ECONOMICS OF MIGRATION IN PAKISTAN:

MICRO AND MACRO ANALYSIS

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DEDICATION

to my beloved parents(late)

and

my husband Muhammad Bilal Arshad,
my children Ahmad, Hamna, Fatima
who are constant source of inspiration to me

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ABSTRACT

The present study provides a mix of micro-macro level analysis. Pre-migration analysis is carried out at micro-level. It focus on private cost of migration. Post-migration analysis provides insight into two macro-level analysis. One that represent contribution of migrants through remittances coupled with complementary polices. Other focus on emigrants' contribution in exports of their home nation. Use of primary-level, cross-sectional data of 2019 and OLS helps in finding financial and private opportunity cost of migration. Socio-economic and demographic potentiality determines cost of migration. The study finds that personal traits, visa market and agent mafia are major factors for high migration cost. Emigrants also affect economic growth through foreign remittances. However, there are certain complementary polices without which it is impossible to acquire enhanced benefits of remittances. These policies are in areas of human capital, financial depth, quality of institutions and macroeconomic policies. Use of DMOLs for period 1984-2018, gives comprehensive information regarding impact of remittances necessitated by complementary policies. Empirical analysis for period 1980-2018 is equally important in finding stabilization function of remittances.

The study also explores long-term relationship between exports and stock of emigrants from Pakistan for the period 1980-2018. Use of panel unit root, panel co-integration and Fully Modified OLS enhances and vector error correction model (VECM). For panel data, are used. Results indicate that an annual increase in the emigrant's stock from Pakistan in selected countries for the said period, accounted for a significant increase in export from Pakistan towards those countries. However, had not population of host countries increased significantly, there would have no increase in exports Pakistan. Results also suggest that GDP of Pakistan has potential to strengthen its export structures, creating direct positive impact on economic growth. Gravity model estimates confirm robustness of results. Over time, Pakistan has developed institutions to manage low-cost formal emigration of its workforce abroad and ensure maximum utilization of workers' remittances. However, Pakistani workers still face challenges during emigration process. This study gives guidelines for promotion of low-cost, safe, orderly and regular emigration. Presence of necessary polices to strengthen role remittances is unavoidable.

Key words: Emigrants, Human capital, Remittances, Financial depth, Institutions, Exports.

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GCC	Gulf Cooperative Council
ILO	International Labour organization
KSA	Kingdom of Saudi Arabia
UAE	United Arab Emirates
Ops	Overseas Pakistanis
BE&OE	Bureau of Emigration & Overseas Employment
OEC	Overseas Employment Corporation
OEPs	Overseas Employment Operators
GDP	Gross Domestic Product
WB	World Bank
KNOMAD	Bank-led-Global Knowledge Partnership on Migration
MPL	Marginal Product of Labour
IOM	International Organization for Migration
ICMPD	International Center for Migration Policy Development
ADB	Asian Development Bank
IMF	International Monetary Fund
ODA	Official Development Assistance
FDI	Foreign Direct Investment
ICRG	International Country Risk Guide
USA	United States of America
UK	United Nations
OECD	Organization for Economic Co-operation and Development

CHAPTER 1

INTRODUCTION

1.1 Background

Theory of human capital defines migration decision as a form of investment (Sjaastad, 1962) Connected with this point of speculation, workers re-locate themselves from rustic to urban, agrarian set-up to mechanical frameworks either inside same nation or across borders. Migration is a condition for financial development (De Haas, 2005). It is a constituent part of the entire improvement process (Todaro, 1969). Diaspora or the migrants are actors of economic growth. As opposed to large bureaucratic advancement projects and aid, migrants are successful instrument for re-distribution of income, reduction in destitution and economic growth (Jevons, 1871; Kapur & McHale, 2003).

On direct front, re-location is an investment decision expanding efficiency of human capital (Bowles, 1970a). Human capital theory indicates that migration is a better source of resource allocation but it entails financial and non-financial cost (Sjaastad, 1962). The financial cost involves out-of-pocket expenditures borne by the migrants, during migratory flow comprising recruitment, documentation and transportation cost (Abella & Martin, 2014; Sjaastad, 1962). Non-financial cost involves opportunity cost and mind cost or psychic cost. Opportunity cost covers those opportunities that migrant is prepared to forego while taking choice to re-locate (Abella & Martin, 2014). However, physic cost includes hesitance to leave family and recognizable condition. As psychic costs do not end-up genuine assets, subsequently these are subjective and excluded from overall cost (Sjaastad, 1962).

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Importantly, labour migration is treated as triple win: for the labour sending as country by lowering its unemployment level, by increasing its remittances; a win for labour recipient countries by supporting their economic activities which was not possible earlier with the domestic labour: a win for migrants themselves who can earn higher earrings, reduce their poverty level, gaining experience, acquiring multiple skills, thereby reducing their opportunity cost of migration. Reduction in migration cost can lead to more migrants' "gains" from migratory process. It can not only enable the sending country to increase migration from low-income sections of society to have more access foreign job opportunities, but it would help reduction in depletion of asset among such households. Lower costs or knowledge about actual costs (financial or private opportunity costs) will raise awareness of actual costs among other potential migrants. Such awareness will also spread knowledge that with attractive personal traits, more education, better level of skills, and more vigilance in searching for new job, building capacity building through spending less time in learning skills required for jobs, migrants could prevent themselves from heavy debt traps.

Reduced migration costs necessitate an understanding of what migrants are paying for and why. As a result, they will be able to lessen their reliance on borrowing. It would also contribute to a higher inflow of remittances to migrant households and the society. Such a significant inflow can be put to good use in areas like education, health, and other beneficial endeavors. As a result, level of human capital and economic growth will rise. Returns to out-relocation are profoundly investigated in empirical writings (for instances concentrates by Borjas (1995); Massey (1999); Palloni et al. (2001) however, private cost that migrants pay is a less explored area.

