School of Management

Gross Domestic Product Growth Correlations: Multi Country Study with Focus on China and India

Master Thesis in Business Administration

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ABSTRACT

Analyses of the dependence of the Gross Domestic Product (GDP) growth rates on seven variables; Logistic Performance (LGI), Corruption Perceptions Index (CPI), Foreign Direct Investment (FDI), Adult Literacy Rate (ADLR), Gini Index (GI), % Service Share of the GDP (SSG) and Global Innovation Index (GII) have been performed in this study. A regression model has been presented where growth rate is taken as a function of seven factors. It has been seen that Gini Index, Foreign Direct Investment and level of corruption Index has shown positive correlation with the growth. However, service share of GDP has shown negative correlation with the growth. This reflects that increase in FDI can increase the growth and increase in corruption can decrease the growth. Manufacturing or industry sector % should increase as service % has shown a negative correlation. GII, ADLR and LGI have not shown any significance in the regression analysis. The model has been further used to compare the growth perspective for China and India. It has been seen that India has certain advantages such as demographic dividend and democratic governing model which can help in sustainability of the growth.

ACKNOWLEDGEMENT

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Table of Contents

List of Figures

List of Tables

Abbreviations

ADLR	Adult Literacy Rate
CI	China and India
CPI	Corruption Perceptions Index
EGR	Economic Growth rate
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GI	Gini Index
GII	Global Innovation Index
IMF	International Monetary Fund
LPI	Logistic Performance Index
OECD	Organisation for Economic Co-operation and Development
SSG	Service share of GDP

CHAPTER ONE

1 INTRODUCTION

The world comprise of countries with developed, developing and underdeveloped countries. These countries are progressing at different stages of development with varying degrees of economic growth (Wilson and Purushothaman, 2003). World economy has considerably changed over the years due to rapidly changing economic conditions in some of the countries. The economic balance of the world's power has also been changing during recent years. Many of the emerging market economies like China, India and Brazil are competing the traditional Western economic powers (USA, UK, Germany and Italy) by virtue of rapid economic growth (Wilson and Purushothaman, 2003). India and China are among the fastest growing emerging economies in the world (Bloom et al., 2010).

China and India are the most populated countries and are among the ancient civilizations of the world. Almost 36 % of world population lives in these countries (Wikipedia, world population). These are the countries with fastest Gross Domestic Product (GDP) growth rate during recent years (Wang, 2013). GDP per capita of China for the year 2012 is 2.38 times higher than India's (in PPP terms) (see figure 1). In 2004 the difference was around 1.78 times (World Bank GDP per capita PPP (2014)). The difference has increased and China has shown better growth rate than India from 80's till recently (Bloom et al., 2010). Hausmann et al., (2005) has pointed out that China has started seeing growth after 1978. It was the year when China brought economic reforms. India was late in reforming and has brought economic reforms by liberalizing its market in year 1991 (Ahluwalia, 2002). In both of these countries, international cooperation and trade has increased since economic reforms. The trade has fueled the flow of foreign direct investment (FDI) to these countries. The relationships among economic reform, international trade, and economic growth are well documented in studies for China and India by Cai et al. (2002) and Chopra et al. (1995).

Present economic performance of both China and India is much better than the rest of the world (Tseng & Cowen, 2013). Figure 2 shows the average growth rate of GDP for the Organisation for Economic Co-operation and Development (OECD) countries and Emerging Economies like India and China. The data is average GDP growth from year 2006 to 2011 (TheGlobalEconomy.com, 2014). The average growth of China from 2006 to 2011 is around

11 %, for India it is 8% and average of all OECD countries is less than 2 %. According to Wilson and Purushothaman, (2003), in 2041, China will have largest GDP in world followed by USA. They predict that the GDP of India will be 3rd largest and it will outstrips Japan by year 2032. They have also mention that India's growth rate will remain 5% by year 2050, however the growth rate of China will fall to 5% by 2020 and further decline to 3.5% by mid-2040s. Per capita income of these countries will keep on growing.

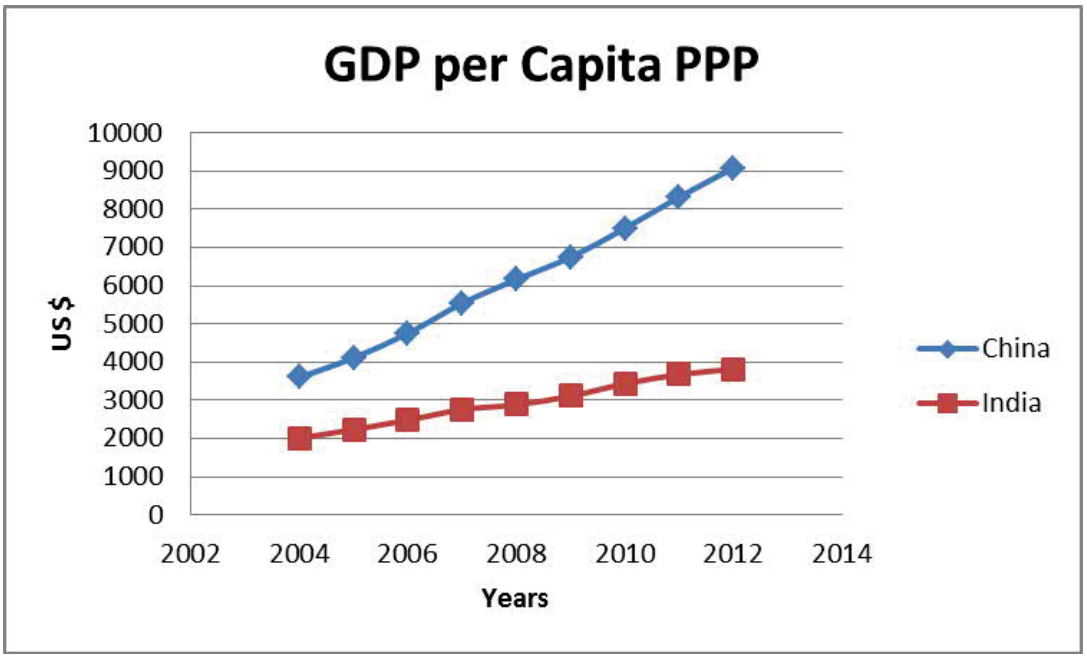


Figure 1 GDP per capita in PPP terms for China and India (Source: World Bank, World Development Indicators)

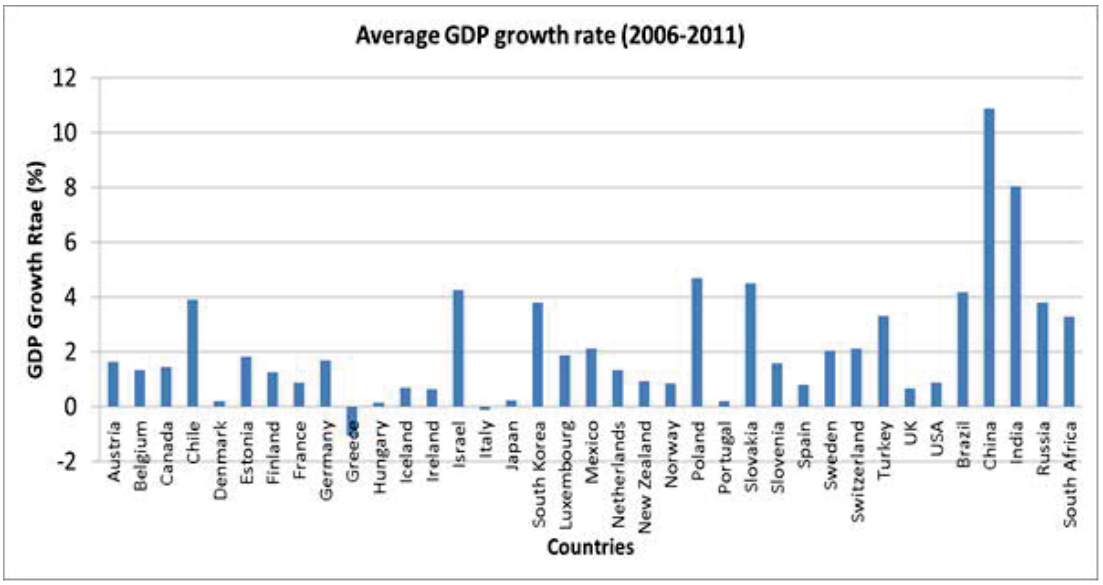


Figure 2 GDP growth rate (Source: TheGlobalEconomy.com)

India and China have different approaches in driving the growth. China has a major role of large scale enterprises in driving the growth. On the other hand India has depended more on small business and entrepreneurial ventures for its growth. In China private sector gets 10 % of the credits and loan and in India, it is about 80 % (Das, 2006; Khanna, 2007). Chinese growth mainly came from its industrial sector. It has made trade to be easy and has attracted large foreign direct investment. In contrast, Service producing industry has pushed forward India's growth (Bosworth & Collins (2007). Due to the reason that China's economic development is based upon manufacturing and factories have played a large role to maintain the growth, it is often addressed as the world's workshop. On the other hand India is often called world's back office due to large scale service industry presence. Information Technology (IT) sector has played an important part to fuel India's growth. Various well-known companies in the world have outsourced their service business to the IT companies in India (Nankervis & Chatterjee, 2011). In recent times many companies are choosing outsourcing as a viable option for meeting their information technology and software needs (Paravastu, 2007). It is evident that globalization is forcing multinational companies to outsource their products and services so that they can reduce cost and improve their competitiveness. China and India are among the favorite countries for outsourcing. Due to outsourcing, more and more Foreign Direct Investment (FDI) is coming to these countries and eventually increasing the share of the service level of the GDP. Foreign Direct Investment (FDI) is one of the factors which also effect the GDP growth and it directly relates to the outsourcing. Indian IT service growth has been very successful so far in raising the service share to the GDP (Rakshit, 2007).

Oza and Hill (2007) in their analysis of outsourcing to India suggested that the future formation of any American organization would consist of two distinctive divisions. The first division would focus on the core operational processes of the organization while the second offshore-division would concentrate on the non-core services. For the last two decades India has been the most attractive and preferred outsourcing destinations of such non-core activities. Low costs and abundance of skilled workers have given India a distinctive competitive advantage in the outsourcing field over other countries. Many companies have even started their core activities in India. Patibandla & Petersen (2002) have highlighted that the research and development in software in India is comparable to the quality in USA. This is also boosting more innovation in the country and hence contributing to the economic growth. In recent times India has started to face some stringent challenges in attracting FDI via outsourcing, countries like China and Brazil have directly challenged the Indian supremacy in

the outsourcing field. Other countries like Pakistan and Philippines have also recorded major improvements and have captured reasonable market shares. Outsourcing experts says that although India is among the top world's outsourcing countries but the companies will start outsourcing to other countries like Romania, Mexico Brazil, Malaysia, South Africa and Bulgaria (Outsource2India 2013). The case of China is of particular interest. China was particularly late in entering the outsourcing business but currently it is trying hard to replicate the Indian success in the outsourcing field. At present, India stands 5th and China stands 19th on the list of most attractive outsourcing destinations by Bloomberg business week (2011). India and China are making lot of efforts to improve the literacy rate in their countries. This is an important factor that makes country attractive for outsourcing. Cai et al. (2002), Wang and Yao (2001), and Chopra et al. (1995) have analyzed the role of human capital, proxied by education level, to economic growth. Economic growth has positive correlation with the human capital. Developing countries are required to focus on their economic policies to maintain a good growth rate. Apart from boosting their exports they must also strengthen their domestic productive capacities through suitable structural reforms (Alhuwalia, 2012). To meet the demand of fast changing economic environment infrastructure improvement should be strengthen along with creating a suitable investment climate. Facilitating private sector access to capital, skills, technology and markets are the other key areas that need special attention (Alhuwalia, 2002; Cai et al. 2002 and Chopra et al. 1995).

China and India has many commonalities. They are the fastest developing economies. In addition, area wise they are among largest countries in the world. China and India (CI) offer good infrastructure, educated and skilled workforce and low costs of doing business. On the other hand, despite the obvious facts of longstanding constant growth CI are regarded as high-risk destinations for running and establishing a business (Johnson & Tellis, 2008). Risks associated with business start are political instability (Wilson & Purushothaman, 2003), border dispute with neighboring countries (Fravel, 2005), terrorism (Gries et al., 2011), natural calamities (Strömberg, 2007) and power outages (Wilson & Purushothaman, 2003). At the same time there is a divisive idea of what constitute growth. Yet, another study claim that logistic performance support growth Arvis et al. (2007) and yet another study suggest equivalent the so called Gini coefficient explain growth more full (Persson & Tabellini, 1991). Mazumdar (2005) argue that adult literacy is related to growth and Podobnik, Shao, Njavro, Ivanov & Stanley (2008) found identified a positive relationship between level of corruption and growth. Finally many western economies claim level of innovation (Galindo and Picazo, 2013) FDI growth (Choong et al., 2010) and level services (Rakshit, 2007) in

support for growth. While many individual explanations exist for growth few studies have addressed each of these hypotheses into one model and uniquely suggested explanations to China and India as leading economies of growth. This study thus asks: *What are the critical antecedents to growth? What are future growth strengths for China and India? What India and China should do to attain a good growth while keeping critical antecedents into consideration?*

1.1 The Objective of the Study

The general objective of this study is to identify antecedents to GDP economic growth. To reach this objective the study offers a theoretical approach and empirically tests for various antecedents and their relationship to growth. This thesis further uses strengths and weaknesses of these countries growth point of view. The latter is used as a basis for explanations in combination with the quantitative study. The study will also draw conclusions on the available opportunities and potential threats when predicting growth to China and India. It also highlights the things India and China should do to keep a healthy growth rate.

1.2 Benefits from the Study

Primarily, the study is targeted at the organizations which are considering investing to China and India. It would provide a realistic and up-to-date analysis and comparison of associated benefits and risks to the organizations considering investments to these countries. The results of this research might also be meaningful for organizations which, despite being already engaged to other countries, are still interested in the state-of-the-art of the Chinese and Indian outsourcing industry. Finally, the entrepreneurs and the governments of CI might also be interested in the findings of this research in order to amend the identified weaknesses and threats faced by China and India. The study also provides comparative analysis of the two countries and highlights the relation of growth with various factors including social, organizational, economical and institutional.

CHAPTER TWO

2 Research Design

2.1 Methodological approach

Analytic-deductive approach has been selected in the present study. Established measures were used to make adequate comparisons across countries. Measures are also generated externally from well-known sources such as World Bank and thus represent objective proxies for each dimension tested.

2.2 Data collection

This thesis is based on publicly available secondary data. Secondary data is collected from various reliable sources. A theoretical model was developed to measure seven factors that are typically related to GDP growth rate. The data is collected mainly from the World Bank, International Monetary Fund and CIA Factbook. The primary World Bank collection of data is taken and compiled from officially-recognized international sources. It presents the most current and accurate global development data available, and includes national, regional and global estimates. Data is taken, according to availability for maximum number countries, from 166 countries of the world.

2.3 Measurements and definitions

Majority of data is taken from the world development indicators by World Bank, International Monetary Fund (IMF), CIA Factbook and Transparency International. Seven antecedents considered for the study and the sources from which they are taken are as under:

- **Logistic Performance Index (LPI):** The Logistics Performance Index is an interactive benchmarking tool to identify the challenges and opportunities in their performance on trade logistics. It is based on a worldwide survey of operators on the ground (global freight forwarders and express carriers), providing feedback on the

logistics "friendliness" of the countries in which they operate and those with which they trade. They combine in-depth knowledge of the countries in which they operate with informed qualitative assessments of other countries where they trade and experience of global logistics environment. It consists therefore of both qualitative and quantitative measures and helps build profiles of logistics friendliness for these countries. The scale is from 1 to 5, where 5 are the best and 1 is the worst (LPI 2014). (Source: World Bank, World Development Indicator)

- **GINI Index (GI):** It is a measure of statistical dispersion which measures the income distribution in a country. It is a measure of inequality of income or wealth in a country. Gini coefficient of 100 % means perfect inequality and Gini coefficient of 0 means perfect equality. (Source World Bank and CIA Factbook)

- **Foreign Direct Investment (FDI):** Foreign direct investment is the total money invested by an individual or a company from another country. This money could be the money invested in expanding the present business or invested in a new business. (Source: http://data.un.org/Data.aspx?d=WDI&f=Indicator_Code%3ABX.KLT.DINV.CD.WD)

- **Adult Literacy rate for 15 years and above (ADLR)** : It is the percentage of the population age 15 and above who can understand, read and write a short and simple statement on their everyday life. It is also the ability to make simple arithmetic calculations. This indicator is calculated by dividing the number of literates aged 15 years and over by the corresponding age group population and multiplying the result by 100. (Source: World Development Indicators, World Bank).

- **Corruption Perceptions Index (CPI)** : Measure the degree to which corruption is perceived to exist among public officials and politicians in 81 countries of the world. Higher corruption index means lower level of corruption. (Source: Transparency International 2013)

- **Service % of GDP**: GDP is the market value of goods and services produced with in a country. Service % of GDP is the service part of the GDP. (Source: http://www.quandl.com/economics/services-share-of-gdp-all-countries)

- **Global Innovation Index** : It is an indicator that ranks countries for having environment for innovation and the output of innovation.
(Source: http://www.globalinnovationindex.org/content.aspx?page=data-analysis)

2.4 Methods for analysis

A regression analysis is performed for GDP growth rate as dependent variable and logistic performance index, gini index, foreign direct investment, adult literacy rate, corruption perceptions index, service % of GDP and global innovation index as dependent variable. Minitab 16 statistical software is used for the analysis of data. SWOT analysis is also used to compare the strength, weaknesses, opportunities and threats in China and India. SWOT analysis is based upon the findings from the literature.

2.5 Validity and reliability

The validity describes how accurately a data is measured and reliability is the consistence of measurement if a repetitive measurement is performed. The validity and reliability of a data source are the most important things to be considered while selecting a data source. World Bank and International Monetary Fund are one of the most reputed organizations collecting data from the statistical organizations of the various countries. These are the organization from where most of the scholars and researchers are collecting data to make similar type of studies as presented in the thesis (Hsing, 2005; Mazumdar, 2005; Alfaro, Chanda, Kalemli-Ozcan & Sayek, 2004). Moreover, these are the only sources from where data on different antecedents is available. All other sources are also referring the data from these sources.

