Socio-Economic Determinants of Financial Inclusion Across The Countries

(A case study of SAARC countries)

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CERTIFICATE

This is to certify that this thesis entitled **"Socio-Economic Determinants of Financial Inclusion: Across the Countries (A Case Study of SAARC Countries)"** submitted by **Mr. Muhammad Moin Maqsood** is accepted in its present form by the Department of Economics and Finance, Pakistan Institute of Development Economics (PIDE) Islamabad as satisfying the requirements for partial fulfillment of the Degree of Master of Philosophy in Economics and Finance.

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DEDICATION

This piece of research work is dedicated to my Mom and Dad.

AUTHORSHIP STATEMENT

*I **Muhammad Moin Maqsood S/O Maqsood Ahmad** declare and affirm on oath that I myself have authored this M. Phil. thesis with my own work and means, and I have not used any further means except those I have explicitly mentioned in this report. All items copied from internet or other written sources have been properly mentioned in quotation marks and with a reference to the source of citation.*

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ABBREVIATIONS

ATM	Automated Teller Machines
BVS	Bio-metric Verification System
CAR	Capital Assets Ratio
CBB	Commercial Bank Branches
DA	Deposit Accounts
ES	Employment Status
GDP	Gross Domestic Product
IFI	Index of Financial Inclusion
IFS	International Financial Statistics
IMF	International Monetary Funds
IR	Interest Rate
LA	Loan Accounts
M-Wallet	Money Wallet
NET	Internet
NPA	Non-Performing Assets

OTC	Over the Counter
PD	Population Density
RN	Road Network
RPN	Rural Population
SBP	State Bank of Pakistan
TEL	Telephone
WDI	World Development Indicators

ABSTRACT

Alike the role of heart for human body, finance is the focal point of an economy, whereas savings and investment are its tubes and vessels. Hence, a solid financial system is a fundamental character of an enduring economy. The frozen financial system endures longer if its foundation is concrete and subsists in the people of grass-root level. They are those, who live in villages and small towns, earn meager income, work in primary sector, spend more on food, and have lesser social securities. In this setting, the process of bringing these people into the main stream of financial activities is called financial inclusion. This study describes the determinants of financial inclusion across the South Asian Association for Regional Cooperation (SAARC) countries from 2004–2013. The study uses principal component analysis (PCA) to construct a Financial Inclusion Index. Adding to it we estimate our empirical models by using panel data estimation techniques. Our results show that level of financial inclusion and development indicators are directly related to each other. From the Socioeconomic variables, GDP per capita is positively and significantly related to the level of financial inclusion. Beyond the GDP per capita, employment status and rural population are positively and significantly related to the level of financial inclusion. Population density in this group is negatively and insignificantly related to the index of financial inclusion. Among the physical infrastructural variable road network, telephone and internet are positively and significantly related to the level of financial inclusion. From the banking sector variables NPA (Non-Performing Assets) is negatively and significantly related to financial inclusion level. CAR (Capital Asset Ratio) is positively and significantly related to the level of financial inclusion. And finally real interest rate is found negative and insignificant means does not play any significant role in determining the level of financial inclusion.

Keywords: Financial Inclusion, Socioeconomic determinants, SAARC countries

CHAPTER 1

INTRODUCTION

1.1 Background

"A machine cannot operate satisfactorily without lubricants ..... Metaphorically, finance is the lubricant of the process of economic growth, and the banking system is the chief dispenser of finance". Cameron et al. (1967)

The peripheral point of any economy is its financial sector (Scholtens, 2006). In fact, no economy has ever grown continuously without a concurrent and similar growth in its financial sector (Sarkaar, 2009). Financial markets and institutions come up to overcome the effects of information irregularities and transaction costs that avert the direct pooling and investment of society's savings. They mobilize savings and provide payment services that facilitate the exchange of goods and services. In addition, they create and process information about investors and investment projects to guide the allocation of funds, monitor and direct investments. They help to diversify, transform and manage risk. When they work efficiently they provide opportunities for all market participants to take advantage of the best investments by governing funds to their most creative uses. And when they do not work well growth chances are missed, inequalities continue and in extreme cases, there can be costly crises Beck et al. (2004). Economies with better developed financial systems experience faster drops in income inequality and faster reductions in poverty levels Beck et al. (2007).

Financial inclusion refers to the delivery of financial/banking services to all the people in a fair, transparent and equitable manner at affordable cost (Mehar, 2014). Sarma and Pais (2008) define it as the process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy. According to Beck et al. (2008) financial inclusion is the use of financial services by individuals and firms. According to Institute of Bankers Pakistan (IBP) journal published in May, 2015 "Financial Inclusion (FI)

refers to the provision of financial services such as bank accounts, cheaper credit, savings and insurance etc at affordable prices to the poor segment of society." Financial inclusion refers "provision of affordable financial services" to those who have been left unattended or under attended by the formal agencies of financial system (RBI, 2006a). Leeladhar (2006) defines it as the delivery of banking services to the large segment of the society at affordable cost. Chakravathy (2010) financial inclusion means the delivery of financial system to the economy and its members.

Financial inclusion is measured under three dimensions; accessibility, availability, and usage of banking services in (Sarma, 2012). Accessibility measures the penetration of banking system peroxide by number of bank accounts per 100,000 populations, availability is measured by number of bank branches and ATM's per 100,000 people, and usage dimension is measured through volume of credit plus deposit relative to GDP. In another study by Mehar (2014) three pillars of FI are introduced as access to financial services, affordability, and actual utilization of financial services. All the pillars are important for inclusive financial system.

Financial inclusion is essential for financial and economic development of a country. That is why modern development theories gradually emphasize the key role of financial inclusion. It has been of growing interest all over the world, particularly in emerging and developing economies. Analysts are increasingly alarmed that the benefits produced by financial intermediation and markets are not being spread broadly enough all over the population and across economic sectors, with potential adverse impacts on growth, income distribution and poverty levels. It is important to make a difference between the banked and un-banked. Those who involuntarily have no or only limited access to financial services are referred to as

the un-banked or under banked, respectively (Beck et al, 2014). Voluntary non-users[1] of financial services have access to but they do not use financial services because they think they have no need for these services or they decided not make use of such services due to cultural, religious or any other reason.

Involuntary non-users want to use financial services but do not have access to financial services due to a range of reasons: First, they may be un-bankable (not acceptable to a bank) because their low income stops them from being served commercially by financial institutions. Second, they may be classified against based on social, religious, or ethnic grounds. Third, they may be un-bankable because of structural and informational networks (such as high deposit requirements or a lack of information from credit offices or due to unavailability of bank branches on suitable distance) stop financial institutions from commercially serving these non-users Classens (2006), Beck et al. (2014).

Inclusive financial system is important for each economy either it is developing or developed. Regulatory authorities and policy makers of all the countries looking for better financial system. In recent years approximately 60 new countries and more than 100 countries gathered at a place for financial system reforms which shows that how many authorities are sincere in providing the variety of financial services at affordable price. Inclusive financial system is desirable because it helps the poor segment of the society to improve and manage their day to day financial needs in formal way Basu (2005). It provides them a formal way to save, borrow and lending the money from the formal financial system, which also protect them from exploitation from the non-formal money lenders. Inclusive financial system discourages the informal growth of credit and facilitates people to get credit through formal ways, which are more safe and protective ways of financial access. So a better financial system promotes

[1] People who have information and access to financial services offered by the banks but they do not use it deliberately.

growth by productive use of their resources (Stulz, 2000). Inclusive financial system enhances the efficiency and capacity of consumers and provides them safe and sound avenues for saving practices by providing them different financial services at affordable prices (Sarma and Pais, 2008). It is not so easy to achieve inclusive financial system because there are many hurdles which policy makers and the authorities face in implementing policies for better financial system.

Sarma (2012) identifies five to six major forms of exclusion such as access exclusion, condition exclusion, marketing exclusion, price exclusion and self-exclusion etc. In first type of exclusion Excess exclusion where many people have did not access to the formal point of service or bank branches or due to long distance they did not use formal financial services and prefer to stay with informal financial system. Conditional exclusion happens when financial services do not meet the needs of people or their condition of use. In marketing exclusion people remain excluded from the formal system of finance because they did not know about the types of financial services and how to use them? Here the role of financial literacy takes place. Financial literacy can be defined as "the ability to use knowledge and skills to manage financial resources effectively for a lifetime of finance well-being." From a policy maker's view point it should create the demand of banking services among non-users by financially educating them.