Aside from cost, there are two wide zones through which out relocation straightforwardly impacts the economy of migrant sending nations: first incorporates

remittances inflow and the second includes contribution of the migrants in exports of their own country. Remittances are altruistic private transfers (Moniruzzaman, 2022). Remittances are one of the important indicator of funding development in migrant-sending countries (Yoshino et al., 2020).

Direct effect of remittances on well-being of household is positive (Durand & Massey, 1992). However, if remittances are invested in human capital, health, education, or small business, their positive impact on economic growth is enhanced (P. Acosta et al., 2008; Kakhkharov & Ahunov, 2022), however if remittances are spent on conspicuous consumption, their impact may not be productive to the whole economy (Chami et al., 2005; Kakhkharov & Ahunov, 2022). Therefore, at macro level it may not positive. Remittances may decrease destitution, give better access to certain basic services (Chimhowu et al., 2005), increment investment levels (Triandafyllidou, 2015) and help improving sending nation's balance of payment. However, on indirect front, apart from creation of business and trade opportunities in home countries, remittances create dependency among beneficiaries (Ballard, 2003a).

Moreover, remittances if invested in health , human capital, education, or small business, their positive impact on economic growth is enhance (P. A. Acosta et al., 2009) but if remittances are spent preliminary mainly on conspicuous consumption, their effect may not be productive to the economy as a whole (Chami et al., 2005).

Remittances have adverse impact on long-run economic growth (Jawaid & Raza, 2012). Beneficiaries pick to live off migrants' exchanges rather working. Role of migrants does not end on remittances; rather they conceivably contribute in international exports (S. Girma & Yu, 2002). Universal relocation encourages international trade between home and host country of emigrants in various manners (Gould, 1994). In a weakening global

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climate for contract enforcement, migrants are a good source of enforcement.(S. Hyder et al., 2016).They promote exports of home country through their superior knowledge regarding home exportable items of country, buying preferences for products of their home country, reducing trade-related exchange cost and by sharing their superior knowledge among natives etc.

Pakistan is significant source immigrants from the South Asia in Middle East. Further, it depends intensively on remittances. Therefore, issues related with movement of Pakistani nationals are of extreme significance. Within context of Pakistan, the analysis of economics of migration highlights three main research gaps: First, available studies on cost of migration (Abella & Martin, 2014; S. Hyder et al., 2016; Karemera et al., 2000) only theoretically discussed the cost of migration., without giving in-depth empirical analysis.

In setting of Pakistan, there exists only one report (ILO, 2016) portraying monetary expense of international relocation by applying multivariate philosophy. However, it endures largely with heterogeneity. Therefore, there is a critical requirement for an exhaustive examination of overall private costs of movement for configuration of polices to reduce cost and increase labour exports abroad.

Second, available empirical and theoretical research into economic effects of remittances on the country of origin is exceptionally blended (Taghizadeh-Hesary & Yoshino, 2019) insignificant or even negative impact on growth of migrant sending (for example studies by Borjas (1995), Jawaid and Raza (2012). Present re-discovery of nexus between migration-and related issues in general disregard the insights that have emerged from migration process and policy experiences itself (De Haas, 2005).

Precisely, remittances alone do not bring positive impacts on growth unless sound corrective complementary economic policies are not in-line with these inflows (Cattaneo, 2005).Complementary policies are empirically tested in this study are in areas of human capital, institutions, financial depth and low level of macroeconomic policy distortion. Role of complementary polices has not been recognized in empirical literature. Recognition of complementary polices and their relevance with remittances in context of Pakistan is supportive to policy-making institutions to improve quality of institutions and create awareness among masses to improve investment on the human capital. Adoption of fiscal, monetary and trade policies that are in best interest of Pakistan will remove macroeconomic policy distortion.

Third, available empirical literature related to migration is broadly within the context of migration emerging from developing towards developed countries (S. Hyder et al., 2016). However, contribution of migrants in exports is one of the less identified zones of research. On pattern of other developing countries, that adopt multiple market reforms coupled with institutional reforms to enhance their volume of (S. Hyder et al., 2016). Pakistan can make use of its large diaspora to advance exports.

Current study is meant to fulfill these three holes in empirical literature. For purpose, this study carries-out profound microeconomic pre-migration and macroeconomic post-migration analysis, in context of Pakistan. On the one hand, labour migration helps Pakistan's economy, but on the other, it has negative effects like brain drain. First part of study is an attempt to fulfill the gap in existing literature due to non-availability of any empirical micro-level study based on cost of emigration particularly for Pakistan. For purpose, this study utilizes cross-sectional data gathered in 2019 through newly designed survey filled-in-from potential Pakistani emigrants. Sample size is 585. OLS estimation technique has been used. Besides identifying role of markets and personal

traits in high cost of migration, study likewise finds the effects of demographic and socio-economic determinants on private cost of migration.

Second part of study seeks to fill key gap in empirical literature relevant to remittances and growth by incorporating complementary polices with remittances. To attain the purpose, complementary polices are found in the area of human capital, institutional quality, financial depth, the stability of macroeconomic policies. Based on the availability of ICRG index from 1984, macro-based part of study utilizes time-series data for the period 1984-2018, for Pakistan. Additional analyses, regarding volatility of remittances, is carried out for which the macroeconomic data are available from 1980. Therefore, the time-period empirical analysis for this part is from 1980-2018. DOLS estimation technique is used for empirical analysis.

Prior to present study, to best of my knowledge, no empirical study, in case of Pakistan, has considered these four complementary-policies with remittances to find their impact on growth and volatility of growth by using time-series data. Therefore, present study is a pioneer in context of Pakistan in identifying the accurate relationship between remittances growth and volatility of output growth. Empirical findings from dynamic ordinary least square estimation suggest that remittances without complementary polices create negative impact on economic growth, however, results are reversed if complementary policies are taken into account.

