THE ROLE OF REMITTANCES TO FOSTER FINANCIAL DEVELOPMENT: EVIDENCE FROM SOUTH ASIA

A dissertation submitted in partial fulfilment of the requirement for the Degree of Master of Philosophy in Economics and Finance

By

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I would like to start by thanking Allah SWT who created each and every one of us, without whose will not a single leaf can move. It is He Who has enabled me to come this far. I can never thank Him enough for the blessings He has bestowed upon me. Peace and blessings be upon the Prophet (SAW) for being an ideal man, following whose path would lead us out of darkness into the light.

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ABSTRACT

The study investigates the role of remittances to promote financial development of selected South Asian countries over the period 1996-2017. In order to capture both depth and efficiency aspects of financial institutions two financial development indices have been constructed through Principle Component Analysis (PCA) using eight main indicators of financial development. The financial development index based on efficiency indicators has been constructed for the first time for South Asian countries. To address the issue of endogeneity among remittances and financial development generalized method of moments (GMM) has been employed for analysis. The findings show that although remittances are sent mainly for consumption purposes but in case of South Asian countries it also promotes financial development due to increase in depth and efficiency of financial institutions, thus a complementary relationship among remittances and financial development exists.

Keywords: Remittances, Financial Development, Efficiency, Depth, South Asia

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LIST OF ABBREVIATIONS

FD	Financial Development
FDI	Financial Development Index
OECD	Organization for Economic Co-operation and Development
GDP	Gross Domestic Product
ODA	Official Development Assistance
GMM	Generalized Method of Moments
OLS	Ordinary Least Square
GCC	Gulf Cooperation Council
FDID	Financial Development Index of Depth
FDIE	Financial Development Index of Efficiency
IMF	International Monetary Fund

CHAPTER 1

INTRODUCTION

Remittances[1] flowing into South Asian countries are becoming significant because of their rising volume and their impact on financial sector of the recipient countries. The amount of remittances into South Asian countries has been growing extraordinarily, from 5.7 per cent in 2017 to 13.5 per cent in 2018 (World Bank, 2018). In South Asia there are different reasons for instance poor pay packages, less job opportunities, the urge to climb up the career ladder etc. that compel people to move out of their home countries and seek better work opportunities abroad. Therefore, remittances have now emerged as one of the largest forms of foreign income that competes with international aid in the developing countries. This rising volume of remittances in South Asian region can play a vital role to foster its financial development. The term 'financial development' basically means the development of financial sector which would lead to the creation and extension of financial institutes, financial instruments and financial market that augment the process of investment and growth.

Remittances can enhance financial sector development by augmenting credit market development through the increase of loanable funds due to the deposits linked with remittance flows and hence stabilizing the financial shocks. This positive impact of remittances on credit market development is known as complementary effect of

[1] "Remittance is an amount of money sent home by an individual working abroad".

remittances. Moreover, individuals or households receiving remittances through the formal channels like banks, the chances for them to know about and to demand other banks products are higher which would again give rise to increasing bank deposits.

Looking at the other side of the coin, as remittances help in the fulfilment of the financial needs of the individuals by overcoming their financial constraints, it might lead to a lower demand for credit. Furthermore, in case banks hold these remittances without increasing lending or if the deposits are used to finance government or private consumption, then this would adversely affect the credit market development. This negative impact is known as substitution effect of remittances Giuliano (2008), Demigüç-Kunt et al. (2011), Martrinez Peria (2010). There might be several reasons where the substitution effect dominates over complementary effect. For instance, if the recipients have a lack of trust towards the financial institutes and prefer other modes of keeping their funds safe or in case banks prefer to hold liquid assets and decide not to lend.

1.1 Problem Statement

Although remittances are sent mainly for consumption purposes, they may also promote financial development by enhancing the efficiency of financial institutions (complementary effect of remittances) or may just act as a substitute to the financial sector, thus it is unknown for the case of South Asia whether remittances flowing to South Asian countries have a complementary or substitution effect on their financial development.

1.2 Research Gap

Aggarwal et al. (2011) and Shahzad et al. (2014) have empirically studied the impact of remittances on financial development of 109 developing countries and South Asian countries respectively. However, financial development in the mentioned studies have been measured using an index constructed by the indicators of size and depth of the financial system. The indicators of efficiency of the financial sector was first taken into account by Sobiech (2019) for developing countries. In order to know the importance of these efficiency indicators for South Asian region with respect to remittances, this study uses the efficiency indictors first time for South Asian region.

1.3 Objective

Objective of the study is to explore the link between workers remittances and financial development in the selected South Asian countries (Pakistan, India, Sir Lanka, Bangladesh and Nepal) for the period 1996-2017.

1.4 Research Question

The research questions of the study are as follows:

Do remittances have a substitution effect on the financial development of the selected South Asian countries?

Do remittances have a complementary effect on the financial development of the selected South Asian countries?

1.5 Significance of the study

Keeping in view the above discussion, remittances may or may not strengthen the financial institutions in the recipient country. It depends on whether they are a substitute or a

compliment to the financial sector of the recipient country. Moreover, this study is important for the South Asian countries as it takes into account the indicators of efficiency. Efficiency of financial institutes is an important variable to consider as it relates to the efficiency of overall financial markets which in turn relates to the efficiency of intermediation process. The study will help the policy makers to form remittance related policies and migration policies according to the obtained results. There is also a scope for future researchers to look at the impact of remittances on financial development using different indicators of depth and efficiency.

1.6 Organization of the study

The study has been divided into five different chapters. First being the introduction of the topic, followed by the second chapter that gives a background of remittance inflows to the South Asian countries. Literature review constitutes the third chapter. After that is the chapter covering the data and methodology in which collection of required data, proxies to be used and the most appropriate methodology employed in order to get the accurate results have been discussed. The fourth chapter is based on results discussion. Finally, fifth chapter concludes the results and gives some policy implications on the basis of results of the study.

CHAPTER 2

BACKGROUND OF REMITTANCES IN SOUTH ASIA

2.1 Formal Mechanism of Remittances in South Asia

There are various ways that remittances are made including mail or telegraphic transfers between banks, electric transfers made by money transfer organizations, international money orders through post offices, and informal network of transfers such as hawala[2].

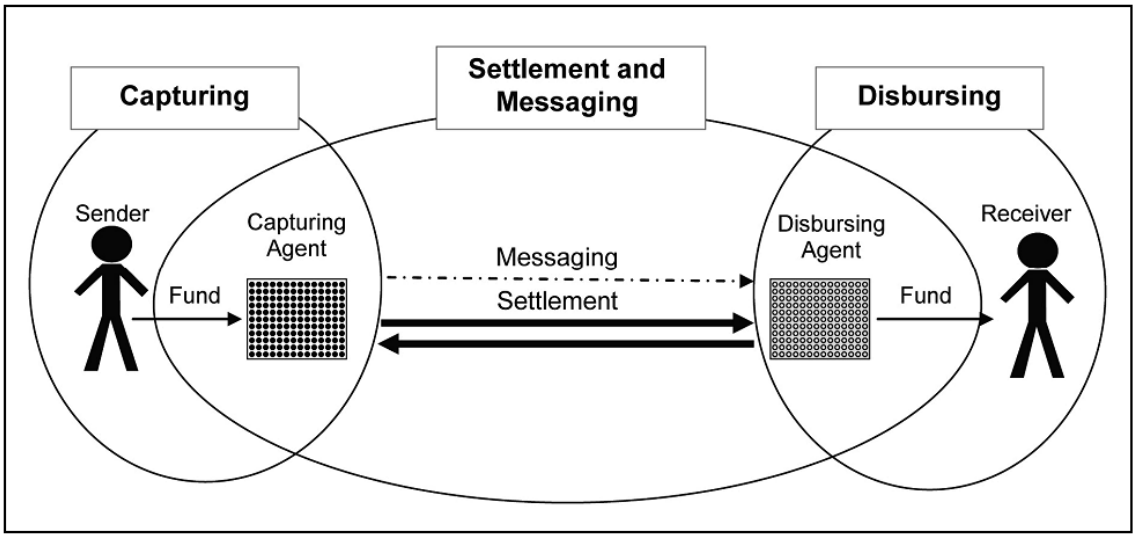

***Figure 2.1*:** Formal Mechanism of Remittances
Source: Asian Development Bank South Asia Working paper Series 2012

In order to complete a transaction for remittances via formal channel, there must be at least three participants, i.e., a sender, a receiver and a service provider. The transfer of remittances is based on four different phases named capturing, messaging, settlement and

[2] Informal mechanism of remittances transfer, also known as hundi.

disbursing. In the first phase (capturing), the sender instructs the capturing agent to send the funds to the selected receiver whose information is provided to the agent by the sender. The sender provides the money in cash or in other forms such as debiting sender's bank account or pre-paid funds, for instance, electric money. In the second step, all the necessary information (inclusive of receiver's information) is sent out by the sending agent to the disbursing agent. Settlement phase is the third phase where arrangements are made between both capturing and disbursing agents in order to transfer the funds. Upon the completion of third step, receiver receives the funds sent via any remittance service provider (Figure 2.1).