CHAPTER THREE

3 LITERATURE REVIEW

3.1 GDP and Economic Growth

Gross Domestic Product (GDP) is the market value of goods and services produced in a country within given period of time (Wikipedia, GDP 2014). GDP comprise of different sectors composition such as agriculture, manufacturing and services. Agriculture is the process of producing food and goods from plants and animals. Manufacturing deals with production of goods. It also includes mining and extraction sectors. Service sector is the non-material equivalent of a good. Service provision is defined as an economic activity that does not result in ownership, and this is what differentiates it from providing physical goods (Wikipedia, GDP Component, 2014). Each country has a different percentage of agriculture, manufacturing and service % in the GDP. Some countries have largest share of services and other have manufacturing or industry among sectors for GDP. For instance India has bigger percentage of services as compared to manufacturing. For China it is vice versa. This together gives an indication of the economic health of a country. GDP has a large impact on the citizens of the country (Kakwani, 1993). For instance, when the GDP is good, unemployment is low and salary levels have hike. Almost, all sectors of business get benefits because of good economic growth (Kakwani, 1993). On the other hand if GDP growth is low or negative, it affects the things adversely. Growth in GDP also leads to the growth in GDP per capita, as shown in figure 3 for the case of China. This is a measure of the living standard of the people of the country. Standard of living can be raised with the economic development of a country. Good infrastructure, educational facilities and better health services are the fruits of economic development (Wilson & Purushothaman, 2003). To achieve these fruits by countries,

organizations like World Bank provide loans to the countries for their economic development. World Bank has following millennium goals (World Bank MDGS, 2014).

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria, and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

All these goals can be achieved if all countries can attain good level of GDP per capita. GDP per capita tells us about the prosperity of the country. All countries have policies to raise the prosperity level for their citizens (Easterly et al., 1993). This can be made possible with the consistent growth of the GDP. Good growth creates more employment opportunities and fulfils basic human needs such as education, health care and housing. China has contributed a lot in the fulfilling the previous goals of World Bank. GDP per capita has increased in China due to its economic growth, but inequality has increased (Yao, 1999). Chinese GDP has grown average around 10% after the reforms in 1978 (Yao & Yueh, 2009). GDP and GDP per capita growth have a direct correlation. Figure 3 shows below that the Chinese GDP and GDP per capita ppp has followed almost similar trend in the growth. According to the convergence theory the lower the per capita income of a country the higher will be the rate of growth of that country and the country will move towards attaining higher per capita income. Barro (1991) and Mankiw et al. (1992) have found evidence that economies with low initial incomes tend to grow faster than economies with high initial incomes. It means that with intelligent efforts, poor countries in the world have better chance to grow. China's and India's growth

rates are of great interest to follow due to their enormous population size. If China and India will perform well in terms of their economic growth it means that a big % of world population will come out of poverty.

China has shown some good results in the recent past. Total Factor Productivity in agriculture for China has increased at an average rate of 6.5 % between 1991-2009 (Cao & Birchenall, 2013). China has also been able to bring many of its citizens out of the poverty by keeping higher rate of GDP growth since 1978 (Montalvo & Ravallion, 2010). Similarly India has also shown a good rate of growth since it had opened its market through economic liberalization (Ahluwalia, 2002). India has fastest growing information technology firms and a booming outsourcing market (Nankervis & Chatterjee, 2011). India's recent growth and development achievements are remarkable. Since Independence in 1947, India has brought agriculture revolution and it has transformed itself from an importer for the food grains to net exporter of food. Life expectancy has more than doubled, literacy rates have quadrupled and health conditions have improved. India is now known for its IT companies in the world. India is also globally recognized in pharmaceuticals, steel and space technologies. India is largely urbanizing and has largest youngest work force in the world (World Bank country overview India, 2014).

Economic growth is very important to raise the living standard for the people of a nation. Almost 100 years ago there were very few basic facilities available for the citizen of any nation. Small fractions of people were having access to electricity cars etc. Basic needs of the people were not met at those times. With the economic growth of the world more and more people are coming out of the poverty. Average life expectancy of the human beings has been increased along with the economic growth. Life expectancy has reached 80 in some countries and is projected to reach 100 in some countries by 2100 (Bloom and Canning, (2000). Many diseases like polio and small pox have been wiped out from the world. The

graph in figure 4 is between GDP per capita and life expectancy of females. It can be clearly seen that the countries having higher GDP per capita have better life expectancy. It could be said that the healthy population is a result of good economic growth. GDP growth is measured by tracking the service and goods consumption. It gives an indication how efficiently country is using its resources. Growth in GDP brings lots of benefits for a nation. It creates jobs and hence lowers down the unemployment. It is important for strong foundation of future society. It keeps society moving in positive and productive direction.

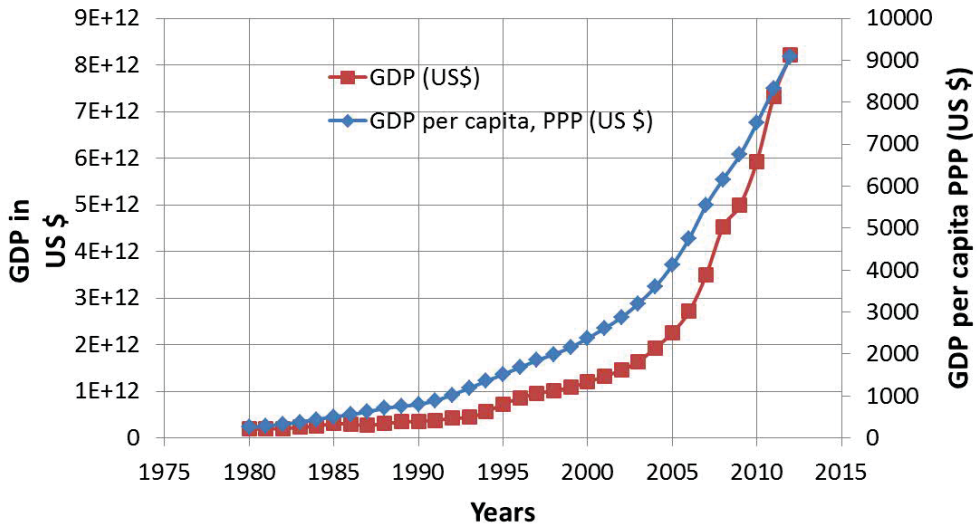


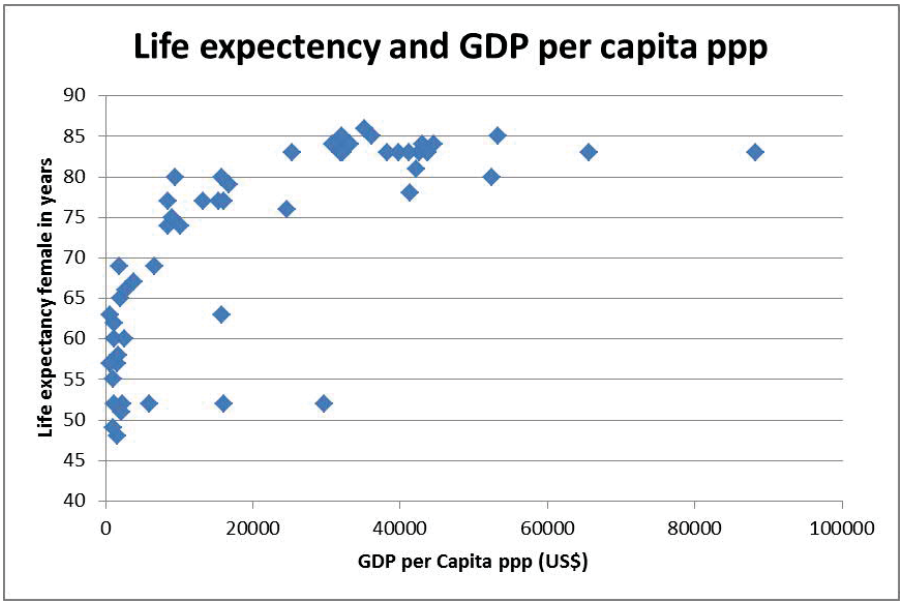
Figure 3 GDP and GDP per capita, PPP for China (Source: World Bank development Indicators)

There are several factors which could affect economic growth. The factors can be divided into two categories:

1. Affecting economic growth in long run
2. Affecting economic growth in short term

Factors which can affect economic growth in long run are human capital, infrastructure, innovation, availability of resources and economic policies. Factors which could affect growth in short term are weather condition, political instability and natural calamities. In the present study some of the factors which can affect the growth in long run for a country have been selected. These factors can contribute to the economic growth for different countries of the

world are listed in table 1. The factors listed are along with the referred studies taken from literature.



Data source: World development Indicator, World Bank

Figure 4 Life expectancy and GDP per capita ppp

Table1. Factors considered for the study

Factor	Study	Definition
Growth	Alfaro, Chanda, Kalemli-Ozcan & Sayek, 2004	Increase domestic productivity and the overall economic growth in the domestic economy
Foreign Direct Investment (FDI)	Alfaro, Chanda, Kalemli-Ozcan & Sayek, 2004	Productive assets by a company incorporated in a foreign country
Logistic Performance Index (LPI):	Arvis et al. (2007)	Logistics and transportation friendliness of a country
Gini Index (GI)	Hsing, (2005)	Income inequality among population in a country
Corruption perceptive Index (CPI)	Podobnik, B., Shao, J., Njavro, D., Ivanov, P. C., & Stanley, H. E. (2008)	Degree of corruption in public offices and politician of a country
Adult literacy rate above 15 years(ADLR)	Mazumdar (2005), Barro, (200)	Ability to write short and simple statement in everyday life
Service % share of GDP(SSG)	Eichengreen & Gupta, (2011)	Service % share of GDP of a country
Global Innovation Index (GII)	Galindo and Picazo, (2013)	Favourable environment for innovation in a country

Numerous studies have been done on growth and the various antecedents related to the growth. None of the study has used collective methodology where different antecedents have been taken together. Moreover, the studies from the literature are bit old. Very few studies cover the recent years. Table 2 shows the antecedents and how they are related to the growth mentioned along with studies selected from the literature. Sometimes, these antecedents could also be the result of economic growth. Hypothesis considered in the study is that the antecedents mentioned in table 2 are related to the growth. FDI, CPI, LPI, ADLR and GII are positively related to the growth and GI and SSG are negatively related to the growth. Higher CPI means lower corruption. Higher SSG means low share of industry or manufacturing in the GDP. It shows that increase in foreign direct investment, logistic performance, literacy rates and innovation can increase the growth rate. Decrease in corruption can increase the growth rate and increase in inequality and service share of GDP can decrease the growth rate.

Table2. Selected studies in support for hypothesis

Antecedent	Relationship	Outcome	Study
Foreign Direct Investment (FDI)	+	Growth	Alfaro, Chanda, Kalemli-Ozcan & Sayek, (2004); Iqbal et al., (2013); De Mello, 1999; Choong et al., (2010)
Logistics Performance Index (LPI)	+	Growth	Arvis et al. (2007)
Gini Index (GI)	-	Growth	Hsing, (2005); Francisco Rodríguez C. (2000); Persson & Tabellini (1991); Gärtner,(2014); Alesina, Alberto and Dani Rodrik, (1994).
Corruption perceptive Index (CPI)	+	Growth	Podobnik, B., Shao, J., Njavro, D., Ivanov, P. C., & Stanley, H. E. (2008)
Adult literacy rate above 15 years(ADLR)	+	Growth	Mazumdar (2005); Cai et al. (2002), Wang and Yao (2001), and Chopra et al. (1995), Barro, (2000)
Service % share of GDP(SSG)	-	Growth	Manufacturing, (2012), Eichengreen & Gupta, (2011) and Tang et al., (2011)
Global Innovation Index (GII)	+	Growth	Galindo and Picazo, (2013) Wong, Ho, & Autio, (2005); Nekabashi et al. (2013) Rosenberg, (2004) Cameron, (1996)

3.2 Theoretical model

The antecedents affecting the economic growth of the country can further categorized into social, accessibility and transportation, economic and institutional factors. Figure 5 shows the schematic of the factors and proxies used in relationship with the growth. Hypothesis has been made that these factors are related to the growth.

Seven hypotheses considered are as under:

H1a Adult literacy rate (ADLR) is related the growth and increase in literacy among the adults in a country can increase its growth rate.

H1b Gini Index (GI) is related to the growth and increase in Gini index or income inequality in a country can decrease the growth rate.

H2 Logistic performance Index (LPI) is related to the growth and increase performance of logistic services can increase its growth rate.

H3a Foreign direct investment (FDI) is related to the growth and increase in FDI in a country can increase its growth rate.

H3b Service percent share of the GDP is related to the growth and increase in value of the SSG in a country can decrease its growth rate. Also the Hypothesis is % increase in service share is taking share of the manufacturing and agriculture sector in GDP.

H4a Corruption Perception Index (CPI) is related to the growth and increase in corruption in a country can decrease its growth rate.

H4b Global Innovation Index is related to the growth and increase in Innovation in a country can increase its growth rate.

Other Hypothesis made is that the net result of GDP growth is to raise the GDP per capita so that the living standard of average human being could be raised. The improvement

in livings standard often leads to better health, education and peace in the nations. Scandinavian countries are good examples where improvements in living standard have brought good health, education and global harmony. These countries have lowest corruption, highest life expectancy, good literacy rate and lowest poverty among different countries of the world (World Bank development indicators).

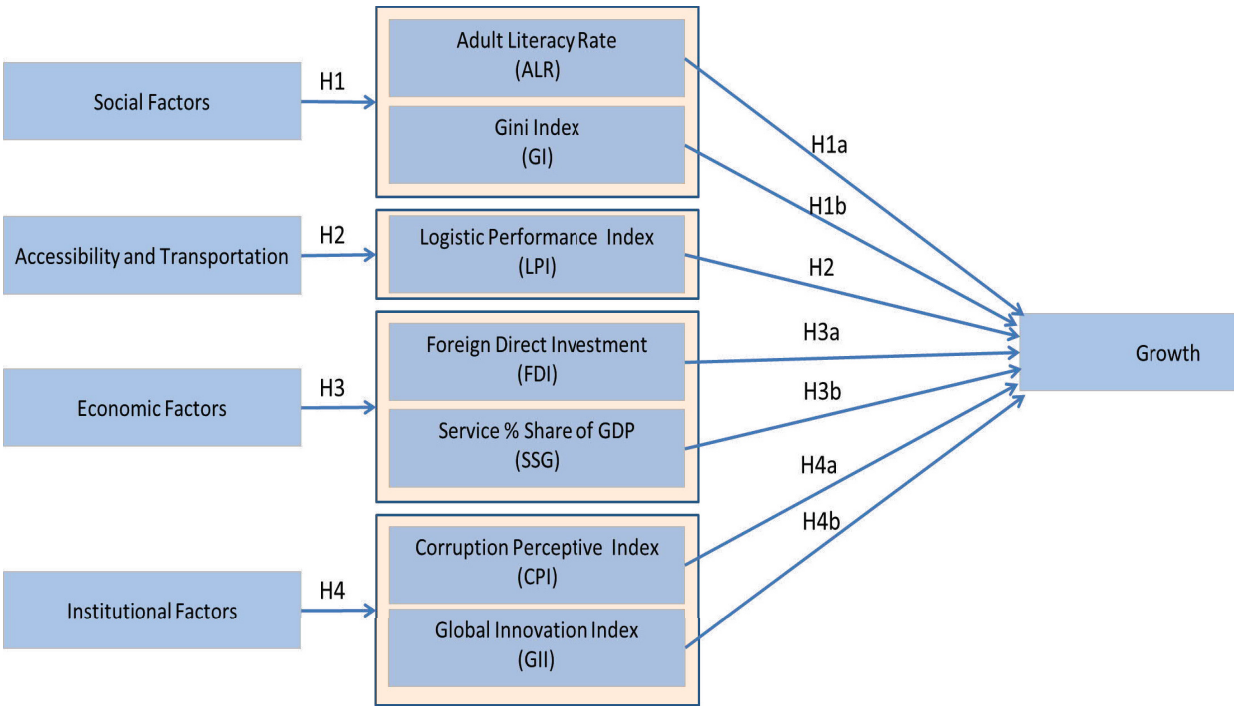


Figure 5 Schematic for factors and growth model

Different factors measured by using proxies of different antecedents are as under:

- Social factor and its relationship on growth are measured using a proxy for literacy rate (ADLR) and gini index (GI).
- Infrastructure and its relationship on growth is measured using a proxy for logistic performance index (LPI).
- Economic factor and its relationship on growth are measured using proxy of foreign direct investment (FDI) and service share % of GDP (SSG).

- Institutional factor or cultural factor and its relationship are measured using proxy of corruption perception Index (CPI) and global innovation index (GII).

3.3 GDP per capita PPP and its relation with different antecedents

Figures 6 to 10 show the relation of GDP per capita relations with the antecedents. It is clear from these figures that the countries with high GDP per capita have often lower level of corruption and illiteracy. They spend more money on R&D and have higher innovation. They have better infrastructure for economic development. The graph in figure 6 shows the correlation between GDP per capita and Corruption Perception Index 2013 (as measured by the Corruption Perception Index (CPI) 2013 by Transparency International). GDP per capita data has been taken from IMF data bank. Lower level of Corruption Index means high level of corruption. It clearly shows that high income group countries have lower level of corruption and thus high growth levels (Hessami, 2014). Denmark is on the top having lowest corruption in the world. Emerging economies like China and India have comparatively higher level of corruption as compared to the developed countries.