Third part of study is the first attempt to analyze the effect of migration on exports, in context of Pakistan. Use of Panel Co-integration test and fully modified least square estimation technique are used enhance the utility of the study. For robustness, following studies by Gould (1994), S. Girma and Yu (2002) and Dunlevy and Hutchinson (2001)gravity model approach has been used. Six Gulf countries and two non-Gulf

countries selected, being major destinations for Pakistani emigrants for the period 1980-2018. Use of panel co-integration techniques and FMOLS indicate that on average, during the period of analysis, migrants contributed 200 billion US $ that needs to be enhanced for rapid economic growth of Pakistan.

1.2 Objectives

The present study provides a mix of micro-macro level analysis. Pre-migration analysis, a micro-based analysis consists on private cost of migration paid by the individuals themselves. Post-migration investigation represents to the contribution of migrants through remittances or in exports of home nation. Objectives of the study are as under:

1) To find total financial cost and private opportunity cost of migration for Pakistani emigrants.

2) To find out the role of visa market and agent mafia in high migration cost.

3) To find out the socio-demographic and economic factors that potentiality determine the financial and opportunity cost of migration

4) To find the impact of remittances on economic growth

5) To find the impact of remittances complemented by complimentary policies in areas of human capital, financial depth, quality of institutions and macroeconomic policies (fiscal, monetary and trade policy)

6) To identify the stabilization role of remittances to reduce output growth volatility

7) To find-out the exact nexus between emigration from Pakistan (in major destination countries) and exports from Pakistan (destination countries where emigrants reside).

8) To identify the supply-capacity of Pakistan and market capacity of selected host countries, through economic indicators (including distance, population and income, real effective exchange rate) for export creation in Pakistan.

1.3 Motivation and Significance of Study

Pakistan is a major labour sending country in Asia, which heavily relies on remittances[1]. Therefore, analysis of migration with multiple aspects is mandatory. Firstly, a micro-economic analysis with respect to cost and finding ways to reduce it is utmost important to improve labour migration. At present, there is a dire need for a comprehensive micro-level empirical research on cost in order to identify private cost of migration, its socioeconomic and demographic factors. Such a cross sectional analysis of data is supportive to the policymaking institutes to arrange form mechanics of cost reduction.

Such arrangements are required in institutional and social-set-up of Pakistan to improve performance of recruitment institutions, commend economically stable political environment, smooth establishment of skill-enhancing trainings institutes to promote low-cost migration policies. At the level of migrants themselves, the study identifies need to upgrade their skill-levels. Beside all arrangement, there is a need to make potential emigrants aware of mechanics of visa and agent mafia enabling them to bargain.

Secondly, the observed empirical literature accessible in setting of Pakistan, comes up short on certain complementary polices to recognize growth enhancing effect of remittances. Therefore, in second piece of study, following Dollar and Kraay (2002) and Calderon et al. (2008) it is contended that complementary arrangement conditions award of investment, raise opportunity cost of consumption. Conflicting discoveries in empirical literature regarding remittances-growth nexus rose because of some excluded or omitted policy factors. Particularly, long-run growth-enhancing role of remittances is

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[1]Foreign remittances apply to the money and products that migrant workers employed of origin pass on to households (Adams, 2007).

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likely capture only if complementary polices of remittance receiving country create room for financial and business investment by encouraging savings from remittances. In this way, inspiration for this examination is to evaluate the role of appropriate complementary policy, or blend of police in remittances-growth relationship. To achieve the purpose, the study utilizes macroeconomic data for period 1984-2018. Use of dynamic ordinary least square (DOLS) for empirical estimation, indicate that human capital, institutions and sound macroeconomic policy environment are complements for remittances. However, financial depth (either measured by foreign or domestic credit to private sector) is a substitute.

Third part of study explores the channels through which overseas Pakistanis, in addition to remittances, contribute towards export expansion. The period of analysis is 1980-2018. Panel data estimation techniques are used for analysis as panel data estimation techniques give more robust results compared to those using OLS (Koutsoyiannis, 1977). Use of panel data also allows monitoring the possible but unobservable changes in individual effects of the trading partner (Javid et al., 2018).

Results of Panel FMOLS support our research hypothesis that migrants are indeed contributory in export of Pakistan. However, output-level of Pakistan is not supportive to exports. This result indicates that Pakistan is producing goods at sub-optimal level. Primarily, it is important to produce at optimal level of production. Secondly, to increase the contribution of migration in exports, there is a need to spread information for the potential migrant regarding export items of Pakistan, the characteristics and availability of these goods with related information. Being ambassadors of Pakistan in their respective countries of destination, migrants can advertise the products of home country thereby further rising exports from Pakistan.

The study as a whole, elaborates contours of theoretical framework that integrates migrants and structural perspective of migration. Consequently, the investigation represents heterogeneous nature of migration process and its related issues. The resulting perspectives indicate naivety of recent views pointing migration as self-help agenda (De Haas, 2005). The perspectives are realistically determined that shape favorable conditions for positive impact of migration both at micro and macro levels.

1.4 Methodology

The empirical investigation for cost-related objective uses ordinary least square (OLS) method developed initially by (Legendre, 1805) later on by Friedrich and Gauss (1795) for the cross-section data gathered from 585 potential migrants. To achieve the second objective, we use time-series data for the period 1980-2018. Dynamic ordinary least squares (DOSL) estimation methodology developed by Stock and Watson (1981) has been employed to find necessary complementarity between remittances and polices. Third objective, that is regarding exports-growth nexus through emigration, is achieved by using Panel Fully Modified Estimation method. This method was developed by (Phillips, 1995) technique. The period of analysis is 1984-2018. For robustness, the study made use of generalized least square (GLS) method, developed by Alexander Aitken (1934).

