

**Impact of Financial Development on Economic Growth:
A Comparative Study of East & South Asian Countries**



By

Sohaib Ameer

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Supervisor

Dr. Attiya Yasmin Javid

Professor/Head

Department of Economics

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Department of Economics and Finance

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DEDICATION

I dedicate this thesis to my Mother, my siblings and my supervisor whose support has enabled me to complete this research study successfully.

DECLARATION

I Sohaib Ameer hereby declare that this thesis, neither as a whole nor as a part thereof, has been copied out from any source. It is further declared that I have prepared this thesis entirely on the basis of my personal effort made under the sincere guidance of my supervisor and colleagues. No portion of work, presented in this thesis has been submitted in support of any application for any degree or qualification of this or any other university or institute of learning.

Sohaib Ameer

M.Phil. Economics and Finance

Faculty of Economics and Finance

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Abstract

We have analyzed empirical relation between financial development and economic growth, using data on 10 Asian countries from 1980–2014. The study develops an index of financial development covering its two main dimensions: depth and efficiency. We have categorized the countries on region bases as East Asian and South Asian countries. By using difference GMM we find that, financial development indeed promotes growth in both region, however, the dimensions and impacts are different. Financial development facilitate growth through capital mobilization. Hence, the development of financial markets and institutions is a critical and inextricable part of the growth process.

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Chapter 1

Introduction

Introduction

Economic growth is a potential measure of a performance of a countries overall sectors. However it only tells us the overall increase in production and may not tell us the actual economy's strength. Since long, the most broadly acknowledged measures of nation's economic growth has been changed in its Gross Domestic Product (GDP). National growth is an appraisal of market output, including the values of all finished goods and services that are produced and traded in market for money inside a given timeframe. Similarly, growth is taken as the fundamental tool in most of the contemporary macroeconomics analysis. Amritya Sin's focuses that development of a country is represented by standard of living of its people. Whereas, standard of living is mostly proxy by GDP per capita, so, growth in these terms explains the increase in standard of living of a country.

1.1 Background of the Study

In recent years, Asian countries has experienced high economic growth rate and better financial development. Financial markets play a key role for monetary liberalization and stabilizing the assets prices. It includes Central bank, commercial banks, stock market, brokerage firms and other financial institutions. These institutions smooth's the process of investment: bridging the space between saver and investor. These markets ease the money circulation, hence, helping business cycle to boost and pave the way for economic growth. There is strong evidence that shows that efficient financial markets help economy to grow faster.

According to world development bank report the developing Asian countries share in total world GDP growth since 2009 is 2.3% points which is 60% of world's annual 4% pace. Which shows very promising progress and strengthen development. Low oil prices are among the other key

factors that helped in boosting economic growth. However less financial access remains the main the impediment for FD in these countries.

South Asian countries are resilient towards economic progress despite the political unrest in most countries. The sub region is expected to grow at a steady pace in FY 2017. Bhutan shows a positive economic growth mainly because of its hydropower and other construction programs. In India many reforms are observed in the past few years, despite its heavy military expenditure it continues to secure a steady economic growth. Maldives on the other hand observes a comparatively less growth due to last year Mount Everest tragedy; lowering the tourist activity in the region. However construction business shows a real progress with a 20.6% growth. Pakistan's GDP growth stands at 4.71% in 2015-16 period, with the main boost in industrial sector which grow at 6.8% in the same period.

In recent years, East Asia has shown tremendous growth as compared to its contemporary other countries. Despite the global financial crisis, most of the Asian countries have experienced steady growth. For developing Asia an efficient financial system is required more than ever. Asia's growth declined a bit during global crisis, but countries with strong financial system reallocated their sources efficiently to regain the growth rate. FD must come with social equity, and it must provide financial stability to maintain the growth. Thus the efficient financial system possess the three stream goals, first, it should help in reigniting growth, secondly it should provide facilities to the neglected part of the society or, must control inequality. And thirdly, it must provide financial stability as a base for a strong financial system.

The global financial crisis of 2008-09 has created many doubts about the financial development and innovations like mortgage-backed securities and collateral debt issued to the group of firms. As these loans exposed the whole financial system to the dangerous risk. Whereas the developing

Asia is far away from such danger, as the level of such financial development is still under construction in these countries. As supposed by ADB in their final review 2015, Asian financial sector requires three areas to be developed. First, financial access must be ease to let the inclusive growth increase. Second, financial stability must be ensured in the region. Thirdly, growth dividend can be achieved in the light of financial market performance as the region is separated from advance economies.

The major substitutes of Domestic output (and output itself) are indexes that consolidate a few unique measures into a single number. Here we show few records that join output or output variants with a portion of the non-output natural or other indexes officially depicted or with different well-being measures. The purpose of the study is to determine if there is any impact of financial development on economic growth along with other control variables like financial Institutions, human capital, physical capital and government expenditure. It's a cross-country evaluation which comprises South Asian and South East Asian countries. The study focused these countries due to their high GDP growth rate and their fast emergence from the developing economy in the coming era.

This study applies difference GMM to determine cross-country evaluation which comprises South Asian and South East Asian countries. The study focused these countries due to their high GDP growth rate and their fast emergence from the developing economy in the coming era.

Many studies in the regarding field show that financial development has a positive impact on GDP growth. McKinnon and Shaw (1973) are among the few leading researchers who assert the idea of financial liberalization. In their study they show empirical evidence of how government interventions can discourage financial sector by lowering the rates of return on investment

McKinnon and Shaw (1973). Goldsmith (1969) shows a strong relationship between “financial and economic development”.

The index of financial development is constructed to be the representative of financial development. This study also includes trade openness which is the amount of import and export of goods produced and services as a percentage measure of output.

Financial development includes all those factors, institutions and policies which support and ease the provision of financial facilities in the financial market. In this study we have used index of financial development. The most commonly used financial development indicators are bank ratio, private credit and stock market capitalization. Many studies have been conducted on the relationship between “financial developments on economic growth”, so there is bit difference of opinion on causality of the relationship. Most of them show one way causality: financial development has a significant positive impact on national growth. Whereas few researchers assert differently as, Robinson (1952) maintains that FD follows nation’s growth and Lucaus (1997) names the association as “overstressed”. However in a study by King and Levine’ (1993) empirically show a strong connection of FD with real per capita GDP growth with a cross-country analysis. A detailed index is created using the above mentioned information. This study has used principal component analysis PCA for weights assignments and capturing the integration among the variables. A strong financial system can boost growth by increasing saving and investment rates, which directly increase the physical capital of the country. It also increases growth by stimulating innovations which increase the efficiency of the market.

Financial inclusion is the provision of financial services and credit at minimum cost to the groups who find it difficult to approach, or in other words which are the weaker sections and low income groups of the society. According to World Bank report, almost 73% of the poor people don’t

possess any bank account either because of its cost or travel distance they couldn't manage. McKinnon and Shaw (1973) show empirical evidence of how government confinements on the financial system such as, interest rate ceilings, reserve ratio can discourage the procedure of financial improvement and, subsequently diminish economic development. Many evidence shows that easy access to financial services helps firms in managing risk, consumption, and investments in many sectors like education, health and enterprises. Robinson, can be quoted as "where enterprise leads finance follows" (Robinson, 1952). Though financial inclusion is the best proxy for financial development but due to unavailability of data, this study has not used this approach. One can consider an assortment of connections between the financial framework and development producing genuine components. In any case, likely the most vital is the relationship of the stock of financial resources and liabilities to the genuine capital stock, its ideal organization and rate of development and its effective designation and use. I accept the relationship between the capital stock and genuine yield is solid, and direct. The development goal of the financial framework is to accomplish the structure and rate of development of different financial resources and liabilities which are consonant with and even induce the ideal attributes of the genuine capital stock. Bencivenga and Smith (1991) state a positive relation among financial intermediation and growth. Demetriades et al. (1996) show very little support i.e. finance is dominating sector in the process of economic development. Then again, he imparts that in many countries economic development deliberately causes financial improvement. On equalization, nonetheless, the vast majority of the confirmation appears to support the perspective that the relationship between FD and national growth is bi-directional.

We know that economic growth in its broader sense covers all the aspects relating GDP and its effective components, so institutions also plays an important role in national growth. To determine

the role of institutions in an economy we are using governance indicators as suggested by Daniel Kaufmann (NRGI) and Aart Kraay (WBDRG). Governance indicators are a composite of six broad indicators namely, voice and accountability that captures the freedom of expression particularly in canvassing in general elections and the freedom of media. Secondly political stability and absence of violence that accounts for the probability of destabilization of government and unconstitutional means of violence and terrorism along with the government's power to implement its policies. Third indicator is government effectiveness that shows the quality of services provided by the government and political pressure on civil servants. Regulatory Quality is to capture perception of the government's ability of promoting private sector and regulates the public and private authorities. Rule of law is taken to estimate the civil rules and law abiding citizens and the effective role of police and judiciary. Last indicator is the control of corruption that is extended to include the level and amount of corruption in both private and public sectors. A detailed index is made using PCA to capture the individual role in governance indicators and its impact on national growth.

Financial liberalization takes into accounts both the domestic and across the border easy flow of cash, and deregulations of strict rules implemented on banks and financial sectors. It includes Capital account liberalization which is to ease the restrictions imposed on capital flow across the borders of the country. Also its impact on growth rate has been proved by many research works. A chin-financial openness index has been given for over 190 countries. But there are limitations to its statistical authenticity, as it does not show any major change in pre and post financial liberalization dates of the countries. However this particular index takes into account the capital openness using a scale from 0 to 1. This study has used financial liberalization dates from different sources. These dates show the deregulation of banking sector and easing financial constraints across the borders.

