) will have mixed outcomes. For example, large population size is associated with less income per capita, therefore negative coefficient. Large country size has a positive impact on income because of economies of scale and/or large resource endowments. Distance from the equator is expected to produce positive result because countries further away from the equator are better in economic performance due to good health, soil fertility and other factors. Landlocked countries are mainly poor countries because of high trade cost; hence negative expected coefficient.

In the second procedure, this research gives due emphasis to the interaction of institutional quality and export in determining income per person. This would help to measure the joint (interaction term) impact of the two variables on income⁵⁸. The procedure also includes a dummy variable which takes the value 1 if the quality of institution of the countries in the sample is at the first quartile (25 percent lowest institutional quality countries) and 0 otherwise. The base specification in this model also includes regional dummies to account for the impact of the presence of one or more particular regions in the sample. The objective of this specification is to measure if higher export is beneficial for income growth across the board in all cases without due regard to the level of institutional quality of countries. This can

⁵⁷ β_1 is not necessarily positive because there might be a situation where the most open country e.g. USA has a very low export to GDP ratio and the most closed country e.g. India has a higher export to GDP ratio.

⁵⁸ Here the research is more interested in the interaction term of the two variables instead of the joint significance (F-test) of the export and institution variables.

be done through adding additional variable i.e. an interactive term of export and institutional quality in the equation. The procedure can be captured by the following econometric equation:

$$\ln y_i = \beta_0 + \beta_1 \ln(X/Y)_i + \beta_2 I_i + \beta_3 \left[(X/Y)_i * Idummy_k \right] + \beta_4 Idummy_k + \beta_5 Rdummy_j + \beta_6 Z_i + \mu_i \quad (5.2)$$

Where the newly introduced variables are:

- $\left[(X/Y)_i * Idummy_k \right]$ is the interaction term of export to GDP ratio and institution dummy as discussed above.
- $Idummy_k$ is a dummy variable that takes value 1 if the country belongs to the first quartile (bottom 25 percent) institutional quality countries category and otherwise zero.
- $Rdummy_j$ stands for regional dummy which classifies countries along 8 geographic regional groupings.
- Z_i and μ_i are set of control variables and the error term respectively as discussed above.

The sign of the coefficients are expected to be: β_1 and $\beta_2 > 0$ for the reasons discussed above. β_3 and $\beta_4 < 0$, because it is expected that higher export to GDP ratio in low institutional quality countries (lowest 25% institutional quality countries) does not influence income in a positive way. In addition, being in the low institutional quality category is expected to have bad impact on income levels. β_5 will have mixed result because being in sub-Saharan Africa will have different impact on income than being in South Asia. Each geographic region is compared separately against the rest of the regions. Hence, the regional dummy variable takes 1 if that particular region is compared with all other regions. Example, South Asia takes 1 and all other regions get 0 when the interest is measuring the impact of being in South Asia. The coefficients in the control variables β_6 will also be expected to have mixed effect as discussed above.

5.4. Data and measurement

In this chapter, the measure of export performance is the nominal 8 years average value of total export to nominal GDP ratio from 2001 to 2008⁵⁹. Data on export to GDP ratio is from the World Bank World Development Indicators. This research follows the usual tradition in using nominal values rather

⁵⁹ Taking the average value of export to GDP ratio of some years is more feasible than relying on one particular year data because in some years export ratio may be higher or lower due to some unexpected shocks.

than real values as measure of export to GDP ratio. The merit of using nominal currency (nominal US dollar) is widely discussed in Rodrik et al. (2002) and Rodriguez and Rodrik (2000)⁶⁰.

Log GDP per capita for 2008 at constant 2005 US dollars purchasing power parity (PPP) will be the measure of economic performance. Population and country size are used as two different measures of size of the economy in the growth equation. Data for per capita income, GDP and population will be from the World Bank, World Development Indicators. Other alternative measure of openness used in the robustness check is the Sachs and Warner openness index. It is available from Sachs and Warner (1995a).

Distance from the equator is the preferred measure of geography in this study and widely used by other researches as well⁶¹. It is measured as distance from the Equator to capital cities at absolute value terms (latitude)/90. Additional variables such as whether countries are landlocked and regional grouping of countries serve as alternative measure of geography. Information about these geographic variables is from the World Bank and US Central Intelligence Agency (CIA) World Fact Book. Data on proportion of the population living 100 km within distance from sea port or navigable river used in the robustness check is from Center for International Earth Science Information Network (CIESIN), "Gridded population of the world, Version 2 alpha", Columbia University, 2000. This data can be used as proxy for local transportation cost as used in Gallup et al. (1999).

Similar to chapter 4, the institutional quality measure is the Kaufmann et al. (2009) governance indicator. The research takes the latest year (2008) data as measure of institutional quality which is classified in six categories. The average weighted composite institutional quality measure of the six categories is estimated in the regression. Some researchers use the average of 8-10 years of institutional quality index instead of relying in one year data. However, institutional quality is a stock variable which is the result of many years of institutional change. Moreover, it can't be affected by some market shocks unlike the trade variable. Therefore, it is reliable to depend on the latest year (2008) data. Ethno-linguistic fractionalization is also used as alternative measure of institutional quality in the main regression as well as in the robustness check. The data source for Ethno-linguistic fractionalization is La

⁶⁰ Alcalá and Ciccone (2002) and Dollar and Kraay (2002) use real openness instead of nominal openness as their measure of openness. The argument in favor of real openness is based on the idea that there is reverse causation from productivity to openness via the price level. But the authors didn't put a convincing reason why there is no reverse causation on their real openness measure. As far as it is possible to control the effect of endogeneity through valid instrumental variables, it is not necessary to shift to this new measure of openness.

⁶¹ See for example Rodrik et al. (2002), Hall and Jones (1999), Frankel and Romer (1999) and Easterly and Levine (2003).

Porta et al. (1999). The validity and characteristics of the above institutional measures are well discussed in chapter 4. Detail description of the data sources and measurement is presented in Annex 1. Before the beginning of the estimation, it would be important to discuss some of the econometric issues that might be faced during the estimation procedures.

5.5. Some econometric issues

In estimating the relationships between the dependent and independent variables, ordinary least square (OLS) method is used. But as described extensively in the literature –if there are problems of reverse causation, omitted variables bias and measurement error, estimations using OLS method are not reliable and couldn't confirm causation. The variables in this research are susceptible to endogeneity and measurement problems for a number of reasons discussed above and in the earlier chapters. Particularly, there is expected simultaneity bias between the export and income variables; institutional quality and income variables; as well as between the export and institutional quality variables. Under this circumstance, OLS estimation would probably generates inconsistent results.

When the OLS is inconsistent, the explanatory variable is not only directly associated with the change in the dependent variable but also related indirectly through the error term. What is needed in this case is a method to generate only the exogenous variation in the explanatory variables. The method of instrumental variable would offer an option to resolve such problems. The instrumental variable needs to fulfill the condition that it is uncorrelated with the error term but correlated with the endogenous explanatory variable of interest⁶².

The identifications strategy is to use a set of instrumental variables due to Acemoglu et al. (2001), Frankel and Romer (1999), and Hall and Jones (1999). Accordingly, the '*settler's mortality*' of Acemoglu et al. is used as instruments for institutional quality. The Frankel and Romer measure of '*constructed trade share*' is used as instrument for the export and openness variables. Moreover, the research uses '*percentage of the population speaking English and other Western European language as mother tongue*' as an alternative instrument for institutional quality variable because data on the former is limited to some 62 countries in the sample while the latter are available for a total of 137 countries.

⁶² It is still the case that the instruments and dependent variables will be correlated, but the only source of such correlation is the indirect path of the instruments being correlated with the regressor which in turn influences the dependent variable. The more direct path of the instrument being a regressor in the model for the dependent variable is ruled out.

In the choice of instruments, this research agrees with Rodrik et al. (2002, p. 6) who argue that though they are not perfect, settler’s mortality and constructed trade share are the best hope that economists have “at the moment of unraveling the tangle of cause-and-effect relationships involved”. Settler’s mortality for example, has a direct impact on colonial time institutions but has an indirect impact on current institutions through the former. Therefore, it is not practically correlated with the error term that affects income. Similarly, geography based constructed trade share has a direct impact on trade performance but its impact on income is indirectly through trade and institutional quality. All the above instruments qualify to be good instrumental variables. So it is hoped that the estimation will produce the most feasible, unbiased result.

Practical applicability of the instrumental variables method is by employing a two stage least square estimations strategy (2SLS). In the first stage, institutional quality and export to GDP ratio variables are regressed on all of the exogenous variables. The base specifications of the first stage are thus:

$$I_i = \alpha_0 + \alpha_1 SM_i + \alpha_2 CTS_i + \alpha_3 Latitude_i + Z_i + \mu_{Ii} \quad (5.3)$$

$$\left(\frac{X}{Y}\right)_i = \gamma_0 + \gamma_1 CTS_i + \gamma_2 SM_i + \gamma_3 Latitude_i + Z_i + v_{Xi} \quad (5.4)$$

Where: SM refers to settler’s mortality and CTS is the constructed trade share. Latitude represents distance from the equator. Z_i refers to all the exogenous variables included in the model. The right extreme values in both equations are the error terms associated with the institutional quality and export variables respectively. In the second stage, the research uses the fitted values of the instruments from equation 5.3 and 5.4 into equations 5.1 and/or 5.2 where the fitted value of SM is used as instrument for institution and that of CTS used as instrument for export to GDP ratio variables⁶³. The language variables (percentage of the population speaking English and other West European language as a mother tongue) are used in place of the SM variable as alternative to get the best result since the SM variable data is not available for a large number of countries.

Overall, there are about 139 observations for most of the explanatory variables used in the estimation. Annex 4 presents summary statistics of the variables used in the regression. The mean real income per capita in 2005 prices is \$15,281, where the poorest country, the Democratic Republic of

⁶³ The 2SLS estimator gets its name from the result that it can be obtained by two consecutive OLS regressions: First OLS regression of the endogenous explanatory variable with instrument to get the fitted value of the regression followed by OLS regression of the dependent variable on the fitted value to get the 2SLS values. See Wooldridge (2009), Baum (2006).

Congo has an income per capita at PPP of \$290 and the richest country Qatar has an income per capita at PPP of \$84,043. The mean export to GDP ratio is 40%. The least export oriented country, Burundi has an export to GDP ratio of 5.9% where as the most export oriented country, Singapore has an export to GDP ratio of 191.16%. When it comes to the institutional quality measure, the mean institutional quality index is 0.02, where the institutionally poorest country, the Democratic Republic of Congo has an average weighted institutional quality index of -1.69 and the institutionally best country, Denmark has an institutional quality index of 1.8.

5.6. Results

5.6.1. OLS results

The research begins by the OLS estimation of the first order relationship of the export and institutional quality variables with income. First the income variable $[\ln y(2008)]$ is regressed with export $[\ln \frac{x}{y}(2001-08)]$ to replicate the common finding that there is a statistical association between higher export to GDP ratio and income. Estimation results are reported in table 5.1. As can be seen from estimation 1, the claim that higher export and income per capita are positively associated is correct. One percent increase in export share is associated with a 2% increase in income per capita. The estimation is statistically significant with a t-statistics quite enough to reject the null hypothesis that 'higher export to GDP share has no relation with income per capita variable'. However, the R^2 value is estimated at 0.2 meaning that only 20% of the variation in income is explained by the variation in export. The remaining 80% is explained by some other factors. Therefore, simple regression of export with income suffers from high omitted variables bias.

In estimation 2, the income variable is regressed against the institutional quality variable. The estimation confirms the hypothesis that, institutional quality has a positive impact on income. The point estimates indicates that a differences of .01 institutional quality index is associated with a difference in income per person of 1.2%. This is equivalent to 3.35 units ($\exp 1.21 = 3.35$) expansion in income per capita over time. The estimation is statistically significant with t-ratio of 16.00. The R^2 value indicates that 65% of the variation in income per capita is explained by the variation in institutional quality index.

The third estimation includes both the export and institutional quality variables in the equation. The export variable loses its coefficient from 0.02 to 0.008 when the institutional quality variable is introduced. This means 1 percentage point increase in export to GDP ratio increases income by 0.8% other things being the same. This is in line with the claim by Rodrik et al. (2002) that when the

institutional quality variable is introduced in the growth model, the openness variable loses its significance. The goodness of fit of the model improves when the two explanatory variables are included in the model. The R^2 value now suggests that 68% of the variation in income is explained by the variation in the institutional quality and export variables together. The joint significance (F-ratio) test of the model is 142.95. This is extremely sufficient to reject the joint null hypothesis that ‘both the export and institutional quality variables together don’t have impact on income’.

Table 5.1: The effect of export to GDP ratio and institutions on income
Dependent variable: 2008 log income per capita at USD 2005 prices

Variable	(1)	(2)	(3)	(4)	(5)
Avg. Export to GDP ratio	.02*** (.004)		.008*** (.002)	.009*** (.002)	.01*** (.002)
Institutional quality		1.21*** (.08)	1.12*** (.09)	0.90*** (.10)	.90*** (.10)
Log latitude (Distance from the equator)				1.55*** (.44)	1.45*** (.44)
Landlocked dummy					-.73*** (.15)
Log area size					.07 (.04)
Log population					-.02 (.05)
Observation	139	139	139	139	139
R^2	0.20	0.65	0.68	0.70	0.75
F-ratio	33.32	255.84	142.95	107.30	66.57
RMSE	1.21	0.80	0.77	0.74	0.69

*Note: Standard errors are in parenthesis; *, **, *** are statistically significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level.*

In estimation 4, the latitude variable (measure of geography) is included to measure the impact of the three deep determinants of growth i.e. trade, institutional quality and geography variables on income. The introduction of the geography variable doesn’t bring too much change on the coefficient estimate of the export and institutional quality variables. The export coefficient slightly increases from .008 to .009 and the institutional quality variable decreases from 1.12 to 0.90. Being further away from the equator has a positive impact on income. A one percent increase in latitude in absolute value terms increases income by 1.55%. This is a slight influence compared to the larger impact of the institutional quality variable on income.

The last column includes three additional control variables i.e. landlocked dummy, population and area size. There is only slight change on the coefficient of the export share (from 0.009 to 0.01) and latitude (from 1.55 to 1.45) variables due to the inclusion of these control variables. But the institutional quality variable keeps intact.

Coefficient estimate of the control variables give mixed result. The population and area size coefficients are correctly signed but not statistically significant at the conventional 5% level. The

landlocked variable suggests that there is high penalty for being a landlocked country. On average, a landlocked country has 73% less income than a coastal country other things being constant⁶⁴. Including controls in the model improves the goodness of fit of the model. Seventy five percent of the variation in income is explained by the variation in the explanatory variables when controls are included in the model.

Table 5.2 presents estimation results of ethno-linguistic fractionalization and measure of openness (export plus import to GDP ratio) variables as alternative or substitute variable to the institutional quality and export variables respectively. Estimation 1 presents regression results of the openness and ethno-linguistic fractionalization substituting both the export and institutional quality variables respectively. In this case, the coefficient of the log latitude variable markedly increases. One percent increase in latitude increases export by 3.30%. The regression result suggests that a .01 difference in ethno-linguistic fractionalization index is associated with more than 1.34% difference in income. As La Port et al. (1999) suggest a more direct impact of fractionalization on income is not empirically supported. Rather fractionalization has an indirect effect on income through its impact on government effectiveness which in turn has a negative impact on income. Similarly, a 1 percentage point increase in openness is associated with 0.7% increase in income. The population and area size variables produce the desired signs but the results are statistically insignificant.

In estimation 2, the openness variable is substituted with the export variable to monitor for any change in the other explanatory variables. There is no significant change in any one of the explanatory variables. Similar to the previous estimations, a 1 percentage point increase in export raises income by 2%. In estimation 3, the regression includes the institutional quality variable, hoping that there is no perfect correlation between it and the ethno-linguistic fractionalization variable⁶⁵. The inclusion of the institutional quality variable significantly reduces the fitted values of the export share and the latitude variables. A one percentage point increase in export to GDP ratio is now associated with only 1% increases in income from what used to be 2% in the model without institutional quality. The fitted value of latitude also reduces from 3.15 to 0.50. This is an indication that institutional quality plays quite a bigger role in determining income levels in comparison to the influence of geography and trade.

⁶⁴ One should keep in mind that most of the landlocked countries in the sample are the tropical countries of sub-Saharan Africa and Asia. This big impact of being a landlocked country on income could also be a reflection of other income reducing factors.

⁶⁵ The correlation coefficient of the institutional quality and the ethno-linguistic fractionalization variables is -0.47.

Table 5.2: The effect of institutions, trade and some other control variables on income
Dependent variable: 2008 log income per capita at USD 2005 prices

Variable	(1)	(2)	(3)	(4)	(5)
Avg. Export to GDP ratio		.02*** (.003)	.01*** (.002)		.01*** (.09)
Institutional quality			.89*** (.09)	.94*** (.09)	.89*** (.09)
Log latitude (Distance from the equator)	3.30 *** (.47)	3.15*** (.44)	.52 (.42)	.45 (.44)	.51 (.42)
Landlocked dummy	-.84*** (.20)	-.82*** (.18)	-.64*** (.14)	-.64*** (.15)	-.62*** (.15)
Measure of openness (export plus import to GDP)	.007*** (.002)			.004*** (.001)	
Ethno-linguistic fractionalization	-1.34*** (.21)	-1.36*** (.27)	-1.02*** (.20)	-.99*** (.21)	-1.00*** (.20)
Log area size	.05 (.06)	.06 (.05)	.11** (.04)	.10** (.04)	.08** (.03)
Log population	-.06 (.06)	-.08 (.18)	-.05 (.04)	-.04 (.05)	
Observation	130	130	130	130	130
R ²	0.61	0.70	0.81	0.79	0.81
F-ratio	30.06	40.27	76.29	66.83	88.62
RMSE	0.60	0.80	0.60	0.63	0.60

*Note: Standard errors are in parenthesis; *, **, *** are statistically significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level.*

In estimation 4, the export to GDP ratio is substituted with the openness (import plus export to GDP ratio) variable in a model that includes all the explanatory variables including controls to monitor the overall impact of trade on income. The coefficient of the openness variable is only 0.004 comparing to the estimated 0.1 fitted value of the export variable. This means that a 1 percentage point increase in the openness measure is associated with only a 0.4% increase in income. The inclusion of the institutional quality variable in the model reduces the impact of openness significantly. In a model where institutional quality is excluded (estimation 1), the coefficient estimate of openness is 0.007. This means that a 1 percentage point increase in openness is associated with 0.7% increase in income. The impact of trade on income is reduced by nearly half (from 0.7 to 0.4 percent) when the institutional quality variable is included in the model. This finding lends support for the claim by some institutional economists who support the idea that openness doesn't have direct significant impact on income rather it has an indirect impact through institutional quality. This claim however, is strongly opposed by trade fundamentalist who always envisage a more direct role for trade to influence income.