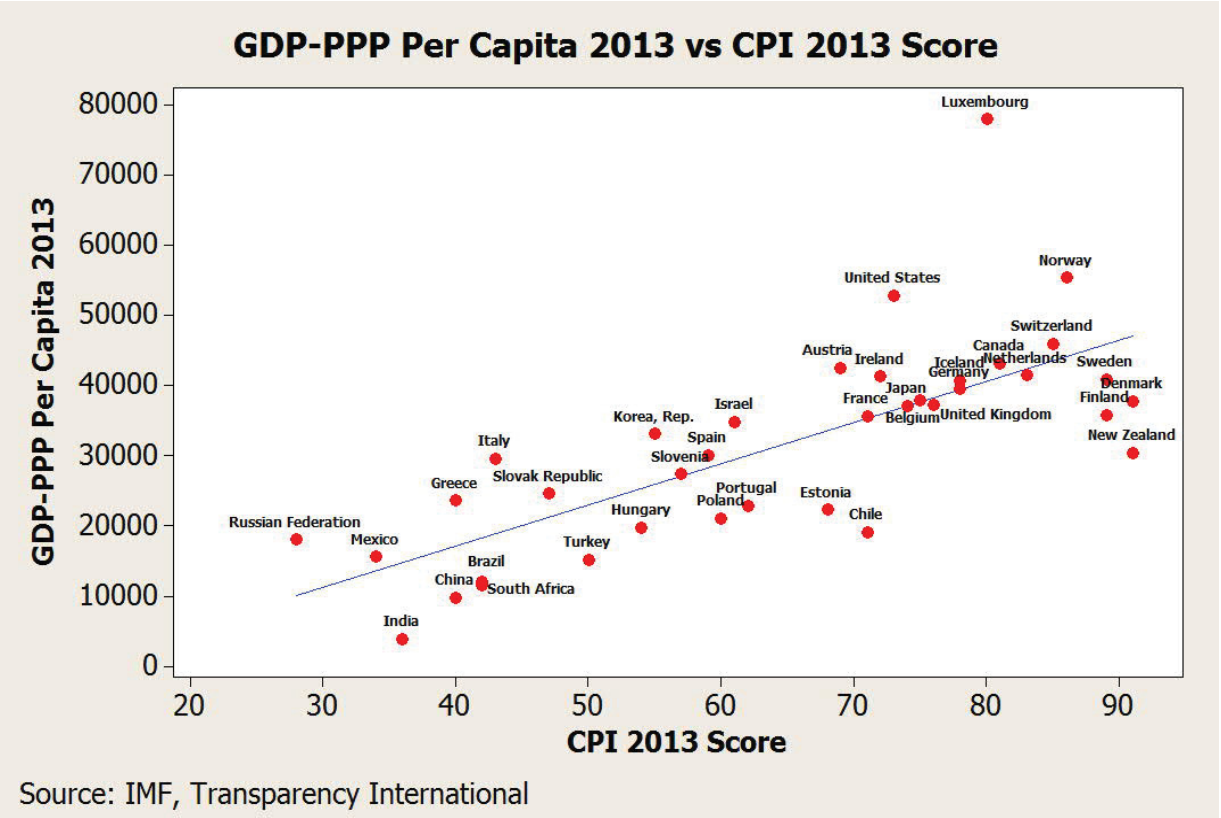


Figure 6 Corruption Index vs. GDP per capita PPP

Figure 7 shows the relation of adult literacy rate (ADLR) and GDP per capita. Adult literacy rate data is for year 2011 or latest available. It shows that economically rich countries have high level of literacy rate and thus corresponds to growth (Hanushek and Wößmann, 2007). India seems to be far behind than the developed countries. The difference between China and India in terms of adult literacy rate is also big. High per capita income plays an important role in determining the standard of living of a country. People find better chance to literate as population has higher income and government spend more money on educational infrastructure. It is therefore seen that most of the countries with higher GDP per capita has very high level of literacy.

Gross research and development expenditure wise developed countries are spending much higher than the emerging economies like India and China. The highest on the list is

Israel (see figure 8). This is measured on a scale of 1 to 100 for different countries, where 100 is the best.

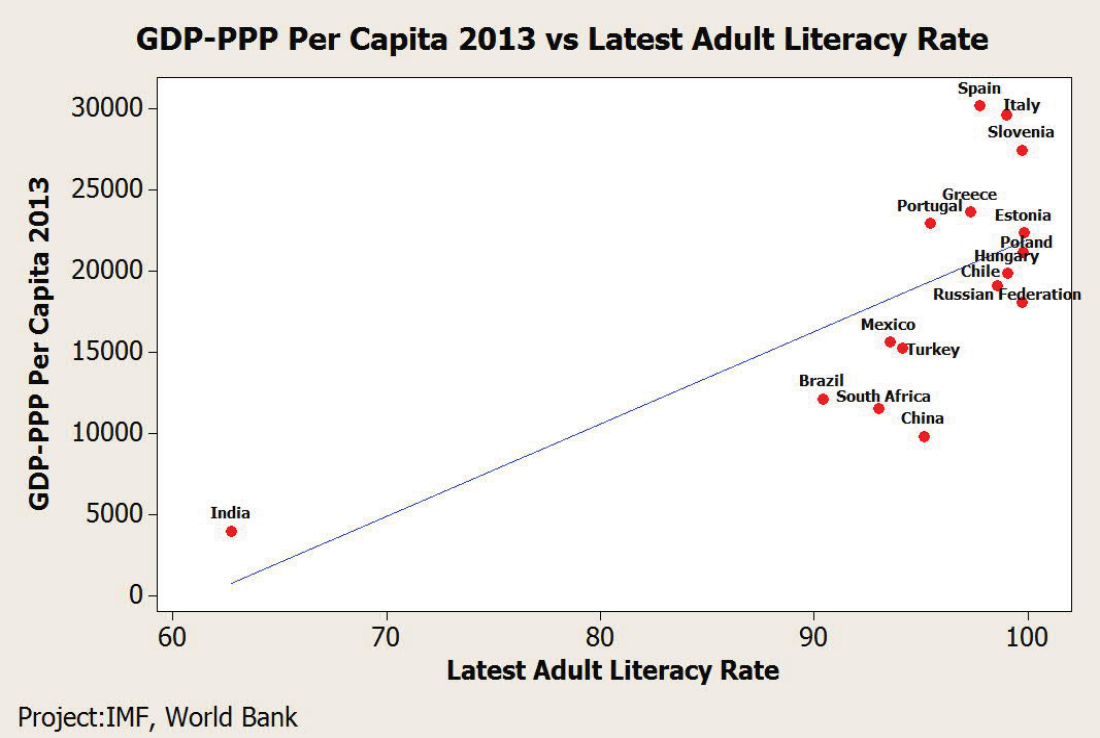


Figure 7 Adult literacy rate vs. GDP per capita PPP

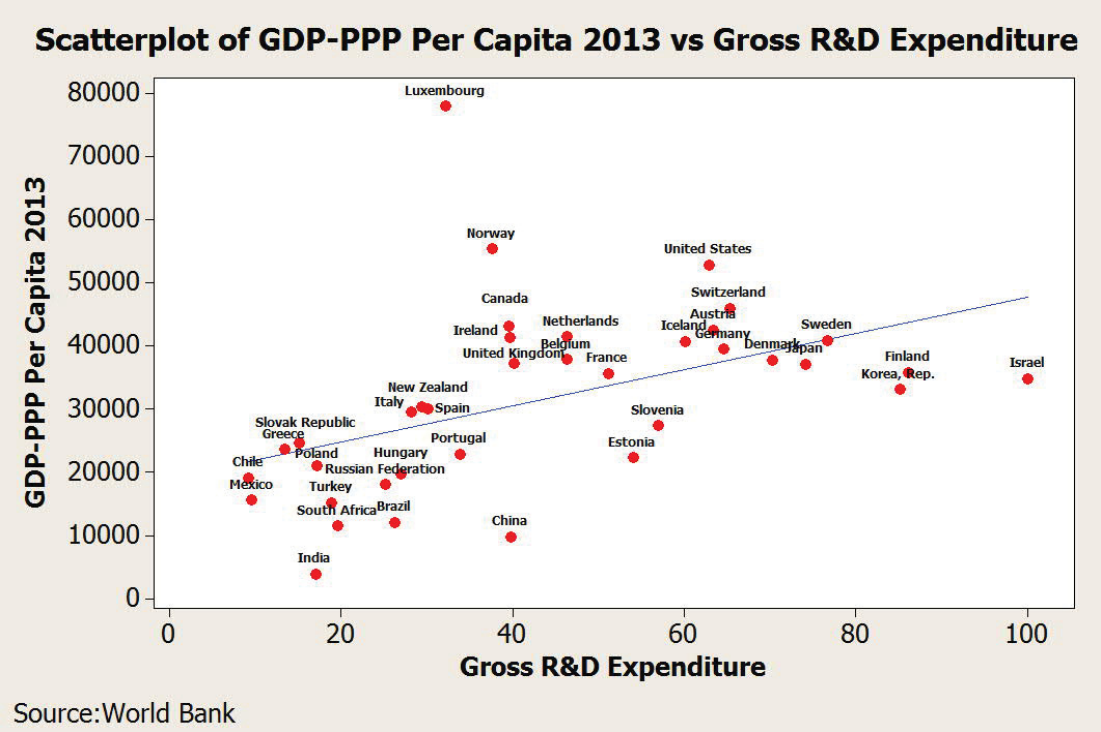
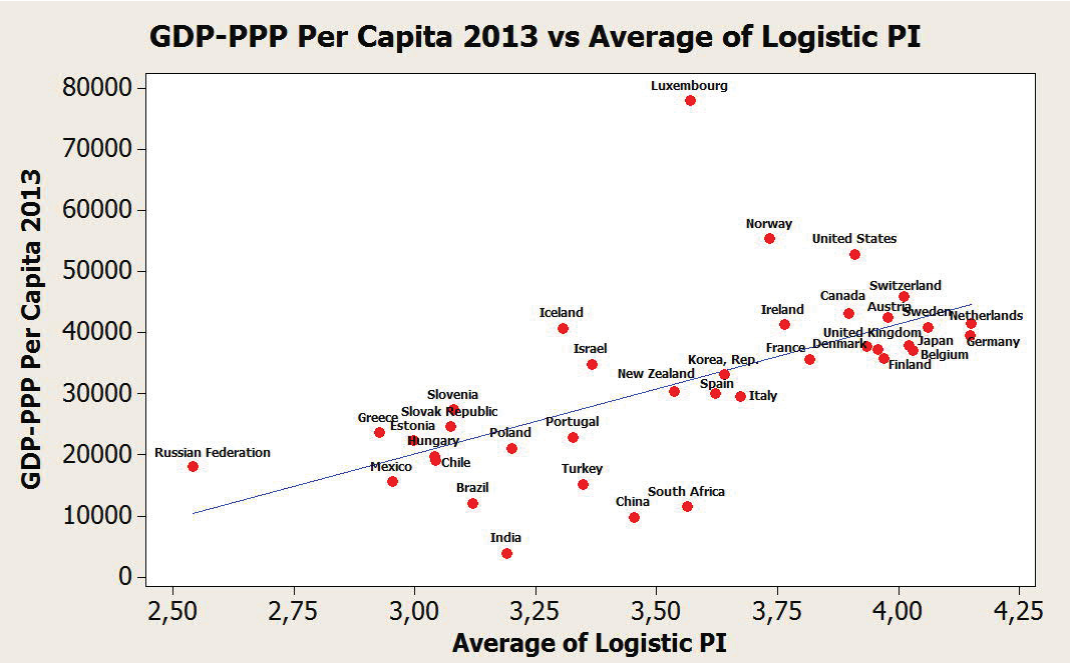


Figure 8 Gross R&D expenditure vs. GDP per capita PPP

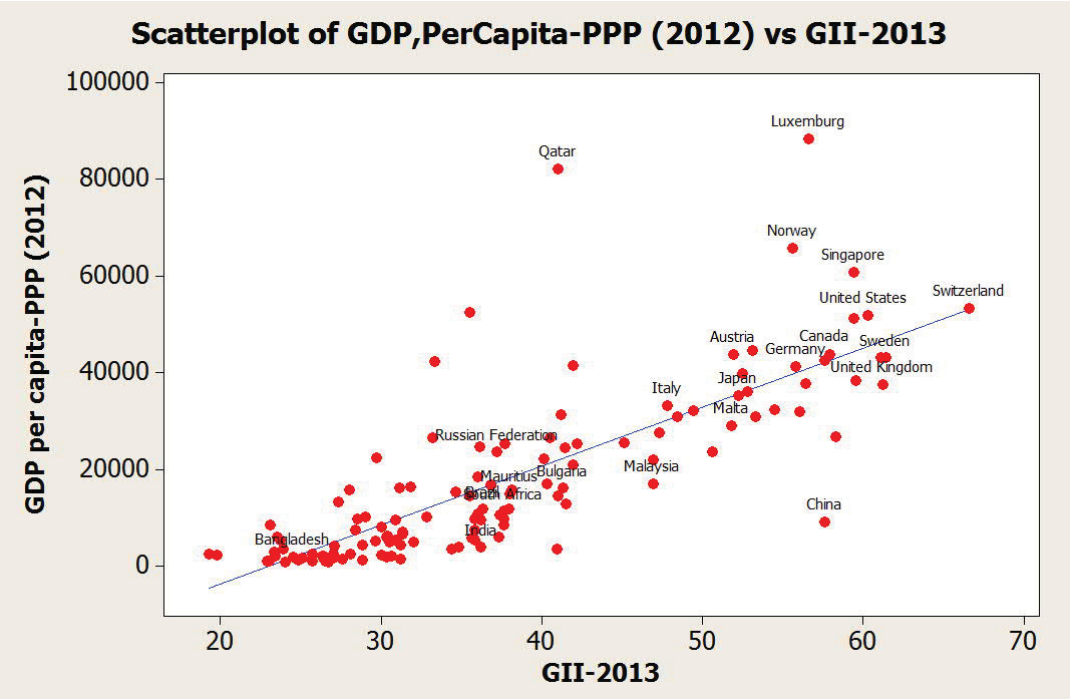
China and India have very high GDP growth rate (see figure 2), but when it comes to the factor influencing the well-being of the citizens (GDP per capita) or the social factors influencing GDP per capita, corruption and Innovation (R&D expenditure), both countries are still at very low level. Figure 9 show the GDP per capita and logistic performance index. India and China are well behind European countries. High logistics costs and lower LPI of a country can become a reason for less trade and foreign direct investment (FDI). This can affect the economic growth. Countries with higher GDP per capita have better logistic performance. Which reflect the ease of supply of goods in the country. This can also be the key determining factor for the competitiveness of a country. Ease in logistics can provide better connection for the markets. In this highly competitive world, the quality of logistics can play a big role in a company decision in selection of a country for doing business.



Source: IMF, World Bank

Figure 9 Logistic performance index vs. GDP per capita PPP

Figure 10 shows the Global innovation index vs. GDP per capita. Here also, countries with higher GDP per capita has higher GII index. Switzerland is on the top and is regarded as most innovative country. African and Asian countries like Bangladesh are low on the innovation index.



(Source: http://www.globalinnovationindex.org/content.aspx?page=data-analysis) and IMF

Figure 10 Global Innovation Index vs. GDP per capita PPP

3.4 GDP growth rate and its relation with Corruption

GDP growth is a key factor in economics and is often monitored by public or policy making organizations. It gives an overview for the development of the country together with other parameters. Corruption is much debated in the world these days as it affect the life of the common man. Organization like Transparency International measures and compares the level of corruption present in different countries of the world. The corruption perspective index tells the relative corruption in different countries. The countries with higher index have lower level of corruption. It has been found that for all countries in the world from 1999 to 2004, an increase of CPI by one unit leads to an increase of annual GDP per capita growth rate by 1.7%. For European countries one unit increase in CPI had 2.4% increases in the GDP per capita growth rate (Podobnik et al, 2008). Corruption can impede the economic growth. Negative correlation between growth and corruption have been reported in many of the studies (Tanzi and Dvoodi (2009), Hall and Jones (1999) and Kaufmann, Kraay and Zoido-

Lobaton (1999: 15). Although corruption lowers the GDP growth, poor countries also lack in the institutions to effectively fight corruption (Husted 1999). It is also mentioned in literature that a simple regression can't provide correlation between corruption and GDP growth but report some correlation of unknown origin (Lambsdorff, 1999). Tanzi and Davoodi (1997) have examined the impact of corruption on the quality of investments. They have supported the hypothesis by reporting their statistical results with high significance. The quality of investment correlate with productivity of capital and, hence, GDP growth. They suggest that corruption lowers the quality of the infrastructure as measured by the condition of roads and power outages. Mauro, 1995 has stated a negative association between corruption and investment as well as growth. However, in the same paper he states that some time corruption acts as speedy money to do the job quickly and can influence the short term growth rate in positive manner. Nevertheless corruption often generates black money which is mainly used for illegal business. There should be international efforts to fight against corruption.

3.5 GDP growth rate and its relation with Foreign Direct Investment

Foreign direct investment (FDI) is well known to the economic world. Iqbal et al. 2013 have mentioned that FDI positively influence the economic growth. Similar positive effects of FDI on GDP growth were also stated by (De Mello, 1999; Choong et al., 2010). Iqbal et al. (2013) have highlighted the role of FDI in bringing innovative ideas that makes local companies to be more competitive in their working area. It is also stated in their study that achievement of average growth rate of 10 % since 1980 by China has been made possible due to large amount of FDI. However, India has liberalized it market in 1991 and since than it has average growth rate of 6%. FDI has a big role in the economic development of China. Korea has also made lot of efforts to boost FDI in the country. Foreign direct investment received by Korea in 2012 rose to US$16.3 billion, up from US$11.5 billion in 2009. This was due to

reduction in corporate tax, better intellectual property rights and improvement in infrastructure (Korea FDI, 2014). Countries around the world are making policies to attract FDI in their market. Alfaro, (2003) has concluded that the flow of FDI in different sectors of economy gives different effect on the economic growth. Primary sector foreign direct investments show a negative effect on the growth. In manufacturing it shows a positive effect and in service sector the effect is ambiguous in nature.

3.6 GDP growth rate and its relation with GINI Index

Relation of growth and Gini index (GI) is ambiguous in literature. Some of the studies report a negative relation for GI and growth and other studies show a positive relation. Gini coefficient measures the income distribution of country residents. Zero value represents perfect equality and higher value of coefficient represent 100% inequality. A study on economic growth and income inequality by Hsing, (2005) reported that inequality measured by Gini index can hinder the economic growth of USA. His other findings indicate that growth in employment, patents granted, and human capital all increases the economic growth. Francisco Rodríguez C. (2000) has stated that inequality can affect the economic growth by slowing it down due to weakening effect of the structure on which it stands. Inequalities cause a polarization in the society which weakens the efforts for the growth. Alesina and Rodrik, (1994) on their study on distributive politics and economic growth also report a negative effect of inequality on growth. Persson & Tabellini (1991) have also mentioned in their study that growth is negatively correlated to the inequality. Their study is covering the democracies. They take in to account the effect of political forces and governmental policies to derive this correlation. Studies by Gärtner, (2014) and Panizza, (2002) also report a negative relation of inequality and growth.