2.2 Trend of remittances in South Asia

The flow of remittances into South Asian countries had shown an increase of 13.5% in the year 2018 as compared to a growth rate of 5.7% in the year 2017 (Figure 2.2).

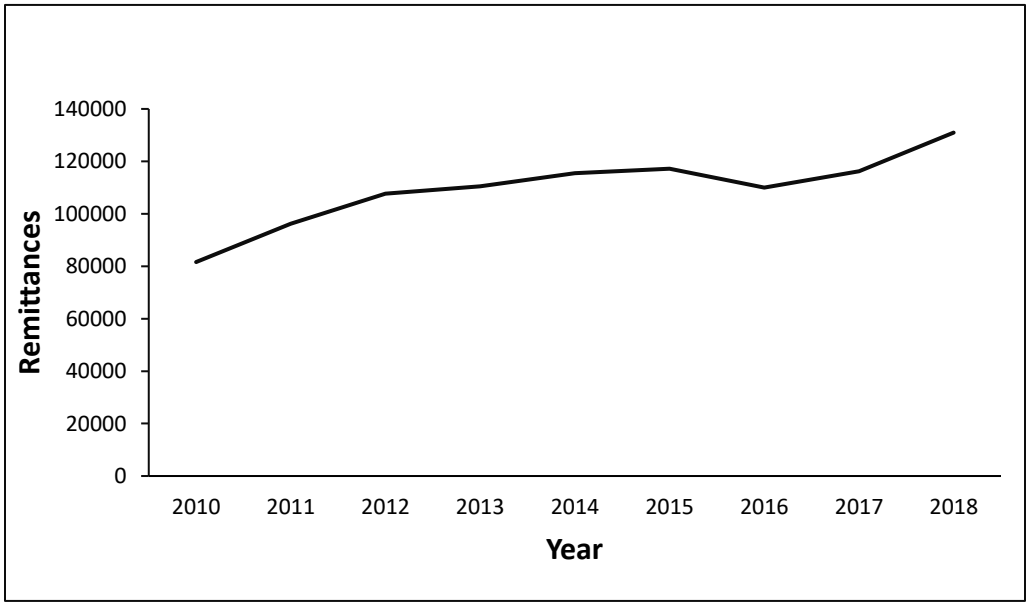

Figure 2.2: Remittances in South Asia, 2010-2018 (US $ million)
Source: World Bank: Migrant remittance inflows (US$ million)

The increasing trend especially after 2016 was mainly due to the stronger economic conditions in high income economies especially the United States and an increase in the prices of oil till October 2018 which left a positive impact on remittance outflow from some GCC countries[3]. India and Pakistan were amongst the top 10 remittance receiving countries in the year 2018. Remittances grew by 15.2% in India reaching an amount of $79.5 billion. This boost was mainly due to a flooding disaster in the Southern Indian state of Kerala which caused migrants to send home huge amount of money in order to help their suffering families. Coming to Pakistan, there was a modest growth of 6.2 % in the growth of remittances. There was a significant decline in remittance inflows from Saudi Arabia which used to be the largest remittance source of Pakistan. Remittances in Bangladesh grew by 17.9% while in Sri Lanka the growth rate was 5.4%.

Table 2.1: Remittances, Foreign Direct Investment, and Official Development Assistance in South Asia, 2018

	Remittance [a]	**Foreign Direct Investment [b]**	**Official Development Assistance [c]**
Bangladesh	5.7	1.1	1.4
India	2.9	1.5	0.1
Nepal	28	0.6	4.9
Sri Lanka	7.9	1.8	0.3
Pakistan	6.8	0.8	0.7

[a]Remittances as a % of GDP
[b] Foreign direct investment, net inflows (% of GDP)
[c]Net ODA received (% of GNI)
Source: World Bank: Workers' Remittances and Compensation of Employees, received.

[3] Gulf Cooperation Council (GCC) countries include—Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman

Remittances have a very important role to play in South Asian Region as in the year 2018 these were the second largest source of external financing, first being exports. This is evident from Table 2.1 where remittances can clearly be seen surpassing both official development assistance (ODA) and foreign direct investment (FDI).

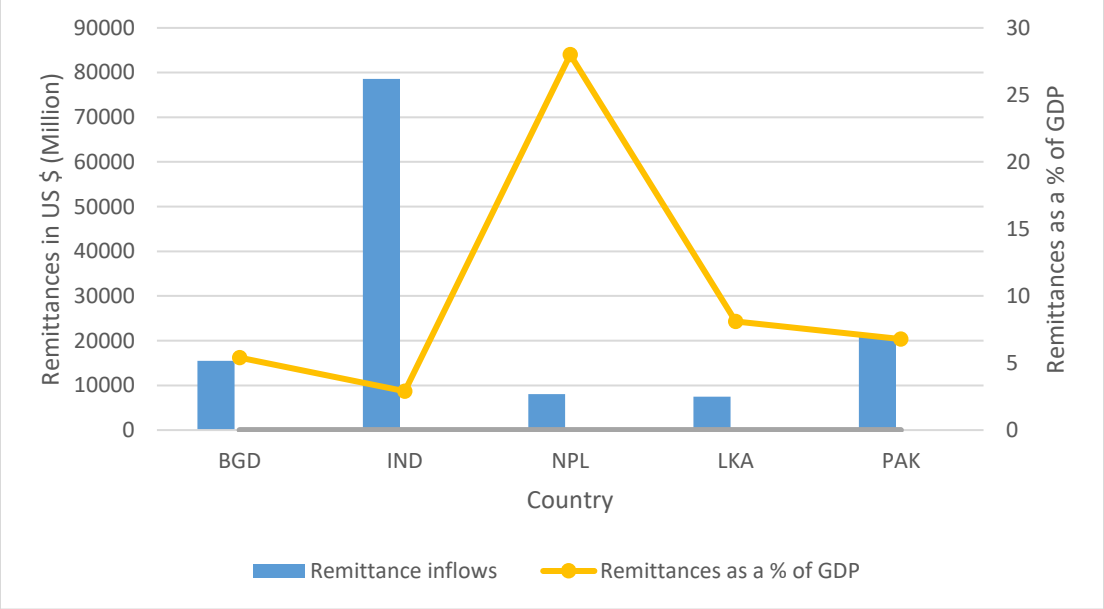

***Figure 2.3*:** Remittances in US $ million and as a % of GDP in South Asia - 2018
Source: World Bank

According to Figure 2.3, remittances received in the year 2018 was highest for India amounting to 78,609 million, after that comes Pakistan having an amount of recorded remittances of $ 21,014 million, then comes Bangladesh that received an amount of $15,496 million followed by Bangladesh are Nepal and Sri Lanka that received an amount of $8,064 and $7,464 respectively. One of the main reason for India topping the list is its working age population which means people lying between the ages of 15 to 64 years (as per the definition by OECD).

When it comes to remittances received as a share of GDP as represented by the solid line, Nepal tops the list having highest remittances inflow to GDP (28%). After Nepal comes Sri Lanka (8.1%), Pakistan (6.8%), Bangladesh (5.4%) and India (2.9%).

