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THE CONTRIBUTION OF INTERNATIONAL AIR TRANSPORT TO ETHIOPIA'S TOURISM SECTOR

By

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The Contribution of International Air Transport to Ethiopia's Tourism Sector

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This is to certify that the thesis prepared by Kalkidan Shitemaw, entitled: ***The Contribution of International Air Transport to Ethiopia's Tourism Sector*** and submitted in partial fulfillment of the requirements for the Degree of Master of Science (International Economics) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Abstract

The Contribution of International Air Transport to Ethiopia‟s Tourism Sector

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This paper examines whether there exists a relationship between tourism and air transport sectors in Ethiopia. It employs Vector Error Correction approach to assess how air transport sector contributes to tourism. It further shows the progress of the two sectors by utilizing a time series data of Ethiopia for the period 1974-2014. Impulse response and variance decomposition tests are also applied to see the interaction of tourism, air transport and economic growth in the country. The findings support the existence of relationship between the two sectors. The empirical tests further show the presence of positive and significant long run and short run relationship between tourism and air transport. Moreover the results of impulse response and variance decomposition indicate the permanent effect of air transport on tourism. The findings also point out the importance of infrastructure, economic growth, transport cost, domestic price and income of the originating country on the performance of the tourism in Ethiopia. There is also evidence that both tourism and air transport contribute to the overall growth of the economy. Thus, since the advancement in air transport leads to development of tourism both in the long run and short run, measures such as upgrading the already existing air fields, expansion of domestic airports, spreading out to new destinations and equipping the airlines with modern technology have to be considered by the authorities.

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Acronyms

ADF: Augmented Dickey Fuller

ADLI: Agricultural Development Led Industrialization

AIC: Akaikie Information Criteria

ATAG: Air Transport Action Group

CPI: Consumer Price Index

CONNDOT: Connecticut Department of Transportation

ECM: Error Correction Model

EEA: Ethiopian Economic Association

EEPCO: Ethiopian Electric Power Corporation

EPRDF: Ethiopia People Revolutionary Democratic Front

ETA: Ethiopian Airlines

FPE: Final Prediction Error

GDP: Gross Domestic Product

GTP: Growth and Transformation Plan

HQ: Hannan Quinn Information Criteria

IATA: International Air Transport Association

IMF: International Monetary Fund

IPN: International Passengers Number

LM: Lagrange Multiplier

MOCT: Ministry of Culture and Tourism

MOFED: Ministry of Finance and Economic Development

NBE: National Bank of Ethiopia

OLS: Ordinary Least Square

PASDEP: Plan for Accelerated and Sustained Development to End Poverty

PP: Phillips- Perron

RGDP: Real Growth Domestic Product

RPII: Real Physical Infrastructure Investment

SDPRP: Sustainable Development and Poverty Reduction Program

SIC: Schwarz Information Criteria

TRC: Transport Cost

TWA: Trans World Airlines

UK: United Kingdom

UNESCO: United Nations Education, Social and Cultural Organization

UNP: Unemployment Rate

UNWTO: World Tourism Organization special agency of the United Nations

U.S: United States

VAR: Vector Auto Regressive

VECM: Vector Error Correction Model

VIS: Visitors Number

WB: World Bank

WTO: World Trade Organization

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The economic structure of countries cannot be seen at a glance as it is a much diversified concept in different terms. Let alone between developed and developing countries, even between developed countries there are implicit and explicit difference in economic and social structure. An economy that possesses high capital accumulation, moderate growth in its population and growth in technological progress is said to be in the path of economic growth. In other words, economic growth is a result of the rise in GDP. However the idea of development is wider than this. For a country to be developed, its economy should not only grow but should also be able to attain structural change. In other words economic development is concerned with both economic and social well-being of the society. Thus, growth is a necessary but not a sufficient condition for development which is concerned with both quantitative and qualitative changes in the economy.

The idea of transportation and economic development are interlinked. This is so because (Kenneth and Samantha, 2008) transportation is a derived demand that is driven by the needs and desires to attain some other final objective and thus as an economic development it stimulates demand from consumers and firms which in turn increases the demand for transportation services. On the other hand, as the transport industry improves it in turn will support the economy by reducing cost of trade and thus making a country more competitive in the world market.

As mentioned above the availability and efficiency of transport service affects economic development. From the beginning of time people gave high consideration for mobility as a consequence they were settling near ports, rivers and lakes where transportation was available.

To high light the history of transportation dating back to the pre-industrial era the main facilities for transportation were animal labors, which was inefficient. During the early 19th century railway and water transport became available and as a result allowed trade to take place around the world and not be limited to nearby areas only. By the end of the 19th century urban transportation was introduced in the form of bicycle, automobile and buses which resulted availability of door to door movements. Air transport was finally introduced in the beginning of the 20th century which allowed trade of perishable goods to take place in long distance markets.

Tourism industry is one of the major sectors in which many countries rely on to achieve their economic goals as it impacts almost every other industry in a country. Although tourism is a sector in which many African counties have always been active in, the region has the smallest tourism sector compared to other regions in the world and the main reason behind this is the safety hazard of its transportation service which is uninviting for tourists.

Looking at the contribution of transport service for a country‟s tourism sector, the availability of air transport has increased the opportunity for both leisure and business travelers to experience different cultures and markets. As a result it has increased the contribution of tourism in poverty reduction by generating economic growth, providing employment opportunities, contributing to the trade balance and by being significant source foreign exchange.

In today‟s world market, mobility of goods, people and information are key components. Thus availability of efficient transport service will lower cost of transportation and increase the ratio of total benefit to cost for businesses. In addition availability of transportation opens a wide market base which will improve benefit of economies of scale for producers and it will also increase

accessibility of resources, and decrease time cost risk and money spent on search of resources which instead could have been used for a more productive purpose.

When markets get more integrated as a result of availability of efficient, prices of goods and services decrease because there will be differentiated products available for consumers to choose from their local markets. Now a days the service sectors of many countries have been growing rapidly and as transport is one of these sectors its growth has resulted an increase in its capacity for labor employment. The sector has not only generated employment opportunities directly in the aviation, cargo, maintenance and catering but also indirectly by being an outlet for domestic produced goods like flowers, fruits, leather, fish and coffee and hence creating job opportunities for the local population.

1.2 Statement of the Problem

Improvement in technology, integration of economies through trade, FDI, migration and socio-cultural and political forces the globalization process has been a significant issue in the world since the 20th century (Kenneth and Samantha, 2008). To realize this high mobility of people and goods internationally there is high need for a fast, safe and cost efficient transportation forms and this is where air transport comes along with railroads, ships and automobiles.

Having no geographical constraint and unlike railways and road transport that require high cost for construction of roads and tracks, air transport only requires a construction of airports. Furthermore it is the most convenient form of transportation for light and perishable goods. All in all aviation facilitates economic growth through improvement of world trade, tourism and international investment by functioning as a tool for the globalization process that is taking place.

In Ethiopia, the airline industry began in 1930 with five airplanes acquired by the government. In 1945 Ethiopian Airlines was established at Bole International Airport in Addis Ababa as its headquarter. Ethiopian Airlines is one of the fast growing and largest companies among the airlines in Africa. The other international airlines found in the country are National Airways Ethiopia which was established in 2007 and Trans Nation Airways.

The availability of international airlines in Ethiopia is playing a significant role in facilitating trade with the rest of the world. By making the distance between countries insignificant to carry out any transaction, it has made it convenient for the county to be part of Common Market for Eastern and Southern Africa (COMESA) and other trade unions which are beneficiary both for a country‟s economic and political performance.

Since its beginning almost 70 years back, the air transport industry of the country has had significant influence on the economy. It has generated huge amount of foreign exchange, created job opportunities, and formed connection with countries in Africa and the rest of the world. It has also played a significant role in advertising Ethiopian culture and hence attracts tourism (Economic Focus, 2005).

In 2005 and 2006 the World Trade Organization (WTO) has named Africa as the fastest growing tourist destination. Therefore, many African countries have recognized tourism as a priority sector in their economic transformation and development plans.

Ethiopia as one of the African countries that possesses the highest number of World Heritage Site, as recognized by United Nations Education, Social and Cultural Organization (UNESCO) led the government to prioritize tourism development. By recognizing the benefit of the industry owing to its contribution to the country‟s GDP and its influence on other sectors such as

agriculture, fishing and handicrafts, the government has given due consideration to tourism in its development strategy as a driving force for economic growth. The convenient and speedy mode of travel for most tourists is air transport. Thus it is one of the determinants of tourism flow to the country and needs due attention in making the tourism sector of the country become one of the chief income generating industries.

As Ethiopian Airlines is the largest airline in Africa in revenue and profit according to International Air Transport Association (IATA) ranking in 2014, the concern of this research is to evaluate the performance of this company to find out if it has any contribution to the tourism sector of the country and determine the reasons for that. This is done to show that the airline industry of the country can be one of the industries that should be concentrated on by the government so that it can achieve the growth and transformation plan it has set to reach.

1.3 Research Question

The study deals with answering the following questions regarding the relation between air transport and the tourism sector in Ethiopia.

1. Does Ethiopian airline have a role in the development of the tourism sector?
2. In what ways does ETA affect number of visitors?
3. To what extent does air transport affect tourism in Ethiopia‟s case?

1.4 Objective of the Study

The general objective of the analysis is to identify the contribution of international air transport on Ethiopia‟s tourism sector development both in the long run and the short run.

The specific objectives include:

- Assessing the performance of Ethiopian Airlines and tourism sector of Ethiopia,
- Examining the airline‟s impact on the tourism sector of the economy, and
- Giving some policy recommendation on how transport sector can be used to better the tourism sector of the country and help achieve the economic target of Ethiopia.

1.5 Significant of the Study

According to the Growth and Transformation Plan (GTP) the culture and tourism objective is making Ethiopia one of the best tourism destinations in Africa by maintaining sustainable tourism development, conservation of unique cultures and cultural heritages and promote tourism attraction sites to enhance earnings from the sector. Looking at the contribution of transport for countries tourism, aviation sector plays a significant role. To take full advantage of their potential in attracting tourism, countries should modernize and expand their air transport infrastructure.

In Ethiopia aside from wholesale and retail trade, transportation and communication, the service sector consists almost entirely of tourism and therefore the development of this sector is prudent in achieving the development goal set by the government for the economy as a whole. The basic significant of this study is that, it shows how much of an impact the Ethiopian Airlines has on one of the country‟s main sectors and thus how it can affect the economic performance of the country.

1.6 Limitation of the study

While conducting this study the researcher faced several limitations. As other airlines in the country were established not long ago, unlike Ethiopian Airlines, it makes it impossible to do a

time series analysis on them. Thus, no comparison is made between the performance of ETA and the other companies in the sector.

Analyzing the impact of international transport on the whole economy would have made the research even better than concentrating only on the tourism sector. However, lack of data has limited the study to focus on one sector.

1.7 Scope of the study

The study attempts to explore the pattern of economic performance of Ethiopian Airlines and its effect on growth of the tourism sector. Though there are other international airlines in the country, the researcher only considers Ethiopian Airlines for the reason mentioned above. Moreover, since Ethiopian Airlines is the major international airline of the country it takes the majority of passengers and cargo and, it represents the overall international movement to and from the country.

The research is made based on the data gathered from domestic and international sources. While analyzing the data, over 40 years (1974/75-2013/14) of time period is taken to show the drift of different variables.

1.8 Organization of the Study

The first chapter deals with introduction. Next to the introduction is an overview of the Ethiopia‟s economy focusing on the transport and tourism sectors. Reviews of theoretical and empirical literatures are presented in chapter three. Chapter four deals with formulation of the model and presents the methodology. Data analysis and interpretation are given in chapter five. Finally chapter six presents the conclusions and provides policy implications.

Chapter Two: Overview of Ethiopian Economy

Being the second most populous country in Sub-Saharan Africa next to Nigeria and having low per capita income and life expectancy, Ethiopia is one of the poorest countries in the world. According to the World Bank classification sited in Melese (2005), Ethiopia is also one of the Heavily Indebted Poor Countries. The main reason for this was considered to be trade deficit. The world market price of the primary goods the country exports has been low on top of these the import of capital goods for which price is relatively high has resulted the negative balance of payment of the country.