Some authors also report a positive correlation of inequality and growth. A study by Yao, (1999) has highlighted that inequality has increased with the economic growth.

Partridge, (1997) has also reported a similar positive correlation of inequality and growth in his study on inequality and growth. Studies by Liu & Zou (1997) and Forbes, (2000) also show a positive correlation of growth and inequality.

3.7 GDP growth rate and its relation with Innovation Index

The start of innovation goes along from the beginning of human evolution. Sometimes innovation comes out of need, for instance Dutch are very good in making water barriers to increase the land area. It also comes out from the institutions and infrastructure made to enhance innovation. Many countries are spending a lot of money on Research and Development (R&D) every year. Innovation helps in the economic growth by enhancing it. Nekabashi et al. (2013) have highlighted that the institutional quality affect the innovation standard. They have also mentioned in their study that the stimulation of innovation with institutional quality enhancement often leads to higher growth. On a study on economic growth, innovation and entrepreneurship Galindo and Picazo, (2013) have reported that Innovation plays a central role in the economic growth process and the entrepreneur is the vehicle to introduce the new technologies to improve the firms' activity and to obtain higher profits. Findings of Cameron, (1996) and Rosenberg, (2004) also reveal that the innovation contributes to the growth.

3.8 GDP growth rate and its relation with Logistic Performance Index

Logistic performance defines the ease of moving goods and products with in the border and also bringing the good across border with in a country. It also gives an indication of the quality of rail, road, sea and air logistic quality. For a country to have a good logistic performance is very important as it can generate better business performance and due to short delivery times may lead to better profit. It can also bring more foreign investment to the

country. China and India are spending lot of money to improve their infrastructure to ease the foreign companies to come and operate in their country. Logistic performance highlighted by Arvis et al. (2007) reveal the case of Chad and Europe, where it takes less than half of the cost and one fifth of the time to bring a container from Shanghai to Europe as compared to Chad. Logistic friendly countries can have more global trade integration and can bring more FDI. A number of empirical studies have found high contribution on infrastructure investment on economic growth (Easterly and Rebelo, 1993; Canning et al., 1994; Sanchez-Robles, 1998). Investment on infrastructure often leads to better roads, rail and air and sea ports. This also determines how well a country is connected with in itself and with other countries. This all together contribute to the logistic performance. Foreign investors also consider logistic performance while making a selection of the country for investment.

3.9 GDP growth rate and its relation with Adult Literacy Rate

Adult literacy is a very important factor to raise the human development index. Mazumdar (2005) has found that the factors behind adult literacy are of importance not only as a constituent indicator of the human development index, but also through its various contributions towards economic growth. It is important for every nation to produce sufficient number of educated workforce to withstand the demand due to economic growth. Level of education and literacy also increase the innovation among the society. Literacy level in a country often assumes to reflect the quality of human capital of that country. World Bank has a goal to provide universal primary education. Some countries are preferred for outsourcing due to certain type of literacy for example India has become favourite country for outsourcing due to good knowledge of English among its citizens. Hanushek & Wößmann, (2007), have concluded that the quality of education has powerful effect on the people earning, income distribution and economic growth. They have also highlighted that just school enrolment or attainment is not enough for the economic growth. Situation in developing countries is much

worse when it comes to the quality of education. The institute should have structural changes for quality enhancement of education. Barro, (2000) has also reported in his study that the score of science tests are significantly related to the growth in a cross countries analysis. His study also shows that the growth is positively related to the years of education attainment in the secondary and higher level by males. However, when measured for the case of female the results were insignificant.

3.10 GDP growth rate and its relation with service % share of GDP

Eichengreen & Gupta, (2011) have highlighted the role of service sector for the economic growth of India. They have also pointed out that service sector in India has initially engaged people having good education level and now it is also engaging more and more people from lower education level also. Hence service sector provides large number of jobs in a country. It is the Service sector growth that has made India to bring large number of people out of poverty. However, role of industrial sector is equally important. Manufacturing or industrial sector also generate large number of services and hence benefits due to service sector. An optimal balance in percentage between Service, Industry and agriculture sector is required for GDP according to author's opinion. Manufacturing have helped to drive economic growth and rising living standard in the world. Even, India which has a large service sector growth is aiming to raise manufacturing share in its GDP from 16 to 25 % by 2022 (Manufacturing, 2014). Large developing economies are moving up in global manufacturing share during last decades. Tang et al., (2011) have concluded that the liberalization of trade in services can be a factor to drive the growth for China. Ansari, (1995) has derived an empirical relation of the service growth and economic growth for India, Pakistan and Sri Lanka. It has been found that they have good correlation. It is also mentioned in their study that the developed countries have seen increase in service share of GDP in the

last phase of their economic development; however developing countries have seen it in intermediate stage.

3.11SWOT for China and India

SWOT is used to evaluate the strength, weaknesses, opportunities and threats for India and China. Figure 11 and 12 shows the geographical location and time difference of India and China with respect to various important locations of the world. Due to time difference of around 12 hours, Indian and Chinese companies are able to provide the quickest time-to-market. The 12-hour time difference between India and the USA provides companies with numerous opportunities for work and makes India a good option for clients who wish to outsource various service-related options, such as helpdesk services and 24X7 Customer Support etc. Similarly, China and India both have large coastal line. This is helping both countries to increase their maritime trade and fuel the industrial growth.

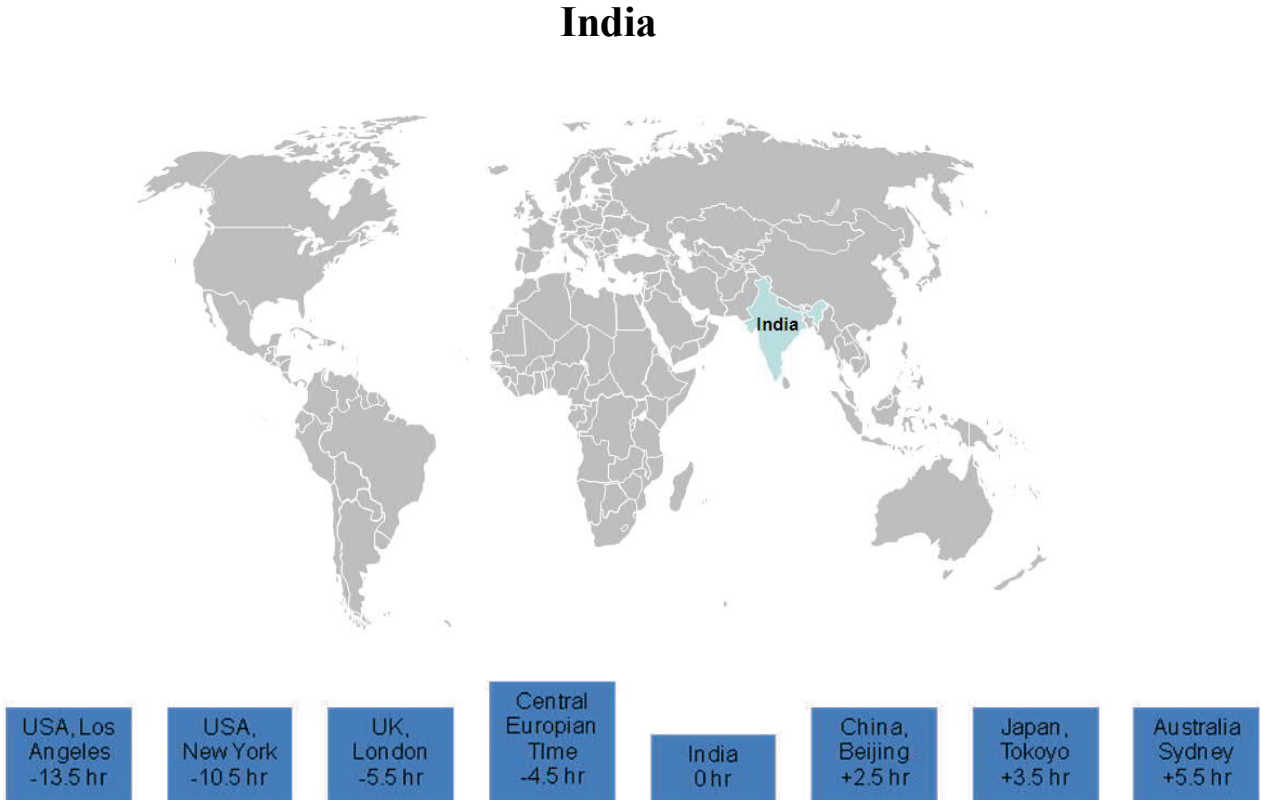


Figure 11 Geographical location and time difference of India with major cities

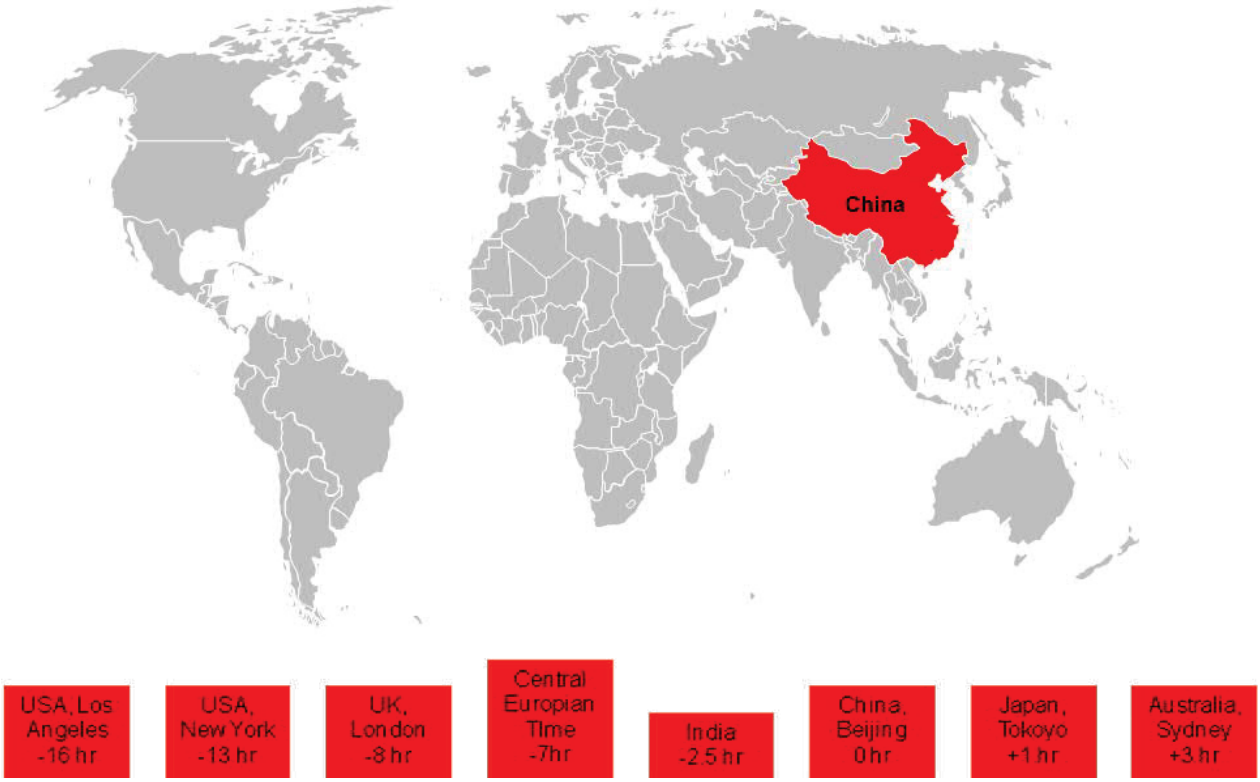


Figure 12 Geographical location and time difference of China with major cities

Table 3 and 4 shows strength, weaknesses, opportunities and threats for China and India. India and China have large population and also large number of skilled manpower. Both countries have big demographic dividend which can support in maintaining growth. Once large population was seen as weakness for China and India is now their strength. India has largest number of youngest workforce in the world. China has also softened it stands on one child policy. It is for continuing supplying young labour force for growing economy. Both countries have strengthened their economic ties with other countries. These countries have started making economic groups e.g. Brazil, Russia, India, China and South Africa (BRICS) and have started taking collective steps to increase bilateral trade with each other. BRICS group of leading emerging markets is expecting to establish a development bank with an aim of reforming the existing political and economic world order (Mariam, 2013).

Table 3. SWOT for India (Source: Ansari, (1995); Khanna, (2007); Nair & Prasad (2004))

India	
Strengths ▪ Free media ▪ Large pool of population ▪ Highly skilled human resource ▪ Low wage structure ▪ Quality of work ▪ Initiatives taken by the Government (setting up Hi-Tech Parks and implementation of e-governance projects) ▪ Large amount of natural resource ▪ Many global players have set-up operations in India like Microsoft, Oracle, Adobe, etc. ▪ Following Quality Standards such as ISO 9000, SEI CMM etc. ▪ English-speaking Professionals ▪ Cost competitiveness ▪ Quality telecommunications infrastructure ▪ Time difference between India and America is approximately 12 hours, which is beneficial for outsourcing of work. ▪ Strong Judicial System ▪ Part of BRIC and G20	**Weaknesses** ▪ Large numbers of people are without basic needs. ▪ Less Research and Development ▪ Contribution of IT sector to India's GDP is still rather small. ▪ Employee salaries in IT sector are increasing tremendously. Low wages benefit will soon come to an end. ▪ Terrorism effected states like Jammu and Kashmir ▪ Bad infrastructure ▪ Big difference of rich and poor ▪ High level of adult illiteracy ▪ Doesn't have VETO power ▪ Low productivity in agriculture
Oppurtunities ▪ Big domestic market ▪ Large number of people are going up in economical level ▪ High quality IT education market ▪ India 's well-developed soft infrastructure ▪ Upcoming International Players in the market ▪ 10th Largest GDP ▪ Big scope in increasing agriculture productivity	**Threats** ▪ High rate of population increase ▪ Lack of data security systems and corruption. ▪ Countries like China with qualified workforce making efforts to overcome the English language barrier and competing with India. ▪ IT development concentrated in a few cities only

Table 4 SWOT for China (Ref. Yao & Yueh, (2009); Huang & Li. (2008); Bloom et al, (2010))

China	
Strengths ▪ Large pool of population and dynamic economy ▪ Highly skilled human resource ▪ Low wage structure ▪ China's authoritarian system makes decision making very simple and quick ▪ Large amount of natural resource ▪ Increasing number of English-speaking Professionals ▪ Cost competitiveness ▪ Quality transportation and Telecommunications infrastructure ▪ Time difference between India and America is approximately 16 hours, which is beneficial for outsourcing of work. ▪ Has Veto Power ▪ Part of BRIC, G20 and G5	**Weaknesses** ▪ Large numbers of people are without basic needs and high economic difference between different provinces ▪ Less Research and Development ▪ Terrorism effected states in western China ▪ Big difference of rich and poor ▪ Corruption ▪ Interference in Judiciary by Political System ▪ Aging population due to one child policy
Oppurtunities ▪ Big domestic market. ▪ Large numbers of people are going up in economical level. ▪ High quality infrastructure, good rail network. ▪ Upcoming International player in the global market have 2nd largest GDP.	**Threats** ▪ Lack of data security systems and corruption. ▪ Countries like India with qualified workforce making efforts are competing with China in every sector. ▪ Losing control of intellectual property when international companies come to China. ▪ China's diplomatic strains with neighbors like Japan and India.

CHAPTER FOUR

4 REGRESSION MODEL

To test the effect of seven antecedents (FDI, CPI, ADLR, GII, LPI, GI and SSGDP) on economic growth rate (EGR), regression analysis has been used. Data used is from different countries of the world covering developed, developing and underdeveloped countries.

4.1 Results and tested model

Table 5 shows the Pearson correlations between antecedents and the economic growth rates (EGR). The data has been taken from 81 countries. It can be seen here that FDI has a positive correlation with Growth and Innovation. It means that FDI can increase both economic growth and innovation. This type correlation is between individual antecedents and growth. To understand the collective effect of all these antecedents, regression analysis has been performed. Regression equation generated out of regression analysis can give economic growth as a function of seven antecedents.

Table 5 Correlation table for different antecedents and Economic Growth rate

	SSG	GII	Gini	FDI	ADLR	EGR
Gini	0,017#	– 0,274***				
FDI	0,010#	0,310***	– 0,007#			
ADLR	0,461*	0,564*	– 0,076#	0,155#		
EGR	– 0,416*	-0,316***	0,272***	0,193#	– 0,225***	
CPI	0,547*	0,720*	– 0,028#	0,135#	0,340**	– 0,123#
SSG	1,000	0,577*	0,017#	0,010#	0,461*	– 0,416*
GII	0,577*	1,000	– 0,274***	0,310***	0,564*	– 0,316***

no-significant; *p<0.001;**p<0.01;***p<0.05;

Regression analyses were performed for the growth as dependent and seven antecedents as independent variable. With such a method we can predict the growth and can also see the effect on growth by changing one variable and keeping all other constant. The graph in figure

13 shows the normal probability plot having linear pattern consistent with the normal distribution. Plot of residual verses fitted value shows a random pattern which shows that results have constant variance.