2.3. Government Policies for Overseas Employment

Amongst all the south Asian countries, Bangladesh has the most widespread policies related to overseas employment. These policies were brought into implementation in the year 2006. Bangladesh's ministry of expatriates, welfare and Overseas employment has been given the power to increase the overseas employment of Bangladeshi nationals, the ministry is also supposed to guarantee the welfare of the nationals of Bangladesh working abroad along with the implementation of the legal framework for international migration and registration of recruitment agencies. On the other hand, ministry of employment and training is responsible for providing regulatory oversight on the recruiting agencies along with the development and implementation of training programs for national and international labor markets.

Government of India has had very less involvement in worker migration, however, it was the growing number of worker's migration to the Middle East and Malaysia that encouraged the government to form some policies on migration. The main focus of these policies is to control and monitor the licenses of the recruiting agencies along with the protection of rights of the migrant workers in the respective host countries. Ministry of Overseas Indian Affairs holds the responsibility of looking after overseas worker's welfare. In the year 2003, government introduced an insurance system that is compulsory for all the Indian workers employed abroad.

Government of Nepal has recognized overseas employment opportunities as a method of reducing poverty and unemployment. Migration of workers is mainly supported by the Department of Labor and Employment Promotion of the Ministry of Labor and Transport Management. The department of Labor and Employment promotion is responsible for the registration of foreign employment recruiting agencies, issuance of licenses to the recruiting agencies, promotion of foreign employment programs, collection of overseas employment information and initiation of training and welfare activities for migrant workers.

Sri Lanka has an active policy on the migration of workers. It is the only country that promotes female migration. Ministry of employment and labor holds the responsibility of monitoring and administering foreign employment. Bureau of foreign employment arranges a wide range of workers' welfare programs at both home and host countries. These programs include mandatory pre-departure skill and awareness training, free insurance coverage, pension schemes, pre departure loans with low rates of interest, scholarship for migrant children and health camp for migrant worker's families.

Working abroad serves as a gateway to many Pakistanis suffering from weak economy at home. Huge number of Pakistani work force provides laborer in different parts of the world, most of them are hosted by Gulf Countries. Remittance inflow due to these workers add up huge chunk in the economy of Pakistan. For the protection of the rights of these laborers, Pakistan has taken several steps in recent years, but it has yet not been able to make an official policy. Three drafts for labor immigration policy have been made so far but none of them were approved. These drafts were presented in year 2008, 2014 and 2017. Moreover, due to absence of a formal policy, Pakistani workers are mostly exploited at the

hands of their recruiters where they are not provided with proper legal aid nor do they have any assurance of their jobs and have very limited job opportunities.

Since 2017 Pakistan has been making some serious efforts to facilitate recruiting process and emigration of laborer. These efforts mainly incorporate gathering information about skills and procurement of workers, introducing biometric system for their registration, refreshed information on yearly migration, keeping up an online portal through which labor can get prior information on job vacancies available overseas.

In the year 2013, South Asians were reported to be the largest group of international migrants. Amongst the total of 36 million South Asian international migrants 13.5 million work in the oil producing countries[4] of west Asia (International Migration Report, UN, 2017).

[4] Qatar, Oman, Saudi Arabia, United Arab Emirates

2.4. Issues in Worker Migration in South Asia

There are a number of issues when it comes to migration in South Asia. As previously discussed, recruitment agencies are being regulated by the South Asian countries, however, the enforcement of regulations remains weak due to which recruiting agencies have been involved in fraudulent activities making a lot of migrant workers their victims. Some agencies charge a very high amount of fee from the workers and send them out without proper documentation. There are also cases where the workers upon reaching the host country get to know that the job offered to them is completely different from what was specified by the recruiting agency. It is very rare that the workers seeking employment abroad are well aware of the details of charges paid to the recruiting agencies. The information on the actual cost and margin for the agents is seldom available to the workers. South Asian countries, excluding Sri Lanka have restricted policies on women migration as compared to those for men. Women seeking jobs abroad have to apply informally due to which they face a lot of difficulties both at the time of application and during the employment. A lot of women workers lack insurance and access to health facilities. They do not have any guarantees of wages or leaves.

Third issue relates to informal migration. A lot of workers in South Asia choose unlicensed agents (for instance, friends or family connections) for going abroad. These workers have to face a lot more difficulties as compared to those who opt formal ways of migration. The exact number of such migrants is not known but it is estimated that they are equal to the number of documented migrants (in case of Bangladesh and India) and five times greater than the documented migrants in case of Nepal. The reason for opting the informal channel

lies in the complex regulatory requirements and constraints set on some parts of the society especially women. In most of the cases, such migrants have no insurance coverage, no protection in case of illness, accidents or early termination of the job contract. On the other hand, they are also exploited by the employers who take advantage of the fact that the workers have come via informal channels and make them work for longer hours at comparatively lesser wage rate (ADB Report 2012) [5].

2.5 Issues of Remittances in South Asia

The huge volume of informal remittances inflows is one of the key issues of the remittance system in South Asia. The total remittance inflow to South Asia is far greater than the officially recorded amount due to the high use of informal remittance channels. Due to the anonymous nature of informal remittance transactions, it is hard to estimate the amount of informal remittances. It is believed that the informal remittance inflows accounts for almost 42% of the total remittances (ADB Report 2012)[6]. This tends to create a problem as no linkage is created in the formal financial system that could possibly result in capital enhancement. Remittances received via informal channels which have no link with the formal sector are said to be used by the households in houses, land and other consumption items such as food and appliances while only a little of it is utilized in financial assets like saving and investment.

[5] ADB South Asia Working Paper Series No. 12
[6] ADB South Asia Working Paper Series No. 12

CHAPTER 3

LITERATURE REVIEW

3.1 Theoretical Literature

In connection with the provision of better information by the financial intermediaries, (King and Levine (1993b), Galetovic (1996), Blackburn and Hung (1998), Morales (2003), Acemoglu, Aghion and Zilibotti (2003) believe that financial intermediaries could have a better success rate in terms of introducing new goods, and thus in turn, increase the rate of technological innovation. Financial intermediation can also have a huge impact internationally especially between a country that has more efficient intermediaries that exert corporate control more efficiently than capital scarce countries, and thus the international capital can flow from one country to another, improving the former's economic growth rate Boyd and Smith (1992). According to King & Levine (1993) there exist two schools of thought regarding the correlation between financial indicators and economic growth: the ones who support it like Goldsmith (1969), McKinnon (1973), and Shaw (1973) observed a positive influence of financial systems on economic growth, and secondly, the ones who don't, like Robinson (1952) see little effect of financial markets on the country's economic growth rate.

3.2 Empirical Literature

The remittances and financial development causal relationship has been widely discussed in the empirical literature. However, still, the link is inconclusive. Therefore, both views[7] based on previous literature have been incorporated in this section.

Aggarwal et al. (2011) take into account 109 developing countries in order to study the relationship between remittances and financial development. Time period taken is 1975 to 2007. Balance of payments data on remittance flows received by the countries taken under consideration along with the data for financial sector development which is represented by share of deposits to GDP and credit to GDP. The study took a number of control variables, first being the country size which is taken as log of GDP in constant dollars then the level of economic development which is represented by GDP per capita, quality of legal institutes of the countries considered also represented by GDP per capita, inflation measured as the annual percentage change in the GDP deflator. Along with all of these variables a number of variables have also been used in order to control current and capital account openness. Generalized Method of Moments (GMM) is used in order to tackle the problem of endogeniety. Regression is run by taking one period lag of the regressors. Results of this study suggested that the variables under consideration i.e., financial development and remittances are positively and significantly related to each other.

Giuliano (2009) empirically investigated the relationship between remittances and growth. The study has used a large sample of 73 developing countries in order to analyze the relation between remittances and financial development and the impact this relation has on

[7] Complementary and substitution

growth. Time period taken is from 1975 to 2002. The study also analyzed how financial sector conditions of a country may influence the capacity of a country to utilize remittances and country's effectiveness in doing so. Dependent variable taken is the growth rate of output which is measured using the growth of real per capita GDP in constant dollars. Control variables included are inflation, trade openness, human capital, government fiscal balance and investment ratio and population growth. Country size, Inflation and Capital and current account openness. Population growth, inflation, and level of GDP had negative coefficients. On the other hand, investment and fiscal balance were positively related with the economic growth. Methodologies implied in order to get to the appropriate results are OLS (Ordinary Least Square) and SGMM (System generalized methods of moments). Results obtained revealed that remittances help in the reduction of credit constraints and this way act as a substitute for the lack of development in the financial sector and hence accelerate the economic growth. In other words, remittances help promote growth in countries that have less developed financial sector by playing the role of a substitute for lack of financial development.