Dropping or including one or more variables in the model changes the level of significance and coefficient estimate of the other explanatory variables⁶⁶. For example, in all models (estimation 3-5) where the institutional quality variable is included, the latitude variable reduces its coefficient and the

⁶⁶ Dropping the log population variable from the model (estimation 5) doesn't change the coefficient or significance of the other explanatory variables.

estimate is any more statistically significant. As mentioned earlier, the above estimation confirms the claim that in a multivariate regression between trade, institutional quality and geography, institutional quality always produces statistically significant results with large coefficient estimate as compared to the trade and geography variables.

However, as stated above the claim that institutional quality has a direct impact on income but trade has an indirect impact through institutional quality improvement is strongly contested by trade fundamentalists on the concern that since both trade and institutional quality have geography as the same determinant, it is not possible to separately identify their individual impacts on income. Estimation of the joint interaction term of trade and institutional quality may provide a more reliable estimate of the two variables on income. Accordingly, in table 5.3 this study investigates the joint impact of institutional quality and export on income by utilizing the model specified in equation 5.2.

5.6.2 The interaction term of export and institutions on income

In equation 5.2, three new explanatory variables are introduced⁶⁷. Table 5.3, reports the regression result that includes the interaction term of export and bottom 25 % institution dummy and institution dummy variables. As seen in estimation 1, there is no marked change in the coefficient of all the older explanatory variables. The coefficient estimates of the newly introduced variables produce a rather disappointing result. The interaction term of the export to GDP ratio and the bottom 25% institution dummy is expected to produce a negative coefficient. But the result suggests that 1 percentage point increase in the interaction term is associated with 1% increase in income per capita. The bottom 25% institution dummy estimate produces the expected sign but statistically it is insignificant.

In the second estimate, additional control variables are included to monitor the change in the newly introduced two variables. The inclusion of the area and population variables reduces the coefficient of the interaction term but the sign of the coefficient stays positive. However, the level of significance diminishes from what used to be 10% to insignificant level. The institution dummy has the desired sign but still statistically insignificant. Therefore, the inclusion of the population and area size of countries controls don't help to get the desired outcome on the interaction term and institution dummy variables.

⁶⁷ The newly introduced variables are the interaction term of export share and institution dummy, (2) institution dummy, and (3) regional dummy. The cut-off point for institution dummy is the first quartile or lower 25 percent worst institutional quality countries.

In the third estimate, the model includes regional dummies to measure the impact of the two variables of interest (institutional quality and export share) when regional dummies are included in the model⁶⁸. Unfortunately, all the regional dummies turn out to be insignificant except the sub-Saharan Africa dummy. Because of this statistically insignificant result, only the result on sub-Saharan Africa dummy is reported (see annex 4 for full result of the impact of regional dummies). The sub-Saharan Africa dummy clearly shows that being in this region reduces income by 65% *ceteris paribus*, comparing to other regions. Because of the introduction of the sub-Saharan Africa dummy, the latitude (distance from the equator) variable loses its coefficient and significance level. The loss of statistical significance of the distance variable is understandable given the fact that both variables are proximate measure of geography.

The last column of table 5.3, substitutes the export to GDP ratio with openness variable as well as its respective interaction term to verify the claim that 'higher regulatory quality is a prerequisite for trade to have a positive impact on income' (Bormann et al. 2006 and Bolakway and Freund 2004). Unfortunately, the fitted value of the openness variable is not changed significantly from the previous result. But the result turns out to be statistically insignificant. Therefore, with this estimation it is not possible to confirm the above claim.

The cut-off point and differences in institutional quality measures may play some role for the above different outcomes. For example, Bormann et al. (2006) use the bottom 20% cut-off point to generate their institution dummy variable. It is not clear why they use this cut-off point and not other, but if one puts the cut-off point further down, then the probability of getting the desired result may be higher. This research's choice of the first quartile is arbitrary but it is selected for its wide applicability by researchers who are interested in measuring the impact of the different categories of data points. In both cases [particularly in the work of Bolakway and Freund (2004)], regulatory quality of the World Bank doing business data set is used. Since the regulatory quality measures the day-to-day operation of running a business, there is a chance that poorly regulated countries could not benefit from their open trade policies. So their result may be biased to the choice of the regulatory quality measure as a proxy for institutional quality.

⁶⁸ Regional dummy classification is based on the World Bank criteria. There are 8 regions according to the World Bank classification.

Table 5.3: Effect of regions and export-institutions interaction term on income
Dependent variable: Log 2008 income per capita at USD2005 prices

Variable	(1)	(2)	(3)	(4)
Avg. Export to GDP ratio	.009*** (.002)	.01*** (.002)	.007*** (.002)	
Institutional quality	.86*** (.12)	.86*** (.12)	.85*** (.10)	.92*** (.10)
Log latitude (Distance from the equator)	1.60*** (.46)	1.53*** (.46)	.58 (.39)	.48 (.41)
Interactive term (export *Bottom 25 institution)	.01* (.007)	.007 (.007)	.01** (.005)	
Interactive term between openness and bottom 25% institution dummy				.005 (.003)
Institution dummy (bottom 25 percent)	-.48 (.30)	-.32 (.28)	-.23 (.23)	-.09 (.28)
Openness (average export plus import to GDP ratio)				.002** (.001)
Landlocked dummy		-.71*** (.16)	-.43*** (.13)	-.42*** (.14)
Ethno-linguistic fractionalization			-.50** (.22)	-.44** (.23)
Sub-Saharan Africa dummy			-.65*** (.15)	-.71*** (.15)
Log area size		.05 (.04)		
Log population		-.02 (.05)		
Observation	139	139	130	130
R ²	0.71	0.75	0.83	0.83
F-ratio	65.61	49.85	77.78	72.07
RMSE	0.74	0.69	0.56	0.58

*Note: Standard errors are in parenthesis; *, **, *** are statistically significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level.*

In all OLS estimations above, it is consistently confirmed that higher export to GDP share is positively associated with income. But the magnitude of the influence becomes smaller when the institutional quality variable is introduced in the model. Institutional quality on the other hand has a strong positive impact on income. The most important thing, however, is the confirmation whether the above relationships are causal or not. As stated above, one needs to control for endogeneity, multicollinearity and measurement error before declaring the relationship as causal. The next section is devoted to checking the causality of the relationships.

5.6.3. Instrumental variable results

The next step is to estimate the corresponding growth equation using Instrumental Variable (IV) estimation to account for the possible endogeneity of export to GDP ratio and institutional quality variables. As stated above the instrumental variables chosen are originated from different sources

advocated by both supporters of the institution and trade hypotheses⁶⁹. The exclusion restriction is that the IVs are excluded from the second stage regression.

The first stage regression of institutional quality and log settler's mortality shows strong negative association between the two variables. A difference of 1 log mortality rate index is associated with 0.38% difference in institutional quality index (result not reported). The other alternative instrumental variables (percentage of the population speaking English and percentage of the population speaking one Western European language other than English as a mother tongue) are also strongly associated with the institutional quality index variable. A one percent increase in people speaking English as a mother tongue is associated with 1.09% increase in the institutional quality index. Similarly a 1% increase in people speaking one Western European language as a mother tongue is associated with 0.82% increase in institutional quality index. Therefore, all the institutional quality instruments fulfill the first condition that they are correlated with the respective endogenous variables⁷⁰.

In the same way, there is strong association between the trade and Frankel and Romer constructed trade share variables. A one percent increase in constructed trade share is associated with 0.46% increase in export. Similarly, 1% increase in constructed trade share is associated with 0.92% increase in the openness variable. The result confirms that the constructed trade share variable could be a valid instrument for trade because it is strongly associated with the two endogenous trade variables (i.e. export to GDP ratio and/or openness).

Table 5.4 presents the second stage estimation results of the base specifications (equations 5.1). Estimation 1 presents the IV regression of export on income. The result is a solid approval of the earlier OLS finding. A one percentage point increase in export is associated with 2% increase in income. Estimation 2 uses openness in place of export. Again the finding of the OLS estimation is replicated in this case as well. Estimation 3 runs IV regression of export and latitude variables on income. The inclusion of the latitude variable doesn't change the impact of export on income. The result is similar to the earlier OLS estimation. The standard errors in all the IV estimations are robust to account for any heteroskedasticity problems⁷¹.

⁶⁹ The types of instrumental variables used in the regression are broadly discussed in section 5.5.

⁷⁰ It is possible to use more than one instrument to control for endogeneity. The econometric software STATA for example, gives option to input multiple instrumental variables from which it generates the best instrument.

⁷¹ In a two stage estimation (broadly referred as two-step estimation problem) in which one model is embedded in another, the second stage contains variables constructed from parameters in the first stage (Hardin 2002). In this kind of model, the covariance matrix of the second stage estimator induces noise by the first stage estimation and

Table 5.4: Impact of institutional quality and export on income: IV estimation
Dependent variable: Log 2008 Income per capita at USD 2005 prices

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	IV	IV	IV	IV	IV	IV	OLS	IV	IV	OLS	IV
Institutional quality				1.59*** (.24)	1.58*** (.24)	1.38*** (.18)	.90*** (.09)	1.38*** (.19)	1.31*** (.004)	.89*** (.07)	1.14*** (.18)
Export to GDP ratio	.02*** (.004)		.02*** (.006)		-.0009 (.0006)	-.001 (.004)	.01*** (.002)		.01* (.004)	.01*** (.002)	.006 (.004)
Openness		.01*** (.002)						-.0006 (.002)			
Log latitude			4.1*** (.41)			.24 (.67)	1.55*** (.43)	.22 (.68)	-.89 (.79)	.52 (.33)	-.48 (.65)
Ethno linguistic fractionalization									-.88*** (.25)	-1.02*** (.22)	-.76*** (.25)
Landlocked									-.56*** (.13)	-.64*** (.13)	-.51*** (.15)
Log area									.17** (.07)	.11** (.04)	
Log population									-.04 (.05)	-.05 (.04)	
Observation	137	137	137	61	61	137	139	137	128	130	128
F-ratio	24.20	20.67	62.59	42.79	22.05	83.74	143.24	84.18	69.18	105.94	65.57
R²	0.2	0.11	0.50	0.46	0.46	0.63	0.70	0.63	0.77	0.81	0.77
RMSE	1.21	1.29	0.94	0.90	0.91	0.83	0.74	0.77	0.67	0.60	0.60

*Note: Robust standard errors are in parenthesis; *, **, *** are statistically significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level. Trade variables are instrumented by the Frankel and Romer constructed trade share. Institutional quality is instrumented by the combination of settler's mortality rate, percentage of the population speaking English as well as percentage of the population speaking one Western European language as a mother tongue in estimation 4 and 5. In the other estimations the latter 2 instruments are used since settler's mortality cuts the sample size significantly.*

Estimation 4 presents the simple IV estimation of the impact of institutional quality on income. The result suggests that institutional quality is still a significant determinant of income. The point estimates indicates that a difference of .01 institutional quality index is associated with a difference in income per capita of nearly 1.6%. This is equivalent to an expansion of income by 4.9 units ($\exp(1.59) = 4.9$) over time⁷². The fitted value of the IV estimation is quite larger than the corresponding simple OLS estimation value. This is astonishing given the fact that fitted values from OLS estimations are expected to be larger than the IV because the IV estimations only account for the partial association of the

hence produce inconsistent variance estimator (Karaca-Madic and Train 2003). Most econometric application software (including STATA) provides a tool to conduct robust variance estimator referred as Murphy-Topel correction to fix this kind of problems. In this research, the IV estimates might have the same kind of problems which needs to be corrected. But since most of the IV estimates in this study produces strong coefficient of determination with an R² usually more than 0.60, doing the Murphy-Topel robust variance estimate might not change the overall estimate of the standard error. Therefore, there is not necessity of conducting this test.

⁷² The magnitude of the IV estimates seems too big to be realistic. Reasons for the over estimation of the IV values are discussed in the latter part of section 5.7.

dependent variable and the endogenous explanatory variables. It effectively filters out the indirect influence of the endogenous variables (in this case the institutional quality and trade variables) that are going to impact the income variable through the error term as explained in section 5.5.

The most interesting result appears when both the institutional quality and export variables are included in the model. As can be seen in estimation 5, the export variable has lost its statistical significance when it is run with the institutional quality variable. In this estimation, the fitted value of the export variable is not significantly different from zero and even appears in wrong sign. The introduction of the latitude variable in estimation 6 does not change anything. The institutional quality variable still stays the same in its coefficient size and statistical sense but the export variable stays not significantly different from zero and wrongly signed. The latitude variable also lost its significance. This is a clear manifestation that the IV estimation confirms the earlier OLS estimation that in a three way race between institutions, trade and geography, institution trumps everything.

Estimation 7 is the OLS estimation of the three explanatory variables used in the earlier estimation. This is to give a full picture of how the IV estimation is different from its corresponding OLS value. Accordingly, in the OLS estimation all the three variables are statistically significant and correctly signed. The fitted value of the institutional quality variable is extremely less in size than the corresponding IV estimate. This is an indication that the OLS does not over estimate the fitted values due to the endogeneity problem. There might be other explanation for the higher fitted value in the IV estimation which will be discussed in the latter sections. Estimation 8 repeats (6) but uses measure of openness instead of export share. The result is pretty much the same. The openness variable is wrongly signed and is not significantly different from zero.

Estimation 9 includes four variables as control and employs the two language variables as instrument for institutional quality. The result is interesting. The export variable is now correctly signed. A one percentage point increase in export is associated with 1% increase in income per capita. The latitude variable still stays statistically insignificant and wrongly signed. The newly included control variables produce the correct sign and all are statistically significant except the population variable. Re-estimation of (9) by using settler's mortality in place of the language variables as an instrument for institutional quality produces somewhat different result (not reported). The export variable produces a negative coefficient and becomes indifferent from zero. All the remaining variables except the latitude variable are correctly signed. However, most of the estimates except the institutional quality variable (which is significant at 10% level only) are statistically insignificant. This weak estimate is probably the

result of the negative impact of cutting the sample size by more than half. Estimation 10 provides the corresponding OLS result of the earlier estimation for comparison. Again all the variables are correctly signed. In addition, the fitted values of the OLS estimate of the institutional quality variable is less than the IV estimate.

In the last column, the population and area size variables are dropped to check whether the slightly significant result of the export variable follows from the inclusion of these two variables. The export variable is correctly signed but statistically not different from zero. The institutional quality variable is still large in its coefficient estimate and statistically significant.

In general, the above IV estimations confirm the earlier OLS finding that in simple regression of export to GDP ratio on income or institutional quality on income, both institutional quality and export variables significantly influence per capita income. When institutional quality and export variables included in the regression, the export variable loses its significance and in most cases appears in wrong sign whereas the institutional quality variable stays significant. However, the inclusion of additional control variables and expanding the sample size by using alternative instrumental variables (e.g. the Hall and Jones language variables instead of settler's mortality) could change the sign and level of significance of the export variable. Adding and dropping some control variables might alter the result in a very slight way. Such procedure shows that though slim, there is a possibility for trade to influence income more directly rather than only indirectly through institutional quality. The above IV estimations give confirmation that institutional quality has a direct significant impact on income but trade in general has more an indirect impact through institutional quality since trade variable loses its significance and sometime appears in wrong sign when the institutional quality variable is included in the regression. But this doesn't rule out a direct impact of trade on income all together because when some other control variables are included or dropped trade appears to be statistically significant and shows the correct sign.

5.7. Sensitivity analysis

There might be suggestions that some of the results of both the IV and OLS estimations are derived by the influence of certain group of countries, outliers or exclusion of some important control variables. Therefore, it is important to check for the robustness of the result by taking these issues into account. In the following section, a sensitivity analysis is performed by bringing alternative empirical estimations into the model. Table 5.5, provides the IV and some OLS estimations of the different scenarios.

In estimation 1, the main variables of interest and controls together with the interactive term of export and institutions dummy have been run to reexamine the hypothesis that ‘in countries where the institutional quality is lower, higher export (trade) has no positive impact on income’⁷³. The result suggests that both the institutional quality and export variables are correctly signed. The usually negative and close to zero coefficient of the export variable of the IV estimation is becoming positive and significant. One percentage point increase in export is associated now with 1% increase in income.