In Ethiopia agriculture is the main sector of the economy employing more than 85 percent of the population and accounting for more than 42 percent of the total GDP. The manufacturing industry of the economy is restricted to food processing, beverages, textiles, leather, chemical and metal processing. Tele communication, transport, trade and tourism dominate the service sector of the economy.

The main exports of the country are gold, coffee, livestock and livestock products, pulses, textile, chat, flower and vegetables. Imports are fuel, food stuffs, semi-finished goods, construction and industrial machinery, durable and non-food consumer goods such as automobiles, radios, television and pharmaceuticals.

The huge investment undertaking by the government for the development of housing and construction work, the expansion of banks, colleges, hotels and road infrastructure put Ethiopia as the 5^{th} fastest growing economies in the world in 2010 (The Economist, 2010).

2.1 Agriculture in Ethiopia

The country‟s agriculture sector is mainly dependent on natural seasonal rain fall which is unreliable. The dominance of small hold farmers that are limited both in capital and land size in their production has a negative impact on the country‟s total output. Also, the use of traditional methods of production attributes to the low performance of the sector (Ethiopian Economic Association, 2007/08).The major cash crops produced are coffee, sugar, tea, spices, cotton, tobacco and horticulture. The major food crops include cereals, pulses and oil seeds.

The newly developed production of flower is showing great potential. The labor abundance and the suitable climate condition of the country has been a big contribution for the increase in the volume of export of this product. Moreover, the country is also endowed with vast resources of livestock and fishery. Even though Ethiopia‟s numerous lakes and rivers provide a huge opportunity for the development of the fishery industry, this sector only takes a very small part of the economy. The mining sector is also low in production, with only gold being mined in significant quantity.

As a result of its influence on the economy as a whole, the agriculture sector has always been the main focus of the government. To encourage large scale commercial farming during the imperial government, investors were allowed to import fertilizers, pesticides and tractors free from import duties. Even though agriculture productivity was low as a result of tenancy, land reform programs, drought and famine the government has introduced programs to improve the conditions of farmers.

During the dergue regime the decline in agriculture production continued. This is a result of drought, rural community resettlement program, civil wars, price control, land fragmentation and

lack of resources like fertilizers and farm equipment. The action taken by the government in relaxing policies like price control and limitation on the free movement of goods in the later periods of power increased output. However this increase was not equivalent to the decrease in GDP during that period.

Both the imperial and the dergue government tried to improve livestock production of the country by introducing programs such as free vaccination, improvement of pastureland and construction of new roads.

After 1991 the country undertook a market oriented reform. The current government follows Agricultural Development Led Industrialization (ADLI) as a growth strategy. The objective of this approach is to strength the interdependence between agriculture and industry. By increasing the productivity of peasants and expanding large scale private commercial farmers, by promoting the use of technologies which are labor intensive, improved seeds and fertilizers to realize the full potential of the agriculture sector. The improvement in the agriculture sector will in turn increase the demand for domestic manufactured industrial products, and thus induce overall economic growth for the country (Kassahun, 2012).

The main reason for the increase in the agricultural output during this period were good weather, strengthened agricultural extension services, better access to agricultural inputs and improved access to market.

2.2. Industry in Ethiopia

The history of industry in Ethiopia began in the 20th century. This was when the import of manufactured goods of the country increased as a result of its foreign relations, which encouraged manufacturing import substitution domestically. The early stage of manufacturing in

Ethiopia was dominated by cottage and handicraft industries. Items like cloths, ceramics, leather goods and machine tools were only produced. During the imperial regime the first five years plan encouraged import substitution to produce consumer goods for local markets. Different policy measures like fiscal incentives, high tariff and credit provision were taken by the government to stimulate investment in manufacturing.

Under the dergue rule all the private owned manufacturing enterprises were nationalized. The medium and large scale manufacturing sectors were operated by the government. The restriction on private sector and the inefficiency of the public sector caused the decline in the performance of the manufacturing sector (Alemayehu, 2002).

The coming to power of the EPRDF brought with it policy reforms such as opening the economy, promoting private sector involvement and limiting the role of the government. This policy changed the low performance of the sector. The adoption of the GTP and export promotion strategy aimed at increasing the production of labor intensive manufacturing products. Although it has shown growth and diversification in recent years, the sector is still behind agriculture and service sector in its contribution to the total GDP of Ethiopia (Mulu and Michiko, 2014).

2.3. The Service Sector

The service sector is the second highest contributor to the GDP next to the agriculture sector. It consist the whole sale and retail trade, transportation, communication, tourism, finance and real state. The share of the service sector has been growing in recent years as a result of growth in education, real state, increase in number of hotels and restaurants private owed banks and the

expansion of road infrastructure. As the major issue raised in these study concern tourism and air transport brief discussions are presented below about the two.

2.3.1. Tourism Attractions of Ethiopia

Ethiopia is rich in tourism attraction, having nine historical sites registered by UNESCO as heritages of the world. Among the historical sites found in the country, the castle of Gondar which were built during 1632-1667, situated in the highlands of northwestern Ethiopia in the Lasta mountains old churches hewn which are thousand years old and the ancient town of Axum with its amazing carved obelisks are the major once. The unique rift valley region with lakes which are home for different species of birds, the Blue Nile falls one of the great displays of nature, the Simien Mountains National park with the highest point in Ethiopia, Ras Dejen (4620meters), and home for the indigenous Walia Ibex among many other animals are natural attractions found in the country.

Ethiopia is one of the largest countries in Sub-Saharan Africa. The ethnic diversity in the country and the different religions the people follow resulted varied cultures, cultural and religious celebrations like Epiphany, Meskel and Arefa which are major tourism attractions. Furthermore, the cool climate, hospitality of the people and the rich flora and fauna gives Ethiopia great potential for cultural and educational tourism, hunting safaris, bird watching, and mountain climbing and camping.

Modern tourism started in 1961 as a result of the formation of Ethiopian Tourism Organization by the government. During this period most of the tourists that came were business tourists that participated in international meetings, and thus were not staying for long periods or spending that much money. As a result the tourism sector did not generate much income at the beginning.

During the period lasting from 1963 up to 1973, there was a sharp increase in tourism flow (MoCT, 2009). However as a result of civil war, recurrent drought and restrictions on entry and free movement of tourists during the coming years, the number failed to continue its increase. To reverse this situation the government at the time undertook developmental programs which then resulted a sharp increase in the number of visitors (Gebre, 2011).

After the fall of the military government, the economic policies applied have created a conductive climate for the continual growth of tourism in the country. The removal of restrictions to travel to Ethiopia, the infrastructural development programs in which construction and upgrading of airports, roads, communication network and electric power generation has benefited the sector. More over the priority given by the government to attract major international hotels, lodges, restaurants as well as tour operators to invest in Ethiopia has diversified and modernize the choices available to tourists.

2.3.2. Transport Industry

The lack of efficient transport network in the country is among the obstacles to development. Preventing access to the global market and limiting the ability of the country to compete in international markets it restricts the progress of the economy.

The development of modern transport in Ethiopia was first initiated by Emperor Menelik. During this period the construction of the first road took place by the labor force of the army and the public. The railway transportation began in the early 1900‟s by the construction of a railway from Djibouti to Addis Ababa. The first train arrived at Djibouti in 1902. Regarding water transport, the administration office was established during the 1950‟s after the end of the Italian occupation. The ports of Assab and Massawa were the main outlets of the country during the

time. The beginning of air transport in Ethiopia was marked with the establishment of Ethiopian Airlines in 1945.

2.3.2.1. History of Air Transport

The history of aviation starts with the first short flight that took place in 1903 by Orville and Wilbur Wright. Airplane industry further developed during the First World War, using heavier air craft for investigation and artillery spotting. Drastic increase in the pace of air craft development was witnessed at the time of World War Two. After the war ended commercial aviation grew rapidly using ex-military crafts to transport people and cargo.

Ever since the 1960s, air craft has become lighter, quitter and more competent. During the colonial era the authorities were interested in facilitating the transport sector mainly to extract and transport raw materials to the colonial master nation. Therefore, the early air transports developed in Africa during that period were a link between the colonies and the colonizers and did not link African countries by air (Ambe, 2007). Therefore, even these days air travel within Africa is more expensive per mile than international travel.

Many of African airlines are state owned. As a result of poor safety administration and pilot capacity African airways have the least safety record in the world (Ken, 2011). The progress of air transport differs in the different parts of the continent. East Africa has the most developed network both intercontinental and internationally Ethiopian airlines and Kenya airways are the major once. In North Africa Moroco, Tunisia, Algeria and Egypt are recognized. In Southern Africa, South African airline has the better performance while the west and central Africa only Nigeria performs better (Oladele, 2005).

The history of Ethiopia‟s aviation goes back to 1929, when French made airplane landed in the Western side of Addis Ababa. In 1930, the government purchased five planes to provide postal, security and government services between towns of Dire Dewa, Gondor and Djibouti. That same year a French instructor established the first maintenance and flying school in Jijiga. The government took another step and established Civil Aviation Organization in 1944.

Ethiopian airlines (ETA) was found on December 21, 1945 and started operation on 8 April 1946 with only six airplanes registered in its name. At the beginning the airline relied on foreign management, pilots, technicians, accountants and administrators. After a decade of operation in 1955 Ethiopian Airlines established a self-owned maintenance facility. ETA is a flag carrier and entirely owned by the government. It‟s headquarter is Bole International Airport in Addis Ababa.

During the imperial regime the government invested a significant amount of capital for the expansion of the transport infrastructure in the country (EEA, 2012). It is during this period the first plane landed piloted by Andre Millet, and the agreement made with Trans World Airlines (TWA) by the government that led to the establishment of ETA. Initially, ETA was financed by the government but managed by TWA. Starting then the airline has been expanding both in the number of aircrafts and by the destination it covers.

The purchase of Boeing 720 in 1962 was the reason for replacement of the first airport found round Lideta by Bole international airport in 1950 at the time of Emperor Haile Selassie I. This is because, the Lideta airfield was unable to accommodate Boeing 720 Jetliner. In the 1970‟s the renewal of the original contract with TWA‟s changed its role from manage to adviser. Ever since then ETA has been operated and managed by Ethiopians. Currently, the Ethiopian Airports Enterprise, a publicly owned organization, runs the air lines.

During the dergue even though the agriculture sector performance was stagnant and declining, the service sector registered a positive growth. The reason for these was the high expenditure of the government for defense and public administration at the time. ETA was also the major contributor for the positive service component of the balance of payment. The balance of payment of the country has been negative and growing since the dergue came to power. Before 1974 the country had a positive trade balance (Eshetu and Mekonnen, 1991).

Although the government did not interfere with ETA operations, the dergue government opposed the airline‟s plan to expand into areas such as hotel construction and management and also tourism and catering which were reserved for state operation (Thomas and La Verle, 2002).

The market oriented policies of the new government meant the airline will keep operating independently. In this period, even though ETA has extensive network across the continent and internationally, there is still limited development of domestic air transport. To tackle this problem some of the domestic airports like Mekelle, Bahir Dar, Dire Dewa, Axum, Arba Minch and Gambella have been upgraded (Economic Focus, 2005).

The early programs adopted by the government included Sustainable Development and Poverty Reduction Program (SDPRP) and Plan for Accelerated and Sustained Development to End Poverty (PASDEP). This programs mainly focused on the expansion of road infrastructure and did not give due attention to the other modes of transport like air, rail and water. However the currently adopted Growth and Transformation Plan (GTP) includes the expansion of both infrastructure and service components in all modes of transport. The GTP focuses on the improvement of quality and capacity of airports and also expansion of routes and destinations

both domestically and internationally. The goal is to make ETA a world class airlines adopting modern technology for safety and security purposes (MoFED, 2010).

Currently ETA has four international airports in Addis Ababa, Dire Dewa, Mekelle and Bahir Dar. Owing 68 aircrafts, over 8000 employees, reaching 19 domestic and 83 international destinations in Africa, Europe, America and in the Middle East and Asia (ETA Fact sheet, 2013). Large amount of investment in construction of runways and terminals have been increasing in number year after year. The volume of cargo carried by international flights has increased. This increase is because of increased export in cut flower and meat and meat products.