For example Pakistan financial deregulation took place in 1994, while India started deregulation laws in early 1992. This study has introduced a dummy variable for financial liberalization that has been scaled as 0 and 1, zero is being given to the pre financial liberation years while 1 is asserted to the post financial liberation years.

The primary strategy ramifications of the McKinnon, Shaw' school is that national limitations on the managing an account framework, (for example, financial cost, high save prerequisites and coordinated credit programs) hinder the procedure of monetary improvement and, thus, lessen financial development. Similar conclusions additionally come by the endogenous development writing, in which the administrations gave by money related go-betweens (e.g. gathering and investigating data, hazard sharing, liquidity procurement) are expressly demonstrated. These models recommend that money related intermediation positively affects enduring state development and that administration mediation in the money related framework negatively affects the development rate (Lord and Levine, 1993). The positive relationship among the advancement of the monetary framework and the advancement of the genuine economy, anticipated by the McKinnon, Shaw' approach what's more, the endogenous development writing, has got significant experimental support from late cross country contemplates.

Trade openness has been added to the equation to complete the growth equation. Trade openness adds imports and exports of goods and services of a nation. Here we have taken into account its percentage share in GDP. There is abundant evidence that shows that trade openness spur national growth. Economic theory suggests that trade liberalization has a positive impact on per capita growth rate, Weli (1992).

Another issue is the likelihood of discarded variable inclination. To the degree that other subordinate variables are corresponded with financial market performance and are time-varying

so that the introduction of settled impacts won't totally catch their cross-country contrasts, the coefficient gauges on the financial variables might be one-sided. For instance, Talent and Olson (1999) propose that financial depth will be connected with the quality of agreement authorization in an economy. As result, developments in indicators of financial depth may really be proxying for other discarded variables, for example, the quality of property rights.

In our cross country analysis this study has taken comparison of developed and under developing countries. So few variables differ a lot between countries like physical capital and human capital. For human capital and physical capital, the data is extracted data from PENN World tables. Physical capital is proxy by capital stock series which is generated through perpetual inventory method by Berelemann (2012). Perpetual inventory method is used because capital stock is considered as an inventory and to generate the capital stock series PIM is the most common method used. This study examines the effect of financial development, physical capital and human capital along with other controlled variables, without accounting for nation settled impacts.

The present study differs from most of earlier works in various aspects. As a detailed index of financial development is used with two prong components, one with the financial market impact proxy by stock market capitalization, and the second with financial institutions that is a measure of five variables that estimates the depth and efficiency of financial institutes of the country. Further this study focuses on the region wise difference in financial development impact. This study has included some distinct variables for our growth evaluation as Capital stock series that is generated through PIM and Human capital index and governance index. On the other hand, this study has made comparison of East Asian and South Asian region

1.2 Motivation behind the study

Financial development is an important target to study for sustaining growth in developing Asia. As efficient financial system increase, the efficiency of investment and can overshadow the quantity of investment as the driver of growth. The fast growth in the Asian countries is the strong driving factor behind my interest in selecting the particular region. Asian countries' solid development has deciphered into declining poverty and amazing progress in human development. South Asia has encountered a long stretch of rich economic growth, averaging 6 percent a year in the course of last two decades. The economy of East Asia stands-out amongst the best local economies of the world. It is home of a portion of the worlds' biggest and most prosperous economies. This motivated me to capture the effect of financial development in East and South Asian countries.

1.3 Objectives of the study

Following are the brief objectives of the study

- To find the impact of financial development on economic growth.
- Find the statistical difference of financial development impact region wise (South vs. East Asia) on economic growth.

1.4 Contribution to the Study

This study follows somehow unique approach, by concentrating on specified regions, namely South Asia and East Asian countries, following the research line of other researchers who have been trying to explore the regional differences of growth effectiveness. Many studies have concentrated on the case of Asia, where “growth rate suggested that FD flows seemed to have been quite well employed” (Habibullah 2006).

A detailed index for financial development is constructed based on two dimensions i.e. depth efficiency. This index is then run on economic growth to find its impact in specified regions. Furthermore difference GMM is used to overcome the problem of endogeneity.

Chapter 2

Overview of South Asia and East Asia

South Asia assumes a vital part in the global development story as it has its spot in the Asian Century. It has the world's biggest working age populace, a quarter of the world's white collar consumers, the biggest number of poor and undernourished, and a few delicate conditions of global geopolitical significance. With comprehensive growth, South Asia can possibly change global poverty. South Asia has encountered a long stretch of rich economic growth, averaging 6 percent a year in the course of last two decades. This solid development has deciphered into declining poverty and amazing progress in human development. Still, the South Asia locale is home to a large number of world's poor. As per the World Bank's latest poverty gauges, around 571 million individuals in the area survive less than \$1.25 a day, that makes up more than 42 percent of the developing world's poor. As per the Global Economic Prospects, South Asia's development impeded forcefully in the second half of 2011. The Euro region sovereign debt crisis created a lofty deceleration in South Asia's exports and a withdrawal of portfolio capital.

The economy of East Asia is a standout amongst the best local economies of the world. It is home of a portion of the worlds' biggest and most prosperous economies: Mainland China, Japan and South Korea. Current growth in East Asia has now shifted to Mainland China. As per early 2016 Index, Japan, South Korea, Taiwan and Hong Kong are the four East Asian countries that are considered developed markets by most of economic indexes, and Singapore is the only developed market by all economic indexes in Southeast Asia.

Major positive factors including good political-lawful situations for industry and business, excess of natural resources, to ample supplies of cheap labor, gifted and versatile work. At present in East Asia, trading systems are moderately open; and zero or low import duties consumer and

capital merchandise and so forth have extensively fortified cost-proficiency and change. Free and adaptable work and different markets are other vital components making for elevating business-economic performances. East Asian population has shown quick learning abilities and high knowledge aptitudes in adapting new technology and scientific discoveries and putting them to great use underway. Hard working attitudes are exceptionally positive. There are generally big and developed markets for all sorts of goods and services its prosperity has prompted it being named "An East Asian renaissance" by the World Bank.

The impressive economic performance of numerous Asian economies amid the previous three decades is presently an old story. The growth of GDP per capita found an average of more than 4 percent in China and the significant East Asian economies (Indonesia, Korea, Malaysia, the Philippines, Singapore, Tai-wan, and Thailand) somewhere around 1960 and 1994, contrasted with less than 2 percent in other developing nations and 2.6 percent among the industrial nations. East Asia emerges as the region where living standards are getting much better. The remarkable performance of East Asian economies has been the premise for a huge literature, quite a bit of which investigates reasons behind high development and draws lessons for different nations that might want to stick to this same pattern.

Previous studies have made reference to the contrasting features found for the Asian and the South regions. In their study of the Asian region, Dowling and Hiemenz (1983) mention that in the seventies "Asia has grown rapidly compared to other developing areas". Francis and Alexander (2003) find evidence that East Asia (except Japan) now formulate 19 percent of world trade, which is almost the same ratio as the NAFTA member countries.

While, for the case of South Asia, SM Ahmed (1998) suggests that "there is more to the economic problems prevalent in South Asian countries than the low revenue base or maybe there is a

disconnect between financial development and growth in South Asian countries”. Whereas explaining the growth in South Asia Salman et al. (2010) state that trade openness played an important part in the economic growth of South Asia during the period 1980-2008.

The striking difference in development trajectories of East Asia compared to South Asian countries since the beginning of the 1980’s was the contribution of financial development to economic development appears to diverge significantly between these two regions, particularly in assisting the development of the institutional capacity to sustain economic development.

In this paper we follow a somewhat different approach, focusing on specific regions, namely South and East Asian countries, following the line of research of other researchers who have also tried to explore the regional differences in terms of growth effectiveness. Several studies have focused on the successful case of Asia, where “growth rates suggest that financial development flows seemed to have been well utilized” (Habibullah 2006) and South Asia has exhibited very poor economic growth performance over that period” (Ahmed 2006).

Initially South Asia Growth was triggered by first-generation policy reforms, including global integration, macroeconomic stabilization, and economic deregulation (Ahmed, 2006). Trade restrictions that include import tariffs were reduced. The other restrictions were through economic deregulation to enhance the role of the private sector as the engine of growth. These reforms made the South Asian countries more stable, competitive, and adaptable.

South Asia is among the least integrated region in the world. There is very little cross-border investment within South Asia. The flow of investment, measured by the cross-border movement of people, or the purchase of technology and royalty payments, is all low for South Asia. In South Asia, only 7 per cent of foreign investment Poor investments and cross-border conflicts, and concerns about security, all have contributed to South Asia being the least integrated region. This

is in contrasts with the East Asian countries where the average share of gross direct foreign investment as a share of GDP is 8.26 percent. In addition, with the exception of India, the share of stock market capitalization in GDP is less than compared to East Asian countries.

The gap in technology innovation between South Asia and East Asia has enlarged more significantly in the past decade. South Asia appears to have done well in the services sector, benefiting from outsourcing and specialization comparatively to East Asia countries. South Asia is among the fastest growing region in the export of services. Despite recent liberalization south Asia lags other regions particularly with East Asia in terms of openness.