1.5 Organization of Thesis

The thesis proceeds as follows: each objective and its sub-objective consist on separate chapter. Every chapter contains its own introduction, objectives, motivation, literature review, empirical methodology, set and construction of variables, estimation technique, empirical results and conclusion. Therefore, chapter 2, 3 and 4are full-fledged chapters. Chapter 5 provides combined conclusion and policy implications.

<center>**CHAPTER 2**</center>

<center>**THE COST OF MIGRATION: A MICRO-ECONOMIC STUDY OF PAKISTAN**</center>

2.1 Introduction

A significant aspect of society has always been migration[2] . Over centuries and millennia, migration has been a key factor in human survival, adaptation, and growth (Marsella & Ring, 2003). Migration is about humans who are constantly on move for thousands of years. Since movements within society are continuous, the issues linked with migration from one country to the other country are ever evolving.

For the past some decades, movement of people from and within different parts of the world has attained much attention: resulting in a significant increase in migration (Alburo & Abella, 2002; Khadria, 2002). Difference in productivity, expected higher earnings, primitive conditions, famine, persecution, forced labour, death threats, discrimination and poor chances to marry, better standard of living and family reunification are some of the main forces behind international migration (Borjas, 2001; Datta, 1998; Lee, 1966).

Earnings can be higher by moving across borders. For instance, for poor households, social and economic opportunities are often bleak in their home country. Good opportunities available in foreign countries fascinate these poor household to settle aboard. The opportunities include better job opportunities hence living conditions (Murrugarra, 2011), better marriage opportunities (Sinke, 1999), better education facilities and medical care, good climate, security and family reunification (Lee, 1966).

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[2]A migrant is "any person who lives temporarily or permanently where he or she was not born" (Craig, 2014).

A cost-and-benefit analysis of migration identifies it as a "investment boosting the productivity of human resources."(Bowles, 1970b). At the micro level, migration is a better source of resource allocation by the individuals (Sjaastad, 1962). This investment decision incurs cost that may it be financial or non-financial cost. The available literature has deeply explored the returns to such investment (for example(for example Borjas (1995); Palloni et al. (2001). However, the cost involved in migration process is almost un-explored area in empirical literature. On the instant issue, the theoretical and empirical analysis is lacking, particularly in case of Pakistan.

Cost of migration, in terms of its level of impact, can be broken down into private cost and social cost (Sjaastad, 1962). Private cost is microeconomic-cost incurred by migrants themselves. Social cost is macroeconomic cost faced by the society emigration of individuals. Social cost can be estimated through efficiency–evaluation of migration or by effect of migration on growth.

Private costs are either money or non-money costs (Levy & Wadycki, 1974; Sjaastad, 1962). Money cost involves monetary resources. It includes out-of-pocket expenses involved in recruitment, transportation deployment of migrants. Non-monetary costs involve opportunity and psychic cost. The opportunity cost i.e., foregone earnings while making decision to migrate. It is evident through costs of job search and through the foregone income that a migrant could have earned had he not decided to migrate. Alternatively, the cost involved in of learning a new job involves opportunity cost (Mincer, 1962).

Psychic cost indicates the reluctance of migrant in leaving familiar environment (of home country); family and friends in country of origin; and settling into strange

environment of host country (among strangers). The more the geographic distance[3] (between home country and destination) the more the psychic cost. However, the distance matters more for the first-time movers) (Levy & Wadycki, 1974).The money cost (both out-of-pocket expenses and opportunity cost incurred in migration process) end up-real resources during the migration process while psychic cost do not end up the real resources (Sjaastad, 1962).

To bear cost of migration, migrants sell their belongings and assets (ILO, 2016) and also borrow. Borrowing cost is high for poor (Aleem, 1990). After migration takes place, the migrants often work over-time to pay-off the debt or take a part-time job (Abella & Martin, 2014). Worker-paid cost of migration can be as high as third part of what the low-skilled workers will earn in 2-3 years from abroad (Abella & Martin, 2014). Some of these workers are so desperate to repay the loan that they opt to overstay their visa duration and become irregular migrants[4]. Visa over-stay emigrants are treated as irregular migrants; hence, they are vulnerable. Their employers exploit such emigrants[5]. They also face risk of imprisonment.

In South Asia, Pakistan is the second-largest labour sending country after India (ILO, 2016) but migration of low-skilled workers from Pakistani is high besides high cost of migration. No empirical evidence, however, is available for comprehensive analysis of cost. The available studies on cost of migration, for example studies by Karemera et al. (2000); Abella and Martin (2014); discussed only financial cost of migration and ignored private opportunity cost of migration decision.

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[3]In these modern times, due to use of modern technology and social media (twitter, instagram, whattspp, IMO etc.,) feeling of being away from home has lessened.
[4]Irregular is a term presently used for illegal migrants. This study focus only on regular migrants.
[5] Exploitation by the employer is common practice especially for migration between corridors of South Asia-Gulf Co-operative Council region (ILO, 2016).

In case of Pakistan, a few studies are available, which focus only recruitment cost as deterrent to migration (Amjad & Arif, 2014; G. Arif & SHAHNAZ, 2000). A report by ILO (2016) is available. Primary focus of report is only on financial cost of low-skilled migrants. However, the report suffers from certain economic and econometric flaws. Therefore, a reliable microeconomic-analysis of cost, its decomposition and identifying its determinants is very essential.

After thorough study of available literature in field of migration cost, it is safely asserted that empirically, in case of Pakistan no comprehensive evidence on cost of migration. Hence, there is a need to empirically decompose financial and private opportunity cost. Analysis of cost is incomplete without its determinants. This part of study focuses of this gap in empirical literature and comprehensively contributes in micro-level analysis of cost by: identifying components and determinants of financial and opportunity cost.

Policymakers and government officials in emerging economies are urged by recent research (Song et al., 2021) to use big inflows of remittances more effectively for economic development. In case of Pakistan, this study is the only study that uses the primary level data survey-based data, collected in 2019, to identify if international migration is a better source of resource allocation. Accordingly, policy shall be designed. Study further helps to find ways of reducing cost of migration to promote resource allocation and supports in policy formulation.