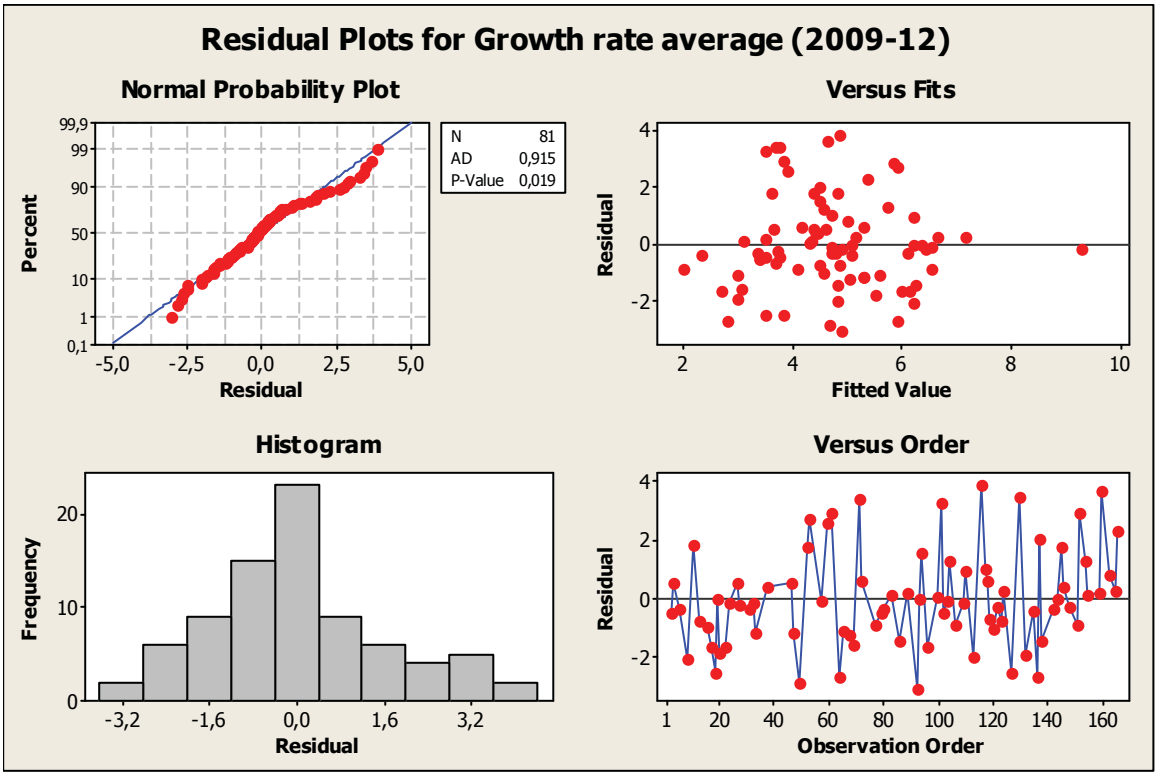


Figure 13 Fitness of the model

Table 6 below shows the summary of the model. The R-Sq value shows that regression model explains 36.85 % of the variance in growth, indicating that the model fits the data fairly well. R-Sq (pred) is 30.80%.

Table 6 Summary of Model

S = 1,69604	R-Sq = 36,85%	R-Sq(adj) = 30,80%
PRESS = 255,229	R-Sq(pred) = 23,25%	

The model equation derived by taking different antecedents shows that the logistic performance, global innovation index and service share of GDP has negative correlation with the growth. Gini, FDI and CPI have shown positive correlation with the growth.

The regression equation is:

Growth rate average (2009-12) = 9, 25211 - 1, 35806 Average LPI + 0, 0520279 Average Gini (1994-2012) + 2,0586e-011 FDI (2011) - 0, 00143798 Adult Literacy Rate, 15 Yeras a + 0, 0402524 CPI-2013 - 0, 0700077 Service share of GDP - 0, 0257799 GII-2013

In the table 7, the p-value for each index tests the null hypothesis that the coefficient is equal to zero (no effect). A low p-value (< 0.05) indicates that null hypothesis can be rejected. It means that for the indexes which have p<0.05 they can affect the growth in more prominent way. On the other hand P> 0.05 suggests that the change in growth is not associated with Logistic performance Index, Adult literacy rate (ALR) and Global Innovation Index (GII). In table 7, we can see that GI, CPI, FDI service share of GDP variables are significant because their p-values are <0.05.

Table 7 Table for Coefficient and P value

Term	Coef	SE Coef	T	P
Constant	9,25211	1,72435	5,36556	0,000
Average LPI	-1,35806	0,69294	-1,95985	0,054
Average Ginni (1994-2012)	0,05203	0,02361	2,20370	0,031
FDI (2011)	2,05e-011	0,00000	2,88952	0,005
Adult Literacy Rate, 15 Years a	-0,00144	0,01164	-0,12356	0,902
CPI-2013	0,04025	0,01934	2,08172	0,041
Service share of GDP	-0,07001	0,02318	-3,01987	0,003
GII-2013	-0,02578	0,04951	-0,52070	0,604

Table 8 represents the analysis of variance which also show that the insignificance of Logistic Performance Index, Adult Literacy Rate and Global Innovation Index.

Table 8 ANOVA table

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Regression	7	122,552	122,552	17,5074	6,08622	0,000013
Average LPI	1	25,674	11,049	11,0489	3,84101	0,053831
Average Gini (1994-2012)	1	21,949	13,969	13,9694	4,85629	0,030700
FDI (2011)	1	36,209	24,017	24,0173	8,34932	0,005077
Adult Literacy Rate, 15 Years a	1	5,381	0,044	0,0439	0,01527	0,902002
CPI-2013	1	4,341	12,466	12,4657	4,33354	0,040875
Service share of GDP	1	28,218	26,233	26,2332	9,11963	0,003483
GII-2013	1	0,780	0,780	0,7799	0,27112	0,604155
Error	73	209,989	209,989	2,8766		
Total	80	332,541				

4.2 Hypothesis testing and discussion

4.2.1 Hypothesis test results

Hypotheses can be discussed based upon the results from the regression analysis. Hypotheses tested are as under:

H1a Adult literacy rate (ADLR) is related the growth and increase in literacy among the adults in a country can increase its growth rate.

As adult literacy rate has not shown any significance in the analysis the hypothesis could not be tested based upon the regression results.

H1b Gini Index (GI) is related to the growth and increase in income inequality in a country can decrease the growth rate.

Gini has shown a positive correlation with the growth. It means that increase in income equality has shown an increase in the growth rate for the countries. It means that regression results have not supported the Hypothesis.

H2 Logistic performance Index (LPI) is related to the growth and increase performance of logistic services can increase its growth rate.

LPI has not shown any significance in the regression analysis. This shows that the hypothesis can't be tested based upon the regression results.

H3a Foreign direct investment (FDI) is related to the growth and increase in FDI in a country can increase its growth rate.

FDI is positive and is in line with the findings from the literature. Regression results fully support the hypothesis.

H3b Service percent share of the GDP is related to the growth and increase in value of the SSG in a country can decrease its growth rate.

Regression results also support this hypothesis as service share of GDP has shown significance in the regression analysis.

H4a Corruption Perception Index (CPI) is related to the growth and increase in corruption in a country can decrease its growth rate.

Regression results have supported the hypothesis. As regression analysis has shown that growth rate increase with increase in the corruption Index. Higher level of corruption index means a lower level of corruption.

H4b Global Innovation Index is related to the growth and increase in Innovation in a country can increase its growth rate.

No significance has been seen for this antecedent in the regression analysis. Hence the hypothesis could not be tested.

4.2.2 Discussion on Hypotheses

Regression results have shown that among the hypothesis only CPI, FDI and SSG are in accordance with the hypotheses made in theory chapter. CPI, FDI and SSG have shown

significant effect in the regression. In the regression analysis Gini index (GI) has also shown significant effect on the growth, but hypotheses point of view it has shown the opposite effect. Hypotheses for remaining antecedents have not shown significant effect on growth in the regression analysis. Overall results show that countries should strengthen the flow of foreign direct investment and concentrate more on increasing the manufacturing % of GDP, as service share has shown negative correlation. Countries should also bring down the corruption to have a healthy growth.

Increase flow of FDI often leads to higher corruption too (Wiki, Corruption in India, 2013). Figure 14 shows average growth rate and CPI index for some of the OECD countries. Growth rate and corruption don't show any correlation for the countries having lowest rate of corruption among different countries in the world. With very low corruption, Sweden and Finland have still the growth rate above the OECD growth average of 2 %. Aim of all countries should be to bring down the corruption as it hinders the distribution of the fruits of growth like health, education and infrastructure.

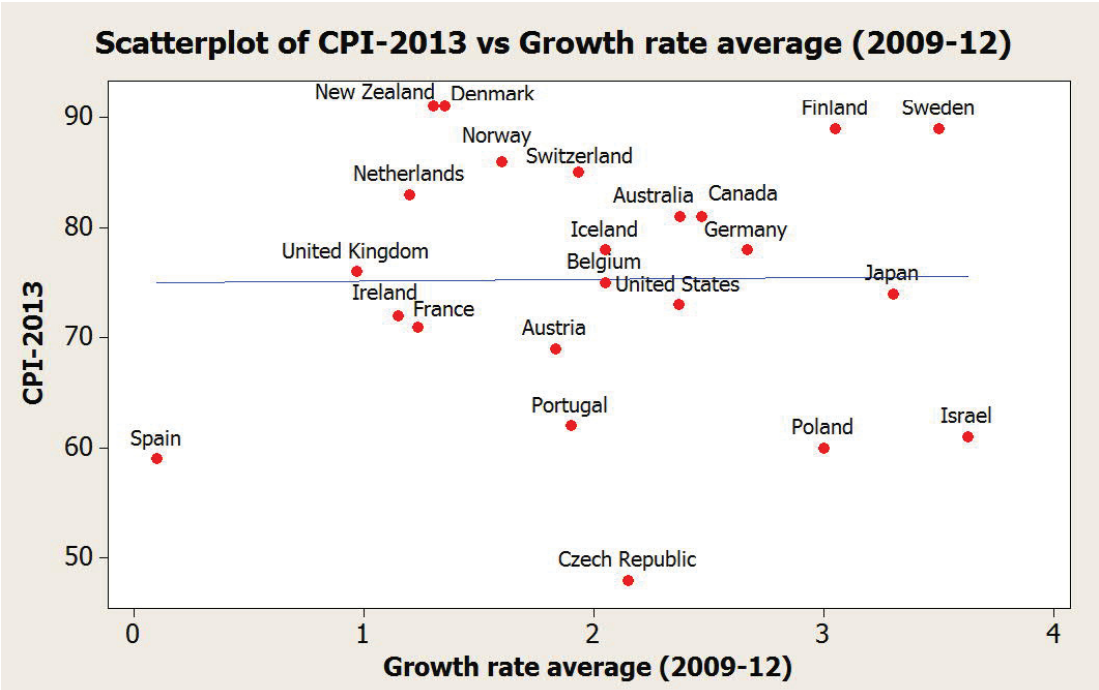


Figure 14 Growth rate and CPI index for some of OECD countries.

The reason for GI to show a negative correlation with the growth could be that sometime inequality is increasing with the increase in growth. Figure 15 shows the Gini Index of some of OECD countries along with China and India. It can be seen here that the inequality has not so big difference among developed countries and emerging economies China and India. Gini for China and USA is almost at same level. Gini index of India is almost the same level as countries like Belgium, France and Switzerland. Scandinavian countries Denmark, Sweden, Norway and Finland have lowest level of inequality in the world. A background note on world development report by Francisco Rodríguez C. (2000) on inequality, economic growth and economic performance reveals the ambiguous nature of effect of inequality on growth. In author's opinion the net aim of all the countries should be to bring down the inequality so that polarization among the societies should be diminished. Polarization often leads to political instability and other social problem in the country.

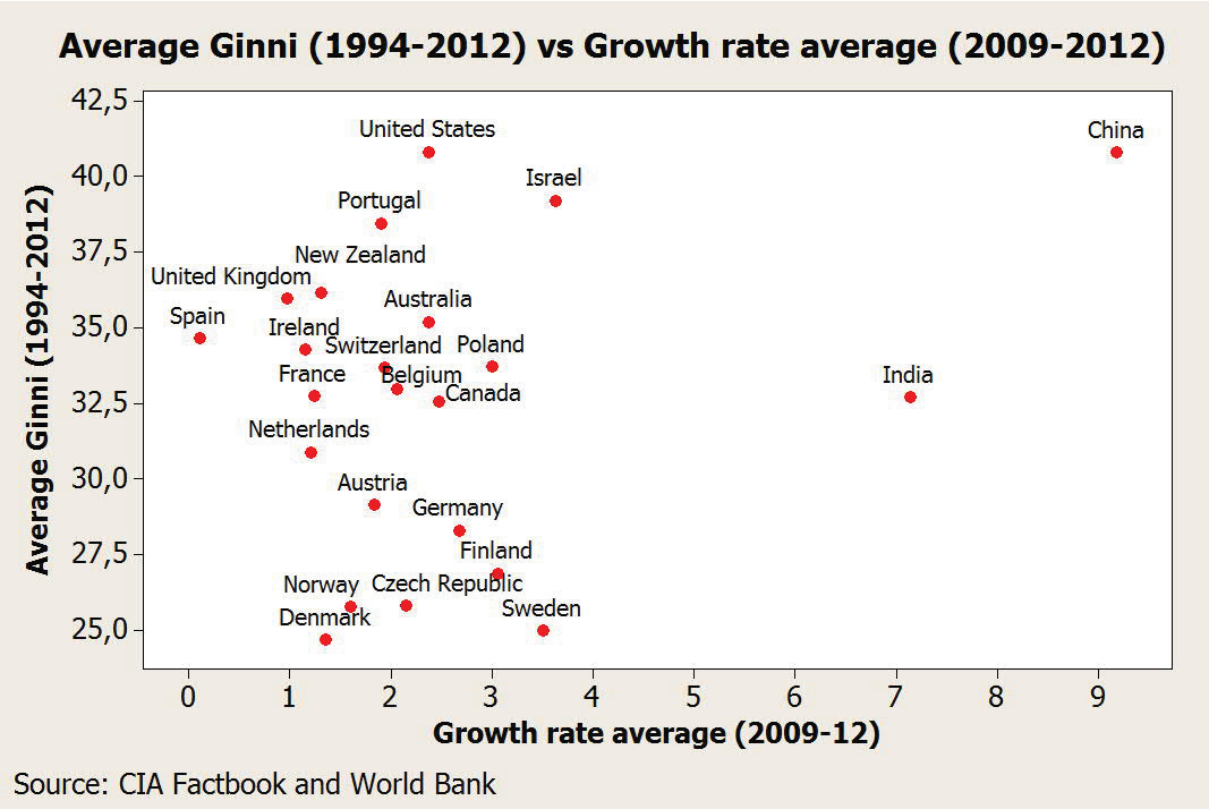


Figure 15 Average growth rate and CPI index for some of OECD countries, China and India.

Logistic performance often quantifies the constraints for country to connect globally. Arvis et al., (2007) have highlighted that the better logistic performance often make country to attract more foreign direct investment. This also supports business to grow in a global environment. Countries at the bottom of the LPI rankings have underinvestment from foreign. It means that even the logistic performance has not shown significance, but it can enhance FDI and hence growth.

Adult literacy rate and innovation have not shown significance in the regression analysis either. However, in author's opinion these antecedents help in fueling the growth. Many innovative ideas in the world have transformed into companies of mass production (Grossman, 1993). Innovation together with entrepreneurship leads to industrialization which enhances the manufacturing. Hence it contributes to the growth. To maintain the growth, literacy plays an important role. It is important to produce required number of educated people in a country to supply for the rising demand in the organizations.

4.3 Discussion India and China Perspective

4.3.1 Role of foreign direct investment (FDI)

Sometimes FDI comes as a result of growth. Figure 16 shows China's and India's growth since 1980. It can be seen the average GDP growth of China is 10 % and for India is 6%. China has chosen a model of investing resources to increase growth whereas India has selected a model of efficiency and productivity to propel growth (Khanna, 2007). Chinese growth has comes from heavy investment in industry and equipment. Figure 17 shows the comparison of FDI in India and China. It is clear that China has almost 10 times FDI as compared to India. Indian growth comes from different factors as combination of improvement of skill sets, diversification of the economy, stimulation of consumer demand,

entrepreneurship (Kalyanaram, 2009). Comparing figures 16 and 17 it can be noticed that the growth of China in 80's was still better than 90's even if there was lower FDI. The growth of China has been influence by FDI in 1990. In the regression model made in this study it has been seen that growth is positively related to the FDI. Increase in FDI can increase the growth. The model covers all the countries from developed, developing and underdeveloped.