These considerations led to studies where the samples of countries in analysis were expanded to these two regions. While combining regions with such different realities does not fully capture their singularity. The approach taken in this study is made in the light of these arguments. Having observed such different trends in financial development and growth and bearing in mind the divergence in their development paths and the specificity of the factors and conditions that prevailed and the diverse outcomes, it appears to be adequate to analyze two different samples, one for each region, and to draw conclusions from the comparison of the estimated results.

Chapter 3

Literature Review

This study is initiated by analyzing the contemporary literature on economic growth and its association with financial development. This study tries to show the empirical association between five FD indicators and per capita output growth. There is large body of literature on growth models which comprises mostly cross country analysis showing what factors contribute to growth. The growth modeling using financial variables is also well researched area for developed markets. Very few studies are found that link growth to financial variables. This section briefly reviews the empirical literature done in this area for the developing and developed markets.

Different measures of FD are considerably associated with real per capita output growth and the rate of physical capital accumulation. This statement is based on Schumpeter view that fiscal system can boost national growth; it is supported by cross-country evidence of over 80 countries from 1960-1989 period, King and Levine (1993). However, in another research Levine maintains that Accounting reforms that help creditors in their contract enforcement and accounting practices can increase economic growth and promote FD by providing cross country evidence, Ross Levine, Norman Loayza and Thorsten Beck (2000). There is a significant impact of real exchange rate on growth productivity, whereas the level of FD of a country is important in determining that effect, Aghiona, Bacchettab, Rancièrec and Rogoffa (2009).

We have introduced human capital index in our study, and also included physical capital which is consistent with the study by Mankiw, Romer, and Weil (1992). They propose an augmented Solow growth model and show that inclusion of human and physical capital provides important details of cross country analysis. In a study of capital stock the Capital stock series is generated through

perpetual inventory method. A sum of 103 countries has been evaluated due to lack of available data, Berlemann and Wesselhoft (2012).

Salman et al. (2010) use various proxies for Openness and Human Capital but retained the volume of trade for openness and Life Expectancy at birth as a proxy to Human Capital. Although a large number of studies use exports or imports separately as a proxy to openness. Other proxies for human capital accumulation may include expenditure of education and primary school enrollment ratio that have been extensively used in studies related to human capital accumulation. For the capital stock they use gross capital formation as a proxy which is a normal practice in research dealing with capital stock.

In a study Devarajan, Swaroop and Zou (1996) find that public expenditure has statistically significant and positive affect on growth a study on 43 developing countries. So we have included public expenditure as it is a major component of GDP. They also maintain that when public expenditure is supplied in excess it could also become ineffective. And in developing countries governments misallocate the public expenditure as the share of capital expenditure is more as compared to current expenditure. Here we should keep in mind that Pakistan, India and China spends way head at their defense expenditure at the cost of development projects.

In an IMF working paper strategy and policy department they have introduced a detailed FD index prepared by Katsiaryna Svirydenka (2016). In this paper they have introduced nine indices that define financial markets and financial institutions in term of depth and efficiency. FD comprise of financial system that needs improvement in savings, productive investments, their risk diversification, and exchange of goods and services Levine (2005). These systems can increase the efficiency of funds allocation and can improve saving and investment decisions. Along with

that these financial efficiency also affect the physical and human capital and total factor productivity, these three factors that determine national growth.

In an industrial study, results show that FD supports economic growth Rajan and Zingales (1998). In another study credit to GDP ratio shows that there is a threshold above which FD do not support economic growth Arcand, Berkes, and Panizza (2012). On the volatility of output and investment growth financial institutions and private credit to GDP from banks play a significant role. These two measures are widely used in contemporary studies to examine the role of FD on national growth.

Demetriades and Hussein (1996) did causality test for FD and per capita GDP growth, however results shows bi-directionality and in some cases reverse causation. They also find that causality patterns varies across countries and hence proved that cross section analysis is somehow weak as it treats countries as homogenous. And they did not support the argument that finance is the leading indicator for economic development. Empirical evidence on the causality between FD and per capita growth is very weak Pagano (1993). This could be because of lack of time series data in developing nations. Where as to overcome this problem, Gupta (1984) use data from industrial output to measure economic development. So he was able to collect data on quarterly base where national accounts data are available on annual bases.

Another important study on causal relationship between FD and output carried out by Jung (1986), who use VAR framework and uses annual data. Given the short sample used by Jung it is hard to believe his scores as variables are valid only if they are co-integrated Demetriades and Hussein (1996). By using a sample of ten developing countries the causality test was taken between FD and output growth which shows bi-directional results, Luintel and Khan (1999). Discussing the simultaneity of regressors Levine and Beck (2000) use GMM dynamic panel estimation. They

investigate the long run relationship between financial depth and growth. Christopoulos, Tsionas (2001) analyze the data efficiently through panel unit root and panel co-integration. The findings shows that single equilibrium relationship exist between financial depth and growth and the also there exist a co-integration that implies unidirectional relationship between them.

Benhabib and Spiegel (2000) maintain that there exist a positive relationship between TFP growth and FD. There empirical results show that FD causes investment to grow faster. Whereas, Beck, 2002, says that there exist a strong positive relationship between TFP and FD which directly effects GDP growth. Rajan and Zingales (1995) suggest that both banks and stock market has a positive impact on economic growth but the stock market effect is stronger than banks. They also said that in cross country analysis the results of stock exchange might have been over exaggerated. Harris (1997) says that in cross country analysis the stock market impact on economic growth might shows weak analysis as the presence of endogeneity might have affected the estimates of stock market indicators. Whereas a well-developed stock market might increase the corporate efficiency by increasing the interest of managers and owners to maximize the firm value (Jensen and Murphy 1990). Smith and Starr (1996) maintain that stock markets make the assets less risky. And it is an important tool to measure the financial depth of a country. He also argues the role of financial liberalization in boosting the economic growth as well as development.

While discussing the role of FD and corporate investment financing Corbett and Jenkison (1994) argue that financial depth to economic growth is positive in both UK and US during the period of 1970 to 1980s. Kunt and Levine (1996) summarize that for well-developed banking system a country must possess a well-developed financial system and stock market. Whereas countries with weak stock markets tends to have weaker banking system. Using a same kind of approach the

Jovanovic (1993) shows a strong correlation between per capita growth and the value of stock. There empirical study comprises on forty countries with the time span of 1980 to 1988.

By using the AK model Pagano (1993) states that the saving utilized for investment has a direct positive impact on growth rate, so the channel through which financial depth affects the growth rate is via saving converted to investments. In another study, the growth rate dependence was shown positive to the number of banks and the efficiency of financial system (Varoudakis 1996). He uses a theoretical model of microeconomics where banks act as Cournot oligopolists to find the stable equilibrium between growth rate and number of banks. Greenwood (1990) checks the relationship between growth and income distribution. He also shows the impact of financial structure on economic development.

On the contrary side few studies condemn the relationship between FD and economic growth. The authors of this doctrine argue that stock market in developing countries is underdeveloped and that can make investments inefficient, (Singh 1997). He also maintains that economic shocks may exacerbate macroeconomic instability due to the interaction between stock market and currency market. And stock market development might undermine the banking system in developed nations. Atje (1993) check the role of stock market on development and results show the positive impact on growth. However they failed to establish a relationship between bank liabilities and growth. Zervos (1996) while conducting research on FD included banking depth variables in his regression. While there results were insignificant, but they emphasize that the results were insignificant due to partial correlation and more work needed to be done in the regarding field.

Arestis and Demetriades (1997) perform analysis on time series instead of cross-section data for USA and Germany. The claim of FD effect on growth couldn't be proved in US, while Germany shows a positive effect of banking development on growth. In US however real GDP contributes

to stock market development and banking system. On the same foot, Neusser and Kugler (1998) analyze the data on fourteen OECD countries from the period of 1971-1991 and find that there exist a long run relationship between manufacturing GDP sector and financial GDP sector. They also find that there exist a level of relationship between financial sector GDP and manufacturing TFP.

Financial liberation has been the major concern for countries since 1990s. Many studies have been done and showed a positive and strong impact of financial liberalization on economic growth. Quinn (1997) composed an index ranging from 0 – 14, where 14 represents the least regulated and 0 being the most restricted for financial regulations. Whereas Quin's index is based on the countries international agreements like OECD and European union, and the countries restrictions on the capital account and current account. But we couldn't use the data because the Quinx index is not available on the internet. Tamirisa and Jhonston (1998) form a time series of capital restrictions based on dis-aggregated components of AREAER. However, there series has a limitation of time period i.e. he used data after 1995. Miniane (2004) then make sub-indices to measure the capital control intensity on the same line as Johnston did. But data was extended from 1983 to onwards and cross section was increased to 34 countries. Cho (1986) maintains that developing countries lack the stock market efficiency so financial liberation may lead to an inefficient resource allocation of financial sector. Stiglitz (1989) says that due to imperfect information in the stock market in developing countries, the financial liberation might not bear its fruits as it is supposed to do.

According to Ang (2008) efficiency of financial system is required for sound economy, and weak financial systems cannot positively help growth to stimulate. Whereas savings and investments are the core fundamentals of the financial system. In another study by Shenet (2006) the nonlinear

relationship has been found between FD and per capita growth. Ranciere and Loayza (2002) determine the long run and short run relationship of FD and per capita growth. They associate the negative short term relationship with the financial crises. And emphasize on the long run impact of FD on economic growth. On the other hand Rousseau and Watchel (2000) find that stocks and bank development contributes to economic growth. They stated that the stock market capitalization don't have a strong impact on growth due to listing.