Bhattacharya et al. (2018) in their study investigated the role of remittance inflows on the financial sector development. Number of countries undertaken for the study are 57 in total which are ranked as the highest remittance recipient countries. Dependent variable taken is financial development which is measured using three alternative proxy variables, first being broad money as a percentage of GDP, second being market capitalization as a percentage of GDP and lastly domestic credit to private sector as a percentage of GDP. Remittances, foreign direct investment and gross domestic product per capita are the explanatory variables used in the study. Panel cointegration tests and GMM are the

techniques used in order to get to the results. Results suggest the existence of a long run relationship between remittances and the three indicators of financial development. The study suggests that it is necessary to strengthen the institutional set ups in order to increase the inflow of remittances and hence the financial development.

Brown. R et al. (2013) in their study have presented a new indication of impacts that remittances lay on the financial development at both macroeconomic and microeconomic level. The first section of the paper taken into account the macroeconomic level using cross section panel annual data for 38 countries for a period of 35 years, from 1970 to 2005. Financial development is represented using a proxy variable of domestic credit to the private sector measured as a percentage of GDP. Remittances are also measured as a percentage of GDP received by each country. After controlling for per capita GDP, other macroeconomic factors and the countries legal origin, it is found that domestic credit to private sector does not increase by increasing remittances, however, the effect seems to be negative. Reasons for the negative relationship as stated by the authors are that remittances tend to reduce the financial constraints faced by individuals hence lowering their demand for credit which in turn results in reducing the level of credit to private sector. Secondly, there is a chance that remittances may actually be used for consumption purpose hence not positively impacting the credit to private sector. Thirdly, the recipients may deposit remittances into bank but if banks choose to hold liquid assets and they don't lend then the credit to private sector will not increase in this case either. The issue of endogeniety is tackled using two stage least squares instrumental variables. Second part of the paper concentrated on the microeconomic level by taking into consideration two countries, Kyrgyzstan and Azerbaijan. Probit model is estimated in order to check the relationship

between remittances and chances of a household holding a bank account. Direct relationship is tested using household's receipts of remittances and indirect relationship is estimated considering a total of remittances received by local community. Results indicated a negative relation for both direct and indirect cases for Azerbaijan while an evidence of a positive relationship in case of Kyrgyzstan has been indicated. Different results across two countries propose that the relationship may not be linear.

Gupta Pattillo and Wagh (2009) studied the impacts of increasing remittances to Sub-Saharan Africa on poverty eradication and financial development. Although this area shares a very small part of the total remittances received by the developing countries yet it directly effects poverty eradication and financial development. The study concludes that remittances help the low income households to access the financial services provided by the banks which would not be possible otherwise.

Hamna (2016) studied the impact of remittances on economic growth in case of the Middle Eastern and North African countries (MENA countries). A total of 12 countries is considered for the purpose of investigation. Un balanced panel data is used and covers the period of 1984 to 2012. GMM is implied in order to control the endogeneity biases. Estimated results suggest that the impact of remittances on the economic growth is determined by the level of financial development and institutional environment. In other words, higher the level of financial development in a country and the better the institutional environment more would the remittances be able to boost growth. The results of this study clearly contradict the results presented by Giuliano (2008)

Demigüç-Kunt et al. (2011) in their study concluded that remittances have a significant and positive impact on the development of financial sector in case of Mexico. They found that remittances have a strong association with higher banking breadth and depth. The results of this study were in line with the first point of view that suggest a positive impact of remittances on the financial development of an economy.

Oke et al. (2011) studied the relationship between remittances and financial development. The country considered for the purpose of study was Nigeria and the data collected was from 1997 to 2009. Two different indicators were used to measure financial development, namely, the ratio of money supply to GDP (which represents the depth of financial sector and measures the size of financial intermediaries and level of financial intermediation) and the ratio of private credit to GDP. Remittances were measured using the current private transfers from migrant workers to the country of their origin. Methodologies employed in order to get to the appropriate results and conclusions were OLS (and GMM The result obtained were seen to be positive and significant at 5% level when ratio of money supply to GDP was taken as an indicator of financial development while on the other hand the result was seen to be positive but insignificant at 5% level when ratio of private credit to GDP was used as an indicator of financial development. These results implied that remittances tend to increase liquid liabilities more as compared to the loanable funds as remittances in Nigeria are more likely to be used for the purpose of consumption rather than other productive projects.

Chowdhury (2011) studied the impact of Remittances on the financial development of Bangladesh. Required data was collected from the year 1971 to 2008. Financial development was measured using three different indicators, i.e., private domestic deposits

to GDP, bank credit to GDP and bank deposits to GDP. Cointegretion analysis and vector correction model were the methodologies employed in order to get to the appropriate results. Conclusions drawn using the obtained results were that a positive change in the remittances leads to a positive and significant change in the financial development of Bangladesh. It was also observed that there was no dependence of remittances on the financial development of the country.

Ahmed, J., & Martínez-Zarzoso, I. (2016) conducted a study in which they checked if the cost of transferring money matter for foreign remittances or not in case of Pakistan. Remittance inflows were considered from 23 different countries. It was found that when the cost of remitting is high then individuals refrain from using the formal channels for sending home remittances and prefer using some informal channels like hundi hence the cost of remittances had a negative and significant impact on the remittances sent via formal channels which had declined the contribution of remittances towards the development of financial sector.

Amin et al. (2018) studied the effects of foreign remittances on financial inclusion in case of Pakistan. Data was collected for the time period 2014-2015 by Pakistan Bureau of Statistics and was taken from PSLM (Pakistan Standard of Living and Measurement). Financial inclusion was measured by making use of a proxy variable ‘using a bank facility. Data collected comprised of a total of 513,099 households, out of this total figure, 78,635 received remittances. Econometric techniques applied in order to get to the results were OLS and the logit technique. Results obtained suggest that there are significant chances of increase in the financial inclusion with the rise in the remittances received.

Shahzad et al. (2014) have empirically studied the impact of remittance on the financial development of South Asian countries. Required data were collected from the year 1989 till the year 2011. Eight main indicators of financial development were used in order to create financial development index using the principle component analysis. The eight indicators are taken from banking, insurance and stock sectors. Pooled OLS is first employed to check the relationship between the variables taken under consideration which is followed by GMM. GMM tackled the problem of endogeniety which could rise due to the bi-causal relationship between the variables taken under consideration (i.e. Remittances and Financial development). Conclusion drawn from the obtained results suggested that remittance inflows positively and significantly affect the financial development of the countries taken under consideration.

Sobiech (2019) studied whether the financial development promotes the impact of remittances on economic growth or not. A total of 151 countries were taken into account, the time period considered was from 1970 to 2010. An index was created for the measurement of financial development. It consisted of three main indicators of financial sector development, i.e., size, depth and efficiency. It was for the first time that efficiency was also taken as an indicator of financial development. The indicator of efficiency has also been used in this study difference being that, the proxy variables taken are ROA and ROE as opposed to interest rate spread and deposit interest rate. GMM and quasi maximum likelihood methods are used to get the necessary results. The conclusion drawn from the obtained results is that the impact of remittances on countries that are less financially developed is more while the impact is lesser in case of countries that are comparatively more financially developed.

3.3 Literature Gap

This study looks at the impact of remittances on financial development of five south Asian countries. The difference between this study and that conducted by Shahzad et al (2014) lies in the selection of indicators of financial development. Current study takes into account the variable of efficiency as an indicator in the formation of financial development index using principle component analysis whereas Shahzad et al (2014) used 8 different indicators of financial development where efficiency was not taken into account. The current study differs from the study conducted by Sobiech (2019) in two ways. First being the selection of dependent variable (financial development in case of the current study and economic growth in case of the study conducted by Sobeich) whereas the second difference lies in the selection of countries (Sobiech conducted research on 151 countries whereas the current study is specific to the South Asian region.)