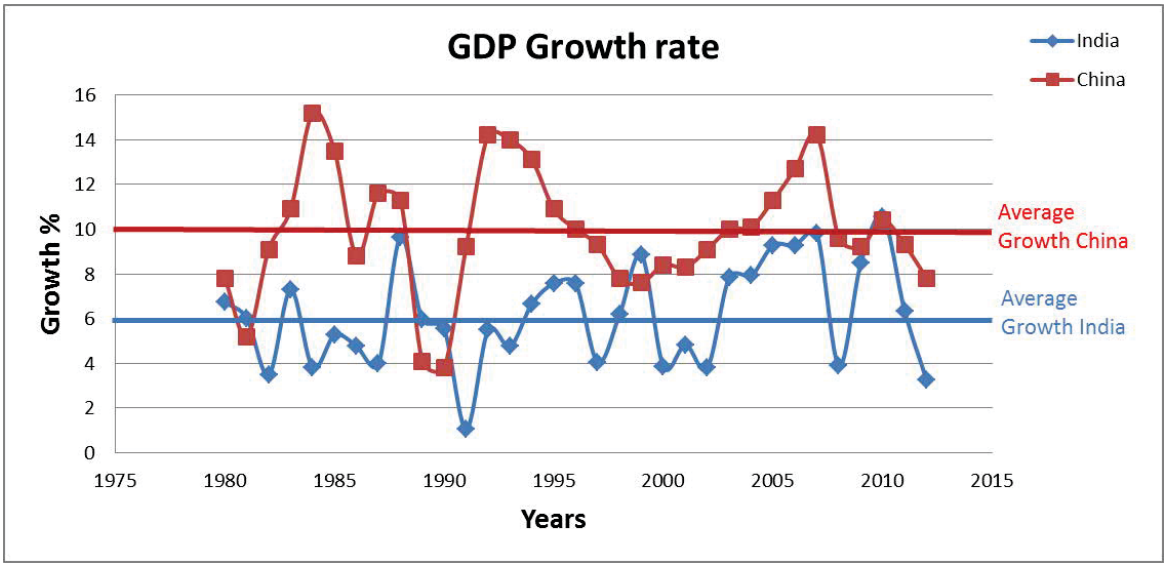


Figure 16 Growth for China and India (Source: World development indicators, World Bank)

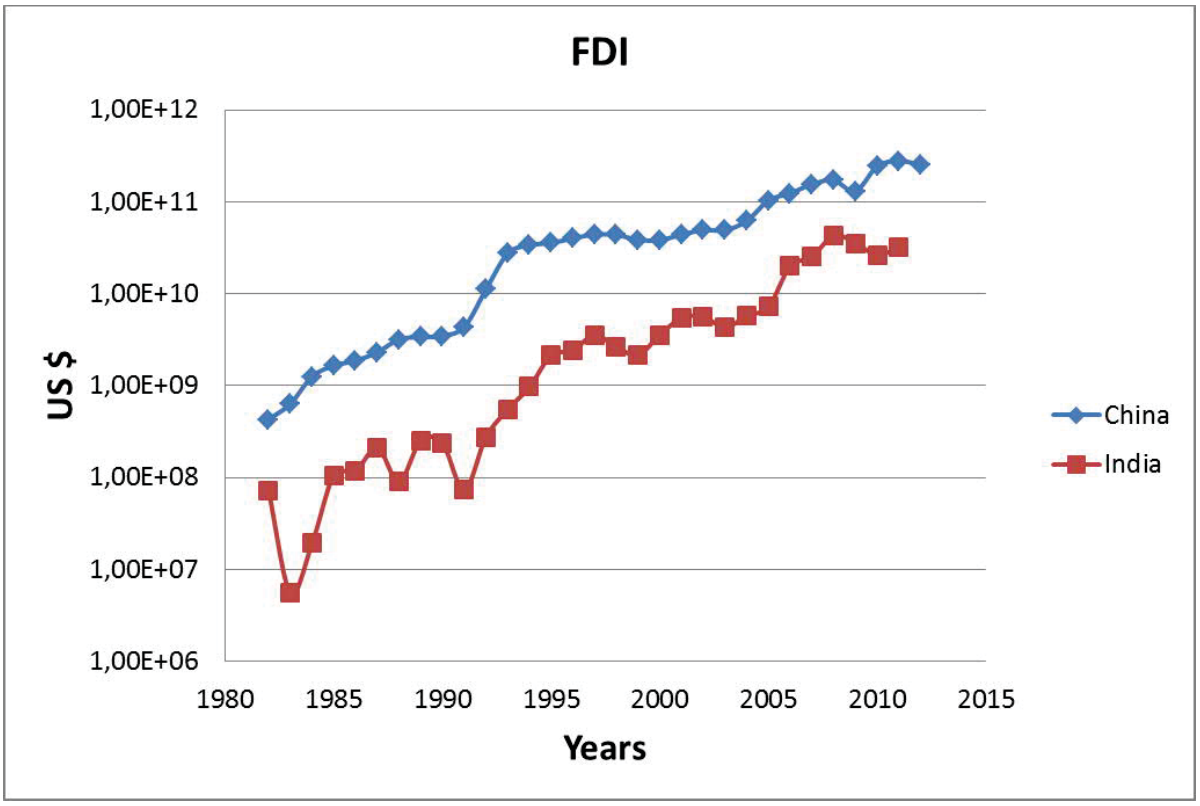


Figure 17 Foreign direct investment in China and India (Source: UN Data)

FDI helps in development of a country. It can strengthen the quality of infrastructure, brings technology and generate employment (Anitha, 2012). Both China and India has large amount of natural resources, high skilled labour pool and huge market. Their post liberlization economic policies have enabled them to attract FDI (see figure 17). India brought economic reforms 1991 as compared to China in 1978. India was 13 years behind in this regards. This could be one of the factors why India's FDI is one tenth the FDI of China. As FDI has shown postive correlation with growth, both countries should continue their efforts on bringing more FDI. In attracting FDI, China seems better than India. India seems to still have some openness issues for its market (Wilson and Pushothaman, 2003)

4.3.2 Role of Corruption

Corruption Index has also shown positive correlation with the growth in the model. It means that correlation of corruption with growth is negative as higher corruption index means

lower corruption. Various studies as mentioned before have also shown negative effect of corruption on growth. However, in author's opinion corruption can increase with increase in growth. Some times corruption could also be a result of the growth. Ramirez, (2013) has highlighted the undesirable outcomes of corruption. Corruption can increase social unrest, decrease FDI, lower the income levels. CPI 2013 has shown India on 94 th place and China on 80th, when it comes to the level of corruption. Both countries have faced high level of corruption in recent years. Even though they have such a high level of corruption, they still have maintained a good growth rate. Since 2010 high corruption scams in India, the 2G spectrum scam, the 2010 Commonwealth Games scam, Adarsh Housing Society scam, the Coal Mining Scam, the Mining Scandal in Karnataka and the Cash for Vote scam have involved very high level government officials including Cabinet Ministers and Chief Ministers (Wiki, Corruption in India, 2013). This is a big threat for the India. Both countries are taken corruption as very high concern. Recently, there were mass moments by people of India against corruption lead by Anna Hazare. Due to the result of that a newly formed political party won the election in New Delhi. They are demanding a strong bill against corruption so that the corrupt people can be punished. These steps and response of people definitely indicates that the corruption in India will come down in near future. Lower corruption in China and India will also help in bringing more and more FDI to these countries.

It has been mentioned in various studies that that the corruption have worsened in China since 1980 (Wedemen, 2005; Wedemen 2012). Ramirez, (2013) concludes that Corruption in China in 2009 is comparable with the USA in 1930. Around Income per capita of China in 2009 is also same as of USA in 1930. USA has brought down the corruption with the economic development. Hence he concludes that the corruption rises in the early stage of development life cycle and once the modernization takes place corruption become low. Figure 18 compare the corruption and growth for China, India and average of 26 OECD

countries. It can be seen here that the OECD countries have low level of corruption as compared to China and India. OECD countries are among the highest level of per capita income. They have better living standards for their citizens. Fruits of growth like education, health and infrastructure are best in the world for OECD countries. From growth point of view China and India stands high in growth rate. This means that China and India have to bring down the corruption to strengthen their social welfare. This can further strengthen the growth for these countries.

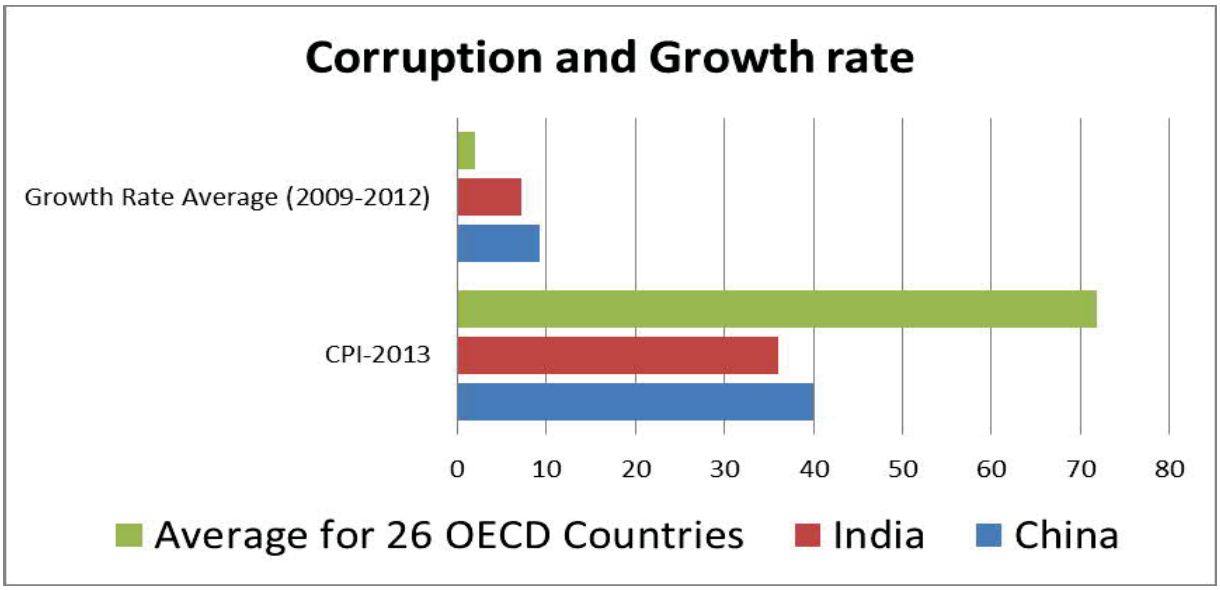


Figure 18 Average growth rate and CPI index for 26 OECD countries, China and India. (Source: Transparency International and World Bank)

4.3.3 Role of Service Share of GDP

Regression model has shown negative correlation of service share of GDP and the growth. It means that manufacturing should be emphasized. Figure 19 shows the service % share of the GDP for China and India. It can be seen that Indian GDP depends more upon the service sector whereas Chinese GDP has higher role of the manufacturing. In India the share of agriculture has fallen from 55 per cent in 1950-51 to less than 17 per cent in 2009. The

share of services increased from 30 per cent of GDP in 1950 to 57 per cent in 2009 (Eichengreen & Gupta, 2011).

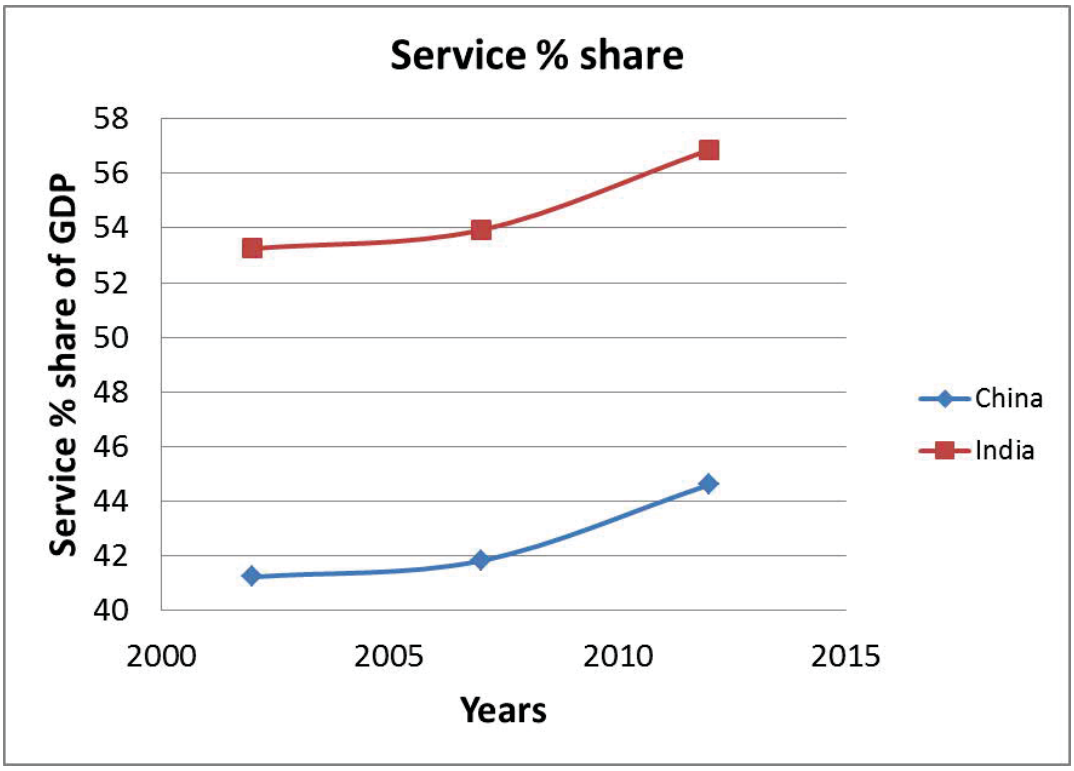


Figure 19 Service % share of GDP (Source: http://www.quandl.com/economics/services-share-of-gdp-by-country)

4.3.4 Role of Gini Index

Inequality has shown positive correlation with the growth in the model. It could be due to reason that world largest economies like China and USA have high level of inequality. On the other hand these economies are still showing a good growth rate. Figure 20 shows the Gini index for India and China. It can be noticed here that the inequality level in China is higher than India. Also the rate of growth of inequality in China is higher than that of India. Biggest drawback of inequality is that it can cause the social unrest in the country. For the social stability of the country it is good to have less inequality. The regression analysis studies by Kristin Forbes (1997) and Hongyi Li and Heng-fu Zou (1998) also shows a positive correlation of inequality and growth. In author's opinion as inequality can creat unfavourable conditions for FDI by creating social tension. Both China and India should try to lower the inequality and use other means for maintaining the growth. India seems better in this regard. China's inequality is increasing at a higher rate.

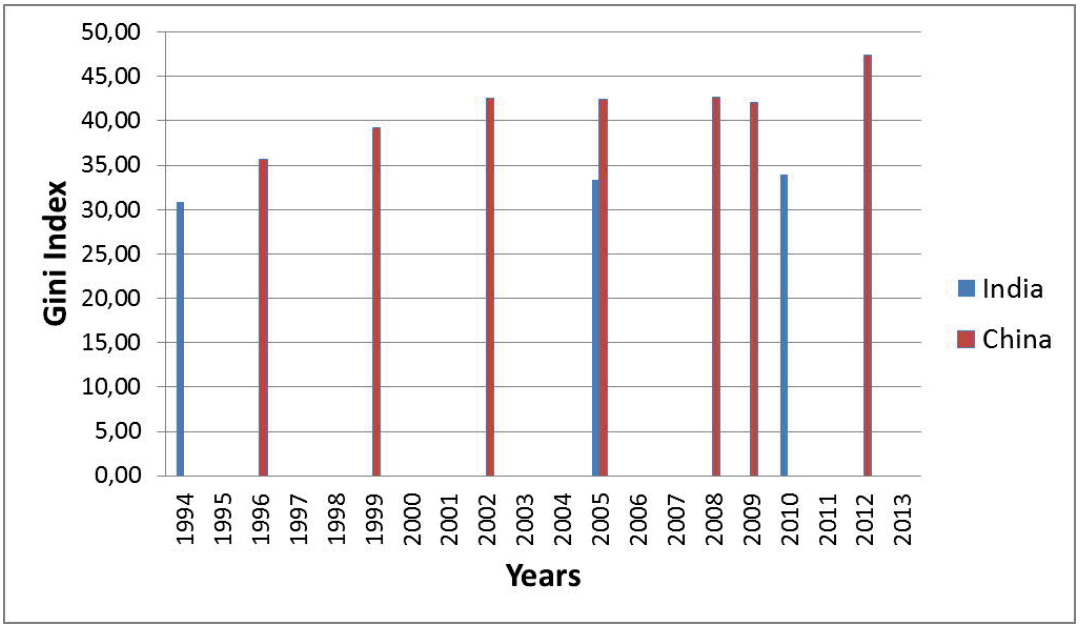


Figure 20 Gini for China and India (Source: World Bank)

4.3.5 Role of LPI, ADLR and GII

In the regression model LPI, ADLR and GII all have shown insignificant correlation. India lacks in logistic performance, adult literacy and Innovation as compared to China (see figures 21, 22 and 23). All these things can also be the result of the growth. For instance scandinavian countries have high level of LPI, ADLR and GII. However growth wise these countries are behind India and China. These antecedents will improve with growth but to make growth faster they can act as a fuel. Both India and China needs to raise quality of logistics, literacy and Innovation.

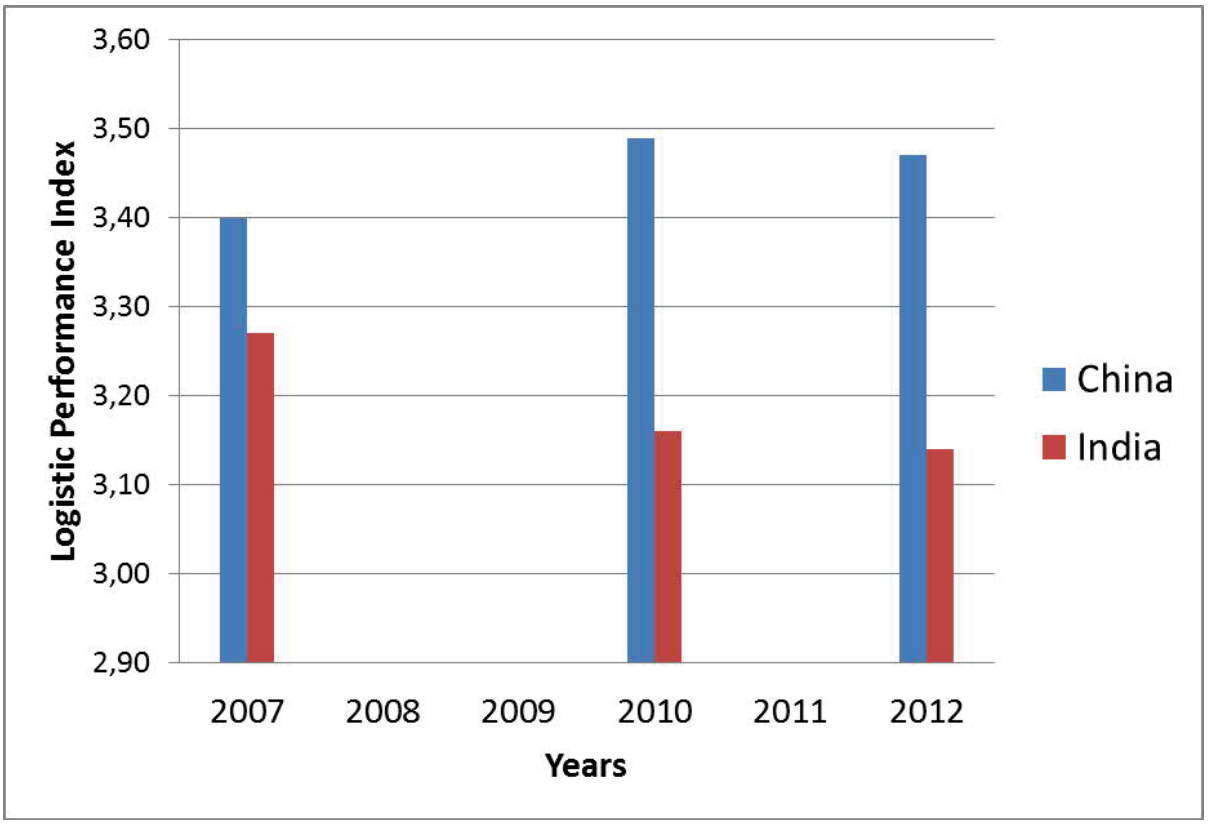


Figure 21 Logistic Performance Index China and India (Source: World Bank)