Caprio (1994) writes that the financial reforms performance depends on several conditions that a country must possessed before the deregulation of the financial system. First, about the net worth of the assets at that time. He says that if banks have low net worth before reforms than their performance might be declined after the new set of rules are implemented. Contrarily, if the bank net worth is high they have the ability to protect risky loans. Secondly, the human capital stock of banks should be enough to maintain the new rules, and possess the skills in risk assessments to make better loan decisions. Third, it also depends on the financial statements and equity market performance and the level of available information. In the more recent studies Cihak (2013) updates the work of King and Levine using the data from WBD source and agrees that FD enhances growth.

Dekle and Pundit (1994) criticize the FD as it should encompass the ease of access and the efficiency of financial market along with the depth measure. They say the indicators should be ranged broad to tackle the financial system strength. And in another study by Park and Jinjarak (2015) state that quality of facilities matters but there quantity matters as well, to direct the credit for productive economy.

Trade openness has been analyzed to check its relationship with per capita growth. As in a study by Edwards (1998), the total factor productivity (TFP) is regressed with trade openness, who uses the data of 93 countries. He finds that countries that are open to trade have experienced fast growth. This study investigates relationship between financial development and real GDP per capita utilizing as of late created time arrangement methods. Their outcomes give little backing to the perspective that money is a main division during the time spent financial development. A detailed index for FD was constructed based on two dimensions i.e. depth and efficiency. This index was then run on economic growth to find its impact in specified regions namely East Asia and South Asia.

Chapter 4

Methodology and Data

This chapter presents the theoretical background, methodological framework and data used for analysis.

4.1 Theoretical Background

Economists have all through been attempting to characterize and clarify economic growth and its determinants. Maybe the best and most comprehensive definite outline of growth theories can be found in (Levine 1997) from where the researchers extricated the writings of economic growth and financial development which can be characterized with reference to following perspectives: effect of financial market on economic growth, impact of financial structure on economic performance and effect of capital account liberalization on economic growth. He believes that we will not have a sufficient understanding of long-run economic growth until we understand the evolution and functioning of financial systems. Generally, economic theory demands two dimensions on the effects of financial activity on the overall economic performance. Firstly, payment methods are the least expensive services offered by the financial system (Kindleberger, 1993). Secondly, a quantity effect, where the financial activity boosts savings and thus resources can be a source of investment financing. Diagrammatically, we have

Financial development → Capital accumulation → Economic growth

One of the known growth models, the Harrod-Domar (1946) growth model remain a prominent way to explain growth in the economy for an outstanding period of time. This methodology accentuated that the growth in labor power and capital stock are the fundamental determinants in growth process yet couldn't clarify the piece of economic development that couldn't be represented by labor and capital. Solow (1956) provides an option approach by accepting that labor and capital

can be substituted for each other in the production stage and thus allowed a consistent arrangement of capital-output proportions. Such purported neo-traditional models accepted diminishing marginal productivities and constant returns of scale which offer ascent to the stationary state found in different development models. Lucas (1988), Romer (1986) and Kwon (1986) stressed the part of increasing returns to scale in output because of learning-by-experience. Romer (1990), Grossman and Helpman (1990), Kruger (1978) and Tyler (1981) indicate and tied the connection between exports (intermediary for openness) and economic growth for various nations. Denison (1962) credits it to the labor quality and the impact of investment in human capital.

Lucas (1988) considers two models; one underscoring physical capital accumulation and innovative or technological change, the other highlighting human capital aggregation through learning-by-doing. Sengupta (1991; 1993) demonstrate the spill-over effect of exports sector growth by using Cobb-Douglas production function.

Ballassa (1978) examines the relationship amongst economic growth and exports for eleven developing countries in a group. In results the explanatory power of the regression equation increased when exports were incorporated as an autonomous variable.

Habibullah and Yoke-kee (2006) try to determine the relationship between financial development and economic growth through GMM. The financial indicators have shown significant causal relationship with economic growth in this study. Literature shows several indicators for empirical approaches of financial development (FD), each of them captures antithetical aspects of financial development. Katsiaryna Svirydzenka (2006) creates a detailed index of FD dimensions representing efficiency and depth of financial institutions. Financial market impact is computed by stock market capitalization, to capture the depth and efficiency of financial institutes of the

country we used total liquid liabilities also known as M3 as a percentage of GDP, Deposit money bank to GDP, private credit from deposit money bank relative to GDP.

Trade openness assessments of total factor productivity has been significantly reported in many studies. Wolf, H. (1993) Controlling for introductory per capita GDP from 1960-90 for 93 developing and developed countries finds that six of the nine measures of openness are factually significant in the expected direction. Tyler (1981) examines the empirical relationship between trade expansion and economic growth utilizing the data of 55 middle income developing countries from 1960 to 1977. He uses the Cobb-Douglas production function and differentiates the function with respect to time and evaluates it in terms of growth rates. It was found that both capital formation and exports assume an essential part in raising GNP growth rate.

Other control variables are suggested by different studies and as in a study by Edwards 1998, the total factor productivity (TFP) is regressed with trade openness; he uses the data of 93 countries.

Financial liberation includes Capital Account liberalization; ease the restrictions imposed on capital flow across the borders of the country. Also its impact on growth rate has been proved by many research works. (Chinn 2009) used financial openness index has been given for over 190 countries.

4.2 Methodology

The methodological framework is based on the following model suggested by (Arellano and Bond, 1991)

$$Y_{i,t} = \alpha + \beta Y_{i,t-1} + X'_{i,t} + \mu_{i,t}$$
$$\mu_{i,t} = v_i + \epsilon_{i,t} \dots\dots\dots(1)$$

Where $Y_{i,t}$ represents the economic growth that is GDP per capita of country i between period t and $t-1$, $X_{i,t-1}$ is the set of regressors or independent variables in our estimation, and $\mu_{i,t}$ is the error

term in the regression. The fixed effects are contained in the error term in Eq. (1), which consists of the unobserved country-specific effects, V_i , and the observation-specific errors, $\epsilon_{i,t}$.

The specific form of model (1) is as follows based on the theoretical background:

$$\begin{aligned} \text{Log}(GDPPC_{i,t}) = & \alpha_0 \log(GDPPC_{i,t-1}) + \beta_1 FDI_{i,t} + \beta_2 FINLIB_{i,t} + \beta_3 EMPLBR_{i,t} + \beta_4 GE_{i,t} + \beta_5 HK_{i,t} + \\ & \beta_6 TRADE_{i,t} + \beta_7 PK_{i,t} + \beta_8 WGI_{i,t} + \mu_{i,t} \\ \mu_{i,t} = & v_i + \epsilon_{i,t} \dots\dots\dots(2) \end{aligned}$$

4.3 Estimation Technique

Based on the data (balanced) type N×T i.e. large N (cross sections) and small T's (time period), and previous research studies, this study chooses panel data regression techniques. Panel data allows investigating dynamic economic relationships, i.e. economic relationships in which variables adjust over time. In our estimation, the levels of GDP adjust over time. This means that the current level of GDP depends not only on the list of specified regressors, but also on the value of the dependent variable, GDP, of the previous period. So our data is basically dynamic panel data. Panel data is the combination of the both cross sectional and time series observations.

Various econometric problems may arise from estimating regression model. Like the problem of endogeneity, time-invariant characteristics (country fixed effects) may be correlated with the explanatory variables. The fixed effects are contained in the error term which consists of the unobserved country-specific effects and the observation-specific errors. Third, the presence of lag dependent variable Y_{it-1} in the regression model gives rise to autocorrelation rendering OLS estimation inconsistent. Thus, the correlation of the lagged dependent variable with the error term may not be insignificant (Roodman, 2009).

This sort of data is better to use for statistical inference, as discussed by Gujrati and Porter (2005) and Baltagi and Recherche (2009). A number of researchers (Hsiao, 1986; Klevmarken, 1989; Solon, 1989) claim that only panel data can control for individual heterogeneity, can give more informative data, more variability, less co-linearity, more degrees of freedom and more efficiency. Also they argue that panel data are better able to identify and measure effects that are simply not detectable in pure cross sections or pure time series data and allow us to construct and test more complicated behavioral models than purely cross-section or time-series.

To address the foregoing issues with the estimation of regression model, this study uses the Arellano and Bond (1991) differenced- GMM estimator. To cope with the first of the foregoing problems, the differenced-GMM uses the lagged levels of the endogenous regressors as instruments, which makes the endogenous variables predetermined and, therefore, not correlated with the error term. To deal with the second problem, the differenced- GMM uses first-differences to eliminate the fixed effects. Although first-differencing eliminates individual country-fixed effects, it introduces an additional correlation between first differenced lagged dependent variable and error term. Thus, the first-differenced lagged dependent variable is also instrumented with its past levels. Finally, the Arellano and Bond (1991) differenced-GMM estimator is particularly suited for the large group dimension panel. System GMM is preferable when relationship between AR explanatory term and dependent variable is highly persistent. In our case we find differenced GMM more robust as compared to system GMM.