Table 5.5: Sensitivity analysis about the impact of institutional quality and export on income
Dependent variable: Log 2008 Income per capita at USD 2005 prices

Variable	(1) IV	(2) OLS	(3) IV	(4) IV	(5) IV	(6) OLS	(7) IV	(8) IV
Institutional quality	1.41*** (.18)	.91*** (.08)	.96*** (.16)	1.06*** (.20)	1.06*** (.20)	.73*** (.09)	1.64*** (.42)	1.43*** (.33)
Export to GDP ratio	.01*** (.003)	.009 (.002)	.004 (.004)		.01** (.05)	.01*** (.002)	.02 (.01)	.02 (.01)
Openness				.001 (.002)				
Log latitude	-.98 (.83)	.48 (.34)	.37 (.52)	.07 (.61)	.08 (.69)	.71* (.40)	-1.39 (1.06)	-1.21 (.93)
Ethno linguistic fractionalization	-1.04*** (.25)	-1.06*** (.23)	-.44 (.26)	-.45 (.28)	-.32 (.30)	-.38 (.26)	-.25 (.30)	-.29 (.32)
Landlocked	-.55*** (.25)	-.60*** (.13)	-.38*** (.12)	-.40*** (.13)	-.50** (.30)	-.45*** (.17)	-.61** (.29)	-.60** (.26)
Log area	.14** (.07)	.09** (.04)			.12* (.07)	.09* (.05)	.10** (.07)	.10** (.06)
Log population	-.03 (.05)	-.03 (.04)			-.05 (.06)	-.06 (.06)	-.05 (.07)	-.04 (.08)
Export or openness	.003 (.007)	.01** (.005)	.01** (.007)	.005 (.004)				
Interactive term	.39 (.41)	-.27*** (.23)						
Institution dummy								
Latin America and Caribbean dummy			.11 (.16)		.34 (.24)	.22 (.19)		
South Asia dummy			-.31 (.22)		-.04 (.31)	-.27 (.24)		
Sub-Saharan Africa dummy			-.68*** (.21)	-.71*** (.19)	-.48 (.32)	-.61** (.24)	-.60*** (.28)	-.74*** (.23)
Percentage coastal population					-.001 (.003)	-.0003 (.002)	-.003 (.003)	-.004 (.003)
Sachs and Warner openness measure					-.005 (.32)	.34 (.21)	-.55 (.57)	-.24 (.44)
Observation	128	130	128	128	114	114	110	107
F-ratio	55.67	93.20	79.30	77.10	63.88	89.64	39.43	41.65
R²	0.76	0.82	0.84	0.81	0.84	0.86	0.71	0.76
RMSE	0.66	0.59	0.56	0.60	0.59	0.55	0.76	0.66

*Note: Robust standard errors are in parenthesis; *, **, *** are statistically significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level. Trade variables are instrumented by the Frankel and Romer constructed trade share. Institutional quality is instrumented by the combination of percentage of the population speaking English and percentage of the population speaking one Western European language as a mother tongue. Estimation 5 excludes the 4 neo-European countries (USA, Canada, Australia and New Zealand). Estimation 6 excludes 3 most open economies (Hong Kong, Singapore, Luxembourg) together with the 4 neo-European countries.*

⁷³ As it has been done in the earlier OLS estimations, the institution dummy is set at the bottom 25% worst institutional quality countries.

The latitude variable however, is wrongly signed and stays insignificant. All the four control variables are correctly signed and statistically significant except the population variable. The estimation of the interactive term and institution dummy variables produce rather disappointing result. Both estimates are wrongly signed and are not significantly different from zero. The null hypothesis that 'higher export has positive impact on income in low institutional quality countries' could not be rejected at the 5% significance level.

Estimation 2 provides the corresponding OLS estimation. In the OLS estimation, export in low institutional quality countries is positively associated with income. One percentage point increase in the interactive term is associated with 1% increase in income. The interactive terms in both the OLS and IV estimations are wrongly signed. Therefore, both the IV and OLS estimations could not support the hypothesis that 'higher institutional quality is a necessary condition for trade to have a positive impact on growth'.

Estimation 3 includes three regional dummies (Latin American and the Caribbean; South Asia; and sub-Saharan Africa) in the model to monitor for any change in the main variables of interest. The institutional quality variable still stays strong and highly significant albeit some loses in its fitted value. The export share variable loses its fitted value and statistically it is no more significant. Both the interactive term and institution dummy keep intact. This is evidence that the impact of export on income is not negative in countries where the institutional quality is low.

Estimation 4 repeated the same IV regression using openness instead of export share and the corresponding interactive term of openness and institution dummy. It maintains the sub-Saharan Africa dummy but drops the other two regional dummies for not showing any statistically significant result. The result suggests that both the openness and interactive term of openness and institution dummy variables are not significantly different from zero. Therefore, using openness in place of export does not change the result. But the interactive term of openness and institution dummy is wrongly signed and fails to reject the null that 'openness to trade is not beneficial for growth in low institutional quality countries'. Estimation 5 includes two additional control variables i.e. percentage of the population living within 100 km from the coast and the Sachs and Warner openness index. The institutional quality variable is still highly significant at all levels. The corresponding OLS estimate in (6) is consistent with the previous similar estimations.

To further check the robustness of the result, two additional procedures have been taken. In the first procedure, the four neo-European countries (i.e. USA, Canada, Australia and New Zealand) are

excluded from the sample to check if the higher value of the institutional quality index is derived by these countries. Estimation 7 gives the result. The exclusion of the four countries from the sample even increases the fitted value of the institutional quality index from what used to be 1.06 to 1.64. In estimation 8, the three highly open countries together with the four neo-European countries are excluded from the sample. The result still stays the same. Institutional quality is still a significant determinant of income. Export has a positive impact but statistically not significant at all.

The fitted value of the institutional quality variable in the IV estimate is always larger than the corresponding OLS estimate. As explained in section 5.5 and 5.6.3 above, this should not be the case. It is expected that the OLS should be larger than the IV estimate for the reasons discussed above. Some scholars give explanations for the reason why the IV estimate might exceed the OLS estimate. One of these reasons could be, 'though there is no reason to expect systemic correlation between the instrument and the residual may be by chance they are correlated' (Frankel and Romer 1999). Another reason may be 'the attenuation bias from measurement error in the institutional quality variable swamps the reverse causality bias that would tend to make the OLS to be larger than the IV estimate' (Rodrik et al. 2002).

The above results in general inform that institutional quality has a significant positive impact on growth. The influence of institutional quality on income is consistent and robust to the inclusion of additional control variables. The result is also robust after controlling for the effect of some influential groups (example neo-Europe) and outliers in the export variables. The IV estimation proves that the relationship between income and institutional quality is causal. A simple IV regression between export share and income is consistent with the corresponding OLS estimation. It confirms that causality runs from higher export to GDP share to higher income.

In multiple regressions however, the role of export and openness is not well determined. Most of the IV estimates show mixed result. In some estimation the export share variable is correctly signed but statistically insignificant. In some other occasions, it is wrongly signed and still statistically insignificant. So one could not definitely be sure that export share has robust, positive and significant impact on income. The IV finding more or less supports the idea that trade has an indirect impact on growth through institutional quality. But it does not totally rule out the direct impact of openness on income because in some occasions there is slightly positive impact of trade on income. For example, in estimation 2 and 3 of the OLS and IV estimations respectively, the interactive term is positively related to income with 5% significance level. This applies to the export variable as well.

The IV is consistent with its OLS counterpart in estimating the impact of the interaction term of export and institution dummy. With the IV estimate, it is not still possible to confirm the idea that higher institutional quality is a precondition for trade to have a positive impact on income. In general, there is no proof that higher export and/or trade openness are influencing income negatively in low institutional quality countries.

5.8. Concluding remarks

The purpose of this chapter was to extend the earlier finding that institutional quality has a significant positive impact on export into examining the relationship of export performance and institutional quality with income. Specifically this chapter had three main objectives. First, it measures the independent and joint (interactive terms) impact of institutional quality and export on income. Second, it determines which one of the three deep determinants of growth i.e. institutions, trade and geography are crucial for income levels. And third, assesses if higher institutional quality is a prerequisite for export to have a positive impact on income or not.

The first stage OLS regression consistently proved that both export and institutional quality variables have a significant independent impact on growth. Controlling for institutional quality however, the impact of export on income diminishes by a large margin but still influences income positively. In the race between institutional quality, export and geography, institutional quality shows persistent strong impact on income than the other two variables. Institutional quality consistently influences income at the inclusion of important control variables as well. The research could not prove the claim that higher institutional quality is a precondition for trade to have a positive impact on long-term income growth.

The IV estimation proved that institutional quality is the most important determinant of income. But it gives a blurred picture of the impact of export on income. In the IV estimations, it was not precisely proved that export is a determinant of growth. Sometimes there is positive and significant result, other times (when additional controls included or dropped from the model) the significance level disappears. So the impact of trade on income is not well identified.

The IV estimation rather gives a starring role for institutional quality. Institutional quality has always a positive and statistically significant impact on income. The finding is robust to the inclusion of important control variables and the exclusion of some group of countries and outliers.

The idea that export does not show a robust and consistent impact on income is not suggestive of dismissing any direct positive impact of export on income. The new trade theory claims that export has a

direct impact on income through learning by doing; dissemination of knowledge and technologies; and spurring competition and economies of scale is still valid. The finding of this research should be understood that the estimation of the models could not effectively prove a direct link between the export and income variables unambiguously.

However, the fact that the export variable loses its significance when the institutional quality variable is included in the model is suggestive that export has also an indirect influence on income through institutional quality. In simple regression between export and institutional quality, (see annex 5 to 7 for details) export has a positive impact on institutional quality. One percentage point increase in export is associated with 0.02% increase in the institutional quality index. In the same way, countries that score high export to GDP ratio are countries with higher institutional quality. An increase in institutional quality index by .01 is associated with .16 percentage point increase in export share. The finding is supportive to the earlier finding that institutional quality has a bigger impact on export performance (chapter 4). In the same way, trade has a positive impact on institutional quality. This impact of trade on institutional quality will indirectly influence income through for example, lobby by investors/exporters for better investment climate, institutional reform; good macroeconomic management, better government service etc.

Chapter VI

Institutional Environment and the Pattern of Export Growth in Ethiopia

Ethiopia is the second most populous country in sub-Saharan Africa and one of the poorest countries in the world. The three recent successive governments advance different policies to transform the country from agricultural based to modern economy where manufacturing plays an important role. These successive governments also pursue different strategies in transforming the international trade sector. The past closed economic system and import substitution strategies are now substituted with export diversification strategy in hope of achieving export led growth.

Despite the hope for change, the country is trapped by different structural problems that hinder the exploration of the full potential of the economy in general and the external sector in particular. One of these structural problems is the very poor level of institutional quality of the country. In this chapter, the research gives a brief overview of the state of the institutional environment of the country and the pattern of export growth in recent years.

6.1. The institutional explanation of growth in Ethiopia

Ethiopia was considered as a country which had had great hope of becoming one of the highest growth potentials right after the Second World War. The first World Bank country report in 1950 cited the “industrious and intelligent” people of Ethiopia and believed that “the possibilities for the country’s further economic growth are significant” (cited in Easterly 2006, p. 3). Despite this hope, the majority of the country’s population still lives below 1 dollar a day measure of absolute poverty.

During this span of time, the country undergoes an extensive institutional transformation from a feudal monarchy; to a communist military dictatorship; and now to the Ethiopian People’s Revolutionary Democratic Front (EPRDF) led government. Institutional building and economic growth has taken different shapes during these three distinct periods.

Per capita income growth in the imperialist time was a little more than one percent. The institutional environment of the country at this time is explained by ownership of rural land by absentee feudal landlords (Nega and Moges, 2003). Since agriculture was playing the dominant role in the economy, property rights on land security and land tenure was the dominant form of property rights. The absence of colonial institutions, which was characterized by grabbing of land by European settlers

and the formalization of land rights was absent due to the fact that the country was never colonized (Notivi 2002, Cited in Crewett et al. 2008)⁷⁴. In its place, an expansionist imperial power led by the Shewa monarchy from the north and central highlands of Ethiopia conquest most of the eastern, southern and south western regions in the late 19th century and imposed an exploitive land tenure system called “ye Gebar sirate” (Donham and James 1986, cited in Crewett et al. 2008). The conquest of new territories results in the expropriation and redistribution of the new fertile lands to aristocrats, nobilities and their soldiers at the expense of the majority of small holder farmers. The land ownership rights had created insecurity in tenure, arbitrary evacuation and underutilization of a vast area of land. It had been the source of political grievances and the main cause of political instability of the late 1960s and early 1970s that led to the eventual down fall of the imperial government in 1974 (Adal 2001, cited in Deininger et al. 2003).

Following the overthrow of the imperial regime, the Marxist military government (Derg) which led the country from 1974-1991, transferred all ownership rights of land to the state with limited usufruct rights to the rural peasantry (Deininger et al. 2003, Crewett et al. 2008). As a consequence, the government and its local representatives called ‘peasant associations’ (PAs) have been the dominant force in determining land allocation, redistribution, defining tenure terms of user rights in the highland Ethiopia. Urban land was also put under government ownership and dwellers were only given the right to use.

Moreover, the Marxist military rule was characterized by gross human right violation; arbitrary killing and displacement of citizens; nationalization of private properties; continued civil war and the abolishing of all property and individual rights. Growth in per capita income at this period was nearly zero for the main fact that the state controlled the whole economic life of the nation. Economic ambitions and entrepreneurship were discouraged with a limit on capital ceiling of only \$250,000⁷⁵. During this time, movement of goods across regions was difficult due to repeated customs and bureaucratic controls.

The current EPRDF led government which took power in 1991 through armed struggle has introduced a number of reforms to prop up the weak economy. Capitalism becomes the main guiding

⁷⁴ The country was briefly occupied by Italian forces from 1936-1941. But this never constituted as permanent settlement or colony.

⁷⁵ The military dictatorship (Derg regime) reportedly killed small business owners for allegedly speculating prices and hoarding some important commodities.

principle of the economic system. Capital ceiling on businesses has been lifted, and quotas on business and investment license provisions have been revoked. Moreover, various incentive packages to promote private investment have been provided.

When it comes to fundamental institutional reforms however, little notable change has been observed. The government is still the ultimate owner of both urban and rural lands only giving more responsibility in enacting land user and distribution rights to regional governments. Land rental is officially allowed, though government and local officials have discretionary rights in enacting rules of the rental procedures. There are no notable changes in the ownership right of urban lands as well. In urban areas the government has the right to lease residential and investment lands on long-term basis keeping the status of the government as the most powerful organ in the economic life of the nation. The government has showed little commitment to pay compensation for the properties illegally nationalized by the military government.

Notwithstanding this little institutional change, the government embraces the 'structural adjustment program' subscribed by the international financial institutions in the early 1990s. Under the auspicious of the structural adjustment program, the state took large reform measures such as financial deepening, real depreciation, and reduction of the black-market premium (Easterly 2006). The external sector is totally liberalized. The government privatized some of the state enterprises nationalized during the military rule. The financial sector has been partially liberalized with the permit to domestic entrepreneurs to invest in the establishment of local commercial banks and insurance companies. The possibilities for foreign companies to invest in banks and other financial sector activities and core sectors of the economy are largely prohibited.

The first phase of the EPRDF led government has shown a modest increase in per capita income growth largely credited to the above policy reforms. From 1992 to 2001 the country has exhibited an estimated income per capita growth of 1.12% per annum. This growth however, is more of a recovery from the civil war and largely a result of growth in total factor productivity (TFP) rather than capital deepening (Easterly 2006). The growth is largely attributable to growth in the service sector in contradiction to the government claim that it is orchestrating an agricultural led industrialization growth. The agriculture sector, which the government put too much emphasis and resources on it has never showed sustainable and permanent growth and largely is the victim of erratic rainfall. The sector also suffers from lack of entitlement to land ownership.

The second phase the EPRDF regime has showed some notable improvement. Output growth in the last decade has been impressive. Citing government's own figure, GDP growth from 2003/04 onwards is estimated at 11.8 % per annum⁷⁶. Current per capita income growth nearly tripled from around \$124 in 2001 to nearly \$344 in 2009⁷⁷. This impressive growth is partly due to favorable weather, though the service sector is also growing substantially.

The total size of the economy expands by 64% in 5 years from \$9.3 billion in 2003 to 15.2 billion in 2008 (World Bank 2010). Export is expanding vigorously and passed \$1.5 billion but trade deficit expanded by 9 percentage point from 13% in 2002 to 22% of GDP in 2007. The export to import ratio is 1 to 4 in which for each \$4 imports, export covers only \$1. Meanwhile the ratio of private investment to GDP substantially decreases from 10% in 2001/02 to less than 7% in 2006/07 (World Bank 2010).

The rapid expansion of the economy is followed by rampant inflation and critical balance of payments deficit, where the country at some point in 2008 was left with a foreign exchange deposit of only one week import coverage. The continued devaluation of the Ethiopian currency to counter the balance of payments deficit is followed by another wave of inflation. The high inflation rate⁷⁸ could be a future source of financial crises because the annual nominal interest rate charged by commercial banks is by far less than the continued rampant inflation rate⁷⁹. In general, the government claim of high growth is compromised by high inflation and unemployment rates as well as budget and balance of payments deficits. The country is yet way back from taking the necessary institutional reforms that are crucial for the economic and psychological transition to a market led economic system where the private sector is allowed to play a pivotal role and the government's strong hand is significantly reduced.

⁷⁶ This figure has been highly contested by the opposition parties on the suspicion that the government is fabricating data to get legitimacy on the basis of being perceived as pro-growth state after it lost credentials in the 2005 disputed parliamentary election and the killing in one day of nearly 197 peaceful demonstrators.

⁷⁷ Data on current income per capita is from the World Bank, World Development Indicators.

⁷⁸ The high inflation rate which has started some time in 2006 has continued to climb up in 2010/2011 after a modest slow down in 2009. As a counter measure, the government devaluates the Ethiopian currency against the US Dollar in three different occasions since 2009. The most recent one is 20% devaluation in September 2010. According to the national statistics authority report, in May 2011 alone the inflation rate climbed to 34.7% from the previous month increase of 25.6% (Source: <http://www.csa.gov.et/new/>). In fear of public anger due to continued inflation, the government retreats from its commitment to free market economy and put price cap on many basic commodities in February 2011. However, the price cap worsened the problem by creating shortages in the supply of basic goods. The government abruptly stopped the price cap policy after realizing that the measure was indeed a bad prescription. The government action however, pauses questions about the credibility of government policy commitments on free market economy, respect for private property rights and rule of law.

⁷⁹ For example, average annual lending interest rate of commercial banks is set at 11.5% in 2008. The general annual average inflation rate at the same year was 24% (National Bank of Ethiopia 2009).

This study argues that the unsustainable economic performance of the country is largely attributable to lack of good economic institutions. Lack of property rights in land is the reflection of the state of all property rights in the country. When land ownership rights are not fully guaranteed, there is less motivation to make long-term investments in agriculture by for example, planting cash crop trees such as coffee as well as in manufacturing industries which involve large sunk costs. Though coffee and other agricultural commodities contribute to the lion share of Ethiopia's export, the volume of export could have been much larger than the current levels, if full property rights are guaranteed. Land as a solid form of property would have been used in a more efficient way through long-term investment and adequate land protection measures.