The major international airport, Bole international airport has two terminals. Terminal one which is dedicated to domestic operations and terminal two which is dedicated to international operations. Terminal one was renovated and expanded and now has four airline gates. Terminal two opened in 2003. It has seven airline gates and three levels with its own parking garage, shopping center and restaurants.

Despite being land locked, Ethiopia has an important strategic geographic location that positions it as a favorable air connection point for major regional as well as global groups. Through its strong link to emerging markets, along with being the first African carrier to link South America with Asia, Ethiopian Airlines could further strengthen these high value links by facilitating trade, investment, innovation and knowledge exchange.

A reduction in operating costs would further improve Addis Abba‟s competitiveness as a transit point. This would improve connectivity and increase opportunities available through air transport by enhancing frequencies on existing routes and making new connections possible that were previously not commercially viable (Julie, 2013).

CHAPTER THREE: REVIEW OF RELATED LITERATURES

3.1. Review of the Theoretical Literatures

3.1.1 Introduction to Tourism Industry

According to the definition of UNWTO, tourism is an activity in which a person travels to and stays in a place outside their residence for not more than one consecutive year for leisure business or other reason. Tourism benefits the economy as a whole by increasing the demand for accommodations, transportation, entertainment, hotels and catering, it contributes to the expansion of other businesses. By working in the supporting industries or in tourism itself, it helps generate income for households and the government is also benefited by collecting tax from these businesses. Therefore, by generating foreign exchange, increasing income and employment opportunities, tourism industry is a major contributor to country‟s GDP.

Types of Tourists

According to D. Brown et al (2011), based on their various needs and reasons for traveling, tourists are classified in the following categories:

Business tourist: Tourist traveling with relation to business is known as business tourist. Business tourism is part of the business world. Most of the cities feature conference centers that cater to the needs of business tourists.

Education tourists: Tourists traveling to a particular place in another town, city or country to learn more about a destinations culture and society in order to improve his or her educational qualification are termed as education tourist.

Adventure tourists: Adventure tourists look for some unusual experience. They seek adventurous activities that may be dangerous by traveling to remote areas. Also participating in activities that provide them with a challenge and trill such as rock climbing, river rafting, skydiving, shark cave diving and bungee jumping.

Cultural tourist: These types of tourists travel to experience the essence of various cultures. Visit to historical sites, museums, theaters, art galleries and musical performances are done by these types of tourists.

Eco-tourists: Nature loving tourists, they neither disturb nor leave behind hazardous materials that disturb the ecosystem. Eco-tourists travel throughout the world in search of destinations not affected by pollution or much human intervention. This is environmental friendly travel.

Leisure tourist: These tourists want to rejuvenate and refresh with comfort, while enjoying a break from routine of life. Example of this type of tourism is simply relaxing on a beach.

Health or medical tourist: Those who seek special medical treatment, which is only possible away from home, make trips to other places and are called Health or medical tourist. Some of these tourists benefit from medical assistance in other countries, for they may be expensive in their own country. Many health or medical tourists also make trips simply to stay for few days in healthier climate.

Religious tourist: Religious tourist travel to sites of religious significance. The world is dotted with a number of religious locations like Hajj in Mecca, Jerusalem in Israel, and the Vatican in Rome.

Sport and recreation tourist: These sorts of tourists either take active part in or just watch sports events. Some of such popular sport events are the Football World Cup, Diamond league and Wimbledon Tennis Championship.

Determinants of tourism

Beyond having natural, cultural and historical resources there are also other factors that affect a country‟s ability to attract tourism. Tourism is regarded as an important source of growth for an economy as mentioned before, thus there is a need to identify what the major factors are that determine the flow of tourism.

According to Alexander (2014), strong trade ties which results business traveler, appreciation of the originating currency, the availability of direct flight and hotel rooms, distance between the two countries, difference in language and climate and finally economic condition of both originating and destination countries are the major determinants. On the other hand Tsega (2008) argues countries economic development does not have significant effect on tourism performance. This is because tourists are more interested in a countries history, nature and culture rather than its economic improvement.

In the study by Johan and Maria (2011), the determinants of tourism are not that different from global tourism flow determinant. But within Africa sharing common border, religion or former colonial ties increases tourist arrival.

Using a panel data for the period between 1998 and 2009 in Malaysia, it is indicated tourism demand is influenced by income from the originating country and price of tourism in Malaysia (Siti et al, 2013). In addition Yair and Liran (2003) show destination risk has a significant role in

the determination of tourism. Similarly Fekadu (2013), in his time series analysis on the determinants of tourism in Ethiopia showed that road network, public expenditure on tourism, telecommunication service and political changes are the major variables. As the major mode of transport in the country is road transport, it has a significant impact.

3.1.2 Transportation and Tourism

A number of studies like Seetanah B. (2011) state that infrastructure such as water, energy and transportation are potential determinants of tourism inflow for a country. According to Najat and Masoud (2014) and Eden (2005), infrastructure has a direct impact on tourism thus, the role of transportation in tourism operation is vital. As infrastructure increase the cost of transportation decrease as a result number of tourists increase. It is largely due to the development of transportation that tourism has expanded. The introduction of air transport has shrunk the world, and the motor vehicle has made travel to anywhere possible.

Tourism is all about travel thus it drives demand for transportation. That is, transportation directly fulfills needs for mobility by moving people, freight, and information (Katherine and Greg, 2012). The accessibility of tourism sites depend on the nature of the site, the state of infrastructure and transport of the destination. Therefore, enhancement in transportation has widely improved mobility of people. Thus, attributed to the ease and accessibility of transport has encouraged tourism.

The two most important modes of travel serving tourism are air travel and the private motor car. Within this situation the highly motorized countries of Western Europe and North America generate the majority of tourism related trips and the car remains a significant mode of travel for domestic tourism in developed economies. Since tourists consider both cost and time, the

availability of adequate transport facility is a prerequisite for tourism development (Morteza et al, 2013).

A fundamental fact is that people travel in varying distances by various means for a variety of reasons, and transport provision sits at the heart of that movement. Transport is important for tourism because it facilitates the movement of tourists between their place of origin and their destinations, and acts as the means of movement within a destination, thus allowing for wider dispersion of visitor.

In order for the number of visitors to increase it is important that local networks are integrated to inter regional and international networks. As a result, transport can often be the single most important factor in determining the capability of a destination‟s tourism sector. This is especially the case when the destination happens to be geographically remote and thus highly dependent upon, international air services (Gui and David, 2011). Therefore, the development of transportation, transportation vehicles, infrastructure and using new technologies in this sector speed up the development of tourism (Mammadov, 2012).

3.1.3. The Economic Contribution of Tourism and transportation

As mentions in Zheng (2006) for an industry to qualify as a driving force of the economy, Dicken and Lloyd (1990) sets four requirements. First the industry should be large so as to generate sufficient direct and indirect effect. Secondly, it should be relatively fast growing. Third, should have high linkage with other industries. Last, it should be innovative. Tourism fulfills all the above preconditions, therefore according to Dicken and Lloyd it has an impact on the economic performance of a country.

As mentioned before the contribution of tourism can be direct, indirect or induced. The direct contribution of tourism to GDP includes total spending within a country on tourism by residents and non-residents for business and leisure purposes as well as government expenditure on services directly linked to visitors, like museums and national parks. The indirect contribution includes investment in new aircrafts and construction of new hotels, government spending in tourism marketing and promotion and domestic purchases by sectors that are directly dealing with tourists. The induced contribution measures the GDP and jobs supported by the spending of those who are directly or indirectly employed in the tourism industry (Jennifer and Thea, 2013)

Despite its many benefits tourism can result loss of cultural values and traditional cultures due to cultural colonization from pressure of tourist flow. Further, illegal sell of drugs, prostitution, black market and petty crime activities increase. Therefore, even though it might have a positive role in economic growth the negative social and environmental impacts should not be neglected.

Economically, there are international travel companies that provide the entire travel package service to the traveler and thus only a small amount is spent in the destination countries. The availability of local basic commodities has also declined at the expense of international products as a result their price increases resulting additional cost of living (Thomas, 2009). Tourism by its nature is unstable due to change in fashion, unfavorable exchange rates, environmental catastrophes, terrorism, war etc. thus over dependence on tourism industry for economic development is risky.

In the case of Ethiopia, the tourism sector is believed to have the power and capacity in assisting the eradication of poverty and promoting sustainable development. Thus it has been included in the county‟s plan as a means of accelerating development (MoCT, 2009).

As mentioned in the introduction, improvement in the transport infrastructure improves accessibility by reducing travel time, money and risk to reach resources. The improvement in ease of access increases the market size. The wide market provides new business opportunities and increased competition which leads to increase in profitability of industries. Transport also plays a crucial role in development by providing access for people to education, recreation, health care and other services.

Increased efficiency increases productivity. Thus, increasing transport system efficiency results productivity gains. Reduction of transport cost for instance results reduction in retail price and improvement in service quality (more frequent deliveries) (Todd, 2010).

Air transport and economic development have a mutual causality feedback relationship. As air transport is not a goods and service producing industry, it cannot grow without interacting with other industries. Air transport is not the driver for economic growth rather by affecting other industries which contribute to the economic development it acts more like a platform (Irwan, 2012).

The impact of air transportation differs from other modes of transportation because of its speed, cost, reliability and safety. It is the only feasible long distance transportation mode for perishable commodities, the speediest for time sensitive matters and the only means of access to geographically isolated areas (Mariya and John, 2005). Aviation created 56.6 million jobs, generated 2.2 trillion dollars as direct, indirect, induced and as a tourism catalyst, handled 5.3 trillion value of cargo in 2010 and also 3.5 percent of global GDP is supported by air transport (ATAG, 2012). According to Oxford Economics (2011), aviation enhances economic

performance by opening access to wider base of suppliers, access to new production techniques, increase inward and outward investment and the ability to exploit economies of scale.

Even though many of the economic impacts of development of transportation are positive, there are also negative impacts on economic development. Among these the use of different transport modes and infrastructure are never safe. Therefore, accidents take place due to human error and mechanical and infrastructural failures which lead to cost in healthcare, insurance, damage to property and loss of life. Further the environmental impact of transport through air, water and noise pollution are also significant.

The increase in cross border travel implies closer relationship among countries and people. The flow of goods and people encourages social and economic integration. Beyond the economic benefit air transport provides social benefit. By facilitating tourism and trade it generates economic growth, provides jobs, increase revenues from tax and improve living standard.

3.2 Review of the Empirical Literatures

3.2.1 The Role of Transportation in Tourism Sector

This section is concerned with the empirical relationship between transportation and tourism sector. Thus, this section presented evidences and/or empirical literatures which suggest the existence of significant effects of transportation on tourism sector.

The travel and tourism experience of tourists and the ideas about tourism products start and end with transportation. That is why it is impossible to consider tourism without transportation (Mammadov, 2012). Accordingly, Seetanah (2006) has investigated the importance of Mauritius transportation capital on tourism development, most importantly in the overall destination‟s attractiveness using co-integration analysis. Results from his analysis showed that transport capital stock of the country has been contributing positively of the number of tourist arrival both in the short and long run. Moreover he found that non-transport infrastructure, though having a positive sign, was however found to be insignificant. The study thus highlights the importance of all means of transport infrastructure in adding to the value of service and experience received by tourism and surely helps to form an enhanced total experience of the area destination visited.

Rizal and Asokan (2013) also attempted to address the issues of the role of transportation in development of tourism industry in Sikkim state, India. The paper revealed that transport is one of the main factors promoting the growth of tourism in Sikkim state. They noted that among different modes of transport, road transport plays an important role in hilly regions of Sikkim with mountain and slopes. In general, they suggested that the growth and improvement of tourism transport is very necessary for the economic benefit of tourism to the local people.