Financial literacy can aware and generate demand among the people; for example due to religious reasons can be astounded by allowing entry of financial institutions that offer Sharia-compliant financial products. This will create a level of trust among the non-users of financial services and the financial institutes. Because in this way people will come to know how the whole financial system works actually. More the trust will generate more the capital available to the banks to invest. More investment will increase the profit of banks

respectively which will show the healthy performance of financial sector which is the desired goal of each economy's financial sector to enhance economic growth and prosperity as stated by Muiyuro (2014). In self-exclusion it occurs when people feel the fear of refusal or they have some psychological reasons for not using financial services.

A number of limited studies in the literature shed light on the determinants of financial inclusion. See, for example, Kumar (2011), this study is an attempt to access the behavior and determinants of FI using state wise panel data for the years 1995 to 2008 in case of India. Another study of Beck et al. (2005) examines the relationship between FI and its determinants for 99 countries across the world. Sarma and Pais (2008) developed an index of FI for the first time. They examine the impact of socioeconomic determinants of FI on the level of FI. This IFI covers the three broad dimensions of FI such as accessibility, availability and usage dimension. This is simpler than previous indexes because this gives value in a single number lying between 0 and 1. 0 means complete financial exclusion and 1 means complete financial inclusion.

So for, this study is an effort to examine the determinants of financial inclusion across the SAARC countries using index of financial inclusion IFI and to check the impact of determinants on the level of FI. As we found a few studies and very less work on this issue is done for this specific region. Furthermore this study examines is there any significance association between socioeconomic, infrastructure and banking variables by using secondary level annually panel data from year 2004 to 2013.

1.2 Financial Inclusion (An Overview of SAARC Countries)

The South Asian Association for Regional Cooperation (SAARC) is a common platform for the selected eight South Asian countries for their collective social, economic, cultural, and technical development. This association was established in December 1985 as an impetus for the social development of the member countries. The objective of financial inclusion was endowed in the inception of this organization. The first elected chairperson of SAARC proposed to make "determined efforts towards the goal of total financial inclusion for all sections of the people of SAARC countries," which means getting greater financial inclusion in all the SAARC countries.

Bangladesh Bank governor Atiur Rahman said in his inaugural address at Pan Pacific Sonargaon Hotel in the capital, presided over by Bhutan's central bank governor Dasho Daw Tenzin that for quite some years now, the governments and central banks in all SAARC countries were employing financial inclusion as a tool for promoting social inclusion of the underprivileged population segments. He said financial inclusion initiatives in the SAARC region do deserve credit for the region's post global financial crisis output growth trend at nearly twice the rate of global output growth, with intraregional trade also growing much faster than global trade growth.

The Indian banking industry has been able to penetrate to less than half of the population over the last few decades. The Reserve Bank of India (the regulator) has taken a number of steps to further expedite the process of financial inclusion. Its efforts in adapting to the changing needs of the economy and enabling greater access to financial services to the un-banked and less penetrated segments are praiseworthy. Even though Indian banking credit has enjoyed a significant growth since 2003, credit penetration remains well below global benchmarks. The statistics on financial exclusion in India provides a very depressing picture. Out of over

600,000 rural habitations in the country, only about 30,000 or just 5% have a commercial bank branch. Just about 40 per cent of the populations across the country have bank accounts and this ratio is much lower in the north-eastern part of the country. Status of active bank accounts is altogether alarming. All across India, it is less than 10%.

According to the World Bank (2012), Sri Lanka has the highest share of adults with formal financial accounts such as deposit accounts (68%), which is much higher than in India, Pakistan, Bangladesh and Afghanistan. To ensure financial inclusion, it is important to look beyond the role of formal financial institutions such as commercial banks. In Sri Lanka, high outreach of microfinance is largely a result of the co-operative societies and government –led microfinance programs (e.g., the Samadhi program). While access to financial institutions is still a challenge here, accessing multiple financial institutions for loans and savings is rather a common practice in many countries of this region including Sri Lanka. For instance, in Andhra Pradesh in India, a large flow of capital into MFIs resulted in aggressive expansion and over-lending of MFIs, leading to multiple borrowing and over-indebtedness among MFI clients. This led to a crisis in the microfinance sector in Andhra Pradesh. In Sri Lanka, multiple borrowing in this sector has been on the rise.

In a survey of FI level Pakistan is ranked at 5th number out of 55 countries in the world who are improving themselves for making better financial system in the country (The Economist Intelligence Unit, 2015). Pakistan holds 41.7 million bank accounts in last year. 75% bank accounts out of them belong to personal accounts category (SBP). According to a Deck release by Karandaaz Pakistan, level of financial inclusion in Pakistan increased from 10% to 23% from year 2008 to 2015. This clearly shows the efforts of SBP for providing more access of financial services to the people. And these efforts are appreciable but still there is lot of space for improvement in the level of FI. As this is comparatively low then the region.

Statistics for year 2014 show that in this year 50% adults who are above the age of 15 took loan in Pakistan, while 5 % of them only adopt formal way to avail loan. Savings also remained informal with 51 % holding cash at home. This means people do not have trust on formal financial institutes that's why they prefer to have liquid money at home for their daily transactions. On the other hand domestic money transfer rate remained too higher at 93%. This shows the fact that 93% people who are engaged with financial network prefer the delivery of cash by self rather than using other means of financial transactions.

Karandaaz Pakistan (2015), reports that 79% of Pakistan's people have access to mobile phones but still 80% people use over the counter (OTC) method for their daily financial transactions. While only 14% are the people who use m-wallet channel for financial transactions. Reason behind this scenario is reported as people are satisfied with OTC method or they do not have enough awareness about the usage of m-wallet.

Keeping all the facts in mind SBP is pursuing multiple approaches to tackle the problem of high financial exclusion in the country. In this particular context SBP has taken many conventional and non-conventional measures to boost financial inclusion like,

SBP has recently modified its regulatory framework for opening of new accounts with the help of National Database Authority. According to a national newspaper "Express Tribune", "NADRA is the real-time online registration depository of the biometric impressions of close to 100 million people," On 20th January, 2012 first ever National Financial Literacy Initiative Program is launched in Pakistan with having six broad objectives namely budgeting, savings, investments, debt management, financial products, branchless banking and consumer rights and responsibilities. The main aim of this NFLP is to impart financial literacy to the poor people of Pakistan.

SBP introduced basic banking account (BBA), for the low income customers. BBA aims to reduce the costs for customers. BBA requires no minimum balance. It has no hidden or complex conditions for the customers. SBP is also trying to include the rural areas in financial network. In this regard SBP call for banks to establish 20% of their new branches in rural areas.

Commercial banks have been given the option by SBP to open their full fledged branches, sub branches, booths (with limited general banking functions), or mobile banking units. Similarly the State Bank of Pakistan (SBP) has introduced branchless banking rules and regulations with the objective of providing banks with cheaper and non-traditional channel. SBP has introduced three levels for m-wallet registration at first level of registration a customer can register through BVS or visiting franchise. At second level a customer can register him/herself by simply providing his/her CNIC copy while at third level with CNIC additional supporting documents is required. So far, The State Bank's efforts to promote financial inclusion are part of Pakistan's war on poverty that needs to continue until all citizens have full access to financial services in the country. The high and growing penetration rate of mobile phones offers the fastest way to do this by offering branchless mobile banking to everyone with a cell phone.

1.3 Significance of the Study

Developing inclusive financial system is an important component for economic and social progress on development agenda. The benefits of financial inclusion are not only significant for individuals but for economies as well Cull et al. (2014). According to them FI is linked a country's economic and social development and plays a role in reducing extreme poverty. This study is important for the financial analysts, managers, SBP, as well as for the policy makers. This study addresses one of the globally issue financial inclusion and identifies

determinants of financial inclusion across the SAARC countries. The study empirically examines which set of variables (socioeconomic, infrastructural and banking sector variables) effect more to the level of financial inclusion. The study is an effort to verify the results of previous studies such as Graff (1999), Stulz (2001), Sarma and Pais (2008), Kumar (2011), and Mehar (2014) etc that financial development leads to economic growth. This study provides a new direction to the financial analysts and managers to think in a different way about attaining more capital for investment by including more people in their financial network and that is possible only when people will be served with variety of financial services at affordable prices by the financial institutions.

1.4 Objectives of the Study

Objective of this study is as follows.

- The study aims to explore the determinants of financial inclusion across the SAARC region.