In general, the new reforms are not viewed as enough policy changes by the international donor community and Ethiopian scholars. Lack of property rights on land ownership is considered as the main obstacle for long-term investment. It could also be one of the main reasons for most entrepreneurs to engage in businesses which could bring short-term returns such as commodity export and/or merchandise import rather than investing on businesses specialized in the production of fully or semi-processed exportable goods⁸⁰. The low level of manufacturing to GDP share and hence, the absence of manufacturing export is also a direct impact of lack of commitments on the part of domestic investors in putting their savings in long-term investment.

The trade policy of the country is the direct reflection of the state of economic institutions. Though, the three successive governments followed different trade policy regimes, the main underlying institutional framework that governs the economic life of the nation in general and trade in particular stays almost the same. The following section discusses the different trade policies followed by the three successive regimes and their ramification to trade performance.

6.2. External trade policies in three successive governments in Ethiopia

An evaluation of the external trade policy of Ethiopia reveals a transition from partially free trade to controlled trade policy regimes in the imperial and military governments respectively to somehow fully liberal trade policy regime in the EPRDF led government.

⁸⁰ One interviewed investor expressed his regret on his decision to engage in textile and apparel production rather than on businesses that brings him large short-term profits, citing the difficulties that he faced due to long bureaucratic procedures and the long-term uncertainties in land usage rights.

6.2.1. The imperial government (periods before 1974)

The imperial government was known for taking various measures to expand export of traditional and non-traditional goods though the main trade policy was geared towards inward looking. Expansion of exports and imports in both quality and quantity were given primacy (cited in Wolde 2008). As stated in the Imperial Government of Ethiopia's five year plans of 1958, 1962, and 1968, export diversification from the export of primary agricultural commodities to export of agro-processed, manufacturing and mining products was the main target (cited in Wolde 2008). Geographic diversification of export and reducing the dominant role of coffee in total export were also the main targets of the plans. During this time, import of capital goods and machineries were duty free while higher taxes were levied on the import of other consumable products (Geda and Zerfu 2009). The period is characterized by overvaluation of the currency, high tariff rates and nontariff barriers and restriction of import of some luxury goods as well as heavy tax on export. For the main reason that the policy was more of an inward looking and due to other structural problems associated with the overall economy, the export diversification policy of the imperial government didn't materialized.

6.2.2. The Derg regime (1974-1991)

The 1974-1991 period of the military government (Durg) was characterized by central planning of the economic system. The state controlled the whole external trade sector. According to Geda and Zerfu (2009, pp. 4-5), the period was characterized by: (a) an attempt to control the participation of the private capital in trade and strengthen the state's control of the nations international trade, (b) a close monitoring of the price, quantity and distribution of goods, (c) paying special attention to the external sector that is considered strategically important for the growth of the economy and the import of only essential goods, particularly medical equipment and goods that ensure the health of the population, (c) an attempt to diversify the type and destination of traded goods (particularly shift in trade partnership from Western capitalist countries to the socialist bloc of Eastern Europe).

As stated in the military government's 10 years perspective plan of 1984/85 to 1994/95, the overall target of the export strategy was to gradually move from export of traditional commodities to export of high value added agro-industries, manufacturing and mining products. The plan gives primary role for state enterprises and cooperatives to play an active role in external trade. It was not possible to evaluate the effectiveness of the plan since the military government was overthrown at the middle of the plan period. But the inefficiency of the state enterprises and the dependence in export of only few primary agricultural commodities until recent past is a testimony of the failure of the strategy.

6.2.3. The EPRDF led government (period after 1991)

The current Ethiopian People Revolutionary Democratic Front (EPRDF) led government has taken decisive steps in reforming the external sector. The first fundamental change is transforming the economy from central planning to a free market economic system. Trade strategy is devised to be an outward looking and towards this end, a number of policy measures were taken. The main aim of the new policy measure is to diversify the export base and easing foreign currency shortages by encouraging adequate private capital participation. It is also aimed at: (a) regulating the sector towards reducing the balance of payments deficits; (b) replacing quantitative restrictions with tariffs; (c) encouraging diversification of export and minimizing illegal trade; (d) restructuring state owned enterprises and abolishing all forms of subsidies previously given to state owned enterprises (Geda and Zefu 2009, p. 5). Towards this end, the following important steps were taken: devaluation of the Ethiopian currency (birr) by approximately 41% in 1993 and an eventual step-by-step liberalization of the currency market using an auction system; free and efficient provision of export and import licenses; substantial reduction in import taxes and total abolishing of export taxes; and provision of certain incentive packages such as export credit guarantee, duty draw back and foreign exchange retention schemes (Ministry of Trade and Industry 1998).

Currently all export duties except in coffee are lifted. Licensing procedures are made easy. Two types of duty incentive schemes are instituted to help ease the foreign exchange deficit of exporting companies and minimize the burden of import duties. The duty incentive schemes include: (a) 'duty draw back schemes' for companies fully, partially or occasionally engaged in export business. This scheme helps for refund of custom duties and fees paid when importing capital and intermediate goods used for the production of export goods; (b) 'duty free importation scheme' to those fully engaged in supplying of their products to foreign markets; (c) 'foreign exchange retention scheme' which allows exporters to retain 50% of their export earnings in foreign currency accounts opened for this purpose (Geda and Zerfu 2009).

In general, the post 1991 period is viewed as relatively better period for export diversification. It is also a period where Ethiopia has lost its sea ports after the secession of Eritrea and becomes the most populous landlocked country in the world. The landlocked effect has a big trade and transaction cost toll but the improved policies coupled with higher international demand for Ethiopian commodities help to expand the country's export in both value and volume terms in recent years. The rise of new market powers such as China and India also opens better possibilities for geographical diversification of export.

The government export strategy and the recent incentive packages given to domestic and international investors of horticultural and cut-flower products help the country to diversify its traditional export to non-traditional sector. The country also devises a strategy to attract FDI in textile and apparel production to benefit from preferential trade packages such as the African Growth and Opportunity Act (AGOA). So far the country did not benefit from this attractive package of duty free exporting of textile and apparel products to the US market. The country also gives technical support to leather and leather product exporters so that they can be competitive in the international market hoping that the country has comparative advantage in this sector given its large cattle population.

The positive export growth is partly the result of the new policy changes such as introduction of free market system and attractive incentive packages for flower and leather products export but mostly the result of external factors such as higher demand for Ethiopia's commodities in the Chinese and Indian markets (higher demand for oilseeds and pulses products in these markets). Particularly Ethiopia's coffee gets higher demand in the world market due to the civil war in Ivory Coast, which was traditionally number one exporter in Africa. However, these changes are well below the sustainable level required (Geda and Zerfu 2009). The country is still largely dependent on the export of traditional commodities. This higher export growth is matched by a much higher growth in imports leading the country to ever increasing balance of payments deficits. Shifting the export base from agricultural commodity to high value added semi-processed agricultural and manufacturing export is still a difficult job. This research argues that the basic institutional environment needs to be changed to achieve these objectives. Before proceeding to the analysis of the institutional factors, it is interesting to give a brief analysis of the pattern of export growth in the recent past.

6.3. The pattern of export growth in Ethiopia

Ethiopia's economy is predominantly based on agriculture which is contributing to more than 45% of GDP and more than 85% of total employment. Since the economy is agricultural based, the export is composed of predominantly primary agricultural commodities. Coffee is the single most dominant export commodity accounting for approximately 40% of total export in 2005. The share of coffee in total export is significantly reduced to 26% in 2009. This significant reduction is partly

explained by the historically low price of coffee in the international market and the decision to shift coffee to chat (or qat)⁸¹ production by some coffee farmers as a consequence of lower coffee price.

Table 6.1 provides a glimpse of the pattern of trade in the last 7 years. The export of 3 primary agricultural commodities i.e. coffee, oilseeds and chat dominates the export sector. The share of coffee in total export is between 34 to 39 percent, though its share is significantly reduced in 2009 to 25.85%. Three main factors contribute to the decline in importance of coffee in 2009: First, world demand was significantly reduced because of the 2008/09 world economic recession. Second, the country's new rule demanding the export of coffee through the newly formed Ethiopian Commodity Exchange market system faced strong opposition from coffee exporters who responded to the new regulation by hoarding a large volume of coffee. Third, the ban of Ethiopia's coffee import in the Japanese market which used to pay quite good above world market price due to allegations that the Ethiopian coffee possessed a lot of chemical residuals from un-restricted use of pesticides.

Table 6.1: Value of Ethiopia's major export items from 2003 to 2009 (in millions USD)

Export item	2003	2004	2005	2006	2007	2008	2009
Coffee	165.26	223.45	337.37	354.3	424.2	524.5	375.9
Leather & leather products	52.22	43.59	67.7	75	89.6	99.2	75.3
Pulses	19.97	22.58	35.47	37	70.3	143.6	96.7
Oilseeds	46.09	82.66	125	211.4	187.4	218.8	356.1
Fruits and vegetables	9.58	12.72	16.07	13.2	16.2	12.8	12.1
Meat and meat products	2.42	7.66	14.59	18.5	15.5	20.9	26.6
Live animals	0.481	1.91	12.82	27.6	36.8	40.9	52.7
Chat	58.02	88.02	99.96	89.1	92.8	108.3	138.7
Gold	42.08	48.71	52.5	64.7	97	78.8	97.8
Flowers	0	2.3	7.8	21.8	63.6	111.8	130.7
Others	86.66	69.15	84.98	87.8	91.8	106.3	91.3
Total	482.78	602.75	854.26	1000.4	1185.2	1465.9	1453.9
Non-coffee total	317.521	379.3	516.89	646.1	761	941.4	1078
Percentage share of coffee	34.23	37.07	39.49	35.42	35.79	35.78	25.85
Percentage share of chat	12.02	14.60	11.70	8.91	7.83	7.39	9.54
Percentage share of oilseeds	9.55	13.71	14.63	21.13	15.81	14.93	24.49

Source: Author's own calculation based on data from the National Bank of Ethiopia (NBE) annual reports 2003 to 2004 and from the statistical abstracts of the Central Statistical Agency (CSA) of Ethiopia from 2003 to 2008.

The share of oilseeds in total export significantly increased from 9.55% in 2003 to 24.54% in 2009, thanks to the growing demand for oilseeds in China and India. Oilseeds export almost reaches the level of coffee and recent data (not available) suggests that it surpasses coffee export. The three most

⁸¹ Chat or qat is a stimulant leaf chewed by many adult men (particularly Muslim men) in many parts of East Africa and Southern Arabia. It is a banned substance in some parts of the world (e.g. USA). Ethiopia exports chat mainly to Somalia, Djibouti, Yemen and the UK.

important export items (coffee, chat and oilseeds) together contributed to nearly 60% of total export in 2009. The most interesting development in Ethiopia's export is the growing influence of flower export. Before 2003, there was no officially registered flower export. Flower export in 2004 was a mere \$2.5 million but by the end of 2009 total flower export reaches \$130.7 million. This is an impressive development and a good step towards diversifying Ethiopia's export from a traditional commodity export to a non-traditional one. The government has played an important role in promoting flower production and export. It has provided a lucrative incentive packages and could able to attract huge FDI in the sector. Now most of the flower production and export are owned by foreign multinational companies from the Netherlands, Germany and India⁸². This could be taken as a good lesson for the promotion and diversification of export in other sectors as well.

Table 6.2: Annual percentage growth rate of major export items (from 2003 to 2009) in USD value

Export item	03 to 04	04 to 05	05 to 06	06 to 07	07 to 08	08 to 09	average	B/n 03 to 09
Coffee	35.21	50.98	5.02	19.73	23.64	-28.33	17.71	127.46
Leather and leather products	-16.53	55.31	10.78	19.47	10.71	-24.09	9.28	44.20
Pulses	13.07	57.09	4.31	90.00	104.27	-32.66	39.35	384.23
Oilseeds	79.34	51.22	69.12	-11.35	16.76	62.75	44.64	672.62
Fruits and vegetables	32.78	26.34	-17.86	22.73	-20.99	-5.47	6.25	26.30
Meat and meat products	216.53	90.47	26.80	-16.22	34.84	27.27	63.28	999.17
Live animals	297.09	571.20	115.29	33.33	11.14	28.85	176.15	10856.34
Chat	51.71	13.57	-10.86	4.15	16.70	28.07	17.22	139.06
Gold	15.76	7.78	23.24	49.92	-18.76	24.11	17.01	132.41
Flowers	N/A	239.13	179.49	191.74	75.79	16.91	140.61	5582.61
Others	-20.21	22.89	3.32	4.56	15.80	-14.11	2.04	5.35
Total	24.85	41.73	17.11	18.47	23.68	-0.82	20.84	201.15
Non-coffee total	19.46	36.27	25.00	17.78	23.71	14.51	22.79	239.51

Source: Author's own calculation based on data from the National Bank of Ethiopia (NBE) annual reports 2003 to 2009 and from the statistical abstracts of the Central Statistical Agency (CSA) of Ethiopia from 2003 to 2008.

Table 6.2 presents the year to year percentage change of export in the last 6 years in value terms. On average total export is growing by 20.84% percent in US dollar each year from 2003 to 2009. Total export growth between 2003 and 2009 is an impressive 201.15%. This remarkable growth rate triggers questions on what has happened and which sectors contribute to this high growth rate. As it can

⁸² There are lots of criticisms about the expansion of flower production in Ethiopia. The main concerns of the critics are that first, the land given to the multi-nationals belonged to poor farmers who where never paid enough compensation for their land but forcefully evicted and end up working for the new farms under very poor conditions and extremely low pay. The second is out of concern, due to the poor environmental regulation of the country. The multi-nationals are accused of using extensive chemicals which have potential risks on human health and the future use of the farm land itself. These concerns are legitimate and could be future areas of research.

be seen from table 6.2, export of flowers and live animals which registered an average annual growth rate of 176.15% and 140.61% respectively contribute a lion share to this impressive growth. Total growth rate between 2003 and 2009 of these export goods are 10856.34% and 5582.61% respectively. Both of these products are relatively new. But export of traditional items such as oilseeds, pulses and meat and meat products also registered an impressive growth rate over the last 6 to 7 years. Table 6.3 presents the trend of export growth in terms of volume. Most of the export items show an average positive annual growth rate over the last 6 years. Again export of live animals showed the highest percentage annual growth of 146.99%. Export volume of flower also increases on average by 71.49% each year⁸³. Interestingly, export volume of leather and leather products increases on average by 132.62% each year while in value terms it increases by 9.28% only. This higher growth in volume terms in relative to value is an indication that relative price of leather and leather products is declining throughout the period.

Table 6.3: Annual percentage growth rate of major export goods (2003-2009) in volume (in millions of kg)

Export item	03 to 04	04 to 05	05 to 06	06 to 07	07 to 08	08 to 09	average	B/n 03 to 09
Coffee	23.68	3.27	-8.32	19.43	-3.23	-21.50	2.22	6.24
Oilseeds	28.02	32.74	88.84	-11.55	-35.28	82.77	30.92	235.75
Leather and leather products	-18.46	63.66	0.00	2.60	843.04	-95.10	132.62	-36.74
Pulses	10.85	65.96	-9.29	43.84	46.73	-40.77	19.55	108.62
Meat and meat products	133.14	81.30	10.04	-27.50	12.07	15.38	37.41	336.05
Fruits and vegetables	46.25	2.43	-8.18	17.53	-2.44	-3.51	8.68	52.17
Live animals	408.20	194.52	264.73	31.23	-8.47	-8.25	146.99	5916.39
Chat	203.11	4.91	14.77	-0.45	0.90	13.39	39.44	315.72
Gold	N/A	50.00	-16.67	12.00	-32.14	28.95	8.43	-99.91
Flowers	N/A	N/A	N/A	128.57	55.56	30.36	71.49	2190

Source: Author's own calculation based on data from the National Bank of Ethiopia (NBE) annual reports 2003 to 2004 and from the statistical abstracts of the Central Statistical Agency (CSA) of Ethiopia from 2003 to 2008.

In general, the high rate of export growth is a testimony of the positive effect of the new policies (example, introduction of free market system and incentive packages given to investors in floriculture) to diversify base and intensify the export growth. Most importantly international conditions contribute a lot for this impressive export growth. For example, the recent high income growth of Sudan due to windfalls from the discovery of oil is responsible for an increasing demand of live animals in the Sudanese market. The lifting of a ban on live animal and meat and meat products import by the Saudi Arabian government is one additional factor for higher demand of these two goods. Higher demand for

⁸³ Data on export volume of flowers is only available from 2006 onwards.

oilseeds products in China and India is responsible for higher export growth in this product as well (Fanta 2006).

The government's attractive incentive packages given to investors are responsible for the growth in value and volume terms of flower export. Export of flowers is continuously increasing and there is a hope that the trend will continue at the same rate for the coming few years and there is a chance that the country will take over Kenya (which is number one exporter of horticulture and cut-flower products in sub-Saharan Africa) very soon.

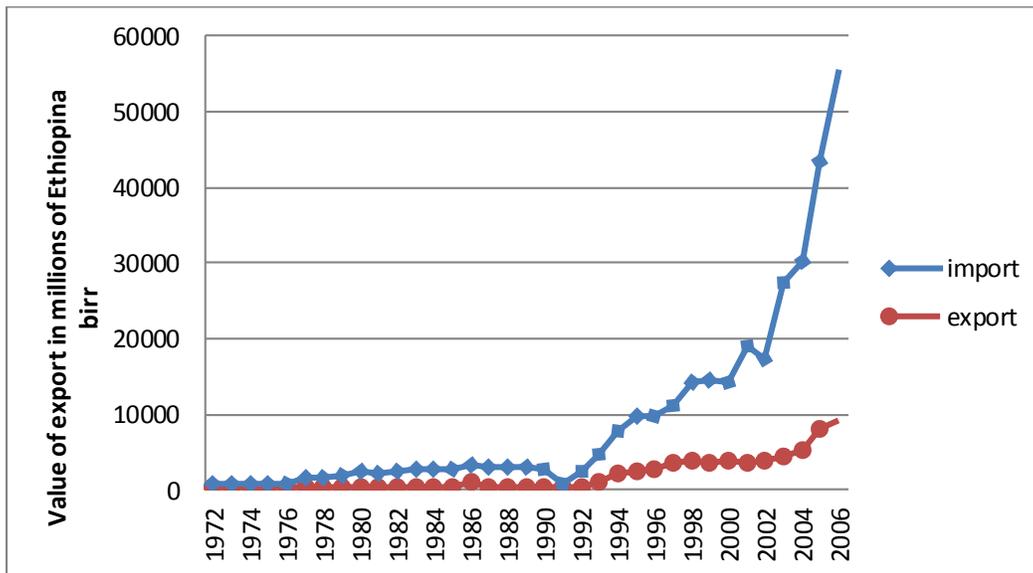
The government wants also to take leather and leather products as a show case for the export of processed and semi-processed export expansions (Ministry of Trade and Industry 2009). It aggressively promotes the export of finished leather products. One interviewed tannery processing factory owner testified that they are forced to sell their products to international market at lower prices while the local market is paying higher prices. This policy, forces many local tanneries to operate under loss. A growth of 843.04% increase in export volume in one year (2007/08) is an indication of a sudden policy push to increase export of leather and leather products, hoping that Ethiopia has a comparative advantage from these products. But this higher increase is not matched by similar increase in value terms and resulted in decreasing export volume in the following years.