2.1.1 Contribution and Significance of Study

In this study, the primary data are collected from low-skilled potential Pakistani-migrant workers irrespective of the country of destination for Pakistani emigrant workers. The present study is based on survey designed for potential Pakistani emigrant workers. Socioeconomic and demographic factors including the age of migrants,

education, skill-set they possess their employment status in Pakistan, their marital status, area of belonging and source of information of job abroad are particularly important. Use of ordinary least square (OLS) method helps to identify the components of financial and private opportunity cost of migration. Besides that, study finds potential demographic and socio-economic determinants of cost of migration. Present study is also supportive to find whether migration cost is regressive to skill level of workers or not.

This study is supportive to the policy making institutions to formulate necessary arrangements in economic and social-set-up of Pakistan to improve performance of recruitment institutions, advocate economically stable political environment; facilitate establishment of skill-enhancing trainings institutes; to make certain policies that are in line with low-cost migratory flows. The results of the study suggest that low-cost migration can be increased through i) upgrading the skill-level of potential emigrants, ii) enhancing their education level, iii) by creating awareness among hem to select best available least cost alternative options of job abroad. These institutional arrangements will not only help in stabilizing economy but also in reducing cost of migration, increasing remittances, reducing poverty ultimately promoting economic growth.

2.1.2 Major Question to be Answered:

This study's objectives are as follows:

i. To find total financial cost of migration for Pakistani emigrants and the share of each component of financial cost in total financial cost

ii. To find opportunity cost of migration for Pakistan workers.

iii. To find out the role of visa market and agent mafia in migration cost.

iv. To find out the socio-economic and demographic factors that potentiality determine the financial and opportunity cost of migration.

2.1.3 Summary and Arrangement of the Study

The rest of chapter is organized as follows: section 2.2 provides brief overview of the economy of Pakistan and its related issues with respect to cost of migration; section 2.3 provides literature review; section 2.4 explains the analytical and theoretical framework of study; 2.5 gives econometric strategies employed in the study to check the evidence. Section 2.6 discusses the selected country that is Pakistan, period of analysis, construction of variables, the sources of data and its analysis. The empirical results are reported and discussed in section 2.7. Finally, section 2.8 concludes the study with policy recommendations and setlines for the further studies.

2.2 Review of Literature

This section begins with providing a comprehensive review of literature on economics of cost of migration. It gives a detailed discussion of theoretical literature on cost of migration that Pakistani workers' pay while proceeding aboard. Besides, the discussion also includes the de-composition of cost of migration, the factors determining monetary and private opportunity cost of migration. Essentially, the overseas Pakistani migrants are source of foreign exchange earnings after exports. Unfortunately, they are exploited during process of recruitment and deployment to their host countries (Lautenschlager, 2015). This exploitation is primarily due to the existence of visa-mafia and intermediaries involved in visa-process (Abella & Martin, 2014). The exploitation increases their vulnerability. To highlight the exploitation of workers and its related issues, the available limited literature has also been reviewed.

2.2.1 Migration: An Investment Decision

Migration decision is related to the application of human capital model. Therefore, this decision is perceived as an investment in well-being of the migrant. From this

perspective, migration depends upon differences to factor returns. Such differences include income that depends on skills of migrants, valuing migration costs.

Migration decision being a private decision is influenced by family consideration; optimal value of waiting and feeling relative deprivation (Wadycki, 1974). Therefore, the actual migration takes place when expected benefits of migration are higher than the estimated cost. Each stakeholder has different views to quantify challenges and potential gain from migration (Abella & Martin, 2014). The diversity of perspectives on benefits and costs of migration brings various strategies to ensure maximum return from increasing levels of migration around the world. The low distance between home and host country; low cost of movement; less intensity of ethnic barriers, result in high tendency to move towards certain destination (Sjaastad, 1962).

Costs of international migration can either private or social cost (Sjaastad, 1962). Social cost is the cost incurred by society due to migration of individuals. It may be in terms of reduction in production. However, the migrating individual is concerned only with private cost of migration paid by him. Two components of private costs include money costs and non-money costs (Sjaastad, 1962; Widick, 1975). Money costs include the recruitment, documentation and transportation costs. Recruitment process matches workers with jobs (Abella & Martin, 2014). Components of money cost include the visa fee, agent fee, ticket etc.

Non-money costs are either private opportunity costs or psychic costs. Opportunity costs are all foregone opportunities or earnings in terms of either time or money, incurred while decide to migrate. These involve costs of job search, the income that migrant could have earned, had he not accepted the foreign job etc.

The psychic cost involves reluctance of migrants to leave the familiar environment, friend, family and activities carried out by the migrant before actualizing the foreign job (Sjaastad, 1962). However, these costs are important in identifying resources allocation. It is likely that more migration may take place if psychic cost is zero (Sjaastad, 1962). In fact, psychic costs do not involve any resource cost as such costs do not end up real resources. Therefore, psychic cost should not be included in overall cost of migration (Sjaastad, 1962).

2.2.2 Distance: An Important Determinant of Cost

At macro level, distance of is functional to psychic cost (Sjaastad, 1962). The greater distance implies the great reluctance of migrating individuals to leave their family or familiar surroundings. Migration cost is also proxied by wage-differential of similar workers between different locations (Atkin & Donaldson, 2015; Bogatzki & Sirries, 2016).

Even in an era of more affordable connectivity, distance acts as a macro-level barrier to migration. On the subject, (Atkin & Donaldson, 2015) have analyzed the microeconomic data of international migration from 150 Mexicans towards US. Their estimates of cost of migration are based on distance, language, skill and owning property in Mexico. Their results indicate that distance is a major factor in determining and affecting cost. However, there is no comprehensive empirical study available for determining the cost of emigration from every aspect.