Musa and Ndawayo (2011) examined the role of transportation in the development of tourism in Nigeria. A major finding of the study is that transportation is a significant determinant of tourism development in Nigeria. Furthermore, they noted that the presence of transportation (as indicated by road connectivity) is statistically significant in determine of the development of tourism in Nigeria. It plays a positive role and combines with other factors to attract tourists. Similarly, recent studies by Ya Hui et al (2012) and Nuku'alofa (2013) also provided an update on the influence of the transportation on the tourism industry. Their result showed that when transportation has improved in terms of accessibility, tourists stay much longer than before. Further, the studies show that improving transportation infrastructure and services primarily to accommodate and boost tourism could bring positive benefits for other sectors of the economy

Air transport is the main mode for international tourism, which normally entails travel over long distance. Especially, without an efficient aviation system, it is almost impossible for a number of landlocked and geographically isolated developing nations to expand and sustain domestic and international tourism. In other words, Tourism and Air Transport industry are complementing each other. Tourism depends on transportation to bring visitors, while the transportation industry depends on tourism to generate demand for its services. The growth in tourism industry directly reflects onto the air transportation. Accordingly, Eric (2013) investigated the relationship between Air transport and tourism growth in selected Africa countries (Kenya, Ethiopia and South Africa) by using a case study analysis. He noted that in most African nations tourism is constrained by the limited offer of flights and the lack of convenient services. In his case study he found that the current good performance of the Kenyan and South African tourism industries resulted from their strong aviation industries, it also encouraging noting that the government of Ethiopia has set in train an initiative to develop the tourism industry. Overall, he conclude that

efficient Air transport can act as a facilitator in the development of more diversified export-based industries, away from over-reliance on natural resources, which in the presence of linkages with other domestic economic sectors can act as a stimulus for broadly based growth.

International Air Transport Association (2007) analyzed the economic benefits of Air transport in Colombia. The study suggested that Air transport facilitates and supports the tourism industry in the country. In 2006, Air transport accounts for over 85 percent of international tourist arrivals to Colombia. It was already provided a strong boost to the sector, accounting for almost all of the increase in tourists since 2003. Further investment in Air transport infrastructure and services also play key role in developing significant further growth in tourism.

Improving the aviation sector is the best tool for marking the tourism sector and helps to correct an out of date, inaccurate or unbalanced perception that accompanied the former brand of Ethiopia. The marquee also adds value to the country‟s efforts to boost the country‟s tourism industry. As a result, Tenadi (2013) explored the reasons why the Zimbabwe tourism authority rebranded the Zimbabwe destination from Zimbabwe Africa‟s paradise to „a world of wonders‟. He found that the new brand replaced an outdated brand. Besides the rebranding of the destination, he also showed that the returning of major airlines is a major factor that has contributed to the re-establishment of tourist‟s confidence to visit or revisit Zimbabwe. This had boosted connectivity, enhanced the capacity and competitiveness of the country thereby further promoting as a tourist destination.

Many writers, such as Seetanah et al (2011) in the case of total tourist arrivals in to Mauritius and Geering (1974) in measuring touristic attractions, have acknowledged the need for

infrastructure (transportation, water, communication, hotel, etc.) in a successful program of tourism development.

3.2.2 Transport, Tourism and Economic Growth

According to the World Bank, one of the major indicators of development is the availability of high quality, efficient and low cost transportation both domestically and internationally. This is because to reach economic development first one needs to have access to markets. Thus, an efficient transportation system facilitates economic growth by opening the chance for movement of people, goods and services. Improvement in mobility leads to access to new trade routes, it minimizes time and cost of travel thereby decreasing production cost. The possibility to access wider markets will increase competition and allows for the benefit of economies of scale in production and distribution (CONNDOT, 2013). Furthermore, a study done by Abhijit et al (2010) shows regions closer to transportation networks tend to have higher level of GDP per capital, higher income inequality and a higher number of firms in the case of China.

Transportation is a critical factor in economic growth. The absence of transport service limits a nation‟s ability to distribute finished goods, integrate the manufacturing and agriculture industry and supply infrastructure facilities. In the case of Nigeria the lack of good roads, poor government policy on transportation and lack of security has limited the performance of the transport sector and thus negatively affects the economic growth (Mustapha, 2011).

Gusti (2012) examined the effect of air transport on economic development in Indonesia. The paper revealed that the geographical condition of the country has made air transport the major mode of transportation. Moreover, the contribution of tourism to the country‟s GDP is high

compared to the other sectors. Thus, it concludes that any inefficiency of the air transport sector could have a negative outcome on the development of Indonesia.

The United States (US) department of aviation (2014) report shows civil aviation contributed 4-5 percent to the US economy in 2012. The sector contributes to the US trade balance, creates high paying jobs, connects the country to market opportunities and thus has a positive influence on economic growth and development. The aviation sector supports 3.4 percent of United Kingdom‟s (UK) GDP and 3.3 percent of the labor force is hired in the sector giving it a significant role in determining the growth rate of UK (Oxford Economics, 2014).A 100 percent increment in tourism expenditure results more than 80 percent grow in the long run in Chile‟s economy (Juan Gabriel et al, 2008).

Tourism is now the world‟s largest industries and among the sectors which contribute to economic growth both in developing and developed countries as presented by different researchers. The study done on the four Southern European countries (Greece, Italy, Portugal and Spain) shows tourism has a positive and statistically significant effect on growth. Thus policies aimed at improving this sector will contribute to the improvement in the standard of living and generating welfare effects both for the sending and receiving countries (Sara and Elias, 2008). Supporting this A.Nowjee et al (2012) shows the causality of tourism arrival to real effective exchange rate and tourism as a source of economic growth. Holding other variables constant a one percent increase in tourism led to about a 0.14 percent increase in economic growth in the long run for Mauritius.

A study by Kareem (2008)on 36 African countries for the years starting from 1995 to 2004, analyzed the causality and long run relation between tourism export and economic growth using

panel granger causality test. The study used real growth domestic product (RGDP) as a measure of economic growth and tourism expenditure and tourism receipt to capture tourism export. While there exists a long run relation between the two, there is a unidirectional causality from RGDP to tourism receipt. This is because most of the countries use their income to upgrade the level of tourism infrastructure and sites so as to attract more visitors and improve the sector so in turn to accelerate long run economic growth. The paper concludes tourism export can be a fast truck to development for Africa.

The study done by Gebre (2011) focusing on Axum, Ethiopia, discusses the economic impact of the sector in the area which is one of the major attraction sites in the country. Tourism has resulted improvement on income of business and non-business households. It has improved small scale enterprises like tour operators, guides and handicrafts and expanded the social service and hotel construction. Meanwhile, the seasonal fluctuation of tourists indicates inconsistence in the income of households depending on it. It has also encouraged dependence and begging to spread among local residents.

Robert B. (2010) also states tourism as a major export for 83 percent of developing nations and their main source of foreign exchange. In contrast to these the experience of Turk shows that tourism is not always beneficiary for the economy for developing nations. This is because even if the sector is labor intensive in operation, the expansion of its productive capacity is capital intensive thus it is as significant in employment creation. Moreover, the seasonality of the work results in high cyclical unemployment in the economy. Thus it should not be generalized that tourism is a way to economic growth (Diamond, 1977).

Unplanned and uncontrolled tourism growth however has a negative impact especially on the environment. High number of visitors will have higher risk of damage to the environment, and such damages get worse if the pressure of tourist services continue to increase. The deterioration of the environment, which is the major source of tourism results a decline in the sectors contribution to the economy. Thus, the cost will be much worse than the possible economic benefit gained from the tourism sector. Therefore, there should be a balance between the number of visitors and the social and environmental cost a county is willing to undertake (Thomas, 2009).

Chapter Four: Model Specification and Methodology of the Study

4.1 Model Specification

To investigate the relationship between international air transport and tourism this paper uses the VECM approach or co-integrated VAR approach for the period 1974 to 2014. To this end the researcher uses the model developed Edwang and Obert (2011) to estimate the determinants of international tourism demand for Zimbabwe. This model is modified so as to include number of passengers and real GDP as explanatory variables for tourism growth in Ethiopia.

The dependent variable for the model is international visitor number. In different models CPI is taken as a determinant for international tourism demand. Domestic price is taken so as to show how tourism product prices affect tourism flow to a country.

The income of the country of origin also has a significant impact on tourism. However tourists flow from all over the world and including income data of each tourist originating country will be complicated and inefficient. Thus, as the trends in global income have a tendency to follow the United States economic activity, annual US unemployment rate is used as a proxy for change in income.

Transport cost is proxied by international oil price which is multiplied by exchange rate to make the measurement of all variables in unit Birr. Transport cost is included because it is a major driver for both air and road transport once tourists inter to the country.

To show the impact of infrastructure on tourism development real physical public infrastructure investment (RPII) which is proxied by government physical public infrastructure capital formation deflated by the GDP deflator is included in the model. The impact of infrastructure on

tourism is expected to be positive. This is because tourists are attracted to better accommodations and communication facilities.

The real gross domestic product (RGDP), the gross domestic product deflated by GDP deflator, is used as a proxy for economic growth. The real GDP is expected to have a positive impact on tourism as its growth would increase investment in all sectors including tourism and transport sector which indirectly plays a major role in tourism.

This paper models international tourists from all countries rather than a particular country of origin. In modeling the impact of international air transport on the number of tourists for Ethiopia, the paper focuses on total number of international passengers arriving in Ethiopia.

$$VIS = f\ (INP, UNP, TRC, CPI, RPII, RGDP)$$

Where,VIS = Total Number of International Visitors

$RGDP$= Real Gross Domestic Product

UNP=Unemployment Rate

INP=TotalNumber of International Passengers

CPI= Current Price Index

RPII= Real Physical Infrastructure Investment

TRC= Total Transport cost

4.2 Vector Auto Regressive and Vector Error Correction Models

4.2.1 Vector Auto Regressive (VAR)

When we have several time series, we need to consider interdependence between them. One way of doing this is estimating a simultaneous equation model with lags in all the variables. However to use this model it requires to classify the variables into endogenous and exogenous. Moreover it requires imposing constraints on the parameters to achieve identification. But since this model involves many arbitrary decisions the alternative is using VAR approach (G.S Madalla, 1992).

VAR describes the dynamic evaluation of the Variables from their common history. It considers the variables in the model simultaneously and thus it reduces the number of lags and also more accurate forecasting is possible because the information set is extended to include the history of the other variables. The VAR model is also easy to estimate because it uses the OLS method and does not require division of variables.

One important characteristic of VAR process is, it generates stationary time series with time invariant means, Variance and Co-variance given sufficient starting values. The VAR approach does not require structural modeling because it treats every variable as endogenous in the system as a function of the lagged values of all endogenous variables in the system.

4.2.2 Vector error correction Model (VECM)

The VAR model is a general framework used to describe the dynamic interrelationship among stationary variables. If the time series are not stationary then VAR needs to be modified to allow consistent estimators of the relations among the variables.

In order to capture both short run and long run relations in the models the study uses Vector error correction Model (VECM), a special case of the VAR for variables in their first differences. VECM also takes co-integration among the variables under consideration. If there is a long run relation among the variables, an ECM can be formulated to show the long run interaction between variables. VECM shows the achievement of long term equilibrium and the rate of change in the short term to achieve equilibrium. It is useful in determining short term dynamics between variables by restricting long run behavior of variables.

4.3 Econometric Procedure

4.3.1 Unit Root Test

The motive behind conducting a unit root test is to investigate the properties of the variables before the construction of an econometric model. That means, the unit root tests are mainly a tool performed to classify series as stationary and non-stationary. Stationary is to mean statistical properties of the series do not change over time.

Once we classify the variables as stationary and non-stationary it is possible to sort out short run and long run effects in our model, and thus set up a model were statistical inference will be meaningful.

A. Augmented Dickey Fuller (ADF) Test

The most common test for testing I (0) versus I(1) is the Dickey Fuller test. The Dickey Fuller test involves fitting the regression model by OLS. In this case existence of serial correlation will

cause problem. Thus to avoid this problem ADF test regression includes legs of the first difference of the variables.