1.5 Research Question

The empirical investigation of this study seeks the answers for the following questions:

- What are the determinants of Financial Inclusion across the SAARC countries?

1.6 Organization of Study

Rest of the study is organized as follows. Section 2 represents the literature review on financial inclusion, its determinants and economic growth. Section 3 describes the empirical model and estimation technique, variable description and data source. Section 4 presents the empirical results. Section 5 presents conclusions and policy implications.

CHAPTER 2

LITERATURE REVIEW

The basic and most important task of management authorities is to facilitate their nation through improving the modern technologies. And their main focus in on the poor segment of the society in the country. Strong evidence in the literature shows that inclusive financial system is one of the fast ways to make better living standard of the poor people. It is also a major tool for economic and financial growth for the emerging economies particularly see, for example, Beck et al. (2000), Beck et al. (2004), Levine (2005), Klapper et al. (2006), Kunt et al. (2008), Kendall et al. (2010), Sarma (2012), Chakrabarty (2012), Basu (2005), Muiyuro (2014).

The rest of this section is divided into three parts; First part discusses the literature on financial inclusion. Second part of this section shed light on the determinants of financial inclusion across the countries. And the Third part provides literature on the relationship between financial inclusion and economic growth across the countries.

2.1 Financial Inclusion and its Determinants

Financial inclusion refers to the delivery of financial/banking services at affordable cost to the all people of a country in a fair, transparent and equitable manner. Lot of studies provides the evidence of cross country variations in the behavior of financial inclusion from all over the world (See for example, Beck et al. (2009), Kumar (2011), Classens (2006), Sarma and Pais (2008), Chakrabarty (2012).

Sarma and Pais (2008) identify the different factors which are significantly associated with financial inclusion. This paper presents empirical relationship between FI and factors associated with FI across the countries using an index of financial inclusion. Among the socioeconomic variables such as income is positively associated with the level of FI. From

the infrastructure variables are also significantly related with the level of FI. From the banking variables NPA and CAR are negatively related with FI. Finally, interest rate found to be insignificant with financial inclusion.

Beck *et al.* (2005) examine the banking outreach using cross section data for 99 countries from 2003-2004. In their study they explain the cross country variations in financial inclusion and access to finance. They use deposit accounts and credit accounts to measure financial access and number of bank branches and ATM use to measure the level of financial inclusion across the 99 countries. In their analyses they found that firms in countries having higher branch and ATM penetration and higher use of loan services report the lower financing obstacles. They also explore the association between FI and access to finance (ATF) and measures institutional and infrastructural development of the countries.

Kendall et al. (2010) explore a set of new indicators of financial access using a cross country data for 139 developed and developing economies. This study is a combination of descriptive statistics as well as regressions analysis. According to the findings of this study there are approximately 6.2 billion people who have their formal account at financial institutions. Roughly 19 percent people from the developed countries do not have any bank account. This statistics for developing economies is roughly 72 percent. In regression analysis they conclude with the results that socioeconomic and infrastructural determinants of FI are positively and significantly related with FI status. They use deposits account and loan accounts as proxies of FI.

Beck et al (2004) find the obstacles for the small, medium and large size firms in obtaining finance from the formal financial institutions. They find that bank concentration increases the obstacles in attaining finance using database for 74 countries, for only low income countries.

They conclude that government interference is more in that banking sector in which it has larger share or government owned banks.

Ardic et al. (2011) measure the financial inclusion status by using the cross countries data of financial access for whole the world. They find that 56 percent of the world population is still out of the financial system. In their study they use the number of credit and loan accounts as indicators of financial inclusion measurement. They use Tobit specification technique and OLS to check out the significance level using secondary level panel data.

Hope et al. (2011) investigate the hurdles which firms face in obtaining financial credit from the financial institutions. By using cross country data for 68 countries. This study concludes that greater financial credibility reduces the barriers in gaining access to external finance. A firm who has weaker financial credibility system suffers more form external credit access problems.

A study by Kumar (2011) is an attempt to access the behavior and determinants of financial inclusion using the state wise panel data for the year 1995 to 2008 for the case of India. He used deposit and credit penetration to measure the usage of financial services which is a dimension of financial inclusion measurement. Panel data estimation techniques (fixed effect estimator and random effect estimator) are employed to check the nature of empirical relationship between the variables. Results of this study indicate that more physical branches of banks have a significant impact on deposit and credit penetration. On the other side economic variables such as income has a positive and significant impact on deposit and credit penetration. Proportion of factories and employment status are significantly related with credit and deposit penetration.

Sarma (2012) examines the financial sector inclusiveness for the 99 countries under three dimensions access to financial services, availability of financial services and use of financial service for the years 2004-2010. He used deposit accounts at banks per 100,000 people as an indicator of dimension one banking penetration, for second dimension he used the number of bank branches per 100,000 population and number of ATM's per 100,000 people as indicators of availability of financial services, where third dimension is the usage dimension peroxide by credit and deposit ratio to GDP of that economy. He developed an index to check the status of financial inclusion whose value exist between 0 and 1, where 0 indicate the totally financial exclusion and 1 represent the totally financial inclusion in the state.

Kunt et al. (2013) investigate the level of financial inclusion in 148 countries by using the publically available user side data. They tried to find out the individual and country level variations that how adult use of formal and informal finance to manage their finance on daily basis and for future plans. They find 50 percent of total population in the world is banked while other is the unbanked and variations in financial inclusion are different according to the level of economic development of different economies.

Chithra and Selvam (2013) investigate financial inclusion status and identify different factors associated with FI. They used deposit and credit accounts as a tool of measurement of FI in their study and they found that deposit and credit penetration have significant association with factors associated with FI. They found no significant relationship between credit-deposit ration and investment ration and FI.

Sahu (2013) explores the determinants of FI in case of India. He measures the level of financial inclusion for each state for each state of India using the financial inclusion index developed by Sarma (2012). He used different set of socio economic variables and covers all dimensions of financial inclusion measurement. According to results of this study per capita

net state domestic product which is a proxy of income used in this study is positively and significantly related to financial inclusion for the case of India. This study also point out that 72.7 percent people in India is out of formal financial system.

Muiyuro (2014) examines the impact of financial inclusion on financial performance using secondary level data of all commercial banks for the case of Kenya. He uses number of ATM's, Agency banking (amount transacted through branches) and Internet banking (amount transacted through mobile banking or internet banking) as proxies of financial inclusion. Where he used ROA (Return on Asset) and ROE (Return on Equity) to check the financial performance of commercial banks. To check the significance between the dependent and independent variables t-test and non-parametric tests from econometric techniques are employed. Empirical results of this study show that there is a positive and significant relationship between financial inclusion and financial performance of commercial banks for the case of Kenya.

2.2 Financial Inclusion and Economic Growth

Many studies show the strong relationship between financial development which is possible through inclusive financial system only and the economic growth. Better and fair financial system makes faster drops in income inequality and reduces the poverty level Beck et al. (2008).

Fair and equitable financial system promotes economic growth and development as many studies provides empirical evidence (see for example, Graff (1999), Stulz (2000), Stulz (2001), Ndikumana (2001), Beck et al. (2004), Beck et al, (2007), Oruo (2013), Beck and Kunt (2014) etc.

Graff (1999) explains the relationship between financial growth and economic growth using a set of 93 economies for the year 1970 to 1990. He introduces education as a new proxy for the resource input into the financial system. Results of this study show that during the 1970 and 1980s finance was a major source of supply of funds and strongly a determinant of economic growth. He uses two wave econometric models to clarify the causal relationship.

Stulz (2000) examines the role of financial structure in economic growth of a country. According to results of this paper financial structure is most important for economic development and growth through the channel of attaining capital by attracting the new investors providing them a comfortable financial structure equipped with latest technology in an easy way.

Stulz (2001) argues that financial structure is important determinant of economic growth. He constructs a new indicator in the study to measure the financial development by estimating regional effect on the probability. He finds that financial development provides the opportunity to the individuals to start their own small business, promotes competition and increase economic growth. According to prediction of this theory these results are not for the larger firms, which can access to funds easily from the outside.

Ndikumana (2001) sheds light on the relationship between financial development and economic activities in African economies since 1970s. Findings discussed in this paper representing the underdeveloped financial systems in African countries. Still traditional indicators are used to measure the level of financial development and credit supply found to be decline in sub-Saharan African economies in the last two decades. On the other side, this paper indicates a positive structural change in financial system and notes a progressive development in financial system in recent years. This study suggests that make ensure the all

banking facilities for maximum people, which is a major responsibility of central bank of economies, that is only the way to promote financial and economic growth.