A joint study by the International Labour Organization (Alburo & Abella) and the World-Bank-led-Global Knowledge Partnership on Migration (KNOMAD) focus on comparing cost across many migration regions. They based their analysis on a survey of five labour sending countries that are Ethiopia, India, Nepal, Pakistan and the

Philippines. In the said survey, the major host countries are the Kingdom of Saudi Arabia (KSA), the United Arab Emirates (UAE), Qatar and Malaysia.

The survey developed a methodology to collect recruitment cost data of labour-sending country. In 2015, survey was also conducted for 634 returned-low-skilled Pakistani workers. As reported by (Amjad et al, 2017), results of this study indicate that cost of migration is very high for migrants moving towards the KSA and UAE. Monetary cost is about US$ 3,500 on fees related to the overseas employment. The migration cost for KSA is higher as compared to that of UAE. The visa cost is very high as compared to other components of money cost. The reason may be visa trading. On average, earnings are also high for KSA. Overall, actual cost of recruitment is too high from official cost of migration. In fact, intermediaries along with visa mafia sallow huge benefits associated with migration of unskilled or low-skilled migrant workers (G. Arif, 2004).

On the other hand, the low-skilled migrant workers expect that from their foreign job they can earn three to four times higher than from domestic earnings. Therefore, they do not hesitate to borrow to pay cost of migration (Abella & Martin, 2014). Migrants work overtime during their foreign job but hardly repay the borrowed money. About one-third of the total foreign earrings are used in re-payment of loan (Abella & Martin, 2014). Reduction in recruitment cost can help to reduce the vulnerability of the migrant workers (P. Martin & Abella, 2014) (G. M. Arif, 2009). On one hand, cost of migration can come down by a reduction in recruitment or documentation cost. On the other hand, network of diasporas in host country act as a low-cost information source for new entrants (Davis & Kilian, 2009; McKenzie & Rapoport, 2007).

2.2.3 Contribution of Employer

Contribution of international employers in cost of migration optimally reduces cost of migration (P. Martin & Abella, 2014). The employers typically contribute in cost for professional and highly skilled migrant workers. The reason is that the demand of such migrant workers exceeds supply (P. Martin & Abella, 2014).The demand-supply mechanism forces employers to compete with one another. On the other hand, employer-paid share of the migration costs falls significantly as skill levels falls.

A low-skilled migrant, with a 2-to-3 years' work-contract, with wage of US $ 200 per month, pay recruitment-related fees equivalent to about one-third of his or her expected foreign earnings[6] .Kuptsch and Pang (2006)reports a similar pattern of results. The highly skilled migrant earning US $ 2,000 a month may pay no or insignificantly low fees Kuptsch and Pang (2006). The gap lies in the capacity of the Government to enforce the migration costs. There is also a need to recommend suitable ways for capacity-building and skill-up gradation of migrant workers.

2.2.4 Findings from Literature

This section has reviewed literature with valuable findings. Many institutional and economic characteristics of home and the host countries are responsible for cost of migration. Both from private and social point of view, the cost of migration is important. The reviewed literature identifies that the cost plays a vital role in migration decisions. Particularly, in case of emigrants going temporally on work-visas. Although, social cost is important from the perspective of a society, but while making decision to migrate, the individuals focus on their personal expenditures (e.g., out-of-pocket) incurred in order to migrate. Unfortunately, emigrant workers are exploited by the

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[6]With expected foreign earring reported as US$ 7200.

intermediaries. As a result, actual migration cost is several times more than the officially announced cost of migration.

The thrust of recent literature is to find ways and means to reduce the cost of migration. A reduction in migration cost can make migrant workers more productive towards their work. They can have more peace of mind once they know that are paying the right amount of cost. Above all, a reduction in cost will enable the migrant workers to repay their debts quickly even without overtime work.

2.2.5   Literature Gap

There has been a long tradition of research on migration issues in literature (Borjas, 1995; Greenwood & Smith, 1997). Unlike remittances, which are sent over borders via banks and money-transfer, migrants are humans who have different socio-economic and demographic status. By migration, these potential migrants have different goals that they want to achieve. Therefore, the economies of scale may be less important in movement of the migrants.

Recent literature has assessed the determinants of migration, the role of migration network in actual migration, returns to migration and value of economic well-being of migrants (Deichmann et al., 2009). Empirical literature has contributed significantly to understand the role of migration in economic development. The theoretical studies on cost of migration in context of Pakistan are still missing. Additionally, there lies a significant gap in literature in decomposing the components of cost, both money and private opportunity cost. Although, a brief reported by (Lautenschlager, 2015)points out components of money cost but there is still a need to have a comprehensive analysis of cost and its determinants with right econometric techniques.

Besides other, while taking a decision to move abroad for job, it is very important to identify the socioeconomic and demographic factors in migration cost determination. According to best of my knowledge, although theoretical background is present but no empirical research has been conducted in the area of cost of migration. Particularly, migration decision has never been evaluated earlier along with its determinants.

A comprehensive analysis on migration cost and its determinants is out of question unless the various components of the cost of migration are known with determinants of cost. Therefore, the focus of the present study is further extended to analyze the cost of migration paid by Pakistani migrant workers who decide to migrate abroad for job. To achieve the purpose, this study has conducted a questionnaire-based survey of the potential emigrants.

Questionnaire thoroughly enquires about demographic characteristics, the socio-economic status, family-background; financial cost of migration, their willingness to forego opportunities in Pakistan either in form of money or other activities and time (Details of the questionnaire in Appendix A).

The study is supportive for policymaking institution in Pakistan to arrange for reducing the cost of migration. On the other hand, the study is significantly contributory for the potential emigrants, who can hunt the best available job opportunities abroad. They can be well aware of the existing official fee of the recruitment. The awareness about the malpractices in visa market and the information regarding cost of migration from each aspect will help in reducing the vulnerability of Pakistani emigrants.