CHAPTER 4

THE DATA, EMPIRICAL MODEL AND METHODOLOGY

4.1 Data Sources

The sample of the study consists of five South Asian countries namely Pakistan, India, Sri Lanka, Bangladesh and Nepal. The annual data of financial development indicators, remittance inflows to GDP, GDP per capita, Exports of goods and services, inflation, foreign direct investment are used over the period 1996-2017. Data for all the variables have been obtained from World Development Index (Database of World Bank) and International Financial Statistics (IFS).

4.2 Type of Data

Panel data has been used in this study. Using panel data is beneficial for a number of reasons. First being that it provides more precise information about the parameters as it consists of more degrees of freedom and less problem of multi-collinearity as compared to cross sectional and time series data. This leads to generation of more efficient results by panel data. Another benefit of using panel data is that it controls for the missing or omitted variables which otherwise is not possible. On the other hand, a drawback of such data is that the analysis becomes very complex, especially when the time frame is further enlarged.

4.3 Proposed Model

There are two different models used in this study. The difference between these models lies in the formation of financial development index which is the dependent variable. To

explore the relationship between remittances and financial development following equation is used.

$$FDI_{i,t} = a_{0i} + \beta_1 RT_{i,t} + \beta_2 CS_{i,t} + \beta_3 ED_{i,t} + \beta_4 INF_{i,t} + \beta_5 EXP_{i,t} + \beta_6 FDI_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t} \quad \text{(Eq.1)}$$

Where $FDI_{i,t}$ = Financial Development Index (see table 4.1 for indices construction) with two alternatives;

1. Financial Development Index of Depth (FDID)
2. Financial Development Index of Efficiency (FDIE)

$RT_{i,t}$ = workers' remittance inflows to GDP in terms of percentage

$CS_{i,t}$ = GDP (constant US$) in terms of log

$ED_{i,t}$= GDP per capita (constant US$) in terms of log

$INF_{i,t}$= GDP deflator (annual %)

$EXP_{i,t}$ = Exports of goods and services (% of GDP)

$FDI_{i,t}$= Foreign direct investment, net inflows (% of GDP)

μ_t = Time specific effect

η_i = Unobserved country-specific fixed effect

$\varepsilon_{i,t}$ = Error term.

β_1 is the coefficient of remittances which explain the change in financial development when there is a unit change in remittances. The other coefficients i.e. β_2, β_3, β_4, β_5 and β_6 are the coefficients of control variables and explain how much would the financial development change by if there is a unit change in the respective control variables.

4.3.1. Construction of Financial Development indices

There is no composite measure [8] to gauge the financial development of financial institutions. However, number of indicators can be obtained from various sources to develop financial development index. In this study two indices to measure financial development of South Asian countries have been used. To approximate financial institutions' depth and efficiency[9] this study has used eight indicators of financial sector development (see Table 4.1) therefore, principal component analysis (PCA) is applied to construct two variables of financial development that have captured the maximum variations for all the indicators used. Different banking sector indicators used to construct the financial development indices are presented in Table 4.1.

In the previous literature Shahzad et al. (2014) had taken eight indicators of financial sector development from banking, equity and insurance sectors and used principal component analysis (PCA) to construct one single variable of financial development. Sobiech (2019) created an index for the measurement of financial development using unobserved components model. It consisted of three main indicators of financial sector development, i.e., size, depth and efficiency.

[8] There are a few data sets providing information about various aspects of the financial sector e.g. The Global Financial Development Database, Dataset on Financial Reforms, World Economic Forum ranking of overall financial development (Feyen, & Levine, 2012, Detragiache, & Tressel, 2010 and World Economic Forum, 2012)

[9] Depth means banks deposits and provision of credit to the economy while Efficiency means spread (difference) between lending rate and deposit interest rate (GLOBAL FINANCIAL DEVELOPMENT REPORT 2019/2020)

Table 4.1: Indicators used in the formation of Financial Development Index

Financial Development Indices	**Indicators Used**		**Indicators' Symbol**
Financial Institutional **Depth**	1	Private credit by deposit money banks to GDP (%)	Pcrdbgdp
	2	Domestic credit to private sector by banks (% of GDP)	DCpvt
	3	Liquid liabilities to GDP (%)	Llgdp
	4	Banks deposits to GDP (%)	Bdgdp
Financial Institutional **Efficiency**	1	Bank's return on assets (%)	Roa
	2	Bank's return on equity (%)	Roe
	3	Bank overhead costs to total assets (%)	Ohc
	4	Net interest margin (%)	Nim

The indices have been constructed using Principal Component Analysis (PCA) which is a method used to transform a large set of data into a smaller one keeping intact the information that is enclosed in the large data set. In simple words, PCA tends to reduce the number of variables along with the preservation of information enclosed in those variables. In this study four different indicators of depth and efficiency of the financial sector are merged and reduced to two different dependent variables that contain all the information from the merged indicators. This has been done twice using the indicators mentioned in order to get two separate indices for financial development (Where FDID is constructed using the four indicators of depth, likewise, FDIE is constructed using the four indicators of efficiency as mentioned in table 4.1)

Financial sector depth

Financial depth basically takes into account the financial sector relative to the economy. It measures the size of banks and other financial institutes in the country. It is said to have a robust link with the long run economic growth along with the reduction of poverty. Domestic credit to private sector as a percentage of GDP is one of the most important variables taken as a proxy in order to measure depth of the financial institutions (World Bank). Sobiech (2019) defines depth as the provision of credit to the economy.

Financial sector efficiency

There are different aspects of efficiency such as efficiency in intermediating savings to investment which is measured using net interest margin, operational efficiency calculated using non-interest income to total income or the overhead costs to total assets and efficiency in terms of profitability measured using return on assets and return on equity as mentioned in one of the working papers of IMF. Efficiency in terms of profitability has been taken into account in this study. Institutes that are efficient are likely to make more profit than others, however, this cannot always be followed as a rule of thumb as sometimes institutes that are less efficient tend to earn profits while operating in economic upsurge while on the other hand efficient institutes may incur losses due to an adverse shock (IMF Working Paper 2016).

Data limitations

Aggarwal et al. (2011) measured financial sector development using share of deposits to GDP and credit to GDP. Brown. R et al. (2013) in their study represented financial development using a proxy variable of domestic credit to the private sector measured as a percentage of GDP. Oke et al. (2011) used two different indicators to measure financial

development, namely, the ratio of money supply to GDP (which represents the depth of financial sector and measures the size of financial intermediaries and level of financial intermediation) and the ratio of private credit to GDP. Shahzad et al. (2014) in order to represent indicators from banking sector in the construction of financial development index considered liquid liabilities to GDP (%), Deposit money bank assets to GDP (%) and Private credit by deposit money banks and other financial institutions to GDP (%). The reason for not including all of the indicators stated in the previous literature for the sake of this study is the unavailability of data for the countries taken under consideration. The required data was available for the indicators that have been taken for the sake of current study.

4.4 Control Variables Discussion

Country size basically reflects the strength of a country which is easy to measure using the gross domestic product. Size of a country is expected to have a positive relation with the financial development. As the size of a country increases, the demand for final intermediation increases hence resulting in the expansion of the financial sector.

Inflation has been controlled because empirical studies suggest that it has a negative impact on the financial development as it misleads the decision making of individuals, discourages financial intermediation and encourages individuals to save in the form of real assets.

Economic development measures the progress of an economy. It usually refers to the adoption of new technologies and general improvement in the standard of living. Growing exports increases the demand for a number of financial products which in turn results in the expansion of financial sector. Foreign direct investment as a percentage of GDP positively impacts the financial sector development as for foreign investment to flow in a country financial sectors need to be developed as a pre-condition. Both of the variables are positively related to each other. Highly developed financial sector of a country would attract higher foreign investments which would further lead to the development of the financial sector.

4.5 Some Related Econometric Issues

This study attempts to estimate relationship between remittances and financial development, the major econometric issues faced in the estimation process are of endogeniety and heteroscedasticity.

Whenever there is a bi-causal relationship between the dependent and independent variables, there arises a problem of endogeniety meaning that the independent variables and error terms of the model are somehow related to each other. In case of this study, there exists a two-way relation between remittances and financial development therefore application of OLS would generate void results. In order to overcome the issue of endogeniety various methods have been adopted like instrumental variable technique and Heckman selection correction. However, this study uses GMM (Generalized methods of moments) to tackle the problem. In the existing literature it has been found that there exists a bi causal relation between financial development and remittances. This bi causal relation gives rise to the problem of endogeniety which would then lead to biased results, therefore using GMM method of estimation gives better results, as practically in econometrics it is the best available technique used in order to tackle the problem of endogeniety. GMM basically is an instrument based technique which either uses lags of dependent and independent variables as instruments (termed as internal instruments) or uses proxies of variables which are termed as external instruments.