Taking advantage of the panel data, GMM estimators are based on differenced regressors' to control for unobserved effects. By taking into account time-specific effects, the following variables are obtained:

4.4 Variables and Their Description

Variables	Abbreviations	Definition
<u>Dependent variable</u>		
GDP per capita	GDPPC	Real GDP per capita
<u>Independent variables</u>		
Financial Liberalization	FINLIB	Financial Liberalization Dummy
Employed Labor	EMPLBR	Labor force participation rate, total (% of total population ages 15-64)
Government Expenditure	GE	General government final consumption expenditure as percentage of GDP
Human Capital	HK	Human Capital Index (Penn world)
Trade openness	TRADE	Exports of goods and services (% of GDP)
Physical Capital	PK	Gross capital formation (annual % growth)
<u>FD index</u>	FDI	All variables in (% of GDP)
	LL	Liquid liabilities (M3)
	SMC	Market capitalization of listed domestic companies
	DC	Ratio of claims on the nonfinancial private sector to total domestic credit
	PC	Private-sector credit to GDP
	BANK	Deposit money bank domestic credit divided by deposit
<u>Governance index</u>	GI	
	GE	Government Effectiveness
	PS	Political Stability and Absence of Violence/Terrorism
	RQ	Regulatory Quality: Estimate
	RL	Rule of Law: Estimate
	VA	Voice and Accountability: Estimate
	CC	Control of Corruption: Estimate

4.5 Data Source

The data on GDPPC, trade openness, Governance indicators and government expenditure has been obtained from the World Bank indicators. Whereas data on human capital index, physical capital and employed labor is collected from PENN World Tables.

Chapter 5

Empirical Results

This chapter presents the empirical results and interpretations. The analysis begins with development of financial development index and then descriptive summary statistics of the data is presented. Thereafter the regression results of panel data estimation are reported.

5.1 Methodology for Index

For index development, this paper relies on a statistical method – the principal component analysis (PCA). Treatment of missing data, for that we have used the most latest available information. Then we Win-sorized data at 5th and 95th percentile. The normalization of data and weights assignment of the data was done through SPSS. The final index was created through multiplying the factor loadings of each component.

5.2 Financial Development index (FDI) and Governance Index

The Financial index is created with two main dimensions namely depth and efficiency. Where financial market depth is captured through stock market capitalization, and for financial depth of institutions we have used liquid liabilities (M3) and Private-sector credit to GDP. For financial efficiency of institutions we have used deposit money bank domestic credit divided by deposit and ratio of claims on the nonfinancial private sector to total domestic credit private-sector credit to GDP. These variables are used to construct the FD index. The principal component technique is used for this purpose. The results for Pakistan are shown in the table a, b, c and d below.

Whereas Governance index was created through six variables namely government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law, voice and accountability, control of corruption. The principal component analysis was used to create index.

The results for Pakistan are shown in the appendix table e, f and g.

Results of Financial development Index Variables for Pakistan

Table (a) Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.957	59.141	59.141	2.957	59.141	59.141
2	1.272	25.443	84.584	1.272	25.443	84.584
3	.451	9.019	93.602			
4	.268	5.351	98.954			
5	.052	1.046	100.000			

Extraction Method: Principal Component Analysis

Initial Eigenvalues – The Variance of Principal component analysis are Eigen Values. The variables are standardized, as we have estimated principal components analysis on the Correlation matrix, which means that the each variable’s variance is equal to 1. And the total variance is equal to the number of variables used in the analysis, in this case, 5. Total - This column contains the eigenvalues. The first component with the highest Eigen values accounts for the most variance and the next component accounts for as much of the left over variance as it can, and so on. Hence, each successive component will account for less and less variance. Percentage of Variance - This column contains the percent of variance accounted for by each principal component.

Cumulative % - This column contains the cumulative percentage of variance accounted for by the current and all preceding principal components. The variables are assumed to be measured without error, so there is no error variance. Extraction Sums of Squared Loadings - The three columns of this half of the table exactly reproduce the values given on the same row on the left side of the

table. The number of rows reproduced on the right side of the table is determined by the number of principal components whose eigenvalues are 1 or greater.

Table (b) KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Approx. Chi-Square		1174.823
Bartlett's Test of Sphericity	Df	10
	Sig.	.000

Kaiser-Meyer-Olkin Measure of Sampling Adequacy - This measure varies between 0 and 1, and values closer to 1 are better. A value of .6 is a suggested minimum. So all the countries used in the index show an average value of .7 on this test scale. Bartlett's Test of Sphericity - This tests the null hypothesis that the correlation matrix is an identity matrix. An identity matrix is matrix in which all of the diagonal elements are 1 and all off diagonal elements are 0. You want to reject this null hypothesis. Taken together, these tests provide a minimum standard which should be passed before a principal components analysis should be conducted.

Table (c) Communalities

	Initial	Extraction
DMB	1.000	.911
LL	1.000	.819
CBA	1.000	.968
PC	1.000	.868
SMC	1.000	.663

Extraction Method: Principal Component Analysis.

Communalities - This is the proportion of each variable's variance that can be explained by the principal components. It is also noted as h^2 and can be defined as the sum of squared factor loadings. Initial - By definition, the initial value of the communality in a principal components analysis is 1. Extraction - The values in this column indicate the proportion of each variable's

variance that can be explained by the principal components. Variables with high values are well represented in the common factor space, while variables with low values are not well represented

Table (d) Correlation Matrix^a

		DMB	LL	CBA	PC	SMC
Correlation	DMB	1.000	.484	-.426	.188	.499
	LL	.484	1.000	-.419	.654	.599
	CBA	-.426	-.419	1.000	-.043	-.545
	PC	.188	.654	-.043	1.000	.426
	SMC	.499	.599	-.545	.426	1.000
Sig. (1-tailed)	DMB		.002	.000	.139	.001
	LL	.002		.006	.000	.000
	CBA	.000	.006		.402	.000
	PC	.139	.000	.402		.005
	SMC	.001	.000	.000	.005	

a. Determinant = .024

This table gives the correlations between the original variables. Before conducting a principal components analysis, you want to check the correlations between the variables. If any of the correlations are too high (say above 0.9), you may need to remove one of the variables from the analysis, as the two variables seem to be measuring the same thing. If the correlations are too low, say below .1, then one or more of the variables might load only onto one principal component.

Rotated Component Matrix^a

	Component	
	1	2
DMB	.690	-.241
LL	.830	-.267
CBA	-.030	.953
PC	.853	.768
SMC	-.237	.835

Extraction Method: Principal

Component Analysis.

Rotation Method: Varimax with

Kaiser Normalization.

The most challenging part of PCA is interpreting the components. The higher the component loadings, the more important that variable is to the component. In our case the liquid liabilities and deposit money bank are more explained by component 1. Similarly, stock market capitalization, Ratio of claims on the nonfinancial private sector to total domestic credit and Private-sector credit to GDP are more explained by 2nd component. Combinations of positive and negative loadings are interpreted as ‘mixed’. The specific sign of the variable is not important.

Results of Governance Index Variables for Pakistan

Table (e) Correlation Matrix

	RQ	RL	VA	CC	GE.EST	PV
RQ	1.000	-.059	.682	.036	-.149	-.220
RL	-.059	1.000	-.028	-.174	.336	.477
VA	.682	-.028	1.000	-.339	-.605	-.497
CC	.036	-.174	-.339	1.000	.454	.154
GE.EST	-.149	.336	-.605	.454	1.000	.760
PV	-.220	.477	-.497	.154	.760	1.000

Initial Eigenvalues – The Variance of Principal component analysis are Eigen Values. The variables are standardized, as we have estimated principal components analysis on the Correlation matrix, which means that the each variable’s variance is equal to 1. And the total variance is equal to the number of variables used in the analysis, in this case, 5. Total - This column contains the eigenvalues. The first component with the highest Eigen values accounts for the most variance and the next component accounts for as much of the left over variance as it can, and so on. Hence, each successive component will account for less and less variance. Percentage of Variance - This column contains the percent of variance accounted for by each principal component. Cumulative % - This column contains the cumulative percentage of variance accounted for by the current and all preceding principal components. The variables are assumed to be measured without error, so

there is no error variance. Extraction Sums of Squared Loadings - The three columns of this half of the table exactly reproduce the values given on the same row on the left side of the table. The number of rows reproduced on the right side of the table is determined by the number of principal components whose eigenvalues are 1 or greater.

Table (f) KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.965
Approx. Chi-Square		196.341
Bartlett's Test of Sphericity	Df	15
	Sig.	.000

Kaiser-Meyer-Olkin Measure of Sampling Adequacy - This measure varies between 0 and 1, and values closer to 1 are better. A value of .6 is a suggested minimum. So all the countries used in the index show an average value of .96 on this test scale. Bartlett's Test of Sphericity - This tests the null hypothesis that the correlation matrix is an identity matrix. An identity matrix is matrix in which all of the diagonal elements are 1 and all off diagonal elements are 0. You want to reject this null hypothesis. Taken together, these tests provide a minimum standard which should be passed before a principal components analysis should be conducted.

Table(g) Communalities

	Initial	Extraction
RQ	1.000	.928
RL	1.000	.823
VA	1.000	.915
CC	1.000	.859
GE.EST	1.000	.894
PV	1.000	.828

Extraction Method: Principal Component Analysis.

Communalities - This is the proportion of each variable's variance that can be explained by the principal components. It is also noted as h^2 and can be defined as the sum of squared factor loadings. Initial - By definition, the initial value of the communality in a principal components analysis is 1. Extraction - The values in this column indicate the proportion of each variable's variance that can be explained by the principal components. Variables with high values are well represented in the common factor space, while variables with low values are not well represented.