The General ADF Model is$\Delta Yt = \mu + \gamma t + \beta Yt - 1 + \sum_{k=1}^{K} \theta i \ \Delta Yt - i + Ut$

Where, Δ is first difference operation; t is the time trend; k is the number of lags; U is the error term and μ and β are parameters.

The test is Ho: Variable is not stationary or has a unit root while the alternative states

Hi: Variable is Stationary

When the P-value is less than 5, we reject the null. If we reject the null we conclude that Yt does not contain a unit root.

B. Phillips-Perron Unit root Tests

An alternative unit root test approach that can be used is the Phillips and Perron unit root test. The application of the PP unit root test is based on the Ordinary Least Squares (OLS) parameter estimate same as in the ADF approach.

Phillips and Perron unit root tests differ for the ADF tests mainly in how they deal with serial correlation and heteroskedesticity in the errors. The PP tests correct for any serial correlation and heteroskedesticity in the errors by directly modifying the test statistics. One advantage of the PP over ADF is that the PP tests are robust to general forms of heteroskedesticity in the error terms.

4.3.2 Co-integration analysis

Co-integration analysis is done to find out the number of co-integrated vectors necessary to run VAR model. Co-integration tells us if there exists a long run relation among the Variables in the model. To run the co-integration analysis we assume that all the variables are non-stationary and integrated of the same order. The two tools that can be used to identify the existence of long run relations among variables are Engel-Granger‟s residual based test and Johansen-Juselius test.

A. The Johansen Test for Co-integration

The Johansen test makes it possible to estimate all co-integrating vectors when there are more than two variables. Generally, if there are n variables there are n-1 co-integration vectors,it provides estimate of all co-integrating vectors. The Johansen proposes two different likelihood ratio tests, which are the maximum Eigen value test and the trace test. For both test statistics, the null hypothesis is no co-integration while the alternative is co-integration (Gerald, 2014).

B. The Engle and Granger approach

Any equilibrium theories that involve variables require the existence of combination of the variables to be stationary. The Engle and Granger recommend a two-step procedure for co-integration analysis. This is because of the desire to know if the system is in equilibrium in the long run. The steps are:

Step 1. Estimate the long run equilibrium equation.

The test is whether the error is stationary or not. If the unit root test hypothesis is rejected then the hypothesis of no co-integration is also rejected.

Step 2. Estimate the Error correction model (It is estimated using OLS).

Here the null hypothesis that there is no co-integration relation is tested against the alternative of co-integration or the residual process is stationary. The test is done using ADF test on the OLS residual. To get the final model (ECM), the error term is combined with the first difference of the variable.

Although, the Engle- Granger procedure is easy to implement it has drawbacks. One disadvantage of the two step estimation is that, any error introduced in the first step is carried into the second step. Another drawback is the methods makes an implicit assumption that the co-integrating vector is unique which means that the model at the end is a result of linear combination of independent co-integrating vectors. Finally, as stated in Harris (1995), the model does not allow the variables in the right hand side to be endogenous .Thus the Johansen test of co-integration is used in this study.

The other issue to be dealt with the issue identifying endogenous and exogenous variables in the system. The test for endogeneity is thus conducted using Granger Causality test. The test is conducted to make sure that the dependent variable considered in the model can be used to formulate the long run equation.

4.3.3 Post Estimation Diagnostic Tests

Model mis-specification in regression analysis gives wrong implication for estimator forecasts and inferences drawn from the model. Thus to examine the quality of the model it is necessary to undertake diagnostic tests.

These tests include serial correlation, hetroscedesticity and normality tests. If a time series is serially uncorrelated no linear function of the lagged variables can account for the behavior of the current variable. For a serially independent time series there is no relation between the current and the past variables. Thus diagnostic test can be applied to evaluate model residuals which also serve as tests of model adequacy.

One of the key assumptions in a regression model is that the errors have the same variance throughout the sample but if the error variance is not constant, the data is said to be heteroscedestic. And since OLS assumes constant error variance, heteroscedestic the results we gain willbe insufficient. Moreover heteroscedesticity makes the OLS forecast error variance inaccurate.

The LM test is conducted to investigate the existence of heteroscedesticity in the model. The null hypothesis of the test is that the errors are homoscedastic and independent of the regressor, meaning there is no mis-specification in the regression analysis.

It is not right to assume that all economic time series are normally distributed, meaning some parameters are extremely sensitive while other parameters are almost unaffected, and if this is so it implies that the estimator does not give either consistent or efficient estimates.

Normality is tested using the Jarque-Bera test which is based on comparing how far the asymmetry and kurtosis measures diverge from the values of the normal distribution using the third and fourth moment of the variables. The null hypothesis for the test states random elements and subject to normal distribution while the alternative states they are not subject to normal distribution (Czeslaw, 2010).

4.3.4 Impulse Response and Variance decomposition

Impulse responses (is a tool in interpreting estimated time series models) are used to investigate the effects of shocks to the system when conducting a VAR analysis. The test shows the response of each variable in the system to a shock in any of the other variables. Impulse response function shows the sign the magnitude and persistence of shocks to the dependent variable.

The variance decomposition determines how much of the forecast error variance of each of the variables can be explained by exogenous shocks to the other variables. It shows the importance of each random innovation affecting the variables in the VAR.

4.4 Nature and Source of Data

In order to capture the relationship between tourism and air transport the study international passengers number to indicate for the development of air transport. Following Edwang and Obert (2011) the study uses US unemployment rate as a proxy for international income.

The study uses annual time series data for the period 1974/75-2013/14 to conduct the analysis. The period is chosen based on the availability of full figures. The data for the chosen variables in the model are both from domestic and international sources. While the data for international passenger number is obtained from Ethiopian civil Aviation Authority, the number of tourism arrivals is gained from Ministry of Culture and Tourism, the other domestic sources include Ministry of Finance and Economic Development (MOFED), National Bank of Ethiopia (NBE), Ethiopian Road Authority, Ethiopian Telecommunication Corporation and Ethiopian Electric Power Corporation (EEPCO). On the other hand the international sources are International Monetary Fund (IMF) and World Bank(WB).

CHAPTER FIVE: EMPIRICAL ANALYSIS AND FINDINGS

5.1 Descriptive Analysis

Here we see the trends of tourism and transport sector in Ethiopia. As for the relation between the two sectors, it will be dealt with in the econometric analysis of this chapter.

The service sector has been a rapidly growing industry in Ethiopia and the tourism sector is one part of it. The tourism sector first started in Ethiopia wth the formation of Ethiopia Tourism organization in 1961. The cultural, historical and natural sites in Ethiopia makes the country a tourist destination. The recognition of this industry as a foreign exchange earning, employment creation and an input to the economic development of the country has made the government devote more resources to the growth of the sector. Thus, when we look at the trend of tourism for Ethiopia as it is shown in figure (1) it has been sharply increasing for the past forty years.

When tourists are classified into catagories according to the purpose of visit, the number of tourists of Ethiopia mostly fall to the catagories of vacation visitors followed by busines and conference visitors. The data for the different catagories is not included in the data in this study because it is not available going back to the past 40 years.

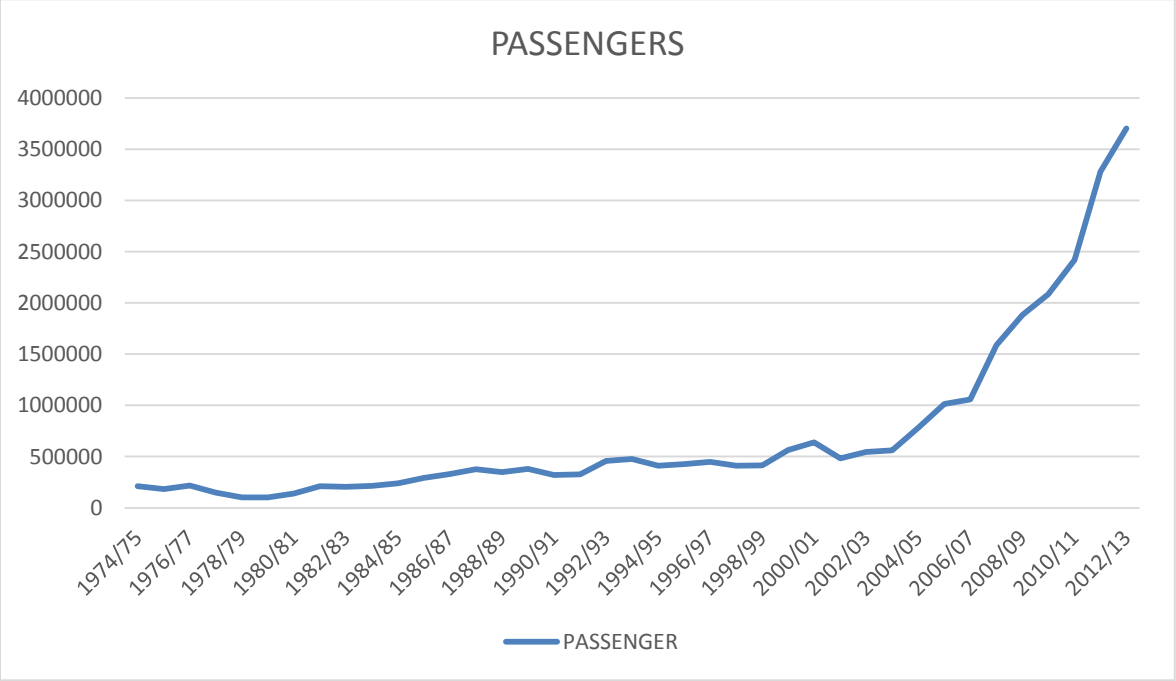
Figure 5.1. Trend of Tourism

Source: Ministry of Culture and Tourism.

The establishment of Ethiopian airlines in 1945 marked the beginning of air transport in Ethiopia. The airlines operation started with only six air planes registered in its name. Currently the airline owns 68 air crafts and reaches up to 19 domestic and 83 international destinations all over the world.

Looking at the figure below, it can be observed that the number of passengers the airline give service to each yearhas been increasing since it first started its operation. The increase in investment in construction of terminals, the purchase of advanced air crafts, the improvement in service quality and increase in the destinations it reaches has made the airlines one of the top airlines resulting the continuous increase in passenger number as shown in the graph.

Figure 5.2 Trend of Air Transport Passenger



Source: Ethiopian Civil Aviation Authority

The trend of both visitors and passengers indicate stable characteristic inside the investigation period. Therefore it can be concluded from the above figures that the Ethiopian tourism sector and its air transport industry are growing sharply.

5.2 Econometric Analysis

In the previous chapters we have seen the presentation of the relationship between the dependent and the independent variables. This section presents econometric results and their interpretation. The unit root test, the Johansen co-integration test and the development of the long run and short run models will be identified as follow.

5.2.1 Unit Root Test Results

The test for unit root is a pre requisite condition when working with a time series data. The presence of a unit root implies that the time series data is non-stationary, while the absence of a unit root show that it is stationary. The test is necessary because results obtained using non-stationary time series can be spurious and thus not consistent and reliable.

The test is done using the Augmented Dickey Fuller (ADF) test and Phillip Perron (PP) test. When the test statistics is larger than the critical value in absolute terms, the null hypothesis of unit root is rejected, and if the test statistics is less than the critical value in absolute terms, we fail to reject the null hypothesis in both tests. Table 5.1and 5.2 shows the results of ADF and PP tests for unit root.

Table 5.1: ADF unit root test results

Values	Test Statistic Under Different Assumptions			Order of Integration
	Intercept	Trend and Intercept	No Trend and No Intercept	
LVIS	0.973628	-1.413487	6.121285	I(1)
D(LVIS)	-8.153574*	-8.240909	-0.761217	I(1)
LUNP	-3.733933*	-3.733924	-0.261426	I(0)
D(LUNP)	-4.719348	-4.649125	-4.789034	I(1)
LTRC	0.41442	-1.939935	2.630561	I(1)
D(LTRC)	-7.012495*	-6.973977	-5.844332	I(1)
LRPII	0.761459	-1.596635	5.054065	I(1)
D(LRPII)	-4.531162*	-4.574527	-3.214647	I(1)
LINP	-0.564834	-4.285586	1.515033	I(1)
D(LINP)	-6.535890	-6.633368	-9.034349*	I(1)
LCPI	0.476268	-1.975434	5.577718	I(1)
D(LCPI)	-4.202155*	-4.225741	-1.276625	I(1)
LRGDP	3.457005	0.326118	2.068814	I(1)
D(LRGDP)	-4.531162*	-4.574527	-3.214647	I(1)

Note: D shows the variable is differentiated once. Mackinnon (1996) one-sided critical values are used for rejection of a unit root. * shows significance at 1%.