4.6 Estimation Technique

While dealing with panel data it is important to decide whether to run regression with fixed effects or random effects. In a random effects model, the unobserved variables are assumed to be uncorrelated with all the observed variables whereas in a fixed effect model, the unobserved variables are allowed to have an association with the observed variables.

In order to decide which effect is appropriate, Hausman test has been run which favors fixed effect for Financial Institutional Depth Model while favors random effect for Financial Institutional Efficiency Model. For details see Table 5.3.

4.7 Tests for Heterogeneity of Financial Development Indices

Two separate tests are performed in order to look at the heterogeneity both across countries and across time. The first case looks at the difference in the data at country level whereas the second case considers differences across time.

4.7.1 Cross Sectional Heterogeneity

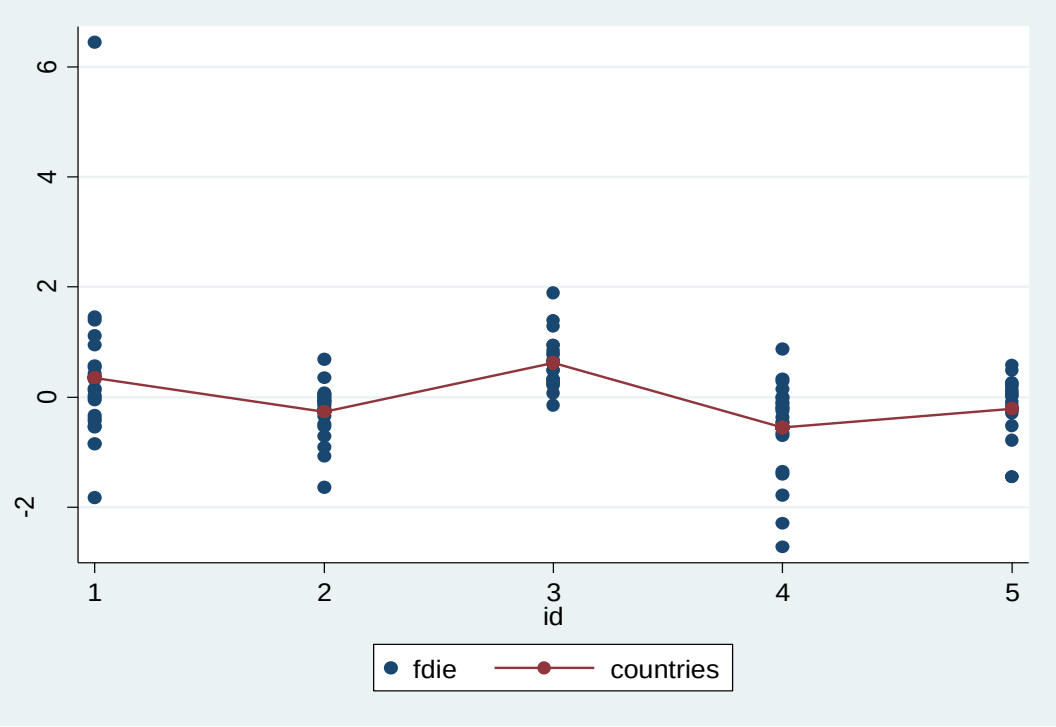

***Figure 4.1*:** Cross Sectional Heterogeneity for Financial Development Index (FDIE)

Figure 4.1 represents heterogeneity of FDIE across the five countries taken. Solid line represents the mean value of FDIE whereas dots represent the values of FDI for each country, represented by a separate id. Straight solid line indicates the absence of heterogeneity from the data. In this case different south Asian countries are being considered for the purpose of the study therefore the level of financial development differs a little in each country but the variation as seen by the solid line is quite low. Similarly, figure 4.2 represents the results obtained when testing for cross sectional heterogeneity for the second financial development index (FDID).

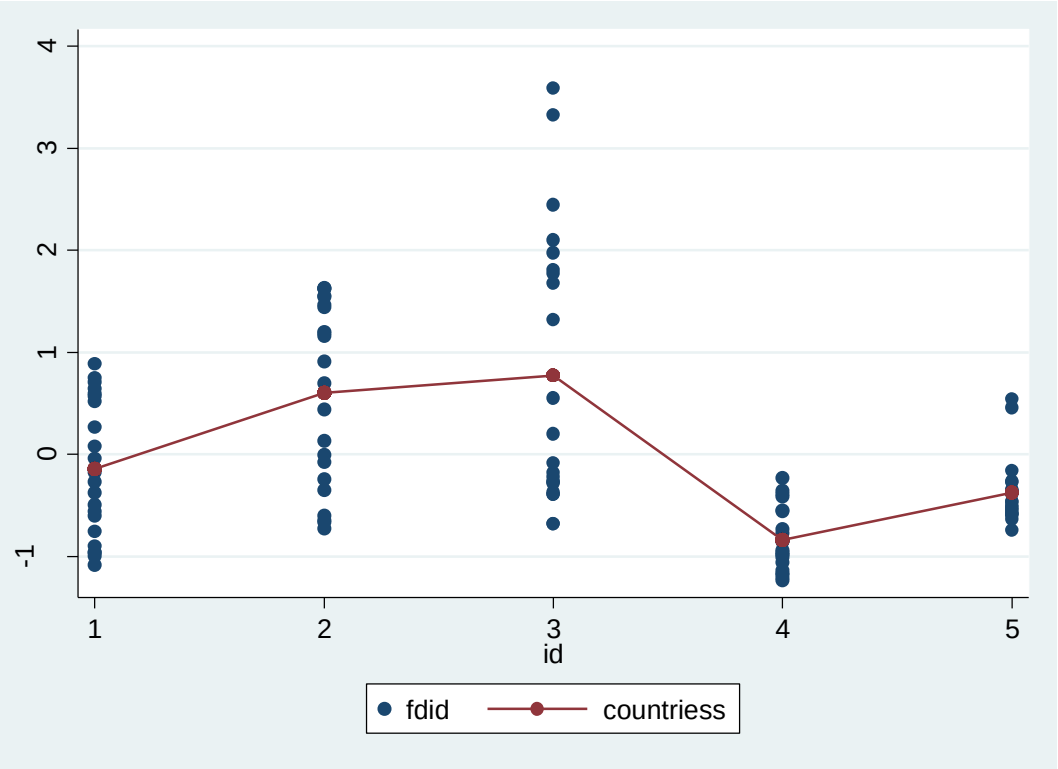

***Figure 4.2*:** Cross Sectional Heterogeneity for Financial Development Index (FDID)

4.7.2 Heterogeneity across time

Checking for heterogeneity across time means to look at the possibility of each country having a different level of Financial development (FD) at different periods of time. It is evident from the figures obtained that the average level of FD in each of the countries varies over time for both models. It is different for each time period. However, the variations in case of figure obtained for FDIE are very low while figure obtained for FDID shows more variations.