Rotated Component Matrix^a

	Component		
	1	2	3
GE.EST	.690	-.241	.600
PV	.830	-.267	.261
RQ	-.030	.953	.136
RL	.853	.768	-.302
VA	-.237	.835	.703
CC	-.036	-.014	.926

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.

The most challenging part of PCA is interpreting the components. The higher the component loadings, the more important that variable is to the component. In our case the government effectiveness and political stability are more explained by component 1. Similarly, Voice and accountability and control of corruption are more explained by 3rd component. Combinations of positive and negative loadings are interpreted as 'mixed'. The specific sign of the variable is not important.

5.3 Descriptive Statistics

To get the general view about our data and its distribution we find out descriptive statistics for both sampled regions i.e. South Asia and East Asia. Table 1 and Table 2 represent the summary statistics of the variables included in our whole sample period 1980-2014 for South Asia. This will help us in exploring the distribution characteristics of our sampled variables.

Table (1): Summary Statistic South Asia

Summary statistics of the dependent and independent variables for South Asia is shown separately in this table. Our sample contains five countries per region and the sample period is 1980 - 2014. South Asia consists of Pakistan, India, Sri Lanka, Bangladesh and Nepal. GDP per capita is dependent variable measured as real GDP per person. Employed labor (Emplbr) represents the labor force participation rate, total (% of population ages 15-64), government expenditure (GE) denotes the general government final consumption expenditure as percentage of GDP, for human capital (HK), index is used from Penn world, trade openness (TRADE) indicates the exports of goods and services as %age of GDP, physical capital (PK) is calculated as gross capital formation (annual %age growth). Financial development index (FDI) is comprised of Liquid liabilities (M3), market capitalization of listed domestic companies, ratio of claims on the non-financial private sector to total domestic credit and deposit money bank domestic credit divided by deposit. Governance Index is formulated through Government effectiveness, political stability and absence of terrorism, Regulatory Quality: estimate, Rule of law: estimate, voice and accountability: Estimate and control of corruption: estimate. The data is collected from World Bank and Penn world tables.

	Mean	Median	Stdev.	CV	N
Log GDPpc	3.13	2.91	1.83	1.11	175
FDI	0.00	0.72	0.99	0.74	175
Trade	40.34	35.56	18.49	0.46	175
GE	9.39	9.84	2.90	0.31	175
GI	0.00	0.67	0.99	0.94	175
HK	11.16	9.46	14.24	1.28	175
Emplbr	4.11	2.93	2.23	1.81	175
PK	1076729.00	144026.10	194999.00	2.04	175

Particularly, the 1st column of the Table 1 presents the name of variables included in our data; the 2nd column portrays mean values of country-specific variables, while the 3rd column shows the

Median. Similarly, standard deviations (Stdev.), coefficient of variation are respectively given in 4th and 5th column. Table 1 report an average growth rate of 3.13 in south Asian countries whereas they show the median value of 2.91. Here we see the slightly positively skewed growth rate pattern among south Asian countries since their mean value is slightly greater than the median value. Financial development Index shows a median value of 0.72 that is significantly greater than the mean value (0.00) of index so overall financial development index shows negatively skewed distribution. Trade openness averages to 40.34 with a median of 35.56 while it shows a variation of 0.46 percent. This implies a positively skewed distribution of trade openness in South Asia. Government expenditure has approximately closer average and median values i.e. 9.39 and 9.84 respectively which signify its slightly negatively skewed distribution. Governance index approximates to 0.00 mean whereas 0.67 median that again entails a negative skewness.

The summary statistics of Human capital, employed labor and physical capital shows a positively skewed distribution pattern since they have higher mean to median value. Human capital shows that it has a greater mean to median ratio i.e. 11.46 and 9.46. Employed labor has a mean of 4.11 and a median of 2.93, while its standard deviation is 2.93 with a coefficient of variation 1.81. Physical capital indicates an average of 1076729.00 with a median value of 144026.10.

When we see the standard deviations and coefficient of variations, we conclude that physical capital is the most volatile factor in South Asian economy with a highest coefficient of variation i.e. 2.04. Besides that, we also see a high dispersion attached to employed labor force and human capital i.e. 1.81 and 1.28. Whereas the government expenditure shows the minimum variation of 0.31 percent.

Table (2): Summary Statistic East Asia

Summary statistics of the dependent and independent variables for East Asia is shown separately in this table. Our sample contains five countries per region and the sample period is 1980 - 2014. Sample of East Asian region comprises

of Korea, Japan, China, Malaysia and Philippines. GDP per capita is dependent variable measured as real GDP per person. Employed labor (Emplbr) represents the labor force participation rate, total (% of population ages 15-64), government expenditure (GE) denotes the general government final consumption expenditure as percentage of GDP, for human capital (HK), index is used from Penn world, trade openness (TRADE) indicates the exports of goods and services as %age of GDP, physical capital (PK) is calculated as gross capital formation (annual %age growth). Financial development index (FDI) is comprised of Liquid liabilities (M3), market capitalization of listed domestic companies, ratio of claims on the non-financial private sector to total domestic credit and deposit money bank domestic credit to deposit. Governance Index is formulated through Government effectiveness, political stability and absence of terrorism, Regulatory Quality: estimate, Rule of law: estimate, voice and accountability: Estimate and control of corruption: estimate. The data is collected from World Bank and Penn world tables.

	Mean	Median	Stdev.	CV	N
Log GDPpc	3.92	3.55	2.15	0.77	175
FDI	0.00	0.07	0.99	0.67	175
Trade	72.93	60.23	52.52	0.72	175
GE	13.19	13.34	4.79	0.36	175
GI	0.00	0.09	0.99	0.87	175
HK	23.49	20.64	22.06	0.94	175
Emplbr	2.70	2.72	0.40	0.15	175
PK	6430212.00	6033525.00	106665.00	1.49	175

On average growth rate in East Asian countries is 3.92 or 4 approximately. Whereas the median growth rate is 3.55. Since mean value is greater than the median so we can see the positive skewness in growth distribution of East Asian countries. FDI and GI are index that's why there mean is zero, as they have been calculated through PCA. Trade with the average of 72.93 and has high standard deviation of (52.52) compared to government expenditure whose average is 13.19 with a standard deviation of just 4.79. Trade has a lower median value of 60.23 as compared to mean that implies a positive skewness in distribution whereas the government expenditure median approximately equates its mean value that entails a symmetrical distribution.

Human capital has a high dispersion attached to it (22.06) and on average East Asian countries included in the study have average human capital of 23.49 with a median of 20.64 that shows a positively skewed distribution.

We observe that Employed labor with an average of 2.70 and median of 2.72 approaches to normal distribution with a standard deviation of just 0.40. Whereas the mean and median of physical capital are too high because the values are in million dollar. But the coefficient of variation along with other stat shows the data is almost normal.

Analyzing the variation in data we see that physical capital shows 1.49 coefficient of variation that implies it has the most erratic distribution whereas human capital and governance index are also the volatile factors in East Asian economy.

5.4 Correlation Matrix

Correlation Matrices of all the variables included in the model are reported in the Appendix Tables x and y. From correlation matrix we can see a bit strong correlation 0.41 between financial development index (FDI) and GDP per capita (GDPPC) in south Asia whereas we see a little or no correlation of 0.04 among them in East Asia. Human capital shows strong negative correlation of -0.77 with Government expenditure in South Asia whereas it shows a strong positive correlation 0.70 with GDP per capita in East Asia. Physical capital and employed labor, financial liberalization and financial development index shows high positive correlation of 0.84 and 0.67 respectively. Employed labor in East Asia seems to have stronger positive relationship with human capital and financial liberalization.

From the empirical results we can suggest multi-colinearity problem between FDI and GDP per capita. More market capitalization and development in private sector can enhance GDP per person. Human capital also cause co-linearity problem because of its correlation with other variables. In

East Asian economy more human capital lead to increase in GDPPC that might turn into rapid growth and development in East Asia whereas in South Asia it shoes strong negative relationship with government expenditure which shows if the government keeps on increasing its spending in other sectors then human capital will decline in economy. Physical capital complement labor force ratio and financial liberalization enhance financial development in South Asia. Whereas in East Asia financial liberalization and human capital seem to be strongly associated with each other that implies more human capital means more financial liberalization and financial development in economy.

5.5 Panel Data Unit Root

Two types of unit root tests are applied that are “The Levin and Lin” test and “Im Pesaran and Shin” test. Both the tests assume null hypothesis that the variable is non-stationary or unit root exists and the alternative in LL assumes that all the series is stationary which is in contrast to the Im Pesaran and shin where fraction of the series is assumed to be stationary. We conclude our unit root results through table 1 and table 2 that show results for South Asia and East Asia results. We can see that all the variables are non-stationary at level and stationary (or, no unit root) at first difference.

Table: (3): Panel Unit Root South Asia

For South Asia two kinds of unit root tests are applied: “The Levin and Lin” named as LL test and “Im Pesaran and Shin” named as IPS test. Both the tests assume same null hypothesis of non-stationarity or unit root exists. The LL assumes the alternative hypothesis that all the series is stationary. However, in Im Pesaran and shin, fraction of the series is assumed to be stationary. Our sample contains five countries per region and the sample period is 1980 - 2014. South Asia consists of Pakistan, India, Sri Lanka, Bangladesh and Nepal. Sample of East Asian region is comprised of Korea, Japan, China, Malaysia and Philippines. GDP per capital is dependent variable measured as real GDP per person. Employed labor (Emplbr) represents the labor force participation rate, total (% of population ages 15-64), government expenditure (GE) denotes the general government final consumption expenditure as percentage of GDP, for human capital (HK), index is used from Penn world, trade openness (TRADE) indicates the exports of goods and

services as %age of GDP, physical capital (PK) is calculated as gross capital formation (annual %age growth). The data is collected from World Bank and Penn world tables.