Al-Tamimi et al. (2002) examine the two way relationship between financial development and economic growth for some selective Arab countries. They observe causal relationship between these variables in the long run as well as short run. Their result show there is a strong link between financial development and GDP growth in the long run and there is a weak relationship in the short run. They use co integration, Granger causality and impulse response function techniques to identify are there any causality exists between financial development and economic growth? And according to them yes it exists.

Beck et al. (2004) check the relationship between poverty and income inequality using broad cross country sample. This study concludes that financial development and growth substantially increase the income of poor people and reduce the inequality. This study also shows that the countries with inclusive financial system grow faster financially and as well as economically too.

Rousseau et al. (2005) examine the relation between financial depth and economic growth. Their study is based on their previous study in which they use data from 1960-1989 and they check the sensitivity of results in time period and variation in sample of countries included. They use rolling regression technique to check the nature of relationship among the finance growth and economic growth. And according to results of this study relationship between financial depth and economic growth is positive among the poorer countries and near to absent in case of richer countries. They use real GDP to check the level of economic growth.

Another study by Clarke et al. (2006) investigates the relationship between finance and income inequality using cross country data from 1960-1995 for 83 countries. The results of this study suggest that financial development is greater in the long run when inequality is

less. This study also disagree with the statement that rich people are only the beneficial from financial development. Instead their result they indicate that financial development reduces inequality and promote growth.

Scholtens (2006) confers a mechanism between financial development and sustainability in development. According to results of this study there are many indirect linkages between sustainable development and financial development but there is no one to one relationship exists. The results of this study suggest that policy makers must consider the credit channel which is a powerful tool for sustainable development.

Bayraktar and Wang (2006) investigate direct and indirect links of reducing financial cost and improving of access to financial or banking services. This study shows direct relationship between access to financial services and economic growth. According to results of this study banking openness directly affects the economic growth. And in indirect way it improves the efficiency of financial intermediaries, motivate capital accumulation and economic growth. For empirically estimations they use advanced econometric techniques in their study as GMM dynamic panel estimators. The empirical results of this study show the existence of direct and indirect links and suggest that authorities should plan to open banking sector for international competition.

Another study of Beck et al. (2007) states that a better financial system is necessary for poverty elevation. According to results of this study financial development excessively increase the level of income for the poor segment of the society, which is the larger part particularly in developing economies. As this study show long run impact of financial growth on income growth and according to their findings there is 40 percent reduction in inequality while 60 percent is due to the impact of financial development on aggregate economic growth.

Sarkar (2009) evaluates the relationship between financial development and economic growth for 65 countries (less developed) for the years 1980 to 2006. Domestic credit to private sector relative to GDP is used to measure the financial development. Dynamic panel data estimations and causality tests are used for regression analysis. This study shows interesting results by using dynamic fixed model; this study states that there is a negative relationship in direction: finance to growth and a positive relationship growth to finance.

Ardic et al. (2011) explore the financial access and financial inclusion agenda around the world. In their study they empirically check the relationship between FI and economic growth and financial development. According to them higher deposit and loan correlations is associated with higher economic growth and financial development measure by GDP per capita. In their analyses they use two regression techniques Tobit specification technique and OLS for 46 observations to check the significance level. Tobit specification is preferable according to them if the value of dependent variable is between zero and one.

Garcia (2012) explores the impact of financial liberalization on financial development for the evolving countries. This study concludes that there is a positive and significant relationship between the financial liberalization and the process of growth of financial system but there is no relation exists with process of development. Dynamic panel data estimation technique is used to explore the regression results in this study based on a paper by Blundell and Bond (1998) as mentioned in this study.

Oruo (2013) investigates the relationship between FI and economic growth for the case of Kenya. In this study secondary data is used taken from the different sources mention in the study from the Kenya. This study concludes that there is a strong positive relationship between financial inclusion and economic growth. Economic growth has a strong positive relationship with branch network and weak but positive relationship with mobile money

transfer. On the other hand economic growth has a weak negative relationship with ATM penetration and strong negative relationship with bank lending interest rate.

Beck and Kunt (2014) examine the level of financial inclusion using its dimension access to finance. They use cross country data in this study as number of credit account and number of deposit account as indicators of measurement of financial access. Regression results of this study indicate a process of financial development to economic growth which is channelized in this paper as easy access to finance provides opportunity to the poor segment of society to enhance their income level which promote small enterprises growth that leads to increase in aggregate resource allocation and hence overall economic growth takes place in an economy.

Summarizing the reviews it is observed that determinants of financial inclusion are not so far studied and examined for many developing economies included in SAARC region which are more impulsive to fluctuations in the level of financial inclusion and that is may be the reason why financial inclusion policies failed in developing nations.

2.3 Research Gap

For every country it is a difficult task to build an inclusive financial system. It is not the challenge only for developing countries but also a hot issue in developed economies too. It has been observed that even the countries that have well developed financial system have not succeeded in being all inclusive and certain segments of their population are still out of the financial systems. According to a study by Ardic et al. (2011), 56 percent of the total population of world is unbanked, means they are totally out of the financial system. They do not use any sort of financial service. The significance of inclusive financial system is recognized globally and that is the reason now every country, particularly developing countries is focusing more on this issue. And financial inclusion is seen as first priority in the policy circle in developing countries now. In developing countries income inequality, poverty

and illiteracy are the main barriers on financial access. Apart from this, some other reasons of financial exclusion in many developing countries including Pakistan are the higher transaction cost, time taking procedure in transaction and lengthy credit access procedures are the barriers on social, economic and financial growth. So for, this study is different in such a way that it is an effort to examine the determinants of financial inclusion across the SAARC countries. The study is an effort to check is there any empirical connection between FI and economic growth specifically in this targeted region. We use secondary level panel data from 2004-2013.

2.4 Hypothesis of the Study

On the base of above literature review following is the hypothesis of the study

H_0 There is no significant association between financial inclusion and its determinants.

H_1 There is significant association between financial inclusion and its determinants.

CHAPTER 3

DATA AND METHODOLOGY

3.1 Empirical Model

Many researchers use multiple regression models in their studies in order to investigate the strength of association between financial inclusion and its determinants. For example, see, Beck et al. (2005), Kendall et al. (2010), Kumar (2011), Chithra and Selvam (2013) and Muiyuro (2014).

$$Y_{it} = \alpha + \sum^{4}_{j=1} \beta X_{1\,it} + \sum^{4}_{j=1} \gamma X_{2\,it} + \sum^{4}_{j=1} \theta X_{3\,it} + \mu_{it} \quad (1)$$

Y_{it} indicate the value of financial inclusion for the i^{th} country at the t^{th} time period. α is the intercept term. β, γ, and θ are the coefficients of parameters X_1, X_2, and X_3 respectively. And μ_{it} is the error term for the i^{th} country at the t^{th} time period.

Four proxies are taken as dependent variables in this study to measure the level of financial inclusion named as number of bank branches per 100,000 persons, number of automated teller machines per 100,000 persons, number of loan accounts per 100,000 persons at formal financial institutes and number of deposits accounts per 100,000 persons at formal financial institutes. As these proxies are world widely used in many studies. See, for example, Muiyuro (2014), Sarma (2012), Beck et al. (2005) and Kendall et al, (2010).

On the other hand of this equation there are three sets of explanatory variables named as X_1, X_2, and X_3, respectively. X_1 is a set of socio-economic variables named as (GDP per capita used as proxy of income, population density, employment status and rural population respectively. X_2 contains on infrastructural variables such as (road Network, number of telephone users per 100,000 persons, and number of internet users per 100,000 people). These variables measure the level of connectivity and information available to people in the

country. Finally, X_3 consists on banking sector variables such as Non-Performing asset (NPA), Capital asset ratio (CAR) and real interest rate (IR), respectively. These variables represent the financial health or soundness of banking industry.