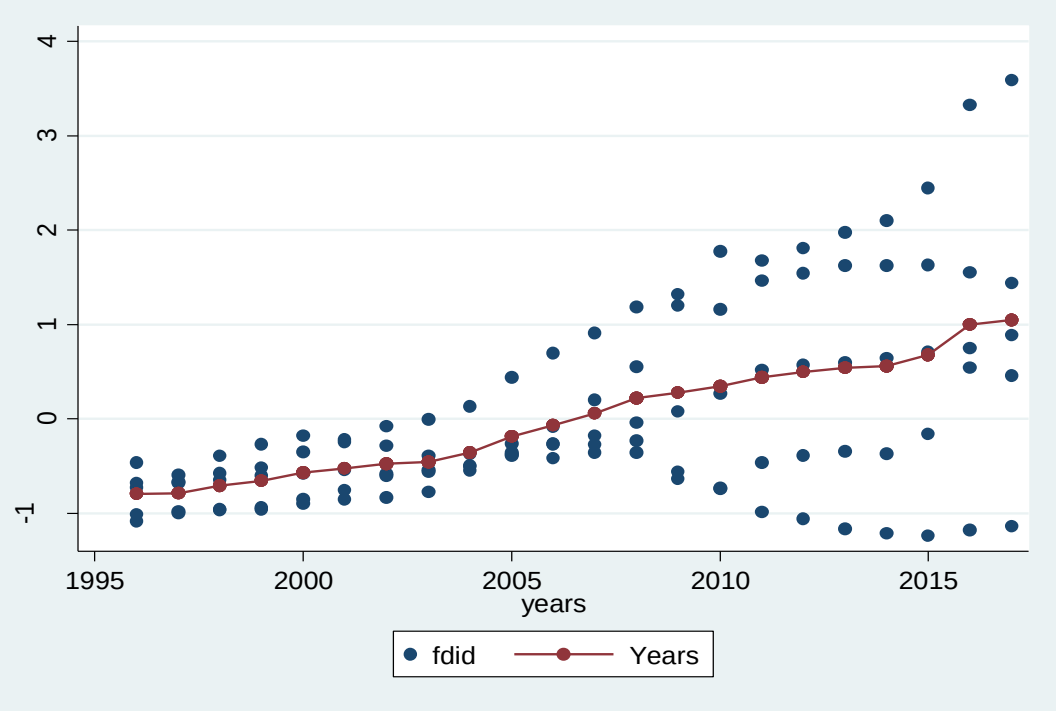

***Figure 4.3*:** Heterogeneity for Financial Development Index (FDID) across time

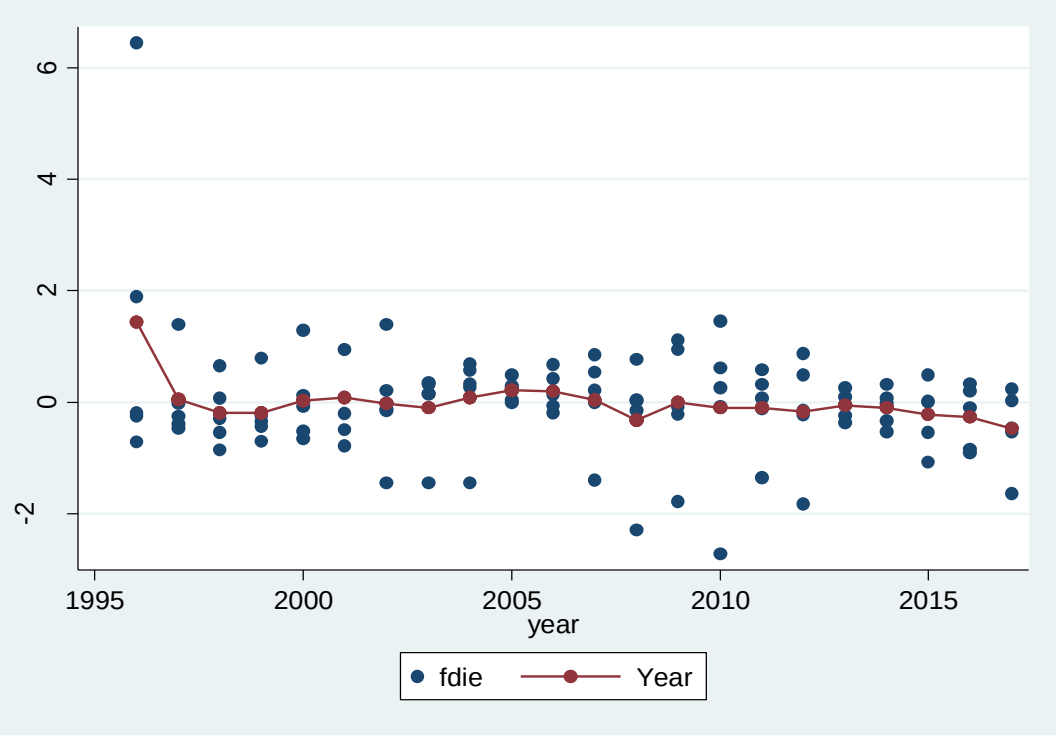

***Figure 4.4*:** Heterogeneity for Financial Development Index (FDIE) across time

CHAPTER 5

EMPIRICAL RESULTS AND CONCLUSION

5.1 Descriptive Statistics

The descriptive statistics of five countries taken into consideration are presented in the table 5.1. Mean values in the table present the average values of each variable taken into consideration. Standard Deviation represents the deviation of each variable from the sample mean. Columns for Min and Max represent the minimum and maximum values found in each series.

The total number of observations for each of the variables is 110. Dependent variable for model 1 which is FDID has a mean of 0.004 and standard deviation of 0.996, its maximum value lies at 3.588 while minimum value lies at -1.237. Similarly, FDIE has a mean value of -0.009 and standard deviation of 0.9836, its minimum value lies at -2.721 while the maximum value lies at 6.448. The mean value of RT lies at 7.586 while its standard deviation is 6.808 with a minimum of 0.977 and maximum of 31.432. Coming to country size, its mean value lies at 11.022 with a standard deviation of 0.672. The minimum value for cs stands oat 9.958 whereas its maximum value is 12.425. Ed has a mean of 2.996 with a standard deviation of 0.248, its minimum and maximum values are 2.614 and 3.586 respectively. Inflation has a mean of 7.628 and standard deviation of 4.468 with minimum and maximum values of 0.400 and 24.891. Exports similarly has a mean of 18.162, standard deviation of 7.317 with minimum and maximum values lying at 8.235 and 39.016 respectively. Foreign direct investment being the last variable of interest has a mean of

1.012 and standard deviation of 0.759. Minimum value for FDI stands at -0.098 while its maximum value is 3.668 respectively.

Table 5.1: Descriptive Statistics

Variables	Obs	Mean	Std.Dev.	Min	Max	Skew.	Kurt.
FDID	110	0.004	0.996	-1.237	3.588	1.299	4.363
FDIE	110	-0.009	0.983	-2.721	6.448	2.215	18.944
RT	110	7.586	6.808	0.977	31.432	2.053	6.776
CS	110	11.022	0.672	9.958	12.425	0.442	2.383
ED	110	2.996	0.248	2.614	3.586	0.626	2.661
INF	110	7.628	4.468	0.400	24.891	1.620	6.018
EXP	110	18.162	7.317	8.235	39.016	1.125	3.708
FDI	110	1.012	0.759	-0.098	3.668	1.263	5.066

5.2 Correlation Matrix

Correlation matrix shows the direction and strength of relationship between two variables. Coefficient of correlation ranges from +1 to -1. The value +1 indicates perfect positive correlation whereas -1 indicates perfect negative correlation. Correlation of every variable with itself gives the value 1. If the variables are positively correlated, it would mean that they move together in the same direction, meaning that increasing one would increase the other variable too but if the variables are negatively correlated then it would mean that increasing one variable would decrease the other. Looking at the matrix above, there exists a positive correlation between remittances and both the indexes of financial development, however the relationship is not too strong in case of FDIE as indicated by the value 0.121 as compared to the value 0.609 which is obtained for FDID. Moving next to country size (CS), it shows a weak negative correlation with FDIE and RT whereas it is positively yet weakly related with FDID. Inflation as evident from the table is positively yet weakly related to FDIE, RT and ED whereas it is negatively yet weakly related to FDID and CS.

Export has a weak negative correlation with both indexes of financial development, RT and CS whereas it shows a positive correlation with both ED and inflation. FDI has a weak positive correlation with all the variables except for FDIE and RT, both of which are weakly and negatively related to FDI.

Correlation matrix can also be used to check the presence of multi-collinearity in the model. If two variables are strongly correlated with each other, there exists a problem of multi-collinearity in the model which would lead to the generation of inefficient results.

Table 5.2: Correlation Matrix

Variables	FDID	FDIE	RT	CS	ED	INF	EXP	FDI
FDID	1.000							
FDIE	-0.019	1.000						
RT	0.609	0.121	1.000					
CS	0.118	-0.307	-0.498	1.000				
ED	0.044	-0.326	-0.118	0.293	1.000			
INF	-0.062	0.023	0.028	-0.146	0.086	1.000		
EXP	-0.072	-0.147	-0.240	-0.098	0.534	0.095	1.000	
FDI	0.140	-0.404	-0.286	0.489	0.514	0.157	0.322	1.000

5.3 Hausman Test

While dealing with panel data the first step is to decide whether to run regression with fixed effects or random effects. In order to opt for the appropriate effect, Hausman test has been run which favors fixed effect for Financial Institutional Depth Model while it favors random effect for Financial Institutional Efficiency Model.