Table 5.2: PP unit root test results

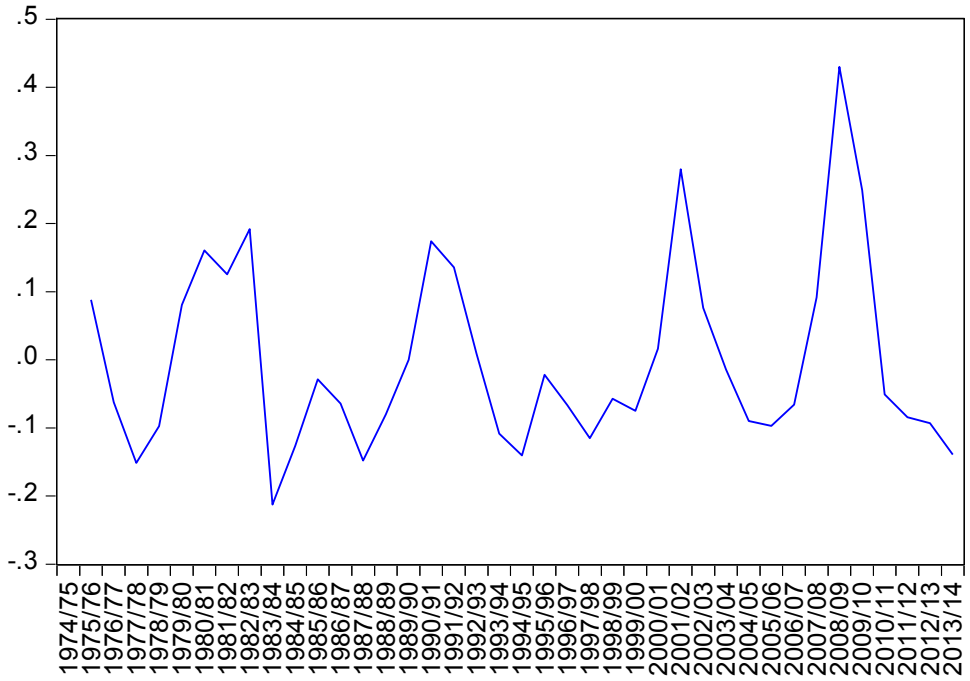
Values	Test Statistic Under Different Assumptions			Order of Integration
	Intercept	Trend andIntercept	No Trend and No Intercept	
LVIS	0.458141	-1.297149	6.776869	I(1)
D(LVIS)	-8.006360*	-8.150226	-4.271773	I(1)
LUNP	-2.258415	-2.216077	-0.310610	I(1)
D(LUNP)	-2.984345	-2.900384	-3.067824*	I(1)
LTRC	0.491947	-1.909382	4.043781	I(1)
D(LTRC)	-7.248700*	-7.306382	-5.866144	I(1)
LRPII	0.548370	-1.879821	4.136275	I(1)
D(LRPII)	-4.508626*	-4.577432	-3.187303	I(1)
LINP	1.398964	-4.249093	2.033104	I(1)
D(LINP)	-12.73834	-19.71142	-9.924537*	I(1)
LCPI	0.103618	-1.494792	4.065115	I(1)
D(LCPI)	-4.183113*	-4.173716	-2.858963	I(1)
LRGDP	0.548370	-1.879821	4.136275	I(1)
D(LRGDP)	-4.508626*	-4.577432	-3.187303	I(1)

Note: D shows the variable is differentiated once. Mackinnon (1996) one-sided critical values are used for rejection of a unit root. * shows significance at 1%.

The tests shows that all the variables have unit root in their level and thus have to be differentiated to be stationary except for unemployment rate (UNP) in the ADF test. UNP is stationary in level under ADF while it is non stationary under the PP test. The existence of

structural breaks can explain the contradicting result. When there a structural break the PP unit root test takes account of such structural breaks unlike the ADF test. Therefore, the PP test is better in the presence of structural breaks. The figure below shows the existence of structural breaks in the unemployment rate series.

Figure 5.3: The trend of unemployment rate



AS shown in the figure, there are permanent breaks in the unemployment rate series. This could be the reason for the conflicting results of ADF and PP unit root tests.

The test results show that all the variables are non-stationary at level. Thus, the determination of co-integrating relationships does not suffer from mixed order of integration.

5.2.2 Co-integration Analysis

The determination of the cointegrating relationship is determined using the Johansen approach. However, before conducting this test determination of the lag length is important. This is because the Johansen test is very sensitive to the number of lags included in the model.

The identification of lags was provided by the Sequential modified LR statistics, Final Prediction Error(FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn (HQ) Information Criterion each test at 5% level of significance. From the table we see that three of the criteria"s select lag two as the optimal lag length for the model.

Table 5.3: Optimal Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	9.255373	NA	2.09e-09	-0.121912	0.182856	-0.014467
1	229.4258	345.1320	2.10e-13	-9.374367	-6.936221*	-8.514806
2	295.4320	78.49385*	1.13e-13*	-10.29362	-5.722097	-8.681944*
3	356.8984	49.83765	1.44e-13	-10.96748*	-4.262581	-8.603690

* indicates lag order selected by the criterion

It is possible that the optimal lag selected to have insignificant contribution in the model. Thus in order to make sure information about the model are not excluded in the estimation of VAR we use Wald exclusion test. As the test shows the first two lags of all the variables are jointly significant. Hence this study employs two lag length for estimation techniques.

Table 5.4: Lag Exclusion Test

	LVIS	LUNP	LTRC	LRPII	LINP	LCPI	LRGDP	Joint
Lag 1	9.903656 [0.194099]	73.94830 [2.34e-13]	14.95574 [0.036571]	40.44670 [1.03e-06]	5.284738 [0.625259]	48.31286 [3.09e-08]	57.39788 [4.98e-10]	266.5398 [0.000000]
Lag 2	4.939552 [0.667340]	32.41926 [3.40e-05]	7.893636 [0.342066]	10.77242 [0.148859]	6.522707 [0.480204]	29.99189 [9.53e-05]	17.10496 [0.016732]	138.5237 [1.76e-10]
df	7	7	7	7	7	7	7	49

5.2.2.1 Johansen Co-integration Test Result

Lack of co-integration between variables suggest there is no long run relationship between them. Thus to determine whether there exists co-integration or in other words long run relationship between the variables the Johansen co-integration method is applied.

The result of testing the number of co-integrating vectors is shown in table 5.5. the unrestricted co-integration rank test (Trace) showsfour co-integrating vectors at the 5% critical value while the unrestricted co-integration rank test (Maximum Eigen Value) shows two co-integrating vector in the system. Thus the test indicates that there is significant long run relationship among the variables VIS, TRC, RPII, INP and CPI.

Table 5.5 (a) Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.844234	210.9477	134.6780	0.0000
At most 1 *	0.732205	142.1498	103.8473	0.0000
At most 2 *	0.576693	93.40115	76.97277	0.0017
At most 3 *	0.523051	61.59379	54.07904	0.0092
At most 4	0.358227	34.20103	35.19275	0.0637
At most 5	0.240367	17.79079	20.26184	0.1057
At most 6	0.186095	7.618751	9.164546	0.0974

* denotes rejection of the hypothesis at the 0.05 level

Table 5.5 (b) Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.844234	68.79790	47.07897	0.0001
At most 1 *	0.732205	48.74868	40.95680	0.0055
At most 2	0.576693	31.80736	34.80587	0.1093
At most 3	0.523051	27.39276	28.58808	0.0704
At most 4	0.358227	16.41025	22.29962	0.2701
At most 5	0.240367	10.17204	15.89210	0.3189
At most 6	0.186095	7.618751	9.164546	0.0974

* denotes rejection of the hypothesis at the 0.05 level

5.2.3 Diagnostic Tests

Diagnostic test is usually conducted to detect model misspecification. The study used LM test to identify the existence of serial correlation. LM test revealed that the null hypothesis of the residuals are not serially correlated is accepted. Thus, the residuals in the model do not show any evidence of autocorrelation problem.

The heteroskedasticity test is conducted to determine whether the variance in the model are constant or not. The results show that the test fails to reject the null hypothesis of homoskedasticity. Therefore, the residuals in the model are found to be homoskedastic.

Finally, the test for normality is conducted using the Jarque-Bera test. The Jarque-Bera test failed to reject the null hypothesis of normal distribution of the residuals. In general, we can conclude the vector error correction model passed all the diagnostic tests conducted in this study.

5.2.4 Vector Error Correction Model (VECM)

After identifying the existence of long run relationship among the variables in the model, the VECM is estimated. The VECM consists of the long run co-integration coefficient and short run coefficients.

5.2.4.1 Long Run Model

The result of the co-integrated VAR with two lag selected by the optimum lag length selection criteria gives us the long run model.

LVIS= 0.08 LUNP-0.508LTRC +0.352LRPII +0.128LINP + 1.224LCPI + 0.2446LRGDP+ 1.97

(0.098) (0.099) (0.081) (0.047) (0.116) (0.181)

The numbers in parenthesis under the estimated coefficients are the asymptotic standard errors. The above equation shows that, in the long run VIS can be explained by TRC, RPII, INP and CPI in Ethiopia.

Change in income which is proxied by US unemployment rate has insignificant impact on visitor number to Ethiopia both in the long run and in the short run. As most of the tourists to Ethiopia are from North America and Europe, according to studies from Ministry of Culture and Tourism, their medium of exchange is dollar. Thus, even if tourists have lower income they still have higher purchasing power since the purchasing power of one dollar is much greater than one birr. Therefore, even though there is increase in unemployment and hence a decline in income of tourists, it can be seen that it might not affect tourism negatively as expected.

The impact of domestic price on tourism is the long run is positive and significant. Meaning a one percent increase in domestic price will lead to a 7 percent increment in visitor number. This positive sign of CPI can be explained by asymptotic information held by tourists. This means when tourists face low CPI in their home countries, they feel they can save money by traveling, not having enough information about the CPI in the destination country (Jintanne et al, 2011).

Also the study by Ayesha and Khalid (2014), shows CPI has a positive impact on tourism because the average tourist are more concerned with enjoyable time rather than getting the cheapest deals. Thus, Ethiopia having many tourist attracting sites and also having nine of these sites registered as a world heritage sites it has given tourists the temptation to visit the country. As a result the tourism sector may not be as sensitive to price as some other industries in the country.

The expected negative and significant coefficient of transport cost in the long run implies that an increase in oil prices which results an increase in transport cost discourages tourists from traveling. As Ethiopia is an oil importing country the increase in oil price has a significant impact on the cost of transportation in the country. The study by S. Beken and J. Lennox (2012) shows that tourism is dependent on in country transport. Consequently, an increase in transportation cost in the country will increase their cost for traveling and discourages them from doing so.

Transport system is responsible for connecting tourism originating regions to tourism destination regions and also providing transport within the tourism destinations. Transport is a factor in destination development and plays a significant role in the creation and development of new attractions. Hence the increase in transport cost to reach these destinations reduce the attractiveness and utility of the trip.

With respect to real public infrastructure investment, real public infrastructure investment has a positive and significant impact on visitors‟ number in Ethiopia both in the long run and the short run. The results here suggest that a 10 percentage increase in real public infrastructure investment in the long run raise visitor number by 6.3 percent. This finding is consistent with the study by Imikan and Ekpo (2012) which shows that infrastructure had a strong positive effect on tourism arrivals both at the global and regional level of consideration. Hence, the role of development of any service industry cannot be ignored because without accommodations tourism may not flourish.