3.2 Construction of Index of Financial Inclusion

Principal component analysis (PCA) approach is used to construct an index of financial inclusion. This gives us a better way to measure the level of financial inclusion because this covers three broad dimensions of financial inclusion such as accessibility, affordability and usage dimensions. This is simpler than the previous indexes because this gives us the single value lying between 0 and 1. Where 0 means complete financial exclusion and 1 means complete financial inclusion. Our discussion here goes further to include situations where the data determine the form of the index by use of a multivariate procedure. This still retains the common interpretation of an index as being a single value that captures the information from several variables into one composite measure, typically taking the form:

$$\text{Index} = a_1X_1 + a_2X_2 + a_3X_3 + \ldots\ldots\ldots + a_pX_p \qquad (2)$$

Where the a_i are weights to be determined from the data and the X_i are an appropriate subset of p Variables measured in the survey. We illustrate two ways in which the weights a_i can be determined from the data. Which one is more appropriate will usually depend on the objectives underlying index construction.

Our estimations are divided into two stages. At the first stage or regression each proxy of financial inclusion is regressed individually for same set of explanatory variables to check the consistency in estimation results. At second stage of estimation we compose these proxies into an index named as index of financial inclusion (IFI) and then IFI is regressed on same set of explanatory variables to check the robustness.

Equation ----- (1) can be rewrite as follow:

$$FI_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 PD_{it} + \beta_3 ES_{it} + \beta_4 RPN_{it} + \gamma_1 RN_{it} + \gamma_2 TEL_{it} + \gamma_3 NET_{it} + \theta_1 NPA_{it} + \theta_2 CAR_{it} + \theta_3 IR_{it} + \mu_{it} \quad \ldots\ldots (3)$$

Below equation ------ (3) is written for each proxy for FI separately with a common set of explanatory variables.

Model-1

$$CBB_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 PD_{it} + \beta_3 ES_{it} + \beta_4 RPN_{it} + \gamma_1 RN_{it} + \gamma_2 TEL_{it} + \gamma_3 NET_{it} + \theta_1 NPA_{it} + \theta_2 CAR_{it} + \theta_3 IR_{it} + \mu_{it} \quad \ldots\ldots (4)$$

Model-2

$$ATM_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 PD_{it} + \beta_3 ES_{it} + \beta_4 RPN_{it} + \gamma_1 RN_{it} + \gamma_2 TEL_{it} + \gamma_3 NET_{it} + \theta_1 NPA_{it} + \theta_2 CAR_{it} + \theta_3 IR_{it} + \mu_{it} \quad \ldots\ldots (5)$$

Model-3

$$LA_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 PD_{it} + \beta_3 ES_{it} + \beta_4 RPN_{it} + \gamma_1 RN_{it} + \gamma_2 TEL_{it} + \gamma_3 NET_{it} + \theta_1 NPA_{it} + \theta_2 CAR_{it} + \theta_3 IR_{it} + \mu_{it} \quad \ldots\ldots (6)$$

Model-4

$$DA_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 PD_{it} + \beta_3 ES_{it} + \beta_4 RPN_{it} + \gamma_1 RN_{it} + \gamma_2 TEL_{it} + \gamma_3 NET_{it} + \theta_1 NPA_{it} + \theta_2 CAR_{it} + \theta_3 IR_{it} + \mu_{it} \quad \ldots\ldots (7)$$

Model-5

$$Index_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 PD_{it} + \beta_3 ES_{it} + \beta_4 RPN_{it} + \gamma_1 RN_{it} + \gamma_2 TEL_{it} + \gamma_3 NET_{it} + \theta_1 NPA_{it} + \theta_2 CAR_{it} + \theta_3 IR_{it} + \mu_{it} \quad \ldots\ldots (8)$$

In order to check the association between dependent and independent variables we employ the panel data estimation techniques (fixed affect model and random affect model). Hausman test is applied to check the appropriateness of random effect or fixed effect model. The Hausman test tests the null hypothesis that coefficients estimated by the efficient random effect estimator are the same as ones estimated by consistent fixed effect estimator. If they are (insignificant P-value is greater than .05) then it is safe to use random effect. In our study P-value is greater than .05 which rejects the null hypothesis and suggests the use of random effect estimator.

3.3 Data and Variable Description

This section contains data description, definitions of variables, and sources of data.

3.3.1 Data Description

This study uses secondary level annual data from 2004-2013 for SAARC countries. Data are accessed through IFS (International Financial Statistics), WDI (World Development Indicators, FAS (Financial Access Survey) and IMF (International Monetary Fund's) websites.

3.3.2 Definitions of variables and Data Sources

Sr #	Name of Variables	Variables Description	Data Source
		Dependent variables	
1	Commercial Bank Branches (CBB)	Number of bank branches per 100,000 people Is a proxy to measure financial inclusion as it is used in a study of Muiyuro (2014).	FAS, World Bank

2	Automated Teller Machine (ATM)	Number of Automated Teller Machines per 100,000 people, is also an indicator to measure the financial inclusion used by Sarma (2012)	FAS, World Bank
3	Loan Accounts (LA)	Number of loan accounts per 100,000 people. Used as a proxy of financial inclusion in a study of Beck et al. (2005).	FAS, World Bank
4	Deposits Accounts (DA)	Number of Deposits Accounts per 100,000 persons. Used as a proxy of FI in another study by Ardic et al. (2011)	FAS, World Bank

Independent variables

A) Socio Economic variables

5	GDP per capita (GDP)	Total out of a country divided by its population is used as a proxy of income used in a study of Sarma (2012)	WDI
6	Population Density (PD)	Number of people per square kilometer / mile. As this variable is used in a study of Kendall et al. (2010) as an independent variable	WDI
7	Employment Status (ES)	Represents the employment status of individuals. Those who have more secured status economically are less likely to be financial excluded Devlin (2005).	WDI
8	Rural Population (RPN)	Percentage of total population living in rural areas, used in a study of Sarma and Pais (2008) for the case of India.	WDI

B) Infrastructural Variables

9	Road Network (RN)	Roads per square kilometer of land area Used in Kunt et al. (2013)	WDI
10	Telephone (TEL)	Logarithm of the number of telephone (landline and mobile) subscription per 100,000 population Sarma and Pais (2008)	WDI

11	Internet (NET)	Number of internet users per 100,000 people Beck and Kunt (2014)	WDI

C) Banking Sector Variables

12	NPA (Non-Performing Assets)	Non-performing assets as the total assets of banking industry of a country Kumar (2011)	IFS
13	CAR (Capital asset ratio)	Capital asset ratio to the total assets of banking sector Sahu (2013)	IFS
14	Interest Rate (IR)	Real interest rate prevailing in the economy. Sarma (2012)	WDI

List of Included Countries

In this study following countries are included from the SAARC Region.

- Afghanistan
- Bangladesh
- Bhutan
- India
- Pakistan
- Siri Lanka

List of Countries Rejected from SAARC Region

Following countries are rejected from sample due to unavailability of data on some major variables.

- Nepal
- Maldives

CHAPTER 4

EMPIRICAL RESULTS AND DISCUSSION

This Chapter is organized as introduction, Response rate, descriptive statistics, Correlation Analysis, Regression Analysis and results discussion.

4.1 Introduction

In this chapter, data analysis, empirical results and results discussion are presented using the secondary level annually data on various variables used in our study. The study investigates the determinants of financial inclusion and a check is there any significant connection between FI and economic growth? For a specific economic region known as SAARC (included at 8 countries) but in our analysis we eliminate some of the countries from this region due to unavailability of data on various variables. In this particular context we sort two broad objectives such as i) investigating the determinants of financial inclusion across the SAARC countries and ii) to check out the relationship between financial inclusion and economic growth.

4.2 Response Rate

The study was conducted for 8 countries which are included in SAARC region but due to unavailability of data of 2 countries, it covers the six countries under this specific economic region. Therefore the response rate is 75%. This rate of response also indicate a broadly acceptable fact that even in this fast and modern era of technology still a lot of people are away from access to initial banking services.

4.3 Descriptive Statistics

Table 4.1 present the descriptive statistics of variables used in the study as below

Table 4.1 Descriptive Statistic

Variables	Mean	Std. Dev.	Min	Max
CBB	9.160	4.521	0.386	18.573
ATM	4.817	5.004	0.016	20.183
LA	68.691	47.713	3.496	149.974
DA	432.782	277.750	38.021	787.067
GDP	1198.507	720.917	220.056	3281.069
PD	357.002	380.969	16.630	1203.003
ES	56.421	9.255	43.7	70.6
RPN	71.337	6.141	62.14	81.703
RN	49.803	24.688	6.6	88.098
TEL	42.990	25.047	2.557	79.250
NET	6.956	6.216	0.105	29.9
NPA	7.869	4.286	2.212	17.5
CAR	8.372	2.896	2.789	17.497
IR	5.066	4.341	6.774	17.475

From the above findings, financial inclusion measured by number of commercial bank branches and number of automated teller machines per 10,000 people indicated as (CBB) and (ATM), respectively recorded a minimum of .386 with a maximum of 18.573, mean value is 9.1603 and the standard deviation for (CBB) is recorded as 4.5219. Results for CBB show that on average 9 bank branches are available for 100,000 people and minimum number of bank branches which are available for 100,000 people are 0.386 and maximum available branches are 18 for 100,000 people across the SAARC countries. For (ATM), it is registered as a minimum of 0.016 with a maximum of 20.183 having mean of 4.817 with a standard deviation of 5.004. Showing that across the SAARC countries on average 4 automated teller machines are available to 100,000 persons and minimum of number of ATM available to 100,000 persons are 0.016 and maximum are 20 ATM per 100,000 persons.