For details see Table 5.3 and 5.4.

Table 5.3: Hausman Test

	FDID	FDIE
Chi-square test value	236.314	10.951
P-value	0	.09

5.4 Impact of Remittances on Financial Development

Table 5.4: Impact of Remittances on Financial Development (1996-2017)

Variables	Financial Institutional Depth Model (FE)	Financial Institutional Efficiency Model (RE)
$RT_{i,t}$	0.100*** (0.007)	-0.008 (0.016)
$ED_{i,t}$	11.342*** (1.520)	-0.568 (0.492)
$Inf_{i,t}$	0.013* (0.007)	0.013 (0.020)
$Exp_{i,t}$	0.047*** (0.007)	-0.002 (0.017)
$Fdi_{i,t}$	0.189*** (0.053)	-0.360** (0.154)
Cons	31.613*** (8.402)	4.443** (2.244)
Obs.	110	110

Figures in parenthesis represent p- statistics
*** Significant at 10%; ** significant at 5%, * significant at 1%;
FE = Fixed Effect and RE = Random Effect
Source: Authors' estimates

As discussed earlier, in the existing literature it has been found that there exists a bi causal relation between financial development and remittances. This bi causal relation gives rise to the problem of endogeneity which would then lead to biased results, therefore using GMM (Generalized methods of moments) gives better results. Finally, GMM technique of estimation is used and to address the problem of endogeneity by taking two period lags of remittances. Table 5.5 presents the GMM estimation results of both models. The estimation

results of column (A) are significant with expected signs therefore, the following discussion is based on the results of financial institutional depth model and the efficiency model results are discussed whenever seems relevant. The F-statistics indicate that the instruments are not weak and significantly correlated with remittances.

5.5 GMM Estimates

Table 5.5: GMM estimates of the relationship between Financial Development and Remittances (1996-2017)

Variables	**Column (A) Financial Institutional Depth Model**	**Column (B) Financial Institutional Efficiency Model**
$RT_{i,t}$	0.099*** (0.007)	0.010 (0.013)
$ED_{i,t}$	14.412*** (1.740)	-0.293 (0.383)
$Exp_{i,t}$	0.048*** (0.007)	0.001 (0.013)
$Inf_{i,t}$	0.013* (0.007)	-0.025 (0.016)
$Fdi_{i,t}$	0.194*** (0.054)	-0.258** (0.124)
_cons	48.367*** (9.725)	2.768 (1.852)
Obs.	100	100
P-value for Hansen's test	0.379	0.394
F-statistics for weak instruments	62.50	72.37
P-value for Sargan test	0.0017	0.0017

Figures in parenthesis represent p- statistics
*** Significant at 10%; ** significant at 5%, * significant at 1%;
Source: Authors' estimates

The results (Table 5.5) indicate that there exists a positive relationship between workers' remittances and financial development in case of both models but there lies a difference in

the magnitude as a unit increase in the share of remittances to GDP is associated with an increase of 0.009 units in financial development in case of the depth model whereas an increase in the share of remittances to GDP is associated with an increase of 0.01 units in the financial development in case of the efficiency model. It is also important to note that the results obtained for the first model are statistically significant at significance level of 1 % whereas the relation is insignificant in case of the efficiency model. The findings support the complementary effect of remittances on financial development for South Asian countries.

Economic development has a positive and significant relation with financial development as the income of country increases over time, it is expected to have better institutional set up, which facilitates the financial sector's development. Furthermore, since Remittances increase the national disposable income, domestic investment and house- hold savings which increase the demand of more developed financial system. A percent increase in ED would cause financial development to increase by 14 percent (see column A). Exports have a positive and significant impact on financial development meaning that a unit increase in exports would lead to 0.048 units increase in financial sector development. The positive relation can be justified keeping in view the fact that exports tend to increase the demand for various financial products resulting in the expansion of the financial sector (Chowdhury, M. B. 2011), (Shahzad el al 2014). Inflation measures the rate at which the average level of price for a selected basket of goods and services increases over a period of time. Inflation in case of depth model has slight positive impact on the financial development which is contrary to previous studies. In case of the efficiency model, a unit increase in inflation would cause financial development to decrease by 0.025 units (which

is in line with previous studies). However, the results obtained are significant at 10% for the depth model whereas they are insignificant in case of the efficiency model. FDI has a positive and significant relation with financial development where a unit increase in FDI would cause financial development to increase by 0.194 units. According to the literature, foreign direct inflows contribute towards the financial development in the region because the development of the financial system of the recipient country is an important precondition for FDI. These results of the study in case of depth model are consistent with the findings of Aggarwal et al. (2011).

CHAPTER 6

CONCLUSION AND RECOMMENDATION

Different reasons for instance; poor pay packages, less job opportunities, the urge to climb up the career ladder etc. compel people to move out of their home countries and seek better work opportunities abroad. Remittances sent home by individuals working abroad have now emerged as one of the largest forms of foreign income that competes with international aid in the developing countries. The amount of remittances into South Asian countries has been growing extraordinarily, from 5.7 per cent in 2017 to 13.5 per cent in 2018 (World Bank, 2018).

Remittances can enhance financial sector development by augmenting credit market development through the increase of loanable funds due to the deposits linked with remittance flows and hence stabilizing the financial shocks. This positive impact of remittances on credit market development is known as complementary effect of remittances, on the other hand as remittances help in the fulfilment of the financial needs of the individuals by overcoming their financial constraints, it might lead to a lower demand for credit hence playing role of a substitute to the financial sector. The impact of remittances have been analyzed along different dimensions[10] in the South Asian region. However, it is important to check the direction of causality between remittances and financial sector development [11]

[10] Remittances are a major source of foreign exchange earnings used to improve the balance of payments, pay import liabilities, service external debt, build foreign exchange reserves, and enhance the viability of the recipient countries (Azad, 2005).

[11] Causality has been analyzed by Fromentin, 2015; Giuliano and Ruiz – Arranz, 2009; Mundaca, 2009.

of South Asian countries because if financial sector development leads to higher remittance inflows, then it is needed for South Asian governments to develop their financial sector in order to attract more remittances.

This study looks at the impact of remittances on financial development of five south Asian countries. The difference between this study and that previously conducted by Shahzad et al (2014) lies in the selection of indicators of financial development. Current study takes into account the variable of efficiency as an indicator in the formation of financial development index using principle component analysis whereas Shahzad et al (2014) used 8 different indicators of financial development where efficiency was not taken into account. The annual data of financial development indicators, remittance inflows to GDP, GDP per capita, Exports of goods and services, inflation, foreign direct investment are used over the period 1996-2017. Data for all the variables have been obtained from World Development Index (Database of World Bank) and International Financial Statistics (IFS).

Two different models have been used in this study. The difference between these models lies in the formation of financial development index which is the dependent variable, one of the FDIs is constructed using indicators of efficiency whereas the other is constructed using the indicators of depth. Principle Component Analysis has been used for the formation of both the indexes.

While dealing with panel data it is important to decide whether to run regression with fixed effects or random effects. In order to decide which effect is appropriate, Hausman test has been run which favors fixed effect for Financial Institutional Depth Model while favors

random effect for Financial Institutional Efficiency Model. The existing literature suggests that there exists a bi causal relation between financial development and remittances. This bi causal relation gives rise to the problem of endogeneity which would then lead to biased results, therefore using GMM (Generalized methods of moments) gives better results. Finally, GMM technique of estimation is used and to address the problem of endogeneity by taking two period lags of remittances.

The results obtained indicate that there exists a positive relationship between workers' remittances and financial development in case of both models but there lies a difference in their magnitude. It is also important to note that the results obtained for the first model are statistically significant at significance level of 1 % whereas the relation is insignificant in case of the efficiency model. The findings support the complementary effect of remittances on financial development for South Asian countries, therefore; it is needed for South Asian governments to strengthen their financial sector in order to attract more remittances.

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