Infrastructure presence is fundamental for a destination to be attractive and have good impression on tourists. Moreover, tourist satisfaction is highly correlated with the level of

infrastructure and technology in a destination. Accordingly, tourism development will not be possible without roads, electricity and means of communication. The absence of public infrastructure creates heavy burden on operating cost resulting a negative effect on competitiveness of a destination. Investment in infrastructure by the public hence insures the competitiveness of the tourism industry.

A study by Yabibal(2010), show that infrastructure is statistically significant determinant of tourism flows in Ethiopia. Good infrastructure reduces the cost of transportation of goods and services as it will make traveling and communication easier and time efficient (Najat and Masoud, 2014).

As the results show international passengers number has a significant and positive impact on tourism as expected. Most of the tourists that come to Ethiopia are from North America and Europe (MOCT, 2013), and as the distance between the countries is significantly long the only means of transportation is air transport. Thus, the increase in the number of air passengers indicate an increase in visitor number. The impact of increase in air transport usage will increase the number of visitors as air transport is the main means of travel for people who want to travel long distance given a short vacation time. Therefore, increase in passenger number which include leisure passengers result in tourism flow.

The availability and development of air transport in the country boost connectivity. Therefore, it provides link not only to already existing origin of tourist to Ethiopia but also produce more new tourist originating destinations. By doing so air transport facilitates and supports the tourism industry. In addition the comfort security and service quality of airlines has a role in tourist travel experience. In this sense Ethiopian airlines buys new aircrafts, builds new domestic airlines and

train personnel to attract passengers. Thus develop the country‟s tourism sector because availability of comfortable transportation facility can influence the choice of destination for tourists.

From the results it is evident that RGDP has a positive and significant impact on tourism. A study Kareem (2008) indicates that RGDP enhances tourism. Most governments in Africa view tourism as a way to change their county‟s image to the world. Thus, as the country‟s economy develop governments spends more on the tourism sector.

Growth in economy increases leads to increase in investment. The investment made by the government can directly be in tourism development or indirectly through the development of infrastructure in the country. The development in infrastructure can result a decrease in cost of transportation between different locations attributed to time saving. Therefore as explained earlier reduction in transport cost attracts tourism.

Furthermore, the test for weak exogenity conducted using the VEC Granger Causality or Block Exogeneity tests shows that LVIS (Number of Visitors) is endogenous in the estimated model. As shown below the test rejects the null hypothesis of weak exogenity at 5% level of significance.

Table 5.6 VEC Granger Causality Test

Variable	Chi-sq	Prob.	Conclusion
LVIS	23.44072	0.0242	Endogenous
LUNP	6.820383	0.8693	Weakly Exogenous

LTRC	9.266261	0.6800	Weakly Exogenous
LRPII	42.76536	0.0000	Endogenous
LINP	16.04384	0.1892	Weakly Exogenous
LCPI	38.29544	0.0001	Endogenous
LRGDP	17.0909	0.1314	Weakly Exogenous

5.2.4.2 Short Run Relationship

After identifying the long run relationship among the variables, the vector error correction model is estimated.Table 5.7 shows the result of D(LVIS) equation in the error correction model, from which the short run impact of TRC, RPII, INP , UNP, CPI and RGDP on VIS. The coefficient of the error correction term are speed of adjustment to long run equilibrium.

Table 5.7 Error Correction Model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
ECM1(-1)	-0.123564	0.180544	-0.684401	0.5012
ECM2(-1)	-0.105076	0.046098	-2.279408	0.0332
D(LVIS(-1))	-0.423173	0.307001	-1.378410	0.1826
D(LUNP(-1))	-0.030531	0.125109	-0.244034	0.8096
D(LTRC(-2))	-0.232770	0.080028	-2.908620	0.0084
D(LRPII(-1))	0.561672	0.252039	2.228513	0.0369
D(LRPII(-2))	0.656823	0.258939	2.536594	0.0192

D(LINP(-1))	0.083880	0.039388	2.129585	0.0452
D(LINP(-2))	0.081234	0.032791	2.477359	0.0218
D(LCPI(-1))	0.966600	0.275235	3.511905	0.0021
D(LCPI(-2))	0.834978	0.314750	2.652829	0.0149
D(LRGDP(-2))	0.634286	0.379436	1.671656	0.1094

The coefficient of the error terms indicate speed of adjustment of disequilibrium. The first error term is negative but insignificant. While the coefficient of the second error correction term is both negative and significant as it is expected to be. This implies that VIS adjusts to its long run equilibrium by 10.5 percent in one year.

In estimating the error correction model the study adopts two lag for all the variables. Based on the test of significance lagged variables are excluded from the final model. All the results except for UNP are consistent with the long run outputs shown above.

International passenger number has a positive and significant impact, in both first and second lags, on tourism as in the long run indicating the undeniable contribution air transport has on tourism. An airport is the first place a tourist gets to see when entering to a country thus it gives the first impression of the county. Therefore, airports equipped with the latest technologies and can manage to compete during peak times are more attractive to tourists. The Ethiopian airline has been updating and improving its service and thus is recording an increase in customers. Which in turn is also increasing the number of tourists year after year.

Furthermore, RPII also have positive and significant result in both lags. The fact that most of the tourist attracting sited in Ethiopia are spread out all over the country gives infrastructure a major role in the development of the county‟s tourism development. Thus, in the absence of infrastructure the presence of attractions has no benefits.

The positive result of CPI indicates that tourists are not sensitive to increase in price of domestic products. This is because tourists are more concerned about the quality and differentiation of touristic products than their price.

Transport cost shows a negative and significant result in the second lag and RGDP has a positive butinsignificant impact on tourism. This can be explained by the fact the outcomes of growth in the economy such as an increase in investment takes time to make an impression, thus it might not result a significant impact in the short run but it is significant in the long run. Rate of unemployment on the other hand a negative but insignificant impact in the short ran. Even if low income of visitors is said to have a negative impact on tourism it is insignificant and thus does not have really impede the development of tourism in Ethiopia.

5.2.5 Impulse Response

Impulse response function is used to trace the effect of one standard deviation impulse shock on one of the current and future values of the variables in the model. Table 5.7 (a) below shows how LVIS responds to one standard deviation of the independent variables at any point in time. The result indicates that in response to one standard deviation shock of LVIS, VIS itself increases by 0.07percent in the first year, except in the second year, it continues to grow in the long run reaching 18percent in the 10^{th} period. It is also shown that in the first period a one standard

deviation disturbance originating from the other variables do not have any impact on the number of visitors.

A two standard deviation disturbance originating from LINP produces a 0.003 in VIS in the second period. Its effect continues to grow as the forecast period extend and reaches 0.05 at the 10th year. The impact of CPI, INP and RPII are permanent while those of TRC and RGDP disappear in the long run.

Table 5.8 (a): Impulse Response of LVIS

Period	LVIS	LUNP	LTRC	LRPII	LINP	LCPI	LRGDP
1	0.077335	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.056690	0.019496	0.017589	0.015071	0.002597	0.041663	-0.014818
3	0.086085	0.032119	0.000914	0.040220	0.011333	0.045443	0.004787
4	0.097522	0.036790	0.009119	0.043831	0.009691	0.046212	-0.010639
5	0.113229	0.043410	0.005488	0.066320	0.022153	0.051613	-0.007989
6	0.134086	0.060204	0.004236	0.087314	0.025325	0.079936	-0.013648
7	0.149190	0.073522	0.012576	0.095871	0.026816	0.087619	-0.011125
8	0.161187	0.072678	0.001301	0.113466	0.032662	0.092485	-0.012676
9	0.177836	0.081220	-0.002128	0.133035	0.040456	0.105248	-0.016237
10	0.186703	0.092603	-4.37E-05	0.147330	0.046485	0.118235	-0.019396

Table 5.7 (b): presents the response of RGDP to one standard deviation impulse shock raised by the rest of the variables. A one standard deviation disturbance originating from VIS will result in 0.01 increase in RGDP. And its effect continues to increase and reaches 0.11 in the 10^{th} year. Hence even if it is not a big VIS has a positive impact on RGDP implying that the tourism sector has a long run impact on economic growth of Ethiopia.

As for air transport, which is proxied by passenger number, it has a positive and ever increasing impact on RGDP. Though it may not be taken as one of the major determinant of growth in Ethiopia, the growth and improvement of international air transport has a role in influencing RGDP. This influence is attributed to the fact that air transport is the main mode of transport for business passengers who in one way or another play a significant role in the country‟s economy.

Table 5.8 (b): Impulse Response of LRGDP

Period	LVIS	LUNP	LTRC	LRPII	LINP	LCPI	LRGDP
1	0.014808	0.012838	0.007570	0.032368	0.012947	0.007180	0.038282
2	0.041599	0.032995	0.009937	0.041481	0.018552	0.034313	0.054000
3	0.044499	0.032780	0.013020	0.039041	0.015088	0.031162	0.053844
4	0.047802	0.035022	0.006161	0.052551	0.021034	0.025944	0.056699
5	0.065059	0.047699	0.010925	0.062175	0.025303	0.036447	0.052361
6	0.074078	0.058887	0.020537	0.064698	0.022490	0.047261	0.049259
7	0.086361	0.062375	0.017756	0.072533	0.021647	0.052040	0.052496
8	0.099901	0.062944	0.015273	0.080886	0.024256	0.056632	0.050437
9	0.106466	0.065006	0.012765	0.091077	0.028449	0.063726	0.046082
10	0.111643	0.071241	0.009746	0.101891	0.031595	0.071995	0.043462

5.2.6 Variance Decomposition

The variance decomposition gives us information about the importance of random shocks to the variables in the VAR. The variance decomposition analysis of the LVIS is presented in table (5.8) below.Here we focus on the relative importance of endogenous variables explaining the variation in visitor number, hence we only decompose the forecast error variance on VIS.

In the table below, the variance estimates indicate that a greater proportion of the variation in VIS is due to its own innovations. About 63.9% of the future variation in number of visitors is due to change in VIS growth itself and only about 36.1% of the future variation is explained by the other six variables together in Ethiopia. The future growth of tourism depends on its self because tourists share experience with their family and friends after retuning. Accordingly, either good or bad information will be shared to potential tourists depending on their experience, which will affect the future trend of tourism.

Table 5.9: Variance Decomposition of LVIS

Period	S.E.	LVIS	LUNP	LTRC	LRPII	LINP	LCPI	LRGDP
1	0.077335	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.109878	76.15647	3.148218	2.562401	1.881379	0.055843	14.37709	1.818600
3	0.156046	68.19282	5.797422	1.273896	7.575925	0.555098	15.60904	0.995795
4	0.198900	66.01321	6.989602	0.994293	9.519264	0.579038	15.00556	0.899033
5	0.248824	62.88852	7.509831	0.683979	13.18669	1.162647	13.89080	0.677538
6	0.313649	57.85497	8.410666	0.448706	16.04867	1.383678	15.23757	0.615745

7	0.379352	55.01621	9.505768	0.416628	17.35775	1.445572	15.75115	0.506923
8	0.444779	53.15409	9.584873	0.303927	19.13463	1.590836	15.78166	0.449981
9	0.516460	51.27990	9.582038	0.227114	20.82700	1.793507	15.85786	0.432587
10	0.590244	49.26626	9.797630	0.173883	22.17599	1.993385	16.15367	0.439182

Moreover, international passenger is not responsible for much of the variations of visitors in the short run but its positive impact increase through time, and this is consistent with the results gained in the dynamic models.

Chapter Six: Conclusion and Policy Implication

6.1 Conclusion

The tourism sector of Ethiopia is one of the major industries contributing to the growth of the service industry in the country. Tourism serve as a source of employment, foreign exchange earnings and income. It was acknowledged in the literature that air transport is a key for the development of the tourism sector. Due to an improvement in the service of Ethiopian airlines, the tourism sector has been experiencing a steady growth in tourism. As shown in the descriptive analysis, the trend of both sectors show positive and increasing development for the period under study.

The purpose of this thesis was to explore the link between the tourism sector and air transport sector using time series data for the period 1974/75-3013/14 for Ethiopia. The paper applied co-

integrated VAR or VECM to determine the long run and the short run relationship tourism and air transport.