6.4. Trade balance

Even though overall export growth is impressive over the last 7 to 8 years, it is not comparable to the growth of imports in the same period. Figure 6.1 presents the trend of both export and import growth and the widening trade gap since 1972. From 1972 to 1992, both export and import growth was stagnant. During this time, the gain from export was the only source of foreign exchange and there was no staggering trade gap which led to significant balance of payments deficits. The early 1990s was a critical period for the country in two important ways. First, the long devastating civil war ended in 1991 with the overthrow of the military government. Second, the new rulers accepted the structural adjustment program and made a long list of reforms. These two conditions helped the economy to jump start growing right after 1992. As a result both import and export were growing significantly in value and volume terms, but import grows much faster than export creating a sizable trade gap. The trade gap was covered through foreign aid and investment loan from international financial institutions as a package to rehabilitate the war ravaged economy and accepting the structural adjustment program. Thanks to the generous loan and aid packages, the country didn't suffer from balance of payments deficits until recently.

Starting from 2002 to present, both export and import were growing faster than usual. But the growth of import is again much faster than export, creating a condition that the country's trade gap is widening beyond the imaginable magnitude. Such big trade gap has never occurred in the recent history of the country. As it can be seen from the line graph of figure 6.1 the slope of imports becoming steeper towards 2005-2009⁸⁴. This unbalanced growth was responsible for the severe foreign exchange shortage and balance of payments deficits that the country is facing starting 2008 and the continued devaluation of the Ethiopian currency as a precondition by the IMF for additional emergency loan.

Figure 6.1: Export and import from 1972 to 2006 in million of Ethiopian Birr



Source: Author's compilation from statistical abstracts of the Central Statistical Authority (CSA) of Ethiopia, available at: <http://www.csa.gov.et/new/>

Overall, export growth in the last six to seven years was impressive thanks to both international demand conditions and domestic supply responses. The government aggressive promotion of flower export is paying its dividend. But, import is exponentially increasing and the gap between import and export is widening over time. Because of this rising trade deficit, the country structurally is not in a position to cover its debt obligations let alone steer-up export led growth. The ever growing trade gap

⁸⁴ One needs to take caution when interpreting the growth of export and import over time in monetary terms. The Ethiopian currency has lost its value against the US dollar significantly over this period. Therefore, some of the higher growth recorded in the data and the above corresponding line graph are the result of currency devaluation rather than real (actual) growth. Conversion of the data to real US dollar value would have been more informative but it was not possible to get the exchange rate information list between the Ethiopian currency and the US dollar for such long time. The figure, however gives some direction of Ethiopia's trade balance over time.

could be one source for macroeconomic destabilization of the country through its effect on continued devaluation of the currency and its subsequent impact on inflation⁸⁵.

The low level of export performance needs to be addressed to bring the huge trade gap and helping to bring economic growth through the use of export promotion. Trade deficit may indicate that there is strong growth performance in the deficit country since a growing economy demands the import of high value machinery, equipment and consumables (Ciuriak 2010). But in some cases it could be an indication of adverse terms-of-trade developments if prices for export goods fall while prices for imported goods are rising. But for long-term sustainable growth, minimal trade gap is an indispensable condition. Therefore, Ethiopia needs to find out the major constraints to export promotion and needs to address these constraints decisively.

From the above one could learn that there are a lot of constraints for export development in Ethiopia. The first and most important one is the structure of the economy itself. Being an agricultural based economy, the country is fully relying on the export of agricultural commodities which are vulnerable to less income elasticity as well as periodic price shocks. The second is related to the infrastructural development of the country. Poor road, telephone and internet networks could hamper trade significantly. The geographic location of the country particularly being a large and landlocked country itself has a sever toll on its export performance. Low private sector participation, high tariff barriers by Ethiopia's regional trading partners, low backward and forward linkages are additional barriers for export (Ciuriak 2010). Above all, institutional quality affects the country's export performance through its effect on shaping the incentive structure to participate or not in export oriented investments that in most cases require long-term investment.

6.5. Concluding remarks

In recent years, Ethiopia has achieved unprecedented external sector growth. Both imports and exports have substantially increased thanks to the new successive policy reforms introduced by the EPRDF led government and some external factors. Such excellent trade performance however, is challenged by the ever increasing trade gap. The country has experienced an alarming balance of payments deficit due to unbalanced growth between its export and import. Since 2002, the trade gap has further increased leading the country to the 2008 foreign exchange crises and contributes to the

⁸⁵ In 2009 Ethiopia had worldwide goods export of \$2.2 billion and worldwide goods import of \$10.9 resulting in a trade deficit of \$8.7 billion (Ciuriak, 2010).

recent hyper inflation triggered by continued devaluation of the Ethiopian currency (birr) as precondition to get additional emergency loan from the IMF to resolve the balance of payments deficits crises.

The country has adopted various trade policy measures under successive governments to transform the external sector from commodity based to agro-industry and manufacturing based. Even though there are some notable changes in diversifying the export sector, commodity export is still the dominant form of export in Ethiopia. The three most important export goods, i.e. coffee, oilseeds and pulses and chat contribute for more than 60% of total export. Manufacturing export is still at infancy despite the fact that government gives utmost incentives.

The various trade policy regimes introduced by the successive governments of Ethiopia to diversify export didn't materialize. One of the main reasons for the failure is that the main underlying institutional framework that governs the economic system is almost the same under the three successive periods. Twenty years after the country declares a liberal economic system, the necessary institutional reforms that are crucial for the economic and psychological transformation are not changed. Property rights are not fully respected. Particularly rural and urban land is still under the ownership of the state. Individuals and investors do not have any ownership rights on land except for some user's right. Under this circumstance, investors are not willing to put their money in long-term investment. The government's heavy hand on the economy, the lack of credibility in implementation of policy reforms and increasing corruption rates are some of additional examples for the absence of basic institutional framework. The lack of level playing field due to unwarranted support and monopolization of the whole economy by the ruling party owned businesses is one more reason for lack of competitiveness and motivation by exporters to invest in long-term manufacturing and agro-processing goods.

Moreover, higher trade cost arising from poor regulatory and institutional quality are major constraints for Ethiopia's manufacturing export. As stated in the earlier chapters, poor institutional quality hampers diversification of export. Ethiopia therefore, needs to institute an enabling institutional reform to achieve balanced, sustainable and diversified export growth. It is only through respect for property rights including land ownership, rule of law and effective control of corruption that the private sector in general and the export sector in particular becomes a beacon of hope for sustainable economic growth. An enabling institutional environment is essential to diversify the export sector from commodity to manufacturing export. Relying on commodity export growth in value and volume terms doesn't

warrant sustainable development. If the country is serious about its future sustainable development, it must achieve diversification of export from commodity to manufacturing and service export. An enabling institutional environment is a necessary condition to achieve diversification in the export sector.

Chapter VII

Empirical Evidences from Ethiopia

Chapter 6 provided survey about the institutional environment of Ethiopia and its impact on the country's economic growth and export performance. It gives compelling justification about the lack of absolute property rights and other core institutional factors and their effect on the growth pattern and diversification of export. The study develops a hypothesis that 'property rights protection and other core areas of institutional quality are an important determinant of growth and diversification of export in Ethiopia'. In this chapter, the study tries to verify if export growth in Ethiopia in the past five years is related to the perceived level of trust in the institutional environment.

The empirical part in this chapter has two core sections. In the first section, the study uses cross-country data from the gravity model of chapter 4, to predict how Ethiopia's export performance changes if its institutional quality is improved to a level of some countries selected from the sample. In the second section, it uses survey data to econometrically test the relationship between decision to expand export and exporter's perception about the institutional environment of the country.

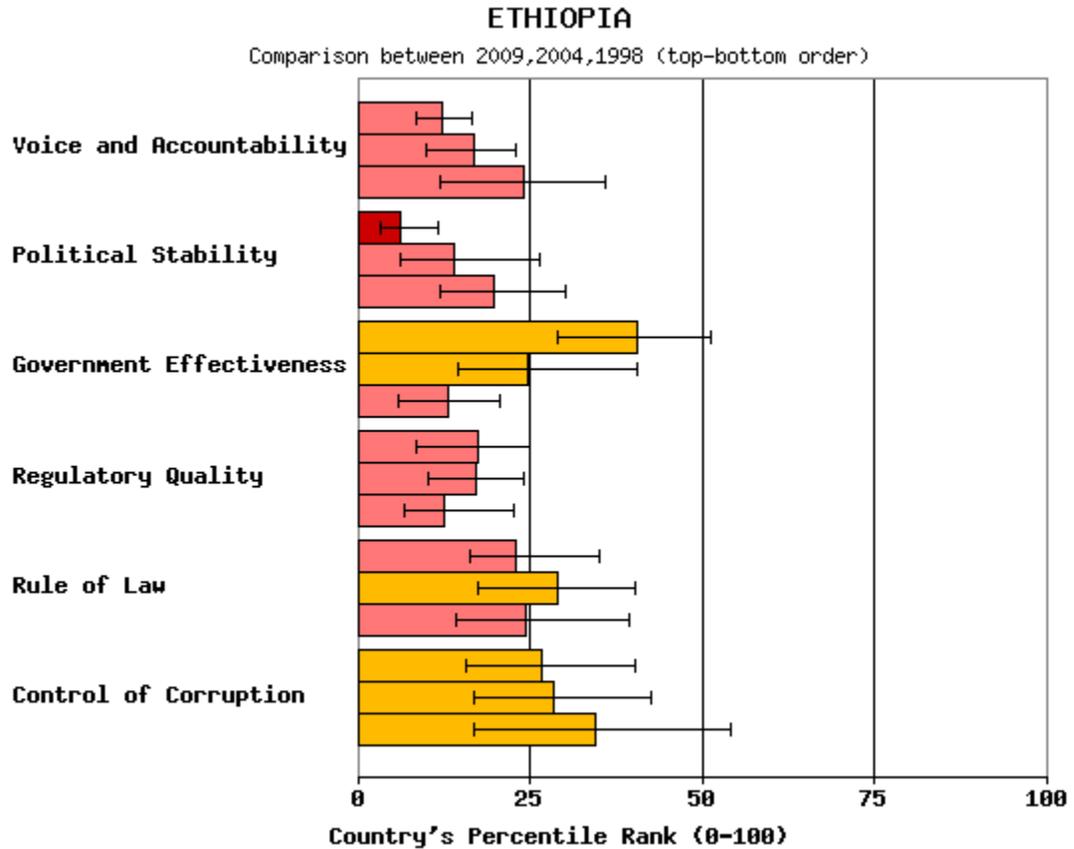
7.1. Ethiopia's regulatory and institutional quality status

According to the World Bank doing business data set (2011), Ethiopia ranked 104th out of 183 economies in overall rank of doing business. Specifically, Ethiopia ranked 157th out of 183 economies in trading across borders (see annex 8, for summary of the external sector performance ranking). The overall low rating of doing business is suggestive that Ethiopia needs to work to improve its external trade performance. This study argues that poor business environment in the country is a reflection of poor institutional quality. Therefore, to improve the business environment, the basic institutional framework needs to be changed.

Figure 7.1, below reviews the pattern of the institutional quality status of Ethiopia from 1998 to 2009 in relation to 212 economies. During this period, Ethiopia has improved its rankings in two categories of institutional quality measure i.e. government effectiveness and regulatory quality. But in the rest four other crucial areas of institutional quality categories' (i.e. control of corruption, rule of law, political stability and voice and accountability), there are significant decline in rankings. In most measures of institutional quality, Ethiopia is in the 1st quartile (bottom 25%) worst institutional quality

category. The least ranking is registered in 2009, in political stability category. In this measure, the country becomes one of the bottom 10% worst politically unstable countries.

Figure 7.1: Institutional quality (rule of law) percentile ranking of Ethiopia 1998-2009



Key: ■ 25th-50th Percentile ■ 10th-25th Percentile ■ 0th-10th Percentile

Source: The Worldwide governance indicator, Kaufmann, Kraay and Mastruzzi (2010)

This low level of institutional quality measure may be the main cause of its backwardness and its poor economic and trade performance. The country needs to improve its doing business rankings as well as its overall institutional quality measure to achieve its long-term economic growth objectives. Better institutional quality is also vital ingredient to achieve better export performance.

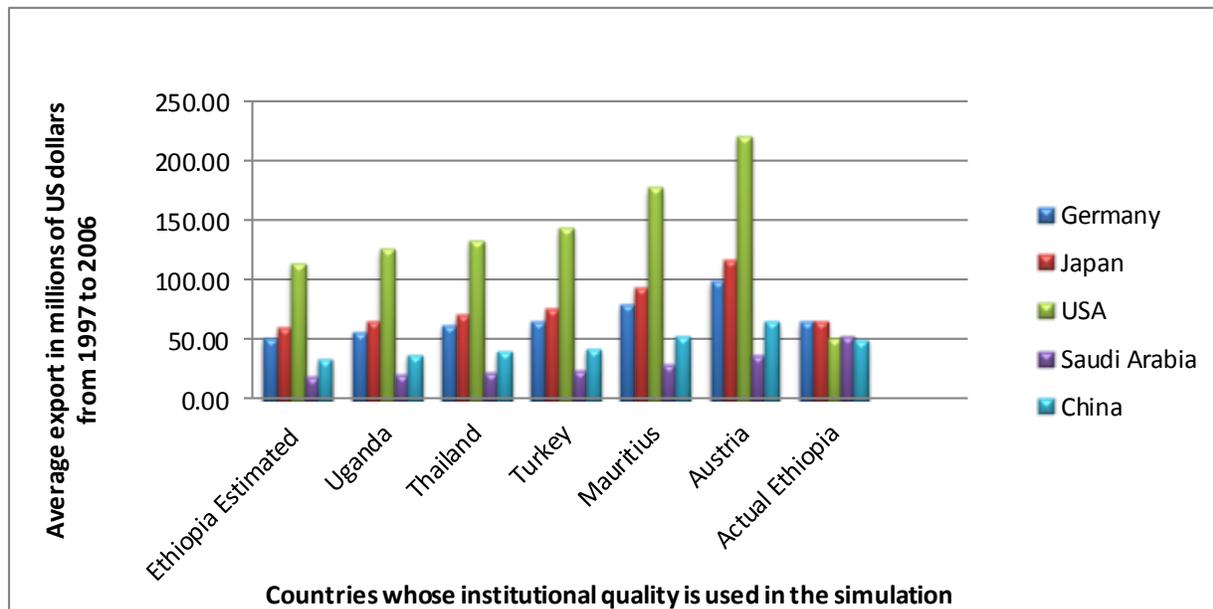
In the following section, the study uses the cross-country bilateral trade estimation results of chapter 4, to estimate the increase in export performance of Ethiopia if its weighted average aggregate institutional quality index improves to the level of one other country (example, Uganda). This simulation exercise would help to estimate possible gains in export from improving the institutional quality index of Ethiopia other factors being constant.

7.2. Simulation results

In this section, the research presents simulation exercise to estimate how Ethiopia’s bilateral export reacts if the institutional quality is improved to the level of one of the five countries selected for comparison. Figure 7.2, provides the simulation results. The countries below the bar charts are those whose institutional quality is used for the estimation. The estimation is based on a hypothetical question: ‘what will be the export performance of Ethiopia if its institutional quality is equivalent to for example, Thailand?’ The different colors of the bar chart (legend) represent the five major export partners of Ethiopia from 1997 to 2006. Germany and Japan were top partners followed by Saudi Arabia, China and USA in the order of importance. The selection is based on their importance for Ethiopia’s export.

The selection of countries whose institutional quality index is used in the simulation is purposive. Two of the countries represent sub-Saharan Africa (Uganda and Mauritius), two represent middle income countries (Thailand and Turkey) and the last one represents advanced economies (Austria). In addition, Uganda and Austria represent landlocked countries.

Figure 7.2: Estimated and actual export of Ethiopia with its major trading partners



Source: Author’s own calculation from the regression estimation of the bilateral trade equation of chapter 4.

The first blocks of the bar chart represent the estimated (fitted) values of Ethiopia’s export. It is based on regression result of the gravity estimation of bilateral trade of chapter 4. Given total GDP of Ethiopia and its export partners; distance between the trading partners; the quality of institutions; and

its landlocked status, Ethiopia would have an estimated export value of US \$114 million with USA. If the institutional quality of Ethiopia reaches to the level of Uganda, Ethiopia's total export would increase by US \$12 million (or by more than 10%). Similarly, if Ethiopia has similar institutional quality with Thailand its export value with USA would increase by 17.50% (or by \$20 million). Ethiopia's estimated export to the USA could similarly increase by 26.31% (or by \$30 million) if it's institutional quality is similar to that of Turkey. Surprisingly, if its institutional quality reaches to the level of Mauritius (one of the best performer in sub-Saharan Africa) export value to the same destination could increase by 56% (or by nearly \$64 million). If the institutional quality of Ethiopia reaches to the level of Austria (landlocked but one of the most advanced economy), export to the USA would increase by 94% (or by nearly US \$107 million). As a matter of fact, actual Ethiopia's export to the USA stands only at US \$50 million at the moment (see the last columns in graph 2 for the actual value of Ethiopia's export to its major trading partners).