	<u>Level</u>		<u>First Difference</u>	
	Statistic	Probability	Statistic	Probability
GDPPC				
LL test	1.44	0.92	-4.73	0.00
IPS test	0.67	0.75	-3.04	0.00
FDI				
LL test	-0.61	0.95	-4.57	0.00
IPS test	0.57	0.71	-4.08	0.00
TRADE				
LL test	-0.23	0.40	-4.10	0.00
IPS test	2.15	0.98	-5.92	0.00
GE				
LL test	-3.54	0.39	-2.79	0.00
IPS test	1.54	0.16	-5.96	0.00
GI				
LL test	0.53	0.29	-5.92	0.00
IPS test	4.09	0.39	-6.66	0.00
HK				
LL test	0.70	0.76	-7.21	0.00
IPS test	3.25	0.99	-5.6	0.00
EMPLBR				
LL test	5.3	1.00	-3.67	0.00
IPS test	3.69	0.99	-4.08	0.00
PK				

LL test	4.73	.86	-2.53	0.00
IPS test	6.63	1.00	-0.08	0.00

Likewise we also check the unit root of variables in East Asia and get the following results.

Table (4): Panel Unit Root East Asia

For East Asia two kinds of unit root tests are applied: “The Levin and Lin” named as LL test and “Im Pesaran and Shin” named as IPS test. Both the tests assume same null hypothesis of non-stationarity or unit root exists. The LL assumes the alternative hypothesis that all the series is stationary. However, in Im Pesaran and shin, fraction of the series is assumed to be stationary. Our sample contains five countries per region and the sample period is 1980 - 2014. South Asia consists of Pakistan, India, Sri Lanka, Bangladesh and Nepal. Sample of East Asian region comprises of Korea, Japan, China, Malaysia and Philippines. GDP per capital is dependent variable measured as real GDP per person. Employed labor (Emplbr) represents the labor force participation rate, total (% of population ages 15-64), government expenditure (GE) denotes the general government final consumption expenditure as percentage of GDP, for human capital (HK), index is used from Penn world, trade openness (TRADE) indicates the exports of goods and services as %age of GDP, physical capital (PK) is calculated as gross capital formation (annual %age growth). The data is collected from World Bank and Penn world tables.

	<u>Level</u>		<u>First Difference</u>	
	Statistic	Probability	Statistic	Probability
GDPPC				
LL test	2.16	0.98	-5.30	0.00
IPS test	2.95	0.99	-6.26	0.00
FDI				
LL test	-1.05	0.14	-5.90	0.00
IPS test	0.82	0.79	-5.07	0.00
TRADE				
LL test	0.19	0.57	-4.67	0.00
IPS test	1.11	0.87	-5.12	0.00

GE				
LL test	0.69	0.75	-4.63	0.00
IPS test	0.71	0.76	-7.45	0.00
GI				
LL test	-2.47	0.35	-6.21	0.00
IPS test	3.33	0.41	-7.40	0.00
HK				
LL test	-0.25	0.40	-6.53	0.00
IPS test	2.08	0.98	-3.65	0.00
EMPLBR				
LL test	-0.08	0.46	-3.41	0.00
IPS test	2.98	0.99	-2.45	0.00
PK				
LL test	3.64	0.99	-3.34	0.00
IPS test	6.35	1.00	-3.81	0.00

5.6 Panel Data Regression Results

The regression analysis is done for both regions separately to examine the relationship between financial development and other variables on growth. The results of South Asian countries are reported in Table 5.

Table (5): Impact of financial development on Economic Growth South Asian Countries

To capture the impact of financial development on economic growth for South Asian countries, empirical regression results are shown in this table using Arellano and Bond (1991) first difference GMM estimation technique. Our sample contains five countries per region and the sample period is 1980 - 2014. South Asia consists of Pakistan, India, Sri Lanka, Bangladesh and Nepal. However, sample of East Asian region comprises of Korea, Japan, China, Malaysia

and Philippines. GDP per capita is dependent variable measured as real GDP per person. Employed labor (Emplbr) represents the labor force participation rate, total (% of population ages 15-64), government expenditure (GE) denotes the general government final consumption expenditure as percentage of GDP, for human capital (HK), index is used from Penn world, trade openness (TRADE) indicates the exports of goods and services as %age of GDP, physical capital (PK) is calculated as gross capital formation (annual %age growth). (FINLIB) symbolizes Financial liberalization that is a dummy variable. Financial development index (FDI) is comprised of Liquid liabilities (M3), market capitalization of listed domestic companies, ratio of claims on the non-financial private sector to total domestic credit and deposit money bank domestic credit divided by deposit. Governance Index is formulated through Government effectiveness, political stability and absence of terrorism, Regulatory Quality: estimate, Rule of law: estimate, voice and accountability: Estimate and control of corruption: estimate. The data is collected from World Bank and Penn world tables. By using t-3 lag instruments the table reports the dynamic panel regression estimates of the effects of financial development on economic growth of South Asian countries during the sample period 1980-2014. In parenthesis t-value is reported with *** Significance at the 1% level. ** Significance at the 5% level and * Significance at the 10% level.

Variables	Estimated values
GDPPC(-1)	0.0006*** (6.23)
GE	-0.005*** (-2.94)
FINLIB	0.017*** (3.55)
EMPLBR	0.006*** (3.63)
PK	0.0013*** (6.04)
HK	0.005 (1.60)
TRADE	0.09** (1.88)
FDI	0.0013*** (6.18)

GI	-0.06*** (-3.09)
R-squared	0.52
J-statistic	8.34
Prob. (J-statistic)	0.245

The results reported in Table 5 show that financial liberalization, labor force participation rate, physical capital and trade openness are significantly associated with high growth rates for south Asian countries. Whereas high government expenditure is associated with lower growth and human capital is insignificant to economic growth in south Asia.

When we observe the coefficients we find that one percent increase in government expenditure leads to 0.5 percent significant decrease in GDP per person in South Asian countries. When discussing the financial liberalizations we find out that 1 percent increase in financial liberalization enhances the GDP significantly by 1.7 percent. Labor force is an important factor in determining the economic growth. In our analysis we see that one percent increase in employed labor brings a 0.6 percent significant increase in GDP per capita.

The coefficient of physical capital depicts a positive relationship with growth. We see that one percent increase in physical capital significantly boosts the GDP per capita by 1.3 percent. Whereas same change in human capital brings the 0.5 percentage insignificant increase in GDP. Trade openness shows that one percent increase in it enhances the GDP per person 9.0 percent.

King and Levine (1993) argue that the quality of a country's financial markets can influence economic growth. To account for this quality variables are included in FD index. Liquid liabilities are a typical measure of the financial depth and thus of the overall size of the financial sector, stock market capitalization (relative to GDP) is an indicator of the size of the stock market. FD index

(FDI) as can be seen, its coefficient is positive and significant at the 1% level. The coefficient of the index shows that a one point increase would significantly expand GDP per capita growth of South Asia by 0.13 percentage points.

Governance Index (GI) leads to significant lower growth in South Asia whereas it has positive influence on growth of East Asian countries. The coefficient of GI shows that a one point increase would significantly contract GDP per capita growth by 6 percentage points in South Asian countries. As J-stat value < J-critical value so J-statistic is insignificant which shows the validity of the instruments used in our estimation and R-square results imply that variation in economic growth is 52% explained by change in our explanatory or independent variables. The results for East Asia are presented in Table 6.

In East Asia, we see the prominent and significant role of financial liberalization, human capital, trade and financial development. Employed labor and physical capital also lead to higher growth in East Asian economies whereas high government expenditure has just a mild influence on economic growth economic growth in East Asia.

Table 6: Impact of financial development on Economic Growth East Asian Countries

To capture the impact of financial development on economic growth for East Asian countries, empirical regression results are shown in this table using Arellano and Bond (1991) first differenced GMM estimation technique. Our sample contains five countries per region and the sample period is 1980 - 2014. South Asia consists of Pakistan, India, Sri Lanka, Bangladesh and Nepal. Whereas sample of East Asian region comprises of Korea, Japan, China, Malaysia and Philippines. GDP per capita is dependent variable measured as real GDP per person. Employed labor (Emplbr) represents the labor force participation rate, total (% of population ages 15-64), government expenditure (GE) denotes the general government final consumption expenditure as percentage of GDP, for human capital (HK), index is used from Penn world, trade openness (TRADE) indicates the exports of goods and services as %age of GDP, physical capital (PK) is calculated as gross capital formation (annual %age growth). (FINLIB) symbolizes Financial liberalization that is a dummy variable. Financial development index (FDI) is comprised of Liquid liabilities (M3), market capitalization of listed domestic companies, ratio of claims on the non-financial private sector to total domestic credit and deposit money bank domestic credit divided by deposit. Governance Index is formulated through Government effectiveness, political stability and absence of terrorism, Regulatory Quality: estimate, Rule of law:

estimate, voice and accountability: Estimate and control of corruption: estimate. The data is collected from World Bank and Penn world tables. By using 4 lag instruments the table reports the dynamic panel regression estimates of the effects of financial development on economic growth of East Asian countries during the sample period 1980-2014. In parenthesis t-value is reported with *** Significance at the 1% level, ** Significance at the 5% level and * Significance at the 10% level.