The findings showed that there is a positive correlation between tourism and international air transport both in the short run and in the long run. Furthermore, the impulse response and the variance decomposition results are also in line with the above finding that air transport has a long run impact on tourism. This result is consistent with our hypothesis that air transport has a significant and positive contribution for tourism sector development.

In addition to air transport, infrastructure, income of the country of origin, economic growth, domestic price and transport cost are important variables as they contribute to the development of tourism sector. From the regression analysis: increase in infrastructure, economic growth and domestic price increase the number of visitors to the country. On the other hand increase in transport cost and low income of originating countries will impede the growth of the tourism sector in Ethiopia.

Furthermore, the results also show that the relation between growth and both tourism and air transport is bidirectional. As the of the country‟s economy improve it will lead to increase in government investment in public infrastructure and thus contribute to the tourism development. Whereas the growth both in tourism and air transport is a relevant input for economic growth in Ethiopia.

6.2 Policy Implications

Since its policies can influence both tourism and air transportation attributes through regulations and infrastructure investment government plays an important role in this relationship. The policy implications that can be derived from this empirical study are:

- The results show that tourism has a significant impact on the country‟s economy thus, to realize the long term benefit of tourism to economic growth, government should give the tourism sector the attention it requires by improving openness to tourism and committing resources since it contributes to the economy through national income, employment opportunities and foreign exchange earnings. In addition creating a welcoming environment, by Offering better tax breaks, lower interest rates, minimum business regulations and lower level of government intervention is essential to attract foreign investment because it gives tourists more differentiated and quality product choices.
- As for the air transport to compete with the rest of the world Ethiopian airlines need to keep up dating itself in technology and service it provides and become a world class airline. And by being the number one choice for travelers it can promote and develop the tourism sector of the country. To be able to attract more tourists it is important that local networks are integrated to international networks thus the air line should improve its domestic airports.
- By recognizing the role of air transport not onlys in the tourism sector but in the economy as a whole, the government should also preserve economic and legal frame works that can stimulate efficiency in management and economic operations of the airline. Additionally, reducing the operation costs of the airline to give frequent service in already existing routes or connecting to new routes will also advance the growth of the airline.
- Finally, since our regression results imply the significance of infrastructure and as government is responsible for public infrastructure development in Ethiopia, there is a

need for expansion of infrastructure investment so as to attract more tourists into the country.

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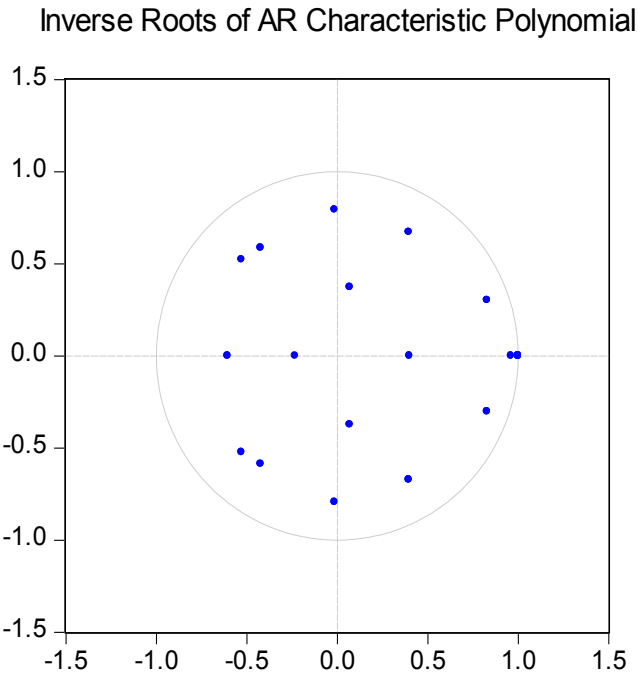
List of Appendices

Appendix A: VAR Stability Test



Appendix B: VECM Result

Error Correction:	D(LVIS)	D(LUNP)	D(LTRC)	D(LRPII)	D(LIPS)	D(LCPI)	D(LRGDP)
CointEq1	-0.123564	-0.003369	-0.385571	-0.800273	1.165203	0.759478	-0.099390
	(0.18054)	(0.27601)	(0.68443)	(0.17219)	(1.22235)	(0.13132)	(0.13152)
	[-0.68440]	[-0.01221]	[-0.56335]	[-4.64758]	[0.95325]	[5.78347]	[-0.75569]
CointEq2	-0.105076	-0.058441	-0.142743	-0.059510	-0.489179	0.115639	-0.021021
	(0.04610)	(0.07047)	(0.17475)	(0.04397)	(0.31210)	(0.03353)	(0.03358)
	[-2.27941]	[-0.82928]	[-0.81683]	[-1.35358]	[-1.56738]	[3.44888]	[-0.62596]
D(LVIS(-1))	-0.423173	0.005412	0.176447	1.198527	-2.857850	-0.830960	0.325036
	(0.30700)	(0.46933)	(1.16381)	(0.29280)	(2.07852)	(0.22330)	(0.22364)
	[-1.37841]	[0.01153]	[0.15161]	[4.09336]	[-1.37495]	[-3.72131]	[1.45337]
D(LVIS(-2))	0.078487	0.297605	0.378056	0.732742	-2.643150	-0.456892	0.119420
	(0.27321)	(0.41767)	(1.03572)	(0.26057)	(1.84975)	(0.19872)	(0.19903)
	[0.28728]	[0.71253]	[0.36502]	[2.81205]	[-1.42892]	[-2.29916]	[0.60002]
D(LUNP(-1))	-0.030531	0.622948	0.033110	0.416687	-0.623176	-0.153165	-0.015655
	(0.12511)	(0.19126)	(0.47428)	(0.11932)	(0.84704)	(0.09100)	(0.09114)
	[-0.24403]	[3.25708]	[0.06981]	[3.49215]	[-0.73571]	[-1.68316]	[-0.17177]
D(LUNP(-2))	-0.025031	-0.369670	-0.009819	-0.294559	0.918407	0.111773	0.054143
	(0.11947)	(0.18264)	(0.45291)	(0.11395)	(0.80888)	(0.08690)	(0.08703)
	[-0.20952]	[-2.02400]	[-0.02168]	[-2.58509]	[1.13541]	[1.28625]	[0.62209]
D(LTRC(-1))	-0.114697	0.029446	-0.249596	0.003412	-1.016142	0.069916	-0.029753
	(0.08410)	(0.12857)	(0.31883)	(0.08021)	(0.56941)	(0.06117)	(0.06127)
	[-1.36378]	[0.22902]	[-0.78286]	[0.04253]	[-1.78456]	[1.14294]	[-0.48563]
D(LTRC(-2))	-0.232770	0.045133	-0.484631	-0.196399	0.036125	0.032010	-0.033931
	(0.08003)	(0.12234)	(0.30338)	(0.07633)	(0.54182)	(0.05821)	(0.05830)
	[-2.90862]	[0.36891]	[-1.59745]	[-2.57318]	[0.06667]	[0.54991]	[-0.58202]
D(LRPII(-1))	0.561672	0.171378	-0.291054	0.161471	3.951007	-0.146950	0.060946
	(0.25204)	(0.38530)	(0.95546)	(0.24038)	(1.70640)	(0.18332)	(0.18360)
	[2.22851]	[0.44479]	[-0.30462]	[0.67173]	[2.31540]	[-0.80160]	[0.33194]
D(LRPII(-2))	0.656823	-0.146121	1.992259	0.337340	1.656591	0.067027	0.026356
	(0.25894)	(0.39585)	(0.98162)	(0.24696)	(1.75312)	(0.18834)	(0.18863)
	[2.53659]	[-0.36913]	[2.02957]	[1.36597]	[0.94494]	[0.35588]	[0.13972]
D(LIPS(-1))	0.083880	0.048790	-0.114383	0.077286	-0.227963	-0.088807	0.001439
	(0.03939)	(0.06021)	(0.14932)	(0.03757)	(0.26667)	(0.02865)	(0.02869)
	[2.12958]	[0.81028]	[-0.76605]	[2.05735]	[-0.85485]	[-3.09986]	[0.05013]
D(LIPS(-2))	0.081234	-0.027982	0.029334	0.075024	-0.243338	-0.036876	0.006597
	(0.03279)	(0.05013)	(0.12431)	(0.03127)	(0.22201)	(0.02385)	(0.02389)
	[2.47736]	[-0.55821]	[0.23598]	[2.39896]	[-1.09609]	[-1.54615]	[0.27619]
D(LCPI(-1))	0.966600	0.365076	0.879886	0.335924	5.688119	0.003095	0.483832
	(0.27524)	(0.42076)	(1.04339)	(0.26250)	(1.86345)	(0.20019)	(0.20050)
	[3.51191]	[0.86765]	[0.84329]	[1.27970]	[3.05247]	[0.01546]	[2.41310]
D(LCPI(-2))	0.834978	0.004407	1.721534	-0.138506	2.943191	0.059995	-0.197191
	(0.31475)	(0.48117)	(1.19319)	(0.30019)	(2.13098)	(0.22893)	(0.22929)
	[2.65283]	[0.00916]	[1.44280]	[-0.46140]	[1.38114]	[0.26206]	[-0.86002]
D(LRGDP(-1))	0.074096	-0.571403	1.304728	0.268705	-1.230655	-0.373007	0.509871

	(0.36162)	(0.55283)	(1.37088)	(0.34489)	(2.44833)	(0.26303)	(0.26343)
	[0.20490]	[-1.03360]	[0.95174]	[0.77910]	[-0.50265]	[-1.41813]	[1.93548]
D(LRGDP(-2))	0.634286	0.754455	-0.849498	0.122886	1.482932	-0.237188	-0.137781
	(0.37944)	(0.58006)	(1.43841)	(0.36188)	(2.56893)	(0.27598)	(0.27641)
	[1.67166]	[1.30065]	[-0.59058]	[0.33957]	[0.57726]	[-0.85943]	[-0.49846]

Note: Standard errors are in ( ) and t satatistics are in [ ]

Appendix C: VEC Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order h
Sample: 1 40
Included observations: 37

Lags	LM-Stat	Prob
1	39.07522	0.8440
2	58.40503	0.1681

Probs from chi-square with 49 df.

Appendix D: VEC Residual Heteroskedasticity Tests

Sample: 1 40
Included observations: 37

Joint test:

Chi-sq	df	Prob.
906.5365	896	0.3960

Appendix E: Residual VEC Normality Tests

Test	Statistic		P-value
	Lags	Chi-sq	
Residual Vector Normality (Jarque-Bera)	Joint	29.13413	0.0100

Appendix F: Descriptive Statistics of Major Variables

Year	VISITORS	PASSENGER
1974/75	20355	212357
1975/76	22302	181756
1976/77	24436	218574
1977/78	26774	149034
1978/79	29336	100253
1979/80	32143	102439
1980/81	35219	137489
1981/82	38589	210588
1982/83	42281	205411
1983/84	46327	213317
1984/85	50759	238750
1985/86	55616	293537
1986/87	60938	330286
1987/88	66768	375183
1988/89	73157	349591
1989/90	80157	381048
1990/91	79495	320863
1991/92	82333	326854
1992/93	85139	456963
1993/94	95197	475808
1994/95	100308	409814
1995/96	105695	427639
1996/97	111371	448097
1997/98	125975	410301
1998/99	101437	413666
1999/00	131242	563668
2000/01	142791	638154
2001/02	151281	481735
2002/03	161676	545238
2003/04	185214	561787
2004/05	195785	782885
2005/06	274375	1015041
2006/07	293745	1056750
2007/08	322865	1589450
2008/09	356411	1881656
2009/10	460640	2085820
2010/11	508995	2419660
2011/12	537269	3282376.7
2012/13	633263	3703604.9
2013/14	633245	3949154.4

DECLARATION

I, the undersigned, declared that this thesis is my original work and has never been presented for a degree in any University and that all sources or materials used for this thesis have been duly acknowledged.

Declared by:

Name: Kalkidan Shitemaw

Signature: _____

Date: _____

Confirmed by Advisor:

Name: _____

Signature: _____

Date: _____

Place and date of submission: Addis Ababa University, July, 2015