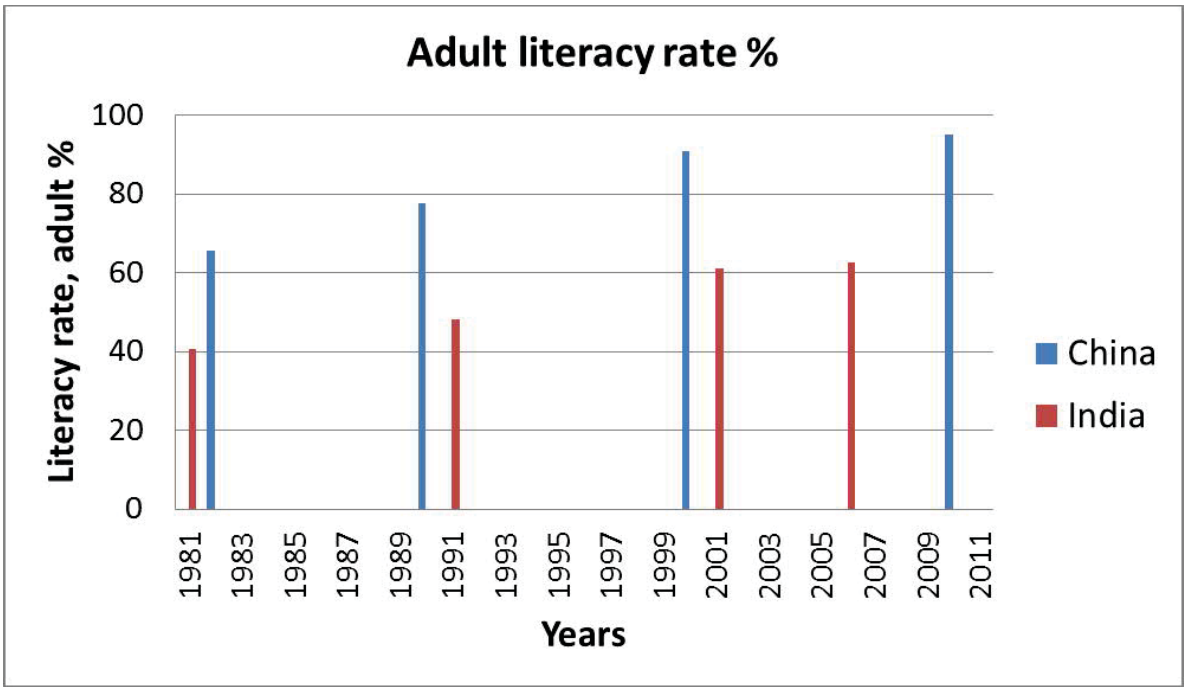


Figure 22 Adult Literacy rate for China and India (Source: World Bank)

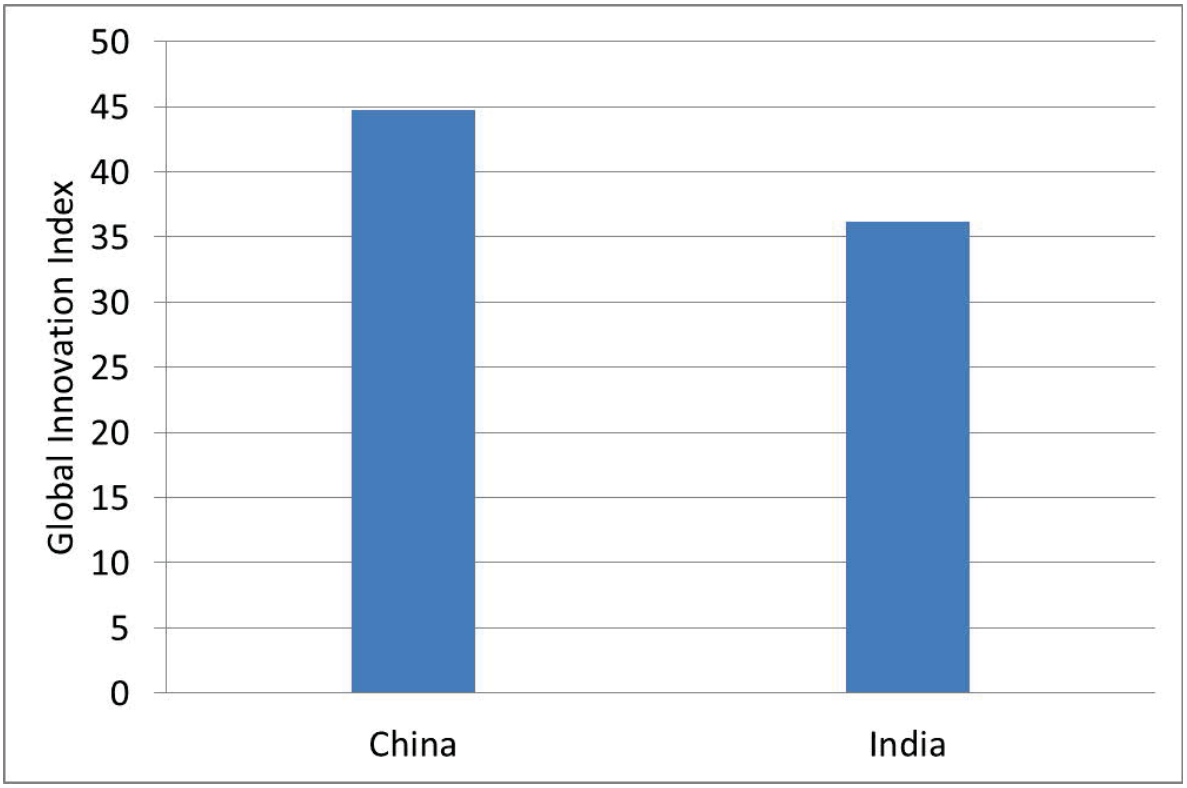


Figure 23 Global Innovation Index 2013, China and India (Source: http://www.globalinnovationindex.org/content.aspx?page=data-analysis)

4.4 Conclusions

The first research question was what are the critical antecedents for the growth?

The critical antecedents seem to be FDI, SSG, GINI and CPI. These are the antecedents which have shown significant relation with the growth in regression analysis. The relation of FDI and Corruption on growth is quite obvious, corruption decrease the FDI by delaying all the investment process. It also makes bad reputation for some countries. FDI brings lot of jobs to the country. Increase in equality could also be result of initial phase of the growth, for instance FDI in certain sector gives job to certain group of professions. FDI is often made in retail, services, manufacturing etc. The data selected is taken for FDI as a whole. The future study for this would be to find a relationship of certain type of FDI on growth. SSG has shown a negative correlation, which shows that the countries having higher share of service sector in their GDP often shows a lower growth. Although the growth of India is because of its service sector and for China, it is the manufacturing sector which plays a vital role. It is the manufacturing which also gives rise to certain type of service industry. Hence rise of manufacturing sector share up to a certain level is admirable according to author. Innovation, literacy and infrastructure are the fruits of economic growth. They are also important to attract FDI in the countries. The value of LPI, GII and ADLR are improving in most of the countries. It has seen that OECD countries which have high LGI, GII and ADLR are showing average of 2 % growth; however the developing economies like India and China are showing much better growth figures even though they are low in these antecedents. This could also be a reason that these have not shown any significant effect in the regression analysis.

The second question was, What are future growth strengths for China and India?

China has already built an economic lead as compared to India. This is because China economic reform started before India. World Bank data shows that both countries were having roughly the same per capita income and urbanization in 1980. China is now well ahead of India in terms of infrastructure and literacy. This means that China has moved ahead of India in over 30 years. This has made possible because of the higher growth rate of China compounded over 30 years. It also means that if India's growth rate will be more than China in coming 30 years India will most likely take over China. In author's opinion India has not

yet seen the golden age of growth. The factors due to which China was ahead have yet to come for India.

China has higher inequality than India. The growth model which China is following seems to give a higher inequality. It can be said that more dependence on industry sector for growth gives rise to more inequality and growth driven out from service sector comparatively generates lower inequality.

4.4.1 Factors which support India

Demographics: India has better human capital as large number of people is in young age. Due to one child policy of China less number of kids have entered into their primary education.

Democracy: Social and political environment is better in India as it has been accepted by strong lobby of democratic countries. Good things about democracy are people can choose the government whom they think is the best. Freedom of speech Right of Information. China has control over newspaper and TV.

4.4.2 Factors in favour of China

Economic lead: China has an economic lead as compared to India. China has made large investments infrastructure and new technologies. Logistic and innovation index of China is better than India. China has much higher GDP and GDP per capita as compare to India.

Geographic advantage: China has better land trade routes as compared to India. India has mountains on North and Northeast and hostile relation with Pakistan in the west. India dependence on Maritime trade. China is good in both maritime and land route due to border sharing with large number of countries. China has plans to build intercontinental rail networks (Rail, 2014).

The third question was what India and China should do to attain a good growth while keeping critical antecedents into consideration?

4.4.3 Things China and India should do to maintain good growth- Social factor wise

Both China and India should open more world class universities and educational institutes so that they can maintain the demand of workforce for the growth. The domestic demand for skilled workforce is going to increase for both countries. The quality of institutes is equally important as the quantity.

Both countries should have policies for uniform development of the country. There are cases in India where one state has 3 times per capita difference than other state. Similarly in China east coast region is much developed and have large per capita difference than western China. This kind of situation can cause social unrest in the country. For growth sustainability point of view this is very important. Even though inequality in the regression model has shown a positive correlation with the growth, but net aim of these countries should be to have minimum inequality.

According to ranking in Mother Index, based upon the statistics on the health of mothers and children, India is on 137th place whereas China is on 61st place among 177 countries in the world (SWOM, 2014). This shows that mothers and children have much better conditions in China. This reflects that India should improve maternal health, children´s well-being, education status, economic condition and political representation among women.

4.4.4 Things China and India should do to maintain good growth - accessibility and transportation wise

India lacks in quality of roads compared to international standard. India should start more projects like golden quadrilateral. Poor roads and delays in ports have been well-recognized worldwide as factors for impeding growth. Indian companies on average lose 30 days in obtaining an electricity connection, 15 days in clearing exports through customs, and lose 7% of the value of their sales due to power outages according to the study made by Goldman Sach in issue number 169. India must improve roads, power supply and provide quick service at ports. India's infrastructure improvement needs are recognised as main obstacles to the country's future economic growth by international investors (Ahuliwalia, 2006).

China public spending on infrastructure is 5 times more as compared to India in 2001(Sharma and Vohra, 2009). China has built high class ports, roads and rail network. The

important consideration China should have is to remove regional disparity. For instance in some regions China has roads quality according to world standard whereas some regions are totally ignored.

4.4.5 Things China and India should do to maintain good growth - economic factor wise

FDI has shown positive correlation with growth. Both countries have FDI flow which is continuously increasing. India still needs to open more and welcome FDI in more sectors.

Bilateral trade should increase between China and India. They have big domestic demand with in their own countries. More trade organizations with neighbors, like BRICS, should be constructed to boost the trade in the region. Asia is a continent with largest population. These countries should also improve business with Bangladesh, Pakistan and South East Asia. India has already started a cooperation among south Asian countries (SAARC).

4.4.6 Things China and India should do to maintain good growth - institutional factor wise

India belongs to the strong lobby of democratic countries. However, China is often seen as a communist power. This makes India as a ‘soft power’ and China as a ‘hard power’ in the eyes of rest countries of the world. China should improve human rights, right to information and ease in social networking. This will project China as an attractive country in the eyes of the investor.

India should improve its governance and made some strong law against corruption. As mentioned before that India has faced some of the biggest scams in the history of the country. This is very important, because to distribute the fruits of good economic growth there is a need of corruption free society. Only then India will efficiently educate its citizens, build good quality roads and improve the health standard of its citizens.

4.5 Limitation and Future work

Some of the antecedents have not shown the significant effect on growth. Due to this, study is not able to give a reasonable answer regarding the effect of these antecedents. These antecedents are GII, LGI and ADLR. Future study could be done on other proxies such as number of engineering or medical professional produced by each country or number of skilled people produced by each country. For infrastructure or LGI area study could be performed on percentage of GDP spend on infrastructure development in each country. For innovation part it could be number of patents filed by each country in a year or number of patent accepted from each country. These kinds of proxies can give an insight into these antecedents and may give a better relation with the growth according to author's opinion.

Inequality is also an important topic as it is important in determining the sustainability of growth. More inequality often generates political unrest and all other types of social problems. A study focused more on inequality should be done in future. It has been seen during thesis study that the biggest economies USA and China have higher inequality. However other economies Germany, France, Japan, India and United Kingdom have comparatively lower inequality. In this type of study the role of different sectors of GDP could be discussed. Agriculture, Industry and Services sector contribution are also different for different countries. India and China have higher percentage of agriculture sector as compare to other economies USA, UK, France and Germany. Also the data from World Bank contains many missing values of Gini in terms of years. This makes it difficult to compare in selected years. In this thesis latest available has been taken for the analysis and also other source CIA Factbook has been used for data collection. The study on specific years can give a better indication of inequality and growth relation.