The fitted value of Ethiopia's export to Japan between 1997 and 2006 is estimated at US \$60 million. This export value could increase by 12%; 18%; and 27% if the institutional quality of Ethiopia reaches to the level of Uganda, Thailand and Turkey respectively. Ethiopia's export to Japan could even increase by 95% if its institutional quality is equivalent to Austria given other things constant.

If one continues doing the same exercise he/she can learn that Ethiopia's export performance to its major trading partners could increase significantly. Simple institutional improvement equivalent to the level of Uganda could increase Ethiopia's export to its major trading partners by an average of around 10%. If Ethiopia adopts the institutional quality of Mauritius, its export could increase on average by around 50%. Therefore, Ethiopia could increase its export significantly by improving its institutional quality.

One needs to take into consideration that improving institutional quality is not a one-fit-all solution to higher export. Ethiopia's actual trade performance in some cases is much higher than what the gravity model predicts. For example, actual export to Saudi Arabia, China and Germany are already higher than its predicted value. This higher predicted export may be the result of higher demand for some of Ethiopia's commodities in these markets. For example, Ethiopia's coffee has high demand in the German market for its best aroma. Similarly, sesame seed from Humera (North West Ethiopia) has higher demand in the Chinese market for its unique quality. Therefore, specializing in some quality products export could also improve Ethiopia's export performance, notwithstanding the fact that specialization also needs better institutional environment.

How Ethiopia's export performance is actually affected by its poor institutional quality and which sections of the export sector are heavily affected by the lack of good institutions are a question of further probe. This research uses primary data to measure if export expansion decision in Ethiopia is indeed influenced by the perception of exporters about the institutional quality of the country.

7.3. Survey results

In this section, the research presents a result of small survey of Ethiopian exporters to assess if export growth in the past 5 years in Ethiopia is related to the perceived quality of the institutional environment. The survey was done from June to August 2010. It was difficult to exactly know how many exporters were active in Ethiopia and therefore, not practical to make a random sampling choice as exporters were scattered throughout the country and there were no full records of the exact status and address of exporters. The data collected in this section was through approaching major commodity and manufacturing (textile and garment and leather and leather products) exporter's associations.

Exporters are organized in associations to get better government services and to attain certain group rights. All major exporters such as coffee; oilseeds and pulses; horticulture and cut flower; textile and garment; leather and leather products are organized in association. The bulk of Ethiopia's export is transacted through these association members. For example, the coffee exporters association claimed that 90% of all coffee export from Ethiopia is done by the association members. Oilseeds and pulses association claim that its members export more than 95% of all oilseeds and pulses export. Other associations such as horticulture and cut flower, textile and garment and leather and leather products claim that their members are responsible for the entire export in their sectors. There is only one major gold exporter in Ethiopia though the share of gold export reaches more than 5% of total export in 2007/08.

The above six associations all together have a total of 210-250 active members by the time of the survey. The research chooses 20% respondents from each association which makes a total of 42 respondents. The research applies random sampling technique in the choice of respondents from the list of association members. However, since there are exporters who are not represented by the associations, the research is not claiming that the data collected in this way should be taken as representative. Rather, it should be taken as response representing the views of the selected respondents.

Exporter's opinion about the different aspects of the country's institutional quality is indicated by responses to several survey questions which cover the following core areas: (1) perceived level of trust in the legal system, (2) protection of property rights, (3) contract enforcement, (4) control of corruption, and (5) government effectiveness.

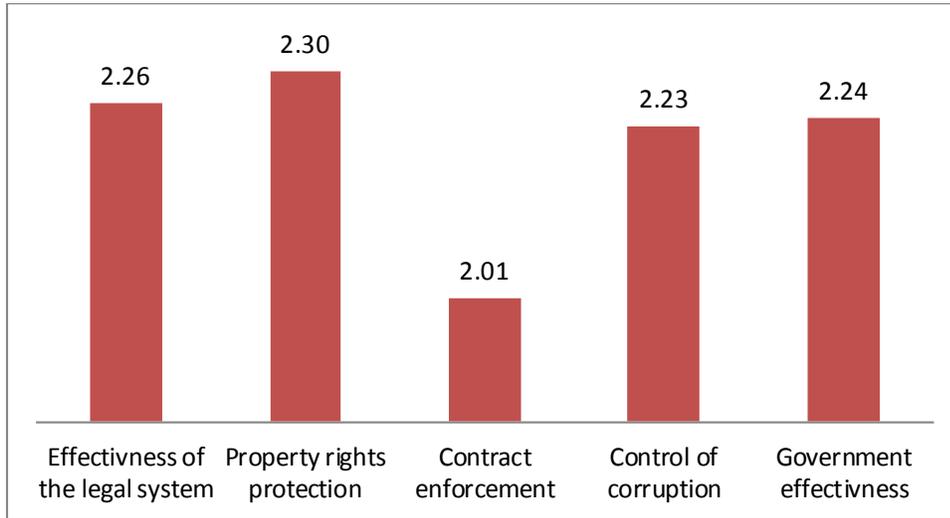
In addition to institutional quality, decision to export is also influenced by the macro-economic and financial constraints of the country. Therefore, it is important to control for these factors as well. The research proxies for macroeconomic and financial constraints with five indicators which include: (1) financing constraints, (2) inflation constraints, (3) infrastructure constraints, (4) policy instability constraints, and (5) tax/regulation constraints. Detail questions addressing the above core institutional quality and macroeconomic and financial constraints are distributed to the respondents (see appendix 2 for the survey questions). Information is collected with Likert scale ranging from 1 to 4, where 1 indicates strongly agree and 4 indicates strongly disagree responses. The information collected through close ended questions is tabulated and used for the estimation.

7.3.1. Summary and descriptive statistics

Figure 7.3, below presents average weighted scale of the responses about the legal and institutional environment. Since the responses are categorized based on an ordinal scale of 1 to 4 where 1 represents better and 4 represents worst institutional quality rankings, the perceived institutional quality ranking decreases as the rank order increases. As it is evident from figure 7.3, most respondents assess the institutional quality of the country as not effective in many regards since average responses are falling out of strongly agree (1) or agree (2) scales. The only exception is with regard to contract enforcement in the country. Most respondents agree that contract enforcement in the country is generally good. Average response for this category is 2.01 which is approximately equal to good.

Average perception about property rights protection in the country is 2.30. The majority of respondents think that property right protection is the first threat for export businesses in the country as it registered the highest score. Next to property rights protection, respondents ranked the effectiveness of the legal system as the second worst institutional quality category (with average score of 2.26). The third area that ranked as less favorable is government effectiveness. On the scale of 1 to 4, average response for this category is 2.24. Control of corruption is the fourth area where respondents think needs certain improvement with average response scale of 2.23. The area that respondents worried least is contract enforcement. Generally, respondents think that the legal system is good when it comes to enforcing written contracts.

Figure 7.3: Exporter’s view about the legal and institutional environment (weighted average)



Key: Responses are scaled from 1 (strongly agree) to 4 (strongly disagree)

Source: Own calculation from the survey result

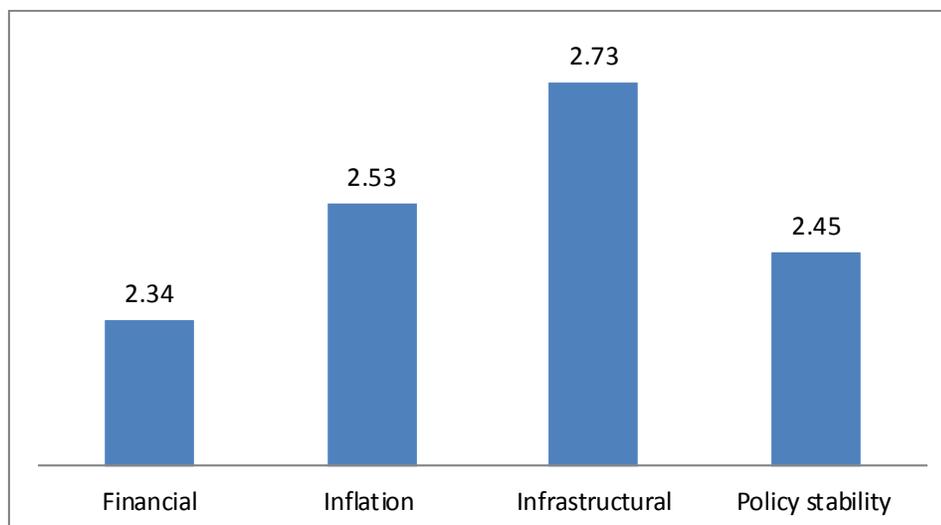
Even though the overall perception of respondents’ about the country’s institutional environment is gloomy, in some areas of institutional categories, such as impartial export license provision, dispute settlement, and police service provision, they view that the country has good institutional quality (not reported). For example, most respondents agree that organized crime is not a big threat for their businesses. Moreover, respondents prefer to legally resolve their economic exchange problems (like contract enforcement) through court rather than taking the law into their own hands. The ancient Orthodox Christianity (Coptic Orthodox) belief by the majority of Ethiopians plays a significant role in shaping the societies’ value which rejects any form of untrustworthiness, violence, theft and robbery⁸⁶.

Similar questions were asked to assess how exporters perceive the macroeconomic, infrastructural, policy and financial constraints of the country. Figure 7.4, presents survey result of the responses. The majority of exporters believe that the infrastructural facility of the country is very poor. Average response in this category is 2.73 which is close to response 3 (disagree in the ranking). The majority of exporters believe that telephone and internet services in the country are very expensive and poor, road networks are bad and inaccessible, port service facilities are very poor, expensive and subject

⁸⁶ The country has relatively very low crime rate than most sub-Saharan African countries. Organized crime is not a common thing and citizens are seen transacting huge sum of money in bank counters and in open markets which is abnormal in many other countries.

to arbitrary increase at any time. They viewed that infrastructural facilities in general are number one constraints for export business in the country.

Figure 7.4: Average exporter's view about the macroeconomic and financial constraints



Key: Responses are scaled from 1 (strongly agree) to 4 (strongly disagree)

Source: Own calculation from the survey result

Respondents believe that inflation is the second major constraint for export business. Average response in this category is 2.53 which is inclined to the response category, disagree (3). Higher inflation is a big threat to export particularly in countries where the currency is overvalued. This kind of problem is critical, particularly when the local currency is losing its value but the exchange rate is deliberately kept overvalued in the face of hyper inflation. This was the main characteristics of the Ethiopian currency market in the last 3 to 4 years.

Exporters believe that policy credibility and policy stability are the third major constraints. Average ranking for this category is 2.45. Most interviewed exporters believe that the country has best policy. The economic policies are legislated with good intentions but the realizations of policies are weak. The main challenge is the implementation policies. The government has bad reputation in fulfilling its promise. In general, government policy implementation credentials are at their worst. Government usually invites exporters for discussion before formulating new policy changes but it never takes their views when formulating or implementing policies.

The least problem for export is financial constraints. Most commodity exporters believe that they can access financial loan at equitable and fast manner from commercial banks. The rules and regulations for loan provision are very clear and transparent. There are no visible favoritism and

discrimination in loan provision. Though, commercial banks need 100% collateral, it is easy for exporters who engage in commodity export to get short-term loan through export loan guarantee scheme. Commercial banks could easily lend them by keeping the stocks as collateral and make sure that they will first receive their loan through arrangement with international banking sections and letter of credit protections.

But the prospect for long-term loan is very dim. Commercial banks have very stringent policy when it comes to reviewing loan applications that require long-term investment. To make things even worse, land is not used as collateral since ownership right of land belongs to the state. This land policy is one major problem for the country to focus on only commodity export rather than diversifying its export base and make some value additions in agricultural commodity export.

The responses by commodity exporters and those engaged in manufacturing export are quite diverse whether in viewing the legal and institutional environment; macroeconomic and financial constraints; or infrastructural problems (summary result not reported). Since almost all manufacturing export needs long-term investment, they are vulnerable to contractual misgivings. Long-term investments are vulnerable to long bureaucratic overhaul, unfavorable local laws (such as labor law and other related regulations). Because of the above problems, it is understandable that the manufacturing exporters' evaluation of the country's export system should be different from that of the commodity exporters. Manufacturing exporter's evaluation of government effectiveness is very critical. They think that the economic policies are not impartial and the tax system is not effective⁸⁷. They also think that custom procedures are cumbersome whether for importing intermediate goods or exporting finished products.

Manufacturing exporters also evaluate the countries macroeconomic and financial constraints in different way than commodity exporters. They evaluate the above constraints as bad with an average score of 3. Most manufacturing exporters think that bank services are not favorable, infrastructural facilities are poor, port service are very poor and expensive, government polices favor party affiliated businesses. They think that the prospect for Ethiopia to begin and expand manufacturing export is very dark even though the government tries to promote manufacturing export. They have a view that the

⁸⁷ Many critics suggest that the government of Ethiopia is intentionally distorting the free market economic system by creating huge businesses owned by or affiliated to the ruling party. These businesses receive unprotected government favor either through bank loan, government contract, tax and other ill-intentioned programs. They dominate every sector of the economy from banking, transport, and distribution to manufacturing, export and other service areas. They are unregulated and become government installed monopoly powers. Under this situation, it is difficult to think that there is level playing field for fair and free competition.

country does not have comparative advantage for manufacturing export. One textile exporter explains his dismay that the country has lost the advantage given by the US government through the African Growth and Opportunity Act (AGOA) program to export textile and apparel products to the US market duty free. Such lost opportunity is the result of extended customs procedure to import intermediate goods, parts and accessories. Lack of access to sea port is one additional reason for the country to lose this opportunity. Even though the country has large unskilled and low cost labor conducive for textile and apparel industry, it could not utilize this great potential because of the extended bureaucracy and inefficient custom procedures. High port service fees and extra processing hours are additional burdens.

The above descriptive statistics helps to understand the directions of the responses given by interviewed exporters about the institutional and other constraints of export. But it doesn't show whether the relationship between institutional quality and the decision to expand export is causal or not. To test for any causality, it is necessary to devise an empirical strategy that explains the relationships very well.

7.3.2. Model specification

In chapter 3, this research vigorously explains the importance of linking the findings of cross-country data analysis with micro-level facts. It explains the deficiency of using micro-level study in deriving a hypothesis about the impact of institutional quality on export performance and establishing linkages between macro-level data with micro-level analysis. The research cautioned that such micro-level study is an indicative in nature with the primary purpose of providing additional support for the cross-country analysis by presenting the opinion of exporters about the facts instead of the facts themselves. In chapter 3, the research provides theoretical background about the impact of institutional quality in firm level export decisions and hypothesized that export growth is a function of institutional quality, macroeconomic and financial constraints and other determinants. Such relationships could be captured by the following base specification:

$$\hat{X} = \alpha + \beta(Inst) + \gamma(MacFina) + \Phi(Cont) + \delta MFdummy + \varepsilon \quad (7.1)$$

The dependent variable in this relationship (\hat{X}) is firm level export growth in the past five years (2005 to 2010) in value⁸⁸. The independent variables are institutional quality (Inst), macroeconomic and

⁸⁸ Export growth in volume terms would have been a better measure for the dependent variable since values are vulnerable to trade shocks and do not reflect the actual export growth. However, since there is no systemic recording of export volume by most of the respondents, it is not possible to get complete data on export growth in volume terms. Rather the research uses export growth in value terms. The correlation coefficient of export growth

financial constraints (MacFina), control variables (Cont), a dummy variable (MFdummy) which takes value 1 if the respondent is manufacturing products exporter and zero otherwise, and the disturbance or error term (ϵ). Control variables are size (measured by the total number of employees) and age in years of the firm⁸⁹.

The model also includes one important dummy variable in the estimation i.e. horticulture and cut-flower dummy. The purpose of including this dummy is to monitor the results across the various sub-sections of the export industry. As explained above, the manufacturing sector is highly influenced by the institutional and other constraints of export than the commodity export sub-sector for simple reason that it requires long-term investment and involves higher sunk cost. Similarly, the horticulture and cut-flower sub-sector also requires long-term investment and involves higher fixed cost than the traditional commodity export. Therefore, it is important to monitor the effect of the explanatory variables across the different sub-sectors.

The main identifying assumption is that small and newly established firms grow much faster than big and old ones (Variyam and Kraybill 1992). Information collected through close ended question is tabulated and used to estimate the above base specification using OLS estimations.

Throughout the estimations, the research is interested in the direction and magnitude of the β coefficient which is expected to be negative. The β coefficient is likely to be negative because exporting firms which decide to expand their export should feel better about the institutional environment than those who don't opt to expand significantly. Since those who feel better chose lower values in the Likert scale, (example 1 for strongly agree and 4 for strongly disagree for questions designed in a positive language), higher export growth should relate negatively to higher scale for institutional quality.

7.3.3. Regression result

Table 7.1, presents the OLS estimation of the base specification using robust standard errors to account for any heteroskedasticity problems. In the first estimation, the study runs a regression to measure the impact of institutional quality and macroeconomic and financial constraints on export growth. The goodness of fit of the model (R^2) in estimation 1 suggests that only 0.8% of the variation in

in value and volume basis for the available data is 0.73 which is considered as strong. Therefore, using export value instead of volume in this research is a fair alternative since using volume cuts the size of the sample significantly.

⁸⁹ Total assets would have been the best proxy for size of a firm. But for unclear reason (probably due to fear of disclosing very sensitive information to a third party and risk of reprisal by the tax authorities) the majority of respondents were not willing to disclose their assets.

the dependent variable is explained by the variation in the explanatory variables. The estimation has a very large robust standard error, which results in very small t-ratio not enough to reject the null hypothesis⁹⁰.