Results for loan accounts show that on average 68.691 persons has access to loan out of 100,000 persons. Minimum numbers of people are 3.496 and maximum are 149.974 who have formal access to loan accounts. Deposits accounts (DA) on average 432.782 are available to per 100,000 persons and minimum numbers of deposit accounts are 38.021 and maximum numbers of DA available to per 100,000 persons are 787.067 across the SAARC countries.

Results for GDP per capita show that income per person is 1198.507 rupees on average. Minimum earning of a person is noticed as 220.056 and maximum is noticed as 3281.069 across the SAARC countries. For population density (PD), it is registered as minimum of 16.63 with a maximum of 1203.003; mean value is seen as 357.002 with the standard deviation of 380.969. For employment status (ES) it was minimum of 43.7 with a maximum of 70.6, Mean value is collected as 56.42 with the standard deviation of 9.25.

In case of rural population (RPN), it was a minimum of 62.14 with a maximum of 81.70 while mean value is recorded as 71.33 with the standard deviation of 6.14. Next variable RN denoted as road network, is recorded as minimum of 6.6 with a maximum of 88.09, while mean value is 49.80 with the St. Deviation of 24.68. For Telephone (Tel) a minimum of 2.55 with a maximum value of 79.25 while mean value is recorded as 42.99 with a St. Deviation of 25.04. For variable (NET) shows to internet users per 1000 persons, recorded as minimum of .105 with a maximum of 29.9, while mean value is registered as 6.95 with a St. Deviation of 6.21.

For non-performing assets (NPA), a minimum of 2.21 with a maximum of 17.5 while mean value is recorded as 7.86 with its St. Deviation of 4.28. Next to capital asset ratio (CAR), it is recorded as minimum of 2.78 with a maximum of 17.49 with a mean value of 8.37 and St.

Deviation of 2.89. And finally the interest rate (IR) is registered as, the minimum of 6.77 with a maximum of 17.47 with a mean value of 5.066 having St. Deviation value of 4.341.

4.4 Correlation Analysis

In order to investigate the strength of linear association between the financial inclusion and its determinants this study estimates Pearson product moment correlation coefficient method. This is the most common way which is used to check the linear relationship between dependent and independent variable. Pearson product moment correlation is shortly represented by r. Values of 'r' remained between 1 and -1. If value of 'r' is close to zero then it shows greater variation in data points and vice versa.

In the above table findings of Pearson's correlation are indicating the strength of relationship between the dependent and independent variables. In this study four proxies (CBB, ATM, LA, and DA) are used to measure the level of financial inclusion. As there is a positive and significant relationship between commercial bank branches (CBB) and gross domestic product (GDP) as its coefficient is 0.8936. There is a positive and significant association between automated teller machines (ATM) and GDP as there correlations coefficient is 0.8692. Variable (LA) shows to loan accounts, which is also have a positive and significant relationship with GDP as it is represented by its coefficient of correlation 0.5453. Next to (DA) shows to deposits accounts also have a positive and significant association with GDP as its correlation coefficient is 0.6189.

PD represents population density as this variable has a negative relationship with CBB, as its coefficient of correlation is -0.0656. Relationship between these variables is also insignificant as its p value does not match with standard criteria for being significant. Negative relationship between the variables indicating that as population increases the level of financial inclusion decreases. Next to PD and ATM, there is also negative and insignificant

association between the variables as their correlation coefficient is -0.0924. This means increasing the pressure of population will decrease the level of financial inclusion which is measured by number of automated teller machines per 100,000 people. Now if we look at the relationship between loan accounts (LA) and population density (PD) then there is a positive and significant association between the variables as its correlation coefficient is stated as 0.3896. And for deposits accounts (DA), there is a positive but insignificant association between DA and PD as there correlation coefficient is notified as 0.1859.

(ES) represents the employment status of individuals. Those who have more secured status economically are less likely to be financially excluded Devlin (2005). From the correlation output table, variable CBB positively correlated with ES as its correlation coefficient is 0.4809. The relationship between the variables is also stationary. There is a positive and insignificant relationship between ATM and ES, as their correlations coefficient is 0.081. While there is a positive and significant relationship between LA (loan accounts) and employment status as its value of correlation estimate is reported as 0.5739. For deposits account (DA) and ES, there is also positive and significant association between the variables as their correlation of coefficient is 0.4503.

RN shows to road network, there is positive and significant association between road network and commercial bank branches (CBB), as value of correlation coefficient is 0.5975. This shows that better road infrastructure provide more access to the people to the commercial bank branches. Next to the ATM, there is also positive and significant relationship between RN and ATM, as correlation coefficient for the variables is reported as 0.4817. Its mean is that, better road network mechanism provides easy and more access to the consumers towards automated teller machines, in other words this improves the level of financial inclusion. In case of RN and LA, there is negative and insignificant association between the variables as its

correlation of coefficient is -0.1246. There is a positive but insignificant correlation between deposits accounts and RN, as their correlation coefficient is 0.0789.

Variable TEL in this study shows to telephone which is contained on mobile phones and landline phones per 100,000 persons. We found a positive and significant correlation between telephone and CBB, as correlation coefficient is 0.4060. Here our results specifically for these variables contradict with the theory that increasing the mobile phone availability is promoting to the agency banking rather than over the counter services for financial transactions. For ATM and TEL, there is also positive and significant association between the variables, as its correlation of coefficient is 0.7095. Next to LD and TEL, there is positive but insignificant relationship between the variables, as their correlation coefficient is 0.2644. There is a positive and significant strength of association found between DA and TEL, as their correlation coefficient is 0.4042.

NET shows to number of internet users per 100,000 people, where there is positive and significant association between NET and proxies of financial inclusion as CBB, ATM, LA, and DA, as their correlation coefficients are 0.6347, 0.8223, 0.4234 and 0.4920 respectively. Our results match with the theory that more availability of internet to the people provides more the access to financial services across the region.

NPA shows to Non-Performing Assets as the total assets of banking industry of the country have negative and insignificant relationship with CBB, as its correlation coefficient is -0.0566. Where NPA is negatively but significantly related to the ATM, as its correlation coefficient is -0.3691. While there is negative and insignificant relationship between NPA and LA, as its correlation coefficient is -0.1933. And there is negative and insignificant relationship is found between the NPA and DA as their coefficient of correlation is -0.3153.

CAR shows to capital assets ratio has negative and insignificant association with CBB, as its correlation coefficient is -0.0053. Where CAR has positive and significant relationship with ATM, as its correlation coefficient is 0.3708. While there is a negative and insignificant relationship between CAR and LA, as their correlation coefficient is -0.1425. And there is also negative and insignificant association between CAR and DA, as their correlation coefficient is -0.0986.

IR shows to interest rate has negative and insignificant relationship with commercial bank branches as its correlation coefficient is 0.2393. While there is negative but significant relationship found between IR and ATM as their correlation coefficient is -0.3335. And relationship between IR and loan accounts is found to be negative and insignificant with its correlation coefficient as -0.266. There is negative and insignificant relationship also found between the IR and DA, as their correlation of coefficient is -0.239.