Variables	Estimated values
GDPPC(-1)	0.0001*** (5.05)
GE	0.003* (1.75)
FINLIB	0.0013*** (5.34)
EMPLBR	0.0450** (1.93)
PK	0.001** (2.02)
HK	0.06*** (5.19)
TRADE	0.41*** (5.17)
FDI	0.035*** (3.45)
GI	0.05** (2.05)
R-squared	0.45
J-statistic	14.85
Prob. (J-statistic)	0.21

Observing the variables' coefficients we find that a percent increase in Government expenditure leads to 0.3 percent increase in GDP per capita but this effect is not highly significant. Financial liberalization, human capital, trade openness and financial development boost the GDP per person momentarily by 0.13%, 6.0%, 41.0% and 3.5% respectively. We also see the mild impact of physical capital and employed labor ratio on growth of economy. Results show that one percent increase in employed labor force and physical capital enhances the economic growth by 4.5% and 0.1% respectively. After analyzing the governance index we conclude that one percent increase in governance efficiency leads to 5.0 percentage points increase in GDP per capita.

As result shows J-statistic is insignificant which indicates the validity of the instruments used in our estimation and R-square results imply that variation in economic growth of East Asian countries is 45% explained by change in our independent variables. We also see the prominent difference among South Asia and East Asia i.e. Governance Index (GI) leads to higher growth in East Asia whereas it has negative influence on growth of South Asian countries.

5.7 Comparison

As we are running a comparison between ten East Asian and South Asian countries. Our stats show the difference between the two regions. Two separate regressions on South Asian and East Asian countries. The results are shown in the above table.

GDPPC is dependent variable, while the independent variable includes FDI for which we have created an index. It is clear that financial development has a positive impact in both regions. While its effect is lesser in South Asia as compared to East Asia due to weak financial system in South Asian countries. Other controlled variables include financial liberalization which is a dummy variable.

Our results are more in favor with the study of Ahmed (1998) who claims that South Asia face more economic problems that might be due to disconnect between financial development and growth. After brief analysis into South VS East Asian economies our findings show that South Asian countries have more employment ratio and financial liberalization as compared to East Asian countries but unfortunately we found insignificant impact of Human capital on growth in South Asian region. Trade openness and foreign direct investment and stock market capitalization South Asian countries have little impact of financial development on their economic growth. Though in the last decade South Asia tried to lift trade barriers but still they have to compete a lot to boost up their growth. Influence of physical capital, financial development and trade openness is positive but too little as compared to East Asian region. Whereas the dilemma is that we found that governance indicator shows significantly negative impact on growth in South Asia. But there is no doubt that South Asia need to revise their Law and regulatory policies to improve the stability and build a strong nation in order to attain long term stability the trust of other nations upon her. Government expenditure on the other hand has significantly negative relationship with growth in South Asian countries which is in corresponding to Levine study that maintains that in low income countries government expenditure has negative impact on growth due to its poor allocation on unproductive projects. While we can see the positive and significant effect of government expenditure in East Asian countries where it is spend productively and efficiently.

Chapter 6

Conclusion and Policy Implication

This study examines the relationship for Asian countries for the period 1980-2014. The financial development index is constructed comprising of five variables using principal component technique. This study adds to the existing literature the impact of financial development on growth considering the traditional growth variables and also including financial liberalization and governance index. Further the comparison is made between South Asian countries with East Asian countries. The dynamic panel data model is estimated by GMM to deal with endogeneity.

The results indicate that financial development indeed promotes growth in both regions but not likewise. In South Asia the efficiency of financial markets are comparatively less than East Asian countries that is probably due to weak financial structure in the former region. Financial liberalization, human capital and trade openness are highly significant with high growth rates for East Asian countries. Employed labor and physical capital also lead to higher growth in East Asian economies whereas high government expenditure has just a mild influence on economic growth in East Asia. Contrarily in South Asia we find a negative relationship among government expenditure and growth. Where unproductive allocation of funds could be the major reason behind this.

Financial markets have been proved to stimulate cash flows and investment from direct and indirect channels. Financial system needs to be strengthened in South Asian countries. Financial development has given boost to the East Asian countries growth throughout the last decade.

Trade barriers among South Asian countries is one of the main cause for economic deprivation. Though we find negative relationship between governance indicators and growth rate in South Asia, but we know there is also a political uncertainty and Security lapse in South Asian countries

that leads the countries to abysmal. At the end it can be concluded that South Asian countries need to install new financial system and look towards East for holistic Progress.

6.1 Implications of the Study

The implications that come out from the finding that financial development is important determinant of growth in Asian Economies and for both regions are discussed below.

Changes in telecommunications, computers, nonfinancial sector policies, institutions, and economic growth itself influence the quality of financial services. To maintain a sustainable economic growth, all economies have to deepen the financial sector and undertake essential measures to strengthen the relationship between financial sector and real sector. Also, countries must strengthen banking and financial governance. A well-functioning financial sector can positively contribute to promote economic growth in both developing and developed countries.

There is a dire need for easing financial access in Asian countries that will ultimately boost savings through investment channel. South Asian countries have to reduce their trade barriers to achieve potential GDP.

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APPENDIX

Table (x) of Correlation Matrix for South Asian Countries

Correlation matrix of variables for South Asia is shown separately in this table. Our sample contains five countries per region and the sample period is 1980 - 2014. South Asia consists of Pakistan, India, Sri Lanka, Bangladesh and Nepal. However sample of East Asian region is comprised of Korea, Japan, China, Malaysia and Philippines. GDP per capita is dependent variable measured as real GDP per person. Employed labor (Emplbr) represents the labor force participation rate, total (% of population ages 15-64), government expenditure (GE) denotes the general government final consumption expenditure as percentage of GDP, for human capital (HK), index is used from Penn world, trade openness (TRADE) indicates the exports of goods and services as %age of GDP, physical capital (PK) is calculated as gross capital formation (annual %age growth). Financial development index (FDI) is comprised of Liquid liabilities (M3), market capitalization of listed domestic companies, ratio of claims on the non-financial private sector to total domestic credit and deposit money bank domestic credit divided by deposit. Governance Index is formulated through Government effectiveness, political stability and absence of terrorism, Regulatory Quality: estimate, Rule of law: estimate, voice and accountability: Estimate and control of corruption: estimate. For financial liberalization dummy is used. The data is collected from World Bank and Penn world tables.

	GDPPC	FDI	TRADE	GE	GI	HK	EMPLBR	PK	FINLIB
GDPPC	1.00								
FDI	0.41	1.00							
TRADE	0.34	0.25	1.00						
GE	-0.25	0.04	0.21	1.00					
GI	0.07	-0.01	-0.02	-0.01	1.00				
HK	-0.11	0.16	-0.16	-0.77	-0.02	1.00			
EMPLBR	-0.03	0.10	-0.27	0.35	-0.01	-0.36	1.00		
PK	0.03	0.32	-0.03	0.21	-0.08	-0.21	0.84	1.00	
FINLIB	0.23	0.67	0.03	0.00	-0.09	0.17	0.17	0.30	1.00

Table (y) of Correlation Matrix for East Asian Countries

Correlation matrix of variables for East Asia is shown separately in this table. Our sample contains five countries per region and the sample period is 1980 - 2014. South Asia consists of Pakistan, India, Sri Lanka, Bangladesh and Nepal. However, sample of East Asian region is comprised of Korea, Japan, China, Malaysia and Philippines. GDP per capita is dependent variable measured as real GDP per person. Employed labor (Emplbr) represents the labor force participation rate, total (% of population ages 15-64), government expenditure (GE) denotes the general government final consumption expenditure as percentage of GDP, for human capital (HK), index is used from Penn world, trade openness (TRADE) indicates the exports of goods and services as %age of GDP, physical capital (PK) is calculated as gross capital formation (annual %age growth). Financial development index (FDI) is comprised of Liquid liabilities (M3), market capitalization of listed domestic companies, ratio of claims on the non-financial private sector to total domestic credit and deposit money bank domestic credit divided by deposit. Governance Index is formulated through Government effectiveness, political stability and absence of terrorism, Regulatory Quality: estimate, Rule of law: estimate, voice and accountability: Estimate and control of corruption: estimate. For financial liberalization dummy is used. The data is collected from World Bank and Penn world tables.

	GDPPC	FDI	TRADE	GE	WGI	HK	EMPLBR	PK	FINLIB
GDPPC	1.00								
FDI	0.04	1.00							
TRADE	-0.32	0.23	1.00						
GE	0.29	0.18	-0.28	1.00					
WGI	0.09	0.08	0.03	0.05	1.00				
HK	0.70	0.10	-0.38	0.32	-0.006	1.00			
EMPLBR	0.60	0.48	0.06	0.18	-0.01	0.64	1.00		
PK	0.12	0.38	0.37	-0.44	0.01	0.13	0.14	1.00	
FINLIB	0.32	0.42	0.12	-0.26	-0.06	0.48	0.69	0.16	1.00

List of countries

South Asian Countries	East Asian Countries
1- Pakistan 2- India 3- Sri Lanka 4- Bangladesh 5- Nepal	1- Korea Rep 2- Japan 3- China 4- Malaysia 5- Philippines