Table 7.1: The impact of institutional quality on export growth in Ethiopia
Dependent variable: Average export growth of firms (in value and volume) between 2005-2010

Explanatory variables	(1)	(2)	(3)	(4)	(5)
Institutional quality	-0.24 (75.14)	-2.57 (81.85)	-20.25 (82.70)	-53.63 (87.28)	-17.92 (82.96)
Macroeconomic, financial and infrastructural constraints	38.74 (77.80)	40.60 (82.79)	44.59 (82.92)	131.62* (99.57)	43.73 (83.99)
Year of establishment			.70 (.88)	.19 (.74)	.75 (.93)
Number of employees		-.003 (.009)	-.009 (.009)	-.066 (.01)	-.005 (.009)
Manufacturing dummy				-128.19*** (56.73)	
Horticulture and cut-flower dummy					-21.66 (62.47)
Observation (n)	36	35	35	35	35
R²	0.008	0.009	0.012	0.12	0.013
F-ratio	0.25	0.27	0.27	2.28	0.21
RMSE	163	165.61	168.60	161.56	171.36

*Note: Robust standard errors are in parenthesis; *, **, *** are statistically significant at the 10, 5 and 1 percent respectively; constant terms are not reported. The rejection criterion in this research is 5% significance level. Source is author's own calculation from the survey result.*

Only estimation 4 produces an interesting result by including manufacturing export dummy in the model. In this estimation, 1 unit increase in the rank order of the institutional quality variable, decreases export growth by approximately 54 percentage points. The model predicts that other things being constant manufacturing goods export dummy decreases export by 128 percentage points⁹¹. The relatively small magnitude of the robust standard error and therefore, the higher t-ratio of the manufacturing dummy variable is enough to reject the null hypothesis that 'better perception about the institutional environment by manufacturing exporters doesn't have an impact on manufacturing export growth'. The goodness of fit of the model in estimation 4 suggests that 12% of the variation in the dependent variable is explained by the variation in the explanatory variables. Estimation 5 substitutes the manufacturing dummy with horticulture and cut-flower dummy variable. The estimation however, is not statistically significant.

⁹⁰ The main reason for higher standard errors could be the result of small sample size or the problem of data collected by Likert scale. Data collected through Likert scale usually suffers from central tendency or social desirability biases.

⁹¹ The dependent variable in this model is average export growth from 2005 to 2009 so interpretation of results is based on unit change in percentage points.

In general, the model suggests that manufacturing goods exporters in Ethiopia are highly influenced by the bad institutional environment of the country as compared to commodity exports. The finding supports the hypothesis that production of export goods that require long-term investment and involves large sunk cost are highly influenced by the institutional environment of the country than exports with no long-term investment.

The weakness of the model is that in most cases the predictions are not statistically significant at even 10% rejection level. The only exceptions are the manufacturing export dummy and the macroeconomic and financial constraints variable which are statistically significant. In almost all estimations (except estimation 4), the goodness of fit of the model is very poor, suggesting that the variation in the dependent variable is not well explained by the variation in the independent variables. This result means the expectations by the Ethiopian manufacturing good exporters for an institutional improvement is very high. Policy makers should look into these high expectations and should deliver better governance and institutional quality if they are serious about diversifying and extending the volume of manufacturing export of the country.

7.4. Concluding remarks

Ethiopia is one of the least performer countries whether judged by the World Bank Doing Business dataset or the World Governance indicator. In both institutional quality measures, the country ranked as one of the 25% worst institutional quality countries category. This low institutional quality level is a major constraint for the diversification of export from commodity to manufacturing and processed agricultural goods export.

Simulation exercise using cross-country data from the bilateral trade equation of chapter 4 suggests that Ethiopia's trade performance could significantly improve if its institutional quality index increases by even a small margin given other things constant. On average, Ethiopia could increase its export by more than 10% with its major trading partners if its institutional quality index improves to the level of some better performing African countries such as Uganda. The increase would be tremendous if the institutional quality index reaches the level of an advanced country such as Switzerland.

Data collected through survey from Ethiopia about the legal and institutional environment of the country suggests that the country needs to improve its institutions. More than average respondents think that the legal and institutional environment generally is not good. Particularly respondents think that property rights are not well protected in the country. Respondents feel that macroeconomic and

financial constraints of the country also are not supportive for export. Particularly, the country's infrastructure and inflationary problems are viewed as bad for the export sector.

The research hypothesized that 'exporter's perception about the institutional environment of the country is an important determinant of the decision to expand export'. To test this hypothesis, the research runs OLS regressions. Most of the estimations however, could not produce statistically significant result. Therefore, it is not possible to deduce any interpretation. In estimation 4, the research finds statistically significant result suggesting that manufacturing export is highly influenced by the institutional environment of the country than traditional commodity export. Higher sunk cost needed for the production of manufacturing export arising from long-term fixed investment is responsible for such variation.

VIII

Conclusion and Policy Implications

This study is aimed at investigating the relationships between institutional quality, export performance and economic growth. To address this issue the study employs three empirical strategies. In the first strategy the research uses the gravity model of bilateral trade to measure the impact of institutional quality on export performance. In the second step, it employs both export performance and institutional quality data to measure their partial and joint (interactive terms) impacts on income. In the third and last step, it uses survey data from Ethiopia to corroborate the cross-country findings with micro-level evidences.

Summary on literature and theoretical framework

The research uses the theoretical approach of the new growth model as implemented by Hall and Jones (1999) and Acemoglu et al. (2001) among others in explaining the interrelationship of the three fundamental determinants of growth i.e. institutions, integration and geography. It gives a detailed description of how institutional quality shapes the incentive structure within a society. The study gives a detailed account of the various theoretical and empirical researches linking institutional quality with income growth. It argues that cross-country researches linking institutions and income have reached their limits and now are effectively over. Therefore, looking to other dimensions of institutional researches is important. One of the new areas could be investigating the impact of institutions on export performance through cross-country investigation or supporting cross-country claim with micro-level studies.

The research argues that despite high effort by the empirical literature, the role of trade on growth is not yet decisively identified. One of the main problems of identifying the tangle of cause-effect relationship is the fact that the trade variable is endogenous. To resolve the endogeneity problem, some researches use policy based openness measures as exogenous variable. But this was unsuccessful because some policies which are meant for improving the external sector such as stable fiscal policy might also influence the domestic sector, leading to potential endogeneity problems. The effort to use lagged trade instrumental variable is also unsuccessful due to serial-correlations.

Multivariate researches using both trade and institutional quality as independent variables to income are also criticized for ignoring the fact that both variables have geography as their common determinant. Under this situation it is difficult to clearly identify the partial effects of these variables.

The best alternative approach to tackle this problem is to run a regression that includes the interactive terms of export share and institutional quality on income. The inclusion of the interactive term would help to identify if there is any necessary preconditions for trade to have a positive impact on income. Based on the full account of what has been done and identifying the major weakness of the empirical findings, the research identifies area to which this research could contribute to scientific knowledge.

In chapter 3, the research develops a theoretical and conceptual framework to outline the channels through which institutional quality influences export performance and to give guidance on the development of the base specifications used in estimation of the models. The research uses two theoretical underpinnings to indicate the channels through which institutional quality affects export performance. The first channel is through its impact on raising import prices. It argues that international trade is constrained by some unobserved factors beyond what the formal and informal barriers of trade could explain. There is huge sum of trade values missing from the trade cost accounting. This missing trade is due to may be the additional costs associated with safeguarding of international exchanges among trans-bordering countries. Such cost is a tariff equivalent and have similar trade limiting effects. The cost includes payments to safeguard international transactions from theft, piracy and other opportunistic behaviors. This cost is reflected in the import price as additional price markup. This price markup is higher to countries where such institutional barriers are assumed to be higher. Therefore, institutional quality affects trade by inflating the price of imported goods due to the additional price markups on import.

The second area to which institutional quality influences export performance is through its impact on local supplier capacity and foreign market access. The research presents detail mathematical model to demonstrate how institutional quality affects export performance through these two channels. The model is adopted from the recent contribution of Redding and Venables based on Constant Elasticity of Substitution (CES) production function. According to the model, institutions affect local supplier capacity through raising or reducing the comparative cost of export. This comparative cost is assumed to be transaction cost spent in the form of payments to custom official as bribe, insurance premiums or extra payments to safeguard contracts from some unforeseen and opportunistic circumstances. Another impact is through raising the cost of production factors such as capital and intermediate goods and their productive use. Lengthy bureaucratic procedures to clear imported goods from customs could be one area to which imports needed for the production of export goods are

exposed to higher cost. Institutions could also influence export by limiting or extending the number of firms entering into the production and sale of export goods.

The research in chapter 3 gives an explanation on how institutional quality could be measured at micro-level. The research cautioned that measuring such micro-level data is noisy as the opinions reflected in the survey are just opinions which don't reflect the facts. But the opinions could indicate the future direction and could be used as an important corroboration of macro-level analysis with micro-level data.

Major findings

Estimations based on the gravity model suggest that the bilateral trade data produces consistent and reliable estimations. Traditional gravity variables such as GDP of the importing and exporting countries, the distance between them, whether they share a common border or have linguistic and historical links, and common membership in trade blocs are found to be the most important determinants of export. In almost all cases the variable estimates are statistically highly significant and correctly signed.

Estimations that include institutional quality indexes of exporting and importing countries have produced the desired results. Particularly the institutional quality of the exporting countries found to be highly significant in both economic and statistical sense. The research finds that institutionally similar countries trade more among themselves than institutionally different countries. Moreover having the institutional quality of the North significantly increases trade. The above findings give a compelling reason from empirical observation that developed countries trade disproportionately higher among each other than with South countries despite differences in factor endowments. Therefore, one could suggest that institutional differences are the main reasons for the disproportional trade between the North and South.

The research runs a regression to measure the independent impacts of the six institutional quality measures of the Kaufmann et al. (2009) rule of Law indicators. Each of the six institutional measures of the exporting countries' institutions affects export performance significantly. The research uses the legal system of countries as alternative measure of institutional quality. The estimation result suggests that having French or Socialist legal system affects export performance negatively in relative to the British legal system. The impact of the German and Scandinavian legal system couldn't be determined due to lack of statistical significance.

Sensitivity analysis using alternative measures of economic size such as population and land area produce the desired results as well. The use of these alternative measures doesn't change the main findings. Better ranking in the World Bank doing business index is also associated with higher export.

By applying an extended version of the new growth model, the research finds a positive partial impact of both export and institutional quality on income. Controlling for institutional quality, the impact of export on income diminishes significantly but still influences income positively. In a horse race between institutional quality, trade and geography, institutional quality shows consistent and significant positive impact than the other two variables. The finding that institutional quality has a positive impact on income is consistent with the inclusion of other control variables as well. But estimation of the interaction terms of institutional quality and export variables could not prove the claim that 'institutional quality is a necessary condition for export to have a positive impact on income'.

The research uses three instrumental variables to control for endogeneity between institutions, trade and income variables. The IV estimations suggest that the institutional quality variable is the most important determinant of income. But it gives a blurred picture of the impact of export on income. Controlling for institutional quality, the impact of trade on income is not well identified. The IV findings are robust to the inclusion of important controls and the exclusion of some group of countries and outliers.

The idea that export doesn't show a robust and consistent impact on income is not dismissive of any direct positive impact of export on income. The new trade theory claims that trade has a direct impact on income through learning by doing, dissemination of knowledge and technologies, spurring competition and economies of scale are still valid.

The cross-country empirical results discussed above support the first alternative hypotheses that 'institutional quality is the determinant of export performance and income growth'. But it does not support the hypothesis that 'in countries where the quality of institution is higher, higher export to GDP share positively contributes to higher income'.

Micro-level study

The research provides a historical account of the institutional environment of Ethiopia. It argues that Ethiopia is not a country where rule of law and property rights are respected. The state of property rights are reflected in the land ownership rights of the people. Since the majority of the Ethiopian people are rural farmers surviving through traditional farming, ownership rights to land has important

meaning. Land ownership has been the source of instability and political grievances in the country's recent history. The 1974 Ethiopian revolution which calls for 'land to the tiller' and basic democratic rights was successful in changing the imperialist regime. But it was not able to guarantee property rights to all citizens. The military government which took over and ruled the country from 1974 to 1991 transferred land ownership rights from feudal landlords to state and effectively controls every aspect of the economy.

The current EPRDF led government which overthrows the military junta in 1991 through armed struggle makes some important policy changes but the basic underlying psychological and institutional factors necessary for free market economy and entrepreneurship is not yet changed. Both urban and rural land ownership rights are still under government control.

Based on the above underlying facts the study tries to estimate the potentials for Ethiopia's export growth from improving its institutional quality. Using bilateral trade estimations of the gravity model, the study forecasts that Ethiopia's export to its major trading partners could increase by an average of 10% if its institutional quality is equivalent to Uganda. The effect would be tremendous if the institutional quality index reaches the level of an advanced country such as Switzerland.

To corroborate cross-country findings with micro-level evidences, the study uses survey data from Ethiopia. Accordingly, it finds that manufacturing export is much more influenced by the institutional environment of the country than commodity export.

The micro-level data give tacit supports to the cross-country finding that institutional quality is an important determinant of export performance. The micro-level study in general supports the hypothesis that: 'export growth in Ethiopia in the last five years is related to the perceived level of trust in the institutional environment'.

Policy implications

Driving a sound policy recommendation for institutional improvement is not an easy task. One of the problems is that most institutional studies are mainly done at cross-country level which could give general macro-level recommendations only. Therefore, from cross-country results, it is not possible to indicate which specific institutions, rules or laws are responsible for higher export or income growth outcomes. It is known that good institutions are established for example, with non-corrupt judiciary with enforcement power. But as Rodrik (2004) suggests enhancing property right by simply rewriting domestic legislation or changing the formal aspect of the institutional environment is not necessarily

bringing good institutions. Moreover, fundamental institutional change is not necessarily the prerequisite for institutions to bring long lasting economic impact. Rather, minimal institutional change in the right direction targeted to achieving certain objectives can bring huge payoffs. So policy recommendations which are tailored to specific policy goals may be more effective than broad policy recommendations.

Countries can learn from the experience of one another. But institutional change is not one fits all solution. Therefore, it is not appropriate to give a wholesale recommendation that works for every country. Institutions which work well in one country may not necessarily work as well in another since the contexts might be different.

In general, the study of the impact of institutional quality on economic performance still lacked strong theoretical foundations to explain why and how institution affects economic performance and give clear-cut policy suggestions. For example, Redding and Venables (2004a and 2004b) present a model describing how institutional quality affects export performance. But the model is too weak to convincingly explain the channels through which institutional quality affects export. The best theoretical explanation so far is the additional price markup theory of Anderson and Marcouiller (2002). According to this theory, poor institutional quality in the importing country is equivalent to tariff and will be reflected in the price of imported goods as additional price markups.

The new growth theory also lacked strong explanatory power on how institutions affect economic performance, how they are evolved, and what kind of institutional factors are important for better economic performance. Therefore, future researches should focus on clarifying the theoretical underpinnings of institutions and its interaction with trade, geography and income variables. Specifically researches should focus on developing theoretical explanation about the different types of institutions, their characteristics, the role they play in economic performance, and the steps or policy options required to improve them.

Further areas of research could be:

- Finding out trade theory based explanation for institutions and export relations by for example, replicating the import price markup theory of Anderson and Marcouiller (2002) to export. This could help to find out if there is additional trade cost on export because of poor institutional quality.

- Further clarifying whether trade has a direct impact on income or influence the latter through institutional quality. In this regard, measuring the direct impact of export on income through firm level study would be a very promising area of research.
- Finding out if institutional quality is a prerequisite for trade to have a positive impact on income through applying another new empirical approach.

At the Ethiopian context, the following institutional reforms would be helpful to improve its economic performance in general and the export sector in particular:

- Property rights, particularly private ownership of land is crucial for a fundamental change in the right direction.
- Commitment to free market economy. The recent price cap measure on major commodity items is a clear violation of the government commitment to free market system.
- Avoiding monopoly of the most important sectors of the economy by party owned businesses is very essential. Such favoritism and systematic control of the economic life of the nation is tantamount to cronyism and against basic rights of citizens. It prohibits level playing field for a fair and free competition and limits the growth potential of the country.
- Improving government effectiveness and service delivery; particularly in the area of customs administration is crucial for the effective development of the manufacturing sector. The incentives given to investors in the horticulture and cut-flower business could be taken as a good show case in this regard.
- Infrastructural development and effective and low cost access to sea port should be given higher policy priority if the country needs to get advantage in manufacturing export in the near future.
- Above all democratic and individual rights are important for Ethiopian citizens to take the government accountable to its actions and call for context specific institutional reforms.

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Annex 1: Secondary data description and sources for all variables used in the estimations

No.	Variable	Description	Source
1	Bilateral export value	5 years average bilateral export value between trading partners from 2002-2006.	IMF direction of trade statistics, compiled by Correlates of War.
2	GDP	Gross Domestic Product of countries in 2008	World Bank World Development Indicators
3	Bilateral distance	Distance between the capital cities of trading partners (Great circle distance) provided by Prof. Kristian Gledtsch, University of Essex.	University of Essex: http://privatewww.essex.ac.uk/~ksg/data-5.html
4	Institutional quality	Measuring the six institutional quality categories of countries and their weighted average composite measure.	Kaufmann, Kraay, and Mastruzzi, (2009), The World Bank Policy Research Working Paper No. 4978.
5	Institutional similarity	A dummy variable if the two countries belong to either the group of industrial countries (through membership to OECD) or group of developing countries (non-members of OECD).	Author's own classification.
6	Institution dummy	A dummy variable if the two countries belong to the category of 25% worst institutional quality countries and zero otherwise.	Author's own classification.
7	Common boarder	Dummy variable if the two trading partners share a common border or not.	CIA World Fact Book
8	Common colonizer	Dummy variable if the two trading partners share common colonizer or not.	CIA World Fact Book
9	Membership in common trade agreements	Dummy variable if the two trading partners are member of a common market, economic zone or any trade agreement.	From the official websites of NAFTA, EU and COMESA.
10	Legal system (origin)	Dummy variable which compares the legal system of French, German, Scandinavian and Socialist countries against the British legal system.	La Porta et al. (1999).
11	Area size	Total size area of countries used in the estimation in 2008.	World Bank, World Development Indicator.
12	Population	Total number of population of countries used in the estimations in 2008.	World Bank, World Development Indicator.
13	Income per capita 2008	2008 nominal income per capita of the sample of countries used in the gravity estimation.	World Bank, World Development Indicator.
14	Income Per capita at PPP 2008	Real GDP per capita for 2008 at constant 2005 US dollars purchasing power parity (PPP).	World Bank, World Development Indicator.
15	Landlocked status	Dummy variable which takes 1 if the country has no access to navigable river or sea coast.	CIA World Fact Book.
16	Doing Business Rankings	A series of annual reports investigating the regulations that enhance business activity and	World Bank Doing Business 2010 and 2011.

		those that constrain it.	
17	Latitude	Is a measure of geography based on distance from the Equator to capital cities of countries used in the sample at absolute value terms (latitude)/90	Hall and Jones (1999) Data set and CIA World Fact Book
18	Ethno-linguistic	Ethno-linguistic fractionalization of the population, average for ethno and linguistic diversity.	La Porta et al. (1999) dataset.
19	Constructed Trade Share	Geographic component of trade based on gravity estimation.	Frankel and Romer (1999).
20	Settler's Mortality	Average deaths of soldiers, missionaries and diplomats per 1000 settlers per year based on the calculation of Phillip Curtin from the records of the British, French and USA governments	Acemoglu et al. (2001).
21	English speaking	Fraction of the population speaking English as a mother tongue.	Hall and Jones (1999) Data set and CIA World Fact Book.
22	W. European language speaking	Fraction of the population speaking one Western European country language (French, Portuguese, Spanish, German) as a mother tongue.	Hall and Jones (1999) Data set and CIA World Fact Book.
26	Regional dummies	Set of 7 regional dummies classified according to the world Bank.	World Bank World Development Indicators.
27	Export share	Is the nominal 8 years average value of total export to nominal GDP ratio from 2001 to 2008.	World Bank World Development Indicators.
28	Measure of openness	The nominal 8 years average value of export and import to nominal GDP ratio from 2001 to 2008.	World Bank World Development Indicators.
29	Coastal population	The proportion of the population living 100 km within distance from sea port or navigable river.	Center for International Earth Science Information Network (CIESIN), "Gridded population of the world, Version 2 alpha", Columbia University, 2000.
30	Export-institution interact. term.	The interactive term of export and institutional quality dummy variable of the bottom 25% worst institutional quality countries.	Author's own calculation from the export and institution variables.
31	Openness-institutions interact. term	The interactive term of openness and institutional quality dummy variable of the bottom 25% worst institutional quality countries.	Author's own calculation from the export and institution variables.
32	Sachs and Warner openness index	The five Sachs and Warner openness index of countries which are open before 1990.	Sachs and Warner (1995a).
33	Ethiopian export in value and volume	Ethiopia's total export value in million US dollars and volume in millions of kg by commodity item from 2003 to 2009	National Bank of Ethiopia and Central Statistical Authority.