Table 4.2) Correlation Output

	CBB	ATM	LA	DA	GDP	PD	ES	RPN	RN	TEL	NET	NPA	CAR	IR
CBB	1													
ATM	0.7592*	1												
LA	0.6674*	0.6626*	1											
DA	0.6956*	0.7738*	0.9133*	1										
GDP	0.8936*	0.8692*	0.5453*	0.6189*	1									
PD	-0.0656	-0.0924	0.3896*	0.1859	-0.24	1								
ES	0.4809*	0.0815	0.5739*	0.4503*	0.2462	0.4505*	1							
RPN	-0.0353	0.1341	-0.3527	-0.3308	0.0938	0.0128	-0.3579*	1						
RN	0.5975*	0.4817*	-0.1246	0.0789	0.6404*	-0.6266*	-0.2695	0.2202	1					
TEL	0.4060*	0.7095*	0.2644	0.4042*	0.6248*	-0.0497	-0.0305	-0.1408	0.2826	1				
NET	0.6347*	0.8223*	0.4234*	0.4920*	0.8039*	-0.2622	0.1595	-0.2426	0.3404*	0.7216*	1			
NPA	-0.0566	-0.3691*	-0.1933	-0.3153	-0.2804	0.4161*	0.3845*	-0.3077	-0.2231	-0.2646	-0.2644	1		
CAR	-0.0053	0.3708*	-0.1425	-0.0986	0.293	-0.5491*	-0.3111	0.0054	0.2445	0.3420*	0.5151*	-0.3772*	1	
IR	-0.2393	-0.3335*	-0.266	-0.239	-0.247	-0.0198	0.2259	-0.0351	-0.3404*	-0.2466	-0.1682	0.1298	-0.1046	1

Star * represents correlation coefficient significance at 1 %.

4.5 Regression Analysis

In addition to descriptive and correlation analysis this study conducted regression analysis to check the strength of association between financial inclusion and its determinants. For this purpose we use panel data estimation techniques (fixed effect model and random effect model). For this purpose regression is performed into two steps. We employed Hausman test to check whether fixed effect estimator is good or random effect estimator. Our result for Hausman test rejects the null hypothesis and suggests to use of random effect estimator as P-value is greater than .05. In first step, for each proxy of financial inclusion, separate regression is performed using the common set of explanatory variables. And in second step, four proxies are converted into an index using principal component analysis (PCA) technique and then it is regressed with same set of explanatory variables.

Table 4.3: Results of regressing CBB on Independent variables

Variables			
CBB	**Coefficient**	**Std. Err.**	**T-Value**
Socioeconomics Variables			
GDP	0.002***	0.000	3.73
PD	0.003***	0.000	4.73
ES	0.155***	0.028	5.42
RPN	-0.062*	0.034	-1.83
Infrastructural Variables			
RN	0.106***	0.014	7.61
TEL	0.036***	0.008	4.52
NET	0.200***	0.059	3.39
Banking Sector Variables			
NPA	-0.109***	0.037	-2.87
CAR	-0.197***	0.060	-3.27
IR	-0.011	0.043	-0.27
R. Sq	0.7856		
F. Stat	0.0000		

Note: "In the above table ***, **, * represent 1%, 5% and 10% level of significance respectively."

As in Table 4.3, first four variables named as GDP, PD, ES, and RPN are the socio economic variables which explain the role of socioeconomic factors in providing access to finance to the people. We can see that real GDP per capita is strongly and significantly associated with financial inclusion (FI) as measured by CBB. GDP per capita is used as a proxy for income, which matters in the level of FI. This indicates that higher the level of income leads to increase in the level of FI. Our results support the findings of Sarma and Pais (2008). Further, population density has a positive and significant association with FI. The positive association between the variables indicates as population pressure increases leads to increase in the level of financial inclusion. Employ status (ES) has also positive and significant association with FI. This mean that the people who have more secured jobs are more engaged with financial network. Our results support the findings of a study by Beck et al (2005). Final in socioeconomic variable namely RPN also negatively related with financial inclusion. In other words, urbanization is positive to financial inclusion.

For inclusive financial system basic infrastructural development is required. Infrastructure such as road network, telephone and internet are variables taken in this study. As connectivity and information plays an important role for the inclusive financial system. In the above table, road network (paved) has a positive and significant association with FI. This means increasing paved road network increase the level of financial inclusion across the country. Because for new branch opening and adjustment of automated teller machines requires paved roads so that these could be easily accessible for people. Subscriptions telephone and internet are also found to be positive and significant. These indicate that financial inclusion is positively associated with communication and informational tools. As number of telephone and internet users increase would tend to increase in FI. Finding is in line with Beck et al. (2007), also found that these variables are positively and significantly related to banking outreach.

Banking sector variables names as NPA, CAR and IR are used to check the soundness of financial sector. Non-performing assets has negative but significant association with CBB. It means lower the NPA leads to higher the level of FI. In broad term NPA is caused due to the default of poor people who took loan from a financial institute. While Capital asset ratio (CAR) is also found to be negative and significant at 1 percent level, which shows highly capitalized banking systems seem to be less inclusive. This is not different from the reality because high CAR tends to be more careful in lending the money to the poor people. That is why it is negatively associated with FI. Another indicator to measure financial health is real interest rate denoted as IR indicates the cost of capital in the banking industry. Real interest rate IR does not show any significant relationship with financial inclusion.

Table 4.4 presents the results of model 2.

Table 4.4: Results of regressing ATM on independent variables

Variables			
ATM	**Coefficient**	**Std. Err.**	**T-Value**
Socioeconomic Variables			
GDP	0.891***	0.244	3.64
PD	0.479***	0.047	10.09
ES	2.369***	0.736	3.22
RPN	-1.607***	0.618	-2.60
Infrastructural Variables			
RN	0.721***	0.165	4.35
TEL	0.557***	0.091	6.06
NET	1.250	0.706	1.77
Banking Sector Variables			
NPA	-0.263***	0.088	-2.98
CAR	0.724***	0.163	4.44
IR	-0.085	0.060	-1.41
R. Sq	0.9152		
F. Stat	0.0000		

Note: "In the above table ***, **, * represent 1%, 5% and 10% level of significance respectively."

In the given table above GDP, PD and ES from the socioeconomic variables have positive and significant association at 1% level with automated teller machines. This mean is that as income level of people increase they will more divert to the usage of ATM. Population density is also positive associate with ATM. The result for employment status shows that persons who have more secure jobs are engaged more with financial system. While, variable rural population has a negative and significant association with ATM. In other words, urbanization is positively associated with ATM.

Better network of communication and information is the basic requirement for inclusive financial system. Because this updates people about financial commodities such as m-wallet, e-banking, and agency banking etc. For all above mentioned commodities it is necessary to have better way of communication and information. In second set of variables road network is seemed to be positively and significantly related with ATM. As this indicates the greater network of paved roads leads to increase in the number of ATM because for ATM assessment is basic requirement to have paved roads. Second to in this group is telephone which is also positively and significantly related to the ATM. This shows, as number of telephone users increase more the people will engage with financial network such as usage of ATM will increase. Such as internet has a positive and significant association with ATM. This means increasing the number of internet users leads to increase the engagement of people with financial system.

Third set of variables represent the financial health of banking industry. As non-performing asset has a negative and significant association with ATM. There is also positive and significant association between CAR and ATM. Finally real interest rate denoted as IR has a negative and statistically insignificant impact on ATM. This shows that real interest rate does not have any significant role in financial inclusion as measured by number of ATM users.

Following Table 4.5 presents the results of model 3. In this model set of independent variables is taken same as above but proxy of FI is used LA. Loan accounts can be defined as number of loan accounts per 1000 people.

Table 4.5: Results of regression Loan Accounts on independent variables

Variables			
LA	**Coefficient**	**Std. Err.**	**T-Value**
Socioeconomic Variables			
GDP	0.105***	0.018	5.59
PD	0.200***	0.023	8.53
ES	2.496***	0.733	3.40
RPN	4.379***	1.433	3.06
Infrastructural Variables			
RN	1.496***	0.397	3.77
TEL	1.300***	0.172	7.55
NET	3.378***	1.053	3.21
Banking Sector Variables			
NPA	-4.216***	0.771	-5.46
CAR	0.1778	1.532	0.12
IR	-0.447	0.864	-0.52
R. Sq	0.7045		
F. Stat	0.0000		

Note: "In the above table ***, **, * represent 1%, 5% and 10% level of significance respectively."

Table 4.5 shows the results of regressing number of loans account on many independent variables. This proxy, number of loan accounts per 1000 people is used to measure the level of financial inclusion in many studies such as Beck et al. (2005) and Kendall et al. (2010). In first set of socioeconomic variables GDP per capita and Population density have positive and significant association with LA. This indicates that income of people increases they save more and that are why they move more towards the formal financial institutes for account opening. Employment status (ES) is found to be positively and significantly and rural population is found to be positively and significantly related to LA.