2.3 An Overview of Migratory flow from Pakistan and Cost of Migration

Pakistan is the 6[th]largest country in world in terms of population. It is the second largest manpower sending country of the South Asia. At present, there are about 8.6 million overseas Pakistani (OPs) living abroad (Ministry of Foreign Affairs, 2022)[7]

Overseas migrant workers are a major asset of Pakistan. They are playing an important role in socio-economic development of Pakistan by sending their valuable remittances. In Pakistan, Bureau of Emigration and Overseas Employment (BE&OE)[8] and Overseas Employment Corporation (OEC) are government functionaries that resister the migrants proceeding workers. Both these organizations facilitate Pakistani workers in proceeding aboard for foreign job. OEC is a public sector overseas employment promoter (OEP). It promotes employment of un-skilled, skilled, semi-skilled highly skilled and professionals' manpower in mainly public sector of foreign countries. OEC has so far provided around 1, 42,000 Pakistani workers to 58 countries in private and public sector.

Since 1971 till 2023, 12.58 million emigrants have been registered by the BE&OE through its nine Protectorate of Emigrants (PoEs), throughout Pakistan (BEOE, 2023)Out of total, about 96 percent of Pakistani workforce is settled in Gulf Co-operative Council (GCC) countries particularly Kingdom of Saudi Arabia (KSA) and the United Arab Emirates (UAE). Since mid-1970s, there was a huge increase in the oil price in the Gulf region. The rise increased the attraction of workers from all over the world. As consequence, migration of workers from Pakistan raised high that reached

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[7] Ministry of Foreign Affairs collects the data of overseas Pakistanis through its Mission abroad. This data includes the number of overseas Pakistanis residing living/working or studying abroad.

[8]However, the Ministry of overseas Pakistanis & Human Resources Development, through its attached department BE&OE collects and complies that data of Pakistani migrant workers who proceed abroad for the purpose of employment.

its new peak after 2011. During entire migration history of Pakistan, year 2015 witnessed highest numbers when 9, 46,571 Pakistanis were registered by BE&OE for overseas employment; followed by the year 2016.

In 2016, 8, 39,353 workers were registered for employment abroad. In 2016, there was 11.3 percent decline as compared to year 2015. Later on, a major decline, in export of labor, was observed during years the 2017 and 2018. In that time, there were 4, 96,286 and 3, 82,439 Pakistanis, respectively, were registered for employment abroad. The decline in oil prices slowed-down the economy of major labor recipient countries. Subsequently, the increase in oil prices in year 2019 positively affected the gulf economies. The gulf countries opened up the job opportunities for expatriates. As a result, in 2019, there was more than 63 percent increase in labor exports. Importantly, the incumbent government had particular attention and focus on migrant workers abroad. Its effective diplomatic policy with foreign countries, especially with the Gulf Countries, has shown good results in growing the export of labor to these countries. Particularly, this has happed in case of KSA[9].

Table 2. 1: Region-Wise Distribution of Pakistani Living/Working/Studying Abroad (1971-9th May 222[10])

Countries	1971-2022
KSA	23,00,000
UAE	577,972 1
Malaysia	38,394
Qatar	190,000
Bahrain	125,000
Kuwait	95,453
Others	5,539,428
Total	**8,866,247**

Source: Ministry of Foreign Affairs (2022)

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[9]The annual placement of Pakistani migrant workers drastically came down in year 2020. The primary reason is the pandemic hit i.e., Covid-19. In year 2020, only 1, 89,653 workers registered themselves with BE&OE to proceed abroad.

[10]The table indicates the data of those migrants who registered themselves with BE&OE on work/employment visa (either direct or through Overseas Employment Promoters). The actual number of workers may vary from the figure reported mainly because the data includes those workers also, who are proceeding abroad for other than first time. So, it may include second- and third-time movers.

Table 2.1 indicates the concentration of Pakistani diaspora across the globe. Being a populous country Pakistan has a surplus workforce. Therefore, Pakistan has been providing workforce to different parts of the world. Since 1971, until February 2023, 12.58 million Pakistanis have proceeded abroad through BE&OE. Pakistani migrant workers have major share of concentration in Middle East, is about 97 percent. KSA and the UAE are also the largest remittance sending countries.

A significant trend of emigration from 2009 to 2019 is illustrated in Figure 2.1. Between 0.36 million to 0.45 million total labors went abroad from Pakistan during 2009 to 2011. There was a small rise during the period 2012-13 when 0.6 million employees were registered. The years 2014-16 were phenomenal, in terms of growth of labor export.

Figure 2. 1: Emigration Trend (2013-Feb 2023)

Source: BE&OE (2023).

About 0.9 million Pakistani employees registered for overseas jobs during 2015. After that, there was a decrease in the export of labor between 2017 and 2018. The decline

was primarily due to a fall in GCC oil prices. The Gulf countries, in particular KSA, began to implement Gulfization policies after declining oil prices[11].

The year 2019 proved vital for Pakistan labor when 6, 25,203 workers were registered as compared to 3, 82,439 in 2018[12]. The major reason for this increasing trend in 2019 was the re-opening of job opportunities for Pakistani workers in the KSA. This rise in emigration can be attributed to the successful diplomatic relations of Government of Pakistan with the Gulf States and the Gulf States particularly KSA and UAE.In general, factors that could affect the demand for Pakistani labour include migration of less educated people from Pakistan and a shift in demand from infrastructure development to maintenance after projects are completed (I. Arif, 2022).

Figure 2.1 shows country-wise comparative analysis of migrant workers proceeding abroad for the years 2018 and 2019. In 2019 for the KSA, a huge increase of 229.71 percent has been witnessed in emigration of workers. However, in 2018 only 100,910 Pakistani workers proceeded abroad. Data indicates that, in 2019, more than 53 percent of the total workforce went to the KSA. In same year, the UAE was the second major destination country. An increasing trend of 42.54 percent was also witnessed in Bahrain. While it was 14.59 percent in Malaysia and 4.37 percent in Oman. There was a decline in labor export to the Qatar during 2019. Since 2015, more than 74,000 Pakistani workers went to Qatar after announcement of 100,000 jobs for Pakistani workers.