Annex 2: Survey Questionnaire

Firm level survey measuring the determinants of export growth in Ethiopia:

The purpose of this survey is to gather information about the institutional and macroeconomic determinants of export growth under which exporting firms operate in Ethiopia. It would help to understand how firm level export growth is influenced by the legal and regulatory environment as well as the macroeconomic and financial constraints in the country. I request your sincere cooperation to write your answer to the questions provided below. It is estimated that the interview will take between 25-30 minutes.

I would like to assure you that the information gathered through this question and answer session is strictly anonymous and used for this research purpose only. Under no circumstances your name or the name of your company is revealed to a third party in written or any other form.

1. General Questions

Date: _____

Interviewee name: _____

Business name: _____

Business type:

- | | |
|----------------------------------------------------|----------------------------------------|
| <input type="checkbox"/> Limited liability company | <input type="checkbox"/> Joint venture |
| <input type="checkbox"/> Government parastatals | <input type="checkbox"/> Share company |

Year of establishment: _____

Number of full time employees: _____

Please list your company's leading export goods:

- a) _____
- b) _____
- c) _____
- d) _____

Please specify the current total assets (estimated assets) of your company in Ethiopian Birr:

- a) Fixed: _____
- b) None fixed (cash, bank deposit, inventory): _____

Please specify total export revenue in Ethiopian Birr for the last five years:

- a) 2005 _____
- b) 2006 _____
- c) 2007 _____
- d) 2008 _____
- e) 2009 _____

Please specify the percentage (rate of export growth) in volume in the last five years

- a) Less than 0% b) 1-25% c) 26-50% d) 51-75%
- e) 76-100% f) Above 100%

2. Legal and Institutional Environment

This section of the survey is interested in the legal and institutional environment of the country. It refers to the trust that you have on the legal system, the rule of law, property rights protection and enforcement of commercial contracts. The section has five core questions. Please give your answer on the scale of 1 to 4, **where 1 is strongly agree, 2 agree, 3 disagree and 4 strongly disagree**. Your answer should reflect your perception and experience about the legal and institutional environment of Ethiopia.

2.1. Please rate your overall trust on the legal system

- a. Content of the law governing the export sector is clear and unambiguous:

1	2	3	4

- b. Courts are impartial and independent:

1	2	3	4

- c. Private businesses can readily file lawsuits at an independent court if there is a breach of contract by the government:

1	2	3	4

2.2. Please rate the state of property rights protection in the country

- a. Organized crime doesn't impose significant costs on your business:

1	2	3	4

- b. You don't need personal body guards and/or private securities to protect you business from theft:

1	2	3	4

- c. The legal system is effective in protecting the property rights of individual businesses:

1	2	3	4

- d. Police forces are effective in safeguarding personal/property security so that this is not an important consideration in business activity:

1	2	3	4

- e. Government is willing to pay compensation for private properties nationalized/expropriated by previous regimes:

1	2	3	4

- f. Government honored any export related contractual relations with private businesses:

1	2	3	4

2.3. Please rate your level of confidence on contract enforcement in the country

- a. Citizens are willing to adjudicate disputes rather than depending on physical force or illegal means:

1	2	3	4

- b. You are confident that the legal system will uphold your contracts and property rights in business disputes:

1	2	3	4

- c. Businesses engaged in export are willing to accept cheques in business transactions:

1	2	3	4

2.4. Please rate the severity of corruption in the country

- a. It is not common to firms in your line of business to have to pay additional payments to get things done:

1	2	3	4

- b. It is not common for state officials to give selected and special favor to some firms in your line of business based on connections:

1	2	3	4

- c. Parastatals (partially or fully government owned businesses) received unwarranted government favor:

1	2	3	4

- d. Businesses have a forum (channel) to report to appropriate higher government bodies of any corrupt practices and abuses by government officials:

1	2	3	4

2.5. Government effectiveness

- a. Government economic policies are impartial and transparent:

1	2	3	4

- b. Government tax collection system is effective and doesn't open room for tax evasion:

1	2	3	4

- c. Export license provisions are impartial and freely available to any applicant:

1	2	3	4

- d. Government export related bureaucratic procedures are not cumbersome:

1	2	3	4

- e. Custom procedures are minimal and efficient:

1	2	3	4

3. Macroeconomic and financial constraints

The third section of the survey is intended to inquire about the macroeconomic and financial constraints faced by exporters. It is classified in four main sections. Please provide your answer on the scale provided below, **where 1 is strongly agree, 2 agree, 3 disagree and 4 strongly disagree**. Your answer should reflect your opinion on how the macroeconomic and financial constraints affect your business.

3.1. Financial constraints

- a. Loan requests at commercial banks get a timely and appropriate response when all bank requirements are met:

1	2	3	4

- b. Bank fees and interest rates are reasonable and affordable:

1	2	3	4

- c. Bank lending procedures are clear and transparent:

1	2	3	4

- d. Loan guarantee (collateral value) requirement to secure your loan is not more than 100 percent of the loan amount:

1	2	3	4

- e. Different alternative assets can be put as collateral (property and land are not the only collaterals accepted):

1	2	3	4

- f. Bank loan service provisions are based on predetermined procedures rather than connections and favoritism:

1	2	3	4

3.2. Inflation constraints

- a. Inflation has not been a major constraint to your export business in the last five years:

1	2	3	4

- b. Government (the Central Bank) foreign exchange rate determination considers the rate of inflation in the country:

1	2	3	4

3.3. Infrastructure

- a. Telephone and internet services are affordable and accessible:

1	2	3	4

- b. Road networks in the country are well established and are not main obstacle to transport goods to and from ports:

1	2	3	4

- c. Port facilities are accessible and doesn't put you in risk of losing merchandise:

1	2	3	4

- d. Port service fees are affordable

1	2	3	4

- e. Port service fees are not subject to arbitrary increase:

1	2	3	4

3.4. Policy instability constraints

- a. Government policies related to export are impartial and transparent:

1	2	3	4

- b. Government policy reforms are always credible and implemented as promised:

1	2	3	4

- c. Policies are designed with full consultation of the business community

1	2	3	4

- d. You are invited to take part in the discussion related to export related policy discussions:

1	2	3	4

Thank you for your kind cooperation!!!!

Annex 3: Summary statistics of variables used in the growth regression

Variable	Observations	Mean	Std. Dev.	Min	Max
Log Income per capita at PPC	139	8.709625	1.351275	5.669674	11.33909
Export to GDP ratio	139	40.40374	28.53515	5.9	191.16
Import plus export to GDP ratio	139	85.07942	52.67604	19.18	361.45
Voice and accountability	139	.0071223	.940582	-1.77	1.53
Political stability	139	-.0944604	.9583781	-2.61	1.52
Government effectiveness	139	.0502878	1.007829	-1.89	2.55
Regulatory quality	139	.078777	.9457107	-1.63	2
Rule of law	139	.0014388	.9986938	-1.68	1.96
Control of corruption	139	.0598561	1.030885	-1.49	2.34
Ave. weighted institutional quality	139	.0171223	.8997288	-1.69	1.8
Log values of latitude	139	.2633813	.1861531	0	.72
Ethno-linguistic fractionalization	130	.3653077	.3088367	0	1
Settler's Mortality	61	255.0641	482.3664	8.55	2940
Log constructed trade share	137	2.951898	.8078817	.83	5.64
Log population in 2008	139	15.97088	1.954844	10.80344	21.00442
Percentage point of population speaking English as mother tongue	138	.0894928	.2592756	0	1
Population speaking one European language as mother tongue	138	.2585507	.3976566	0	1.06
Percent of the population living in 100 km radius to the sea coast	138	55.93696	38.5026	0	100

Source: Author's own calculation from various sources

Annex 4: OLS estimation of regional effects on growth

Dependent variable: Log 2008 income per capita at 2005 USD 2005 prices

Explanatory Variable	(1)	(2)	(3) Regional dummies							
			(a) SEP	(b) ECA	(c) LAC	(d) MENA	(e) NA	(f) SoA	(g) SSA	(h) WE
Avg. Export to GDP ratio	.009*** (.002)	.01*** (.002)	.008*** (.002)	.007*** (.002)	.007*** (.002)	.007*** (.002)	.008*** (.002)	.007*** (.002)	.007*** (.002)	.007*** (.002)
Institutional quality	.86*** (.12)	.86*** (.12)	.85*** (.10)	.87*** (.11)	.87*** (.10)	.88*** (.11)	.84*** (.10)	.85*** (.10)	.85*** (.10)	.83*** (.11)
Log latitude (Distance from the equator)	1.60*** (.46)	1.53*** (.46)	.81* (.42)	.72* (.46)	1.36*** (.44)	.77* (.42)	.80* (.41)	.82** (.42)	.58 (.39)	.76 (.45)
Interactive term (export *Bottom 25 institution)	.01* (.007)	.007 (.007)	.01** (.006)	.01** (.006)	.01** (.006)	.01** (.006)	.01** (.006)	.01** (.006)	.01** (.005)	.01** (.006)
Institution dummy (bottom 25 percent)	-.48 (.03)	-.32 (.28)	-.4 (.25)	-.37 (.25)	-.34 (.24)	-.39 (.25)	-.39 (.25)	-.39 (.25)	-.23 (.23)	-.40 (.25)
Landlocked dummy		-.71*** (.16)	-.59*** (.14)	-.58*** (.14)	-.53*** (.14)	-.56*** (.14)	-.57*** (.14)	-.58*** (.14)	-.43*** (.13)	-.58*** (.14)
Ethno-linguistic fractionalization			-.98*** (.20)	-.97*** (.21)	-.71*** (.22)	-.93*** (.21)	-1.0*** (.21)	-.98*** (.21)	-.50** (.22)	-.98*** (.21)
Regional dummies			-.09 (.16)	.24 (.27)	.44 (.15)	.20 (.22)	.45 (.45)	-.02 (.26)	-.65*** (.15)	0.74 (.22)
Log area size		.05 (.04)								
Log population		-.02 (.05)								
Observation	139	139	130	130	130	130	130	130	130	130
R²	0.71	0.75	0.81	0.81	0.82	0.81	0.81	0.81	0.83	0.81
F-ratio	65.61	49.85	64.71	65.05	70.40	65.05	65.14	64.52	77.78	64.59
RMSE	0.74	0.69	0.60	0.60	0.58	0.60	0.60	0.60	0.56	0.60

*Note: Standard errors are in parenthesis; *, **, *** are statistically significant at the 10, 5 and 1 percent respectively; constant terms are not reported.*

Key: (a) East Asia and Pacific (SEP), (b) Europe and Central Asia (ECA), (c) Latin America and the Caribbean (LAC) (d) North America (NA),

(e) Middle East and North Africa (MENA), (f) South Asia (SoA), (g) Sub-Saharan Africa (SSA), (h) West Europe (WE)

Annex 5: Relation between export and institutional quality

Dependent Variable: Average Institutional quality index

Variable	IV	OLS
Export to GDP share	.02 (.003) t = 4.76	.01 (.002) t = 6.49
Constant	-.65 (.17) t = -3.70	-.44 (.10) t = -4.27
Observation	137	139
F-ratio	22.67	41.10
R ²	0.11	0.13
RMSE	0.85	0.84

Annex 6: Relation between institutional quality and export

Dependent Variable: Average export to GDP ratio or openness

Variable	IV (export)	OLS (export)	IV (Openness)	OLS (Openness)
Institutional quality	16.13 (23.73) t = .68	11.42 (2.53) t = 4.52	26.64 (43.78) t = 0.61	18.96 (4.73) t = 4.01
Constant	42.51 (7.94) t = 5.36	40.10 (2.26) t = 17.74	85.90 (14.64) t = 5.86	84.73 (4.24) t = 19.97
Observation	62	139	62	139
F-ratio	0.46	20.44	0.37	16.06
R ²	0.12	0.13	0.12	0.10
RMSE	31.69	26.72	58.46	50.02

Annex 7: Relation between geography and institutional quality

Dependent Variable: Institutional quality index

Variable	OLS
Distance from the equator	3.01 (.32) t = 9.32
Constant	-.78 (.10) t = -7.40
Observation	139
F-ratio	67.82
R ²	0.39
RMSE	0.71

Annex 8: Number of documents, time and cost of doing business in Ethiopia, 2011

	Ethiopia	Best in the World	Sub-Saharan Africa average	OECD average
Export				
No. of documents	8	France (2)	5.51	4.4
Time it takes in days	44	Denmark (5)	32.2	10.9
Cost (US \$per container)	\$1890	Malaysia (\$450)	\$1,961.5	\$1,058.70
Import				
No. of documents	8	France (2)	8.7	4.9
Time it takes in days	45	Singapore (4)	38.2	11.4
Cost (US \$per container)	\$2993	Singapore (\$439)	\$2,491.8	\$1,106.30

Source: World Bank doing business data set, 2011

Annex 9: Correlation coefficients of the primary data variables collected through likert scale

	Legal system	property rights	contract enforcement	Control of corruption	government effectiveness	Financial constraints	Inflation constraints	Infrastructural constraints	policy instability
Legal system	1								
property rights	0.5577	1							
contract enforcement	0.4582	0.5667	1						
control of corruption	0.4629	0.1849	0.3402	1					
government effectiveness	0.5379	0.4586	0.5587	0.3355	1				
financial constraints	0.4762	0.3689	0.6363	0.3572	0.649	1			
inflation constraints	0.2731	0.3456	0.3094	0.1201	0.269	0.2768	1		
infrastructural constraints	0.3779	0.2573	0.1757	0.0102	0.584	0.2856	0.239	1	
policy instability constraints	0.6327	0.5491	0.34	0.2528	0.607	0.3418	0.34	0.359	1

CURRICULUM VITAE

1. **Family name:** Fanta
2. **First names:** Elias Gebreselassie
3. **Date of birth:** April 24, 1969
4. **Nationality:** Ethiopian
5. **Civil status:** Married

6. **Education:**

Institution [Date from - Date to]	Degree(s) or Diploma(s) obtained
University of the Western Cape, Cape Town South Africa Jun 2004 - Sep 2006	MA degree in Development Studies (emphasis on social policy and economic growth)
Ruhr University of Bochum, Germany Mar 2004 – Dec 2005	MA degree in Development Management
Addis Ababa University, Addis Ababa, Ethiopia, Sep 1986 – Jul 1990	BA degree in Economics
Norwegian School of Economics, Bergen, Norway Jan 2006 Mar 2006	Winter Semester 2006 – Exchange study in the MA program (emphasis on globalization, financial and economic integrations)

7. **Language skills:** Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Languages	Read	Spoken	Written
Amharic (native language)	1	1	1
English	1	1	1

8. **Membership of professional bodies:**

- Former member of the Ethiopian Economics Association
- Member of the Research School of the Ruhr University of Bochum

9. **Other skills:**

- Computer Skills: fully acquainted with Microsoft Access, Word, Excel, Outlook, Power Point, Publisher, STATA, Statistical Package for Social Science (SPSS), Lotus and Internet
- Excellent analytical and interpersonal skills.

10. **Present position:** PhD Student in International Development Studies at the Institute of Development Policy and Development Research, Ruhr University Bochum since January 2009.

11. **Years:** : Third Year (Graduating class)

12. **Key qualifications:**

- Researching and consulting in institutional reform, international trade, social and economic development
- Great deal of research experience in value chain analysis and poverty reduction
- Great deal of experience in financial reform, micro-credit and micro-enterprise development, monitoring and evaluating program implementation and performances
- Providing business and financial management technical support and consulting to small businesses
- Many years of experience in program management, developing project proposals, and researching and writing funding opportunities
- Great deal of experience in designing program work plans, impact monitoring strategies, and conducting monitoring and evaluation
- Good knowledge of the political, economic and social situation of Sub Saharan Africa particularly East and South African regions.

13. **Publication:** “Does Value Addition at Oilseeds Production and/or Spreading the Gain from Export of Oilseed Products Increase the Income of the Primary Producers?”, Published at the Working Papers Serious No. 183, December 2006 of the Institute of Development Policy and Development Research of the Ruhr University of Bochum .