In our second set named as infrastructural variables, paved road network is found to be positive and significant with LA. Telephone is negatively but significantly related to LA. And internet has a positive and significant association with number of loans accounts. This means increase in basic infrastructure provides more access to the formal financial institutions for lending or borrowing.

The third set of variables measures the soundness of banking sector. It can see in the above table that Non-performing assets have negative but significant association with LA. This shows that lowering the NPA leads to higher the loan accounts and higher the NPA leads to lower the number of loan accounts. Capital asset ratio has positive and insignificant association with number of loan accounts. This shows that financial institutes who have more capital are able to provide more loans to the needier. As a result there would be an increase in the number of loan accounts. And real interest rate is consistently found as negative and insignificant, means have no significant relationship with LA.

Table 4.6 presents the results for model 4.

Table 4.6: Results of regressing Deposits Accounts on independent variables

Variables			
DA	**Coefficient**	**Std. Err.**	**T-Value**
Socioeconomic Variables			
GDP	0.484***	0.143	3.38
PD	1.077***	0.178	6.05
ES	10.925**	5.570	1.96
RPN	42.600***	10.881	3.91
Infrastructural Variables			
RN	12.753***	3.015	4.23
TEL	4.511***	1.307	3.45
NET	28.958***	7.996	3.62
Banking Sector Variables			
NPA	-25.240***	5.860	-4.31

CAR	11.927	11.633	1.03
IR	-1.575	6.564	-0.24
R. Sq	0.5898		
F. Stat	0.0000		

Note: "In the above table ***, **, and * represent 1%, 5% and 10% level of significance respectively."

Table 4.6 shows the results for regressing deposit accounts on dependent variables. In many studies deposit accounts is taken as proxy to measure financial inclusion but one of them is Kendall et al. (2010) who use DA as proxy of FI. From the socioeconomic variables, first GDP has positive and significant impact on deposit accounts. Population density is also found to be positive and significant at this moment. Employment status is found to be negative but significant at 5 percent level. And rural population has positive and significant association with DA. This means more access of financial services to the rural areas leads to increase in the number of deposits accounts. Infrastructural variables named as road network is positively and significantly associate with DA. This means better infrastructure of roads provides more access to the financial services such as DA. Telephone has negative and significant association with DA. Internet has positive and significant association with DA. This indicates that more information and connectivity provides more access to financial services to the people. For banking sector variables, results are not different than the expectations. NPA has negative and significant association with number of deposits accounts. There is a negative and insignificant association between capital asset ratio, real interest rate and DA respectively.

Table 4.7 presents the results of model 5. In this model an index is constructed by using four proxies of financial inclusion to check the robustness of the results.

Table 4.7: Results of regressing IFI on independent variables

Variables			
Index	**Coefficient**	**Std. Err.**	**T-Value**
Socioeconomic Variables			
GDP	0.243*	0.090	2.69
PD	0.020	0.090	0.23
ES	1.917***	3.527	3.95
RPN	1.471*	4.241	2.70
Infrastructural Variables			
RN	1.823**	1.728	1.05
TEL	1.205*	0.991	1.22
NET	1.728**	7.264	2.44
Banking Sector Variables			
NPA	-2.792***	4.673	-6.38
CAR	2.350***	7.436	3.01
IR	-4.381	5.388	- 0.81
R. Sq	0.7565		
F. Stat	0.0000		

Note: "In the above table ***, **, * represent 1%, 5% and 10% level of significance respectively."

In Table 4.7 index of financial inclusion is regressed on determinants of FI. From the socioeconomic variables GDP per capita has positive and significant association with FI at 10% level. GDP per capita is used as proxy of income as it is used by Sarma and Pais (2008). This means higher level of income of the people contributes positively in the level of FI. Second variable in this group is population density has positive but insignificant association with FI. This indicates lower the pressure of population leads to more access of financial services to the people.

Insignificant means has not significant effect on FI. In this regard our result for population density is not consistent with proxies when we regress them individually. Next to employment status has positive and significant association at 1% level. This means people who have more secure jobs perform more activities and are engaged more with financial system. While rural population is found to be positive and significant with 10% of level. This

mean is that rural population plays an important and positive role in the level of FI. Our result for this variable does not consistent with the above regressions.

For inclusiveness of financial system basic informational and communication infrastructural is required. As in this modern era of technology where almost every person have mobile phone and the facility of internet banking sector is moving towards branchless banking to facilitate its customers. In this regard SBP introducing e-banking, m-wallet, mobile banking and so on. These all financial services are accessible to the people only if they have better way of communication and information. In second set of variables first is road network which is found positive and significant. This means better road network is pre requisite to provide the access to financial services to the poor people.

Telephone is also found to be positive and significant which indicates increasing the number of telephone users leads to increase the level of financial inclusion. These both variables are significant means in case of SAARC region where most of the people have access to mobile phone are using them for financial transaction or services purposes. Last variable in this group internet has a positive and significant impact on FI at 5% level. In other words providing more internet facilities to the people leads to be more inclusive financial system.

In banking sector variables NPA shows to non-performing assets has negative and significant association at 1% level. This means lower the NPA leads to financial access to the more people in the network. in the line with this our result are consistent with the above regression as well as with the study by Kumar (2008).

For CAR, it is found to be positive and significant at 1% level. Capital asset ratio indicates the financial soundness of financial institute. Result for CAR shows that banks that have more capital leads to perform more financial activities such as giving loans to the poor people etc. In other words the banks with more capital lead to increase in the level of financial

inclusion. Finally for real interest rate denoted as IR in the table is found to be negative and insignificant consistently. This means IR does not have any significant association with financial inclusion.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Many studies have acknowledged that financial exclusion as an expression of social exclusion Kunt and Beck (2014). Kumar, (2011) has found significant association between human development factors and financial inclusion. In this study for particular region SAARC we assessed cross country data on determinants of financial inclusion. These are divided into three categories named as socioeconomic variables, infrastructural variables and banking sector variable. In first set of variables growth indicators are used such as GDP per capita as a proxy of income. Our empirical results show that income which is measured by per capita GDP is found to be positively and significantly related to financial inclusion consistently. This confirms that income has a significant role in explaining the financial inclusion status. Second in this set population density is found to be positive and significant when we regress this for each proxy individually while converting these proxies into index result for population density is found to be negative and insignificant surprisingly. Employment status is found to be positive and significant with the level of financial inclusion indicating that people who have more secure jobs are more engaged with financial network. Where results for rural populations are somehow mixed showing that both rural and urbanization plays significant role in access to finance. More the access to rural areas provides more engagement of people with financial network.

Infrastructural variables such as road network, telephone and internet are used to check that how basic information communication infrastructure is important in determining the level of financial inclusion. In our empirical results road network and telephone is found to be positive and insignificant. Internet is found to be positive and significant with financial

inclusion showing that better the basic information and communication infrastructure provides more opportunities to the people in assessment to the financial services even in their busy lives where no one have enough time to visit branches for daily financial transaction matters. While insignificance of first two variables in this group indicate that for this specific region major portion of people are not well known about the usage of mobile phones for financial services. It is may be due to financial illiteracy.

Finally, non-performing assets are found to be negatively and significantly related with the level of FI showing that a bank with lower NPA are sounder in their financial health. Capital asset ratio is found to be positive and significant with FI showing that banks who are well equipped with capital are more capable in providing loans and other financial services due to his strong financial health. And real interest has no significant role in determining the level of financial inclusion as it is found to be negative and insignificant throughout the estimations.

5.2 Recommendations

Based on the empirical findings, the study recommends:

- Closing down/ merging of unviable branches particularly in urban and metropolitan areas;
- Develop new products and services that would meet the emerging consumer needs;
- Efforts should be made to remove high cost, poor services, low profitability, poor loan recovery and weak capital position which virtually all public owned banks are facing.

Commercial banks should diversify their Branch networks in the country. Statistics show that numbers of Automated teller machines in the Country are increasing day by day. The study also concludes that increase in ATMs facilities countrywide improves the level of financial

inclusion. The study therefore recommends that the value of Assets will increase by installing ATMs and opening more branch networks.

5.3 Suggestions for Further Research

This study focuses on a set of factors which are associated with financial inclusion. This study concludes that better socioeconomic conditions, better development of information and communication infrastructure and better financial health of financial sector plays an important role in building a strong financial network. But still there is a lot of space to be work on this issue. Further research can be conduct to checkout either

- Financial inclusion has any association with financial performance of commercial banks in case of Pakistan.
- Role of financial literacy in determining the level of financial inclusion could be experience for Pakistan.

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