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6 Appendix

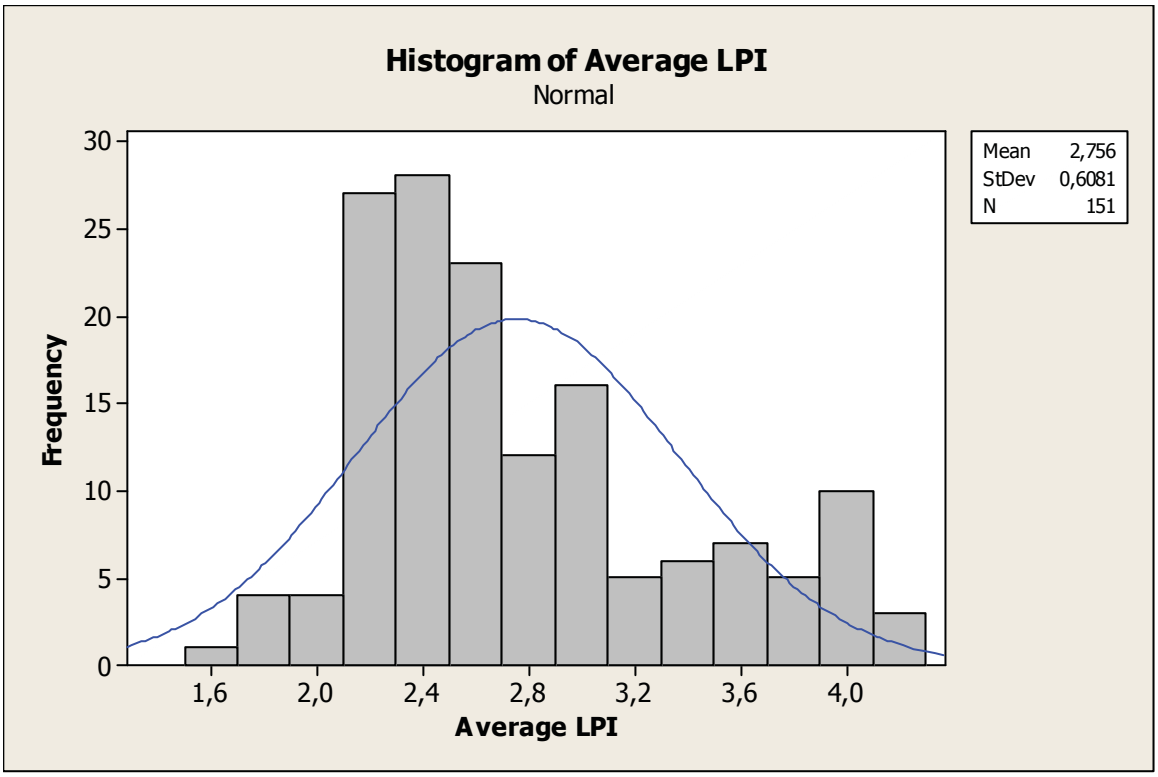

Figure A1. Distribution of Logistic Performance Index

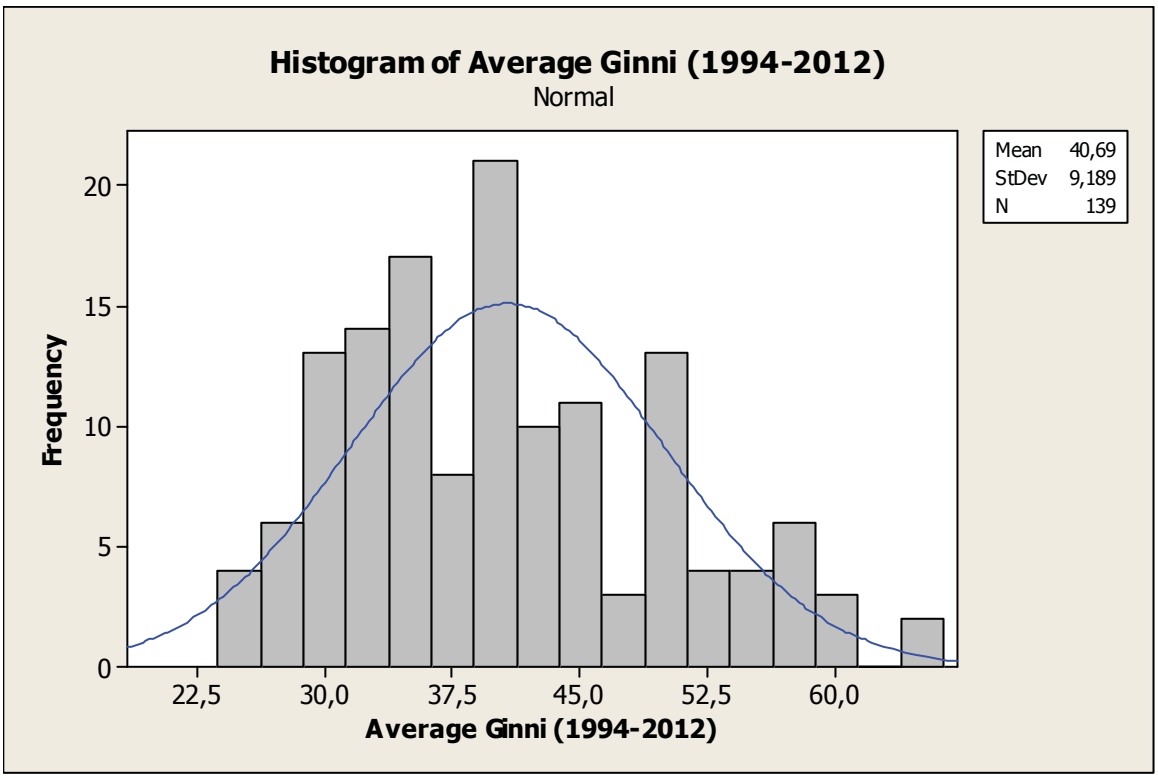

Figure A2. Distribution of Ginni Index

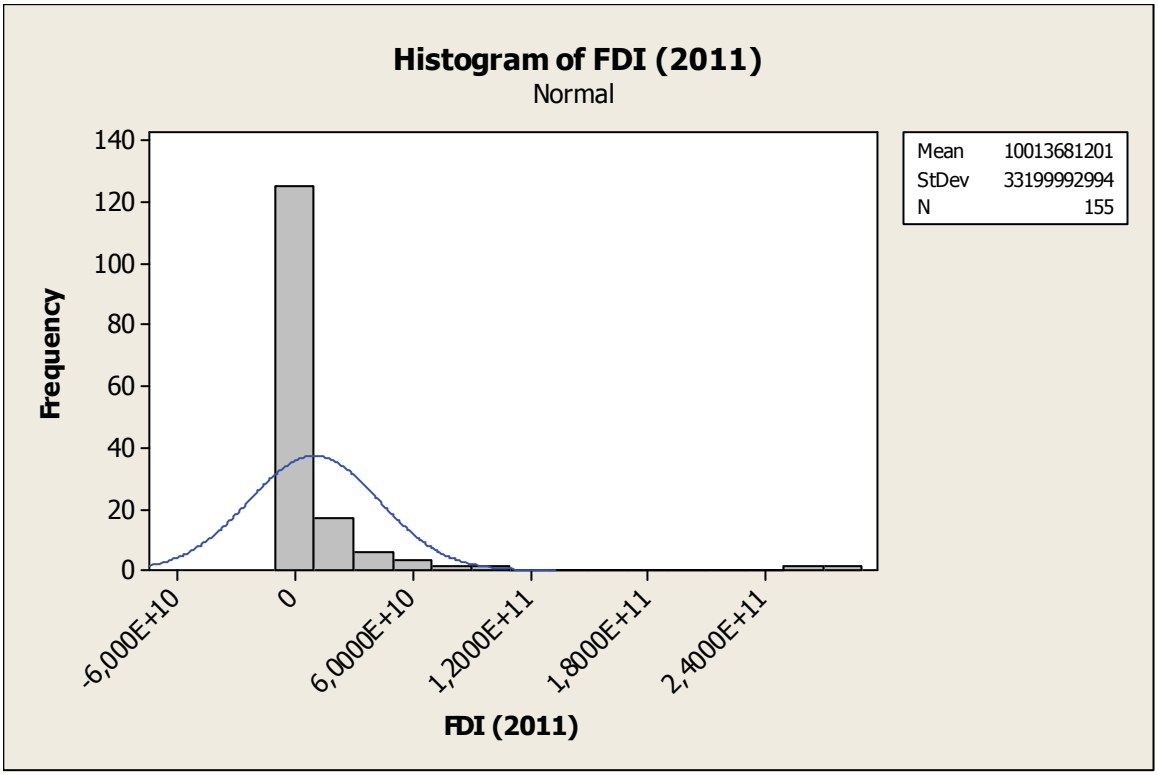

Figure A3. Distribution of Foreign Direct Investment

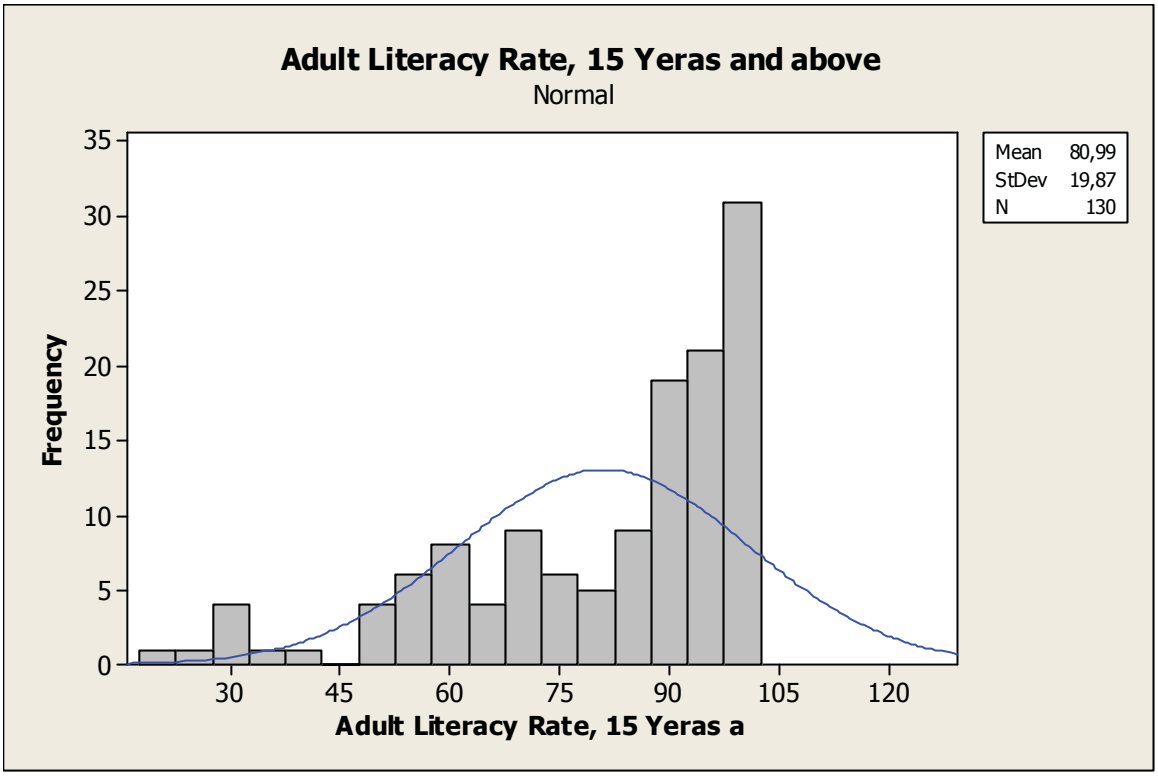

Figure A4. Distribution of Adult Literacy Rate, 15 years and above

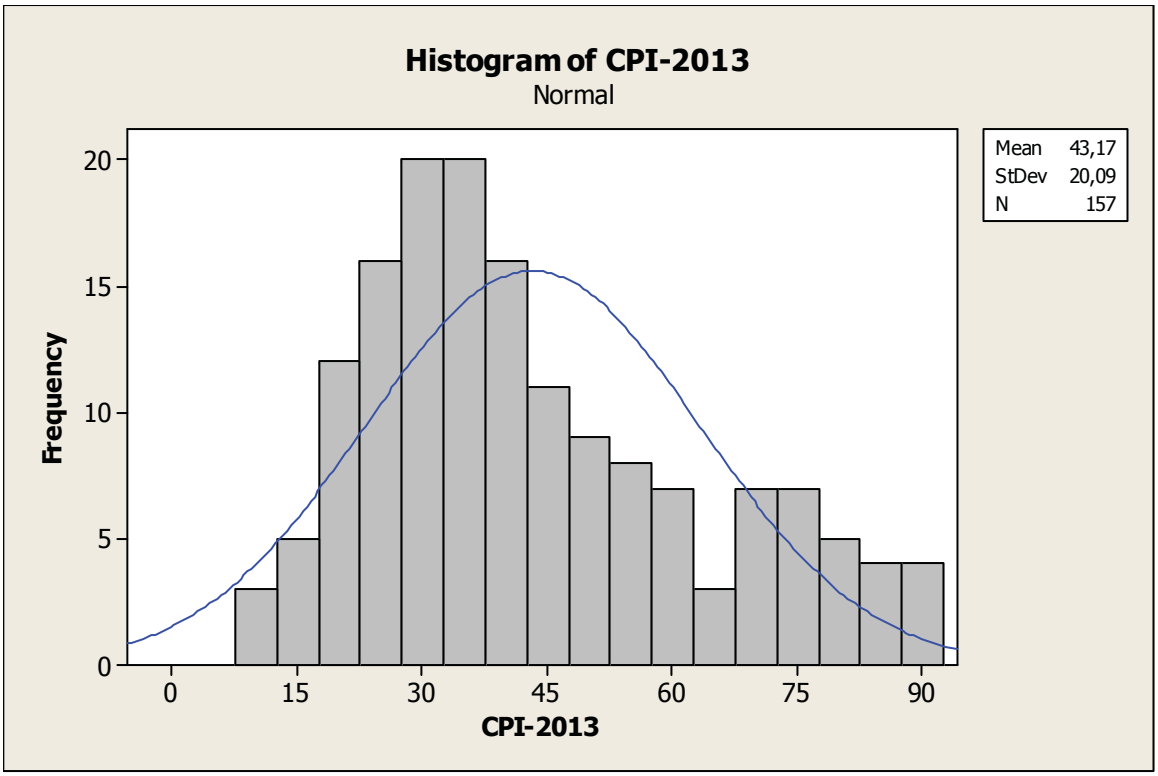

Figure A5. Distribution of Logistic Performance Index

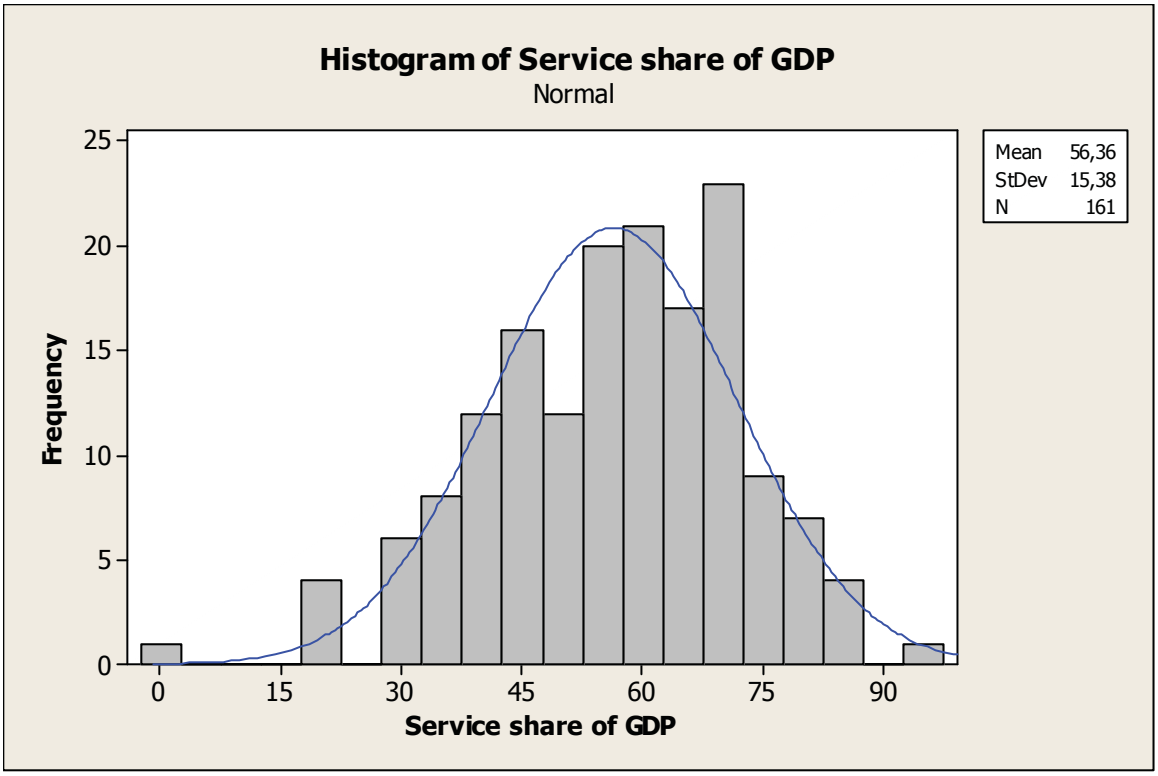

Figure A6. Distribution of service share of GDP

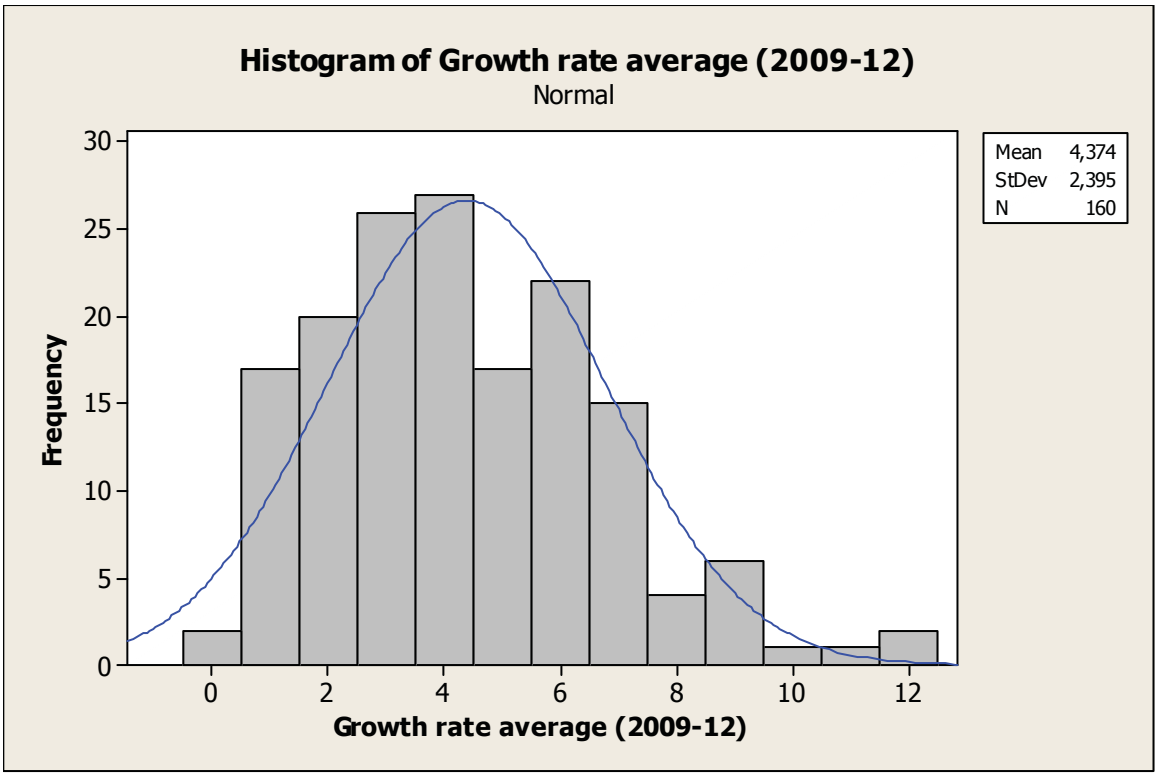

Figure A7. Distribution of Growth Rate Average (2009-2012)

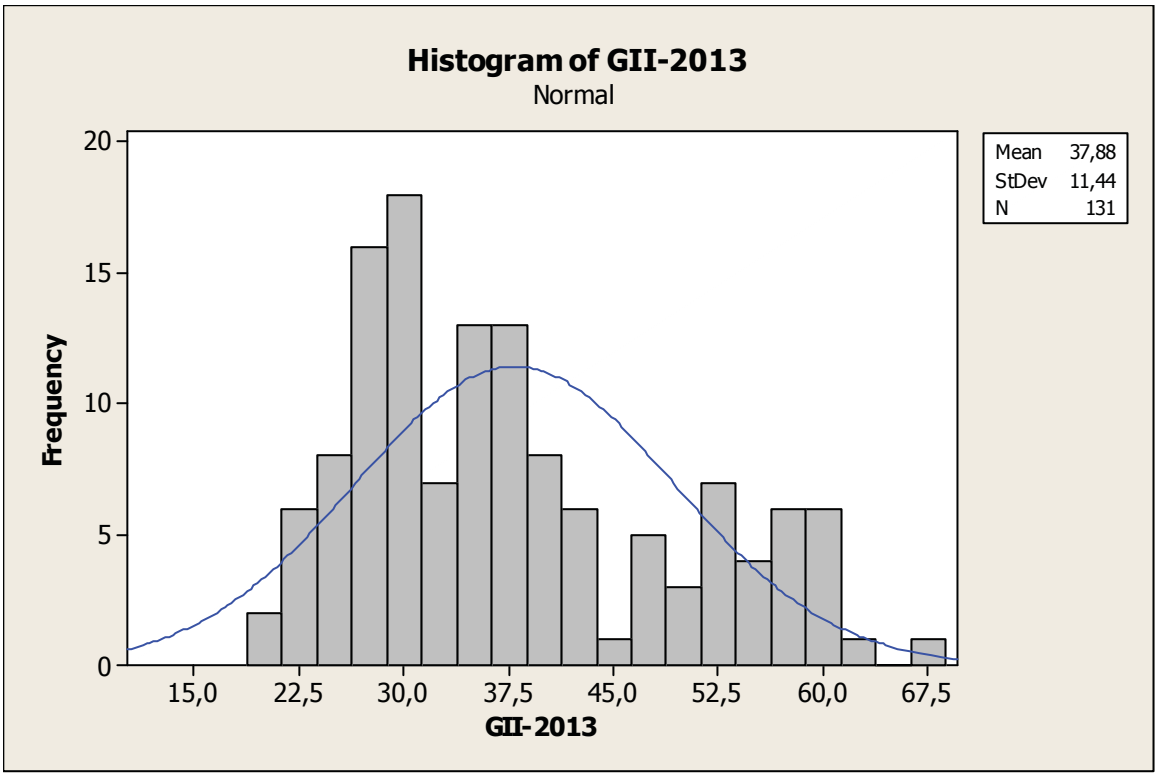

Figure A8. Distribution of Growth Innovation Index, 2013 (GII-2013)