The export of labor towards Kuwait in 2019 was not encouraging. The Government of Pakistan is cognizant of the fact that Kuwait government has un-announced visa ban on

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[11]The term Gulfization means that every country will prefer their national to the foreigners. Adaptations of such policy tend to decrease the demand for foreign workers.
[12]As per data of BE&OE, in 2020, only 1, 06,609 and 53,457 Pakistani migrant workers registered themselves to proceed for KSA and the UAE respectively.

demand for Pakistani workers. The Government of Pakistan is excreting maximum efforts to uplift visa restrictions imposed on Pakistani workers by the Kuwaiti government. Expectedly, the Memorandum of Understanding (Gniniguè & Ali) on labor export will get signed in near future. The MoU will pave way to supply labor in Kuwait.

2.3.1 Skill Composition of Emigrants

Pakistani emigrant worker possesses different type of skill. Skill level defined by the Bureau of Emigration and Overseas Emigration (BE&OE) is given below in Table 2.2

Table 2. 2: Skill/Qualification-Level

Sr.#	Skill/Qualification-Level	Type of workers
1	Highly Qualified Workers	Doctors, Dentists, Engineer, Teachers, Accountants and Mangers
2	Highly Skilled Workers	Supervisor, Nurse, operators Foreman, Technician, operator, Computer programmer/analyst, Carpenters, Designer, Pharmacist, Draftsman, Rigger, Photographer and Artist.
3	Low-Skilled, Semi-Skilled	Welder, Storekeepers, Secretary/ Stenographer, Clerk/ Typist, Mason, Carpenter, Steel fixer, Drivers, Electrician, Plumber, Mechanic, Cable jointer, Fitter, Dentor, Tailor, Gold-smith, Blacksmith, Salesperson, Cook, Waiters
4	Unskilled	Agriculturist, Farmers, Labourers.

Source: (BE&OE, 2020b)

Figure 2.2 shows the detail of skill composition during the years 2018 and 2019. A huge increase of 101 percent has been witnessed for skilled-workers that almost doubled in 2019 as compared to 2018. Similarly, a rise of 15 percent was also observed in category of the semi-skilled labour during 2019. On the other hand, there is an increase of 57 percent for un-skilled labour. The rise is mainly due to the momentum in construction sector of the Gulf countries, recovery of oil price and their economy. On contrary, during 2019, there is a minor decline in demand for highly qualified and highly skilled workers. Due to Covid-19, the year 2020 is a special year as only about 200,000

workers went abroad. Figure 2.3 indicates the skill-wise composition of workers in 2022.

Figure 2. 2: Skill Composition of Migrant Workers (2022)
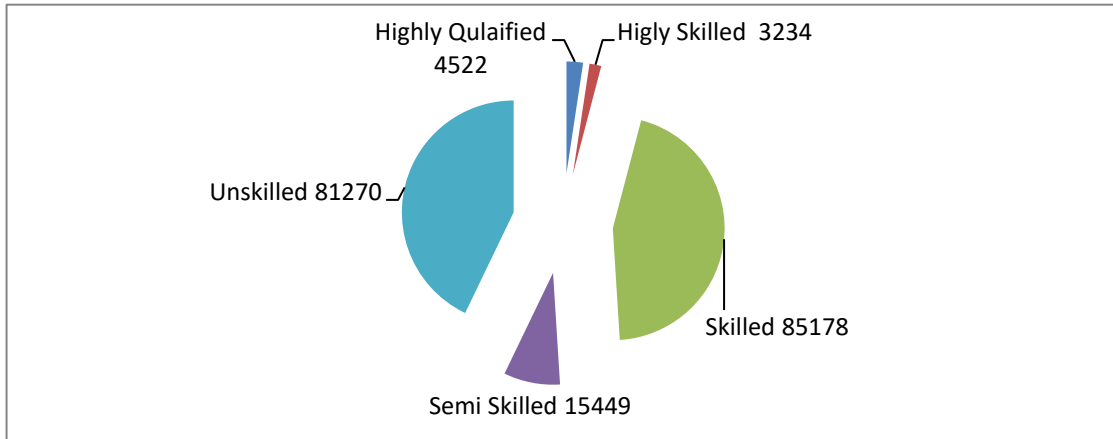
2.3.2   Woman Emigration from Pakistan

The role of women is vital for economic development. However, there are certain cultural and social barriers that women face while deciding to go abroad. Due to such impediments, women emigration from Pakistan is low. As reported by {Shah, 2004}. migrant females constitute about 11 % of all labour migrants in the Gulf. The number may have increased now. According to the (BE&OE, 2019), the migration of Pakistani women has remained quite low, with only 40,807 women going abroad for employment between 1971 and July 2019. This figure includes all female emigrants registered with BE&OE and OEC.

Government is determined to provide equal job foreign opportunities to women. Since 2019[13], the data of women emigrant workers is being collected. Table 2.4 indicates that in 2019, majority of women emigrants went to the UAE followed by the KSA, Oman,

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[13] The recent data of female migrant workers is not available.

United Kingdom, Qatar, Bahrain, direct employment visa and the rest through Overseas Employment Promoters (OEPs) registered etc. 70 percent women.

Women emigrants are facilitated by every possible mean at time of registration and during proceeding abroad. The Government has close coordination with the governments of KSA, Qatar and UAE to create online linkage of job portals. These portals[14] will ensure the rights of migrants.

Table 2. 3: Top Destination Countries for Women Migrants in 2019

Sr. No	Country	No. of Women Emigrants
1	UAE	1437
2	KSA	1217
3	UK	230
4	Oman	165
5	Bahrain	152
6	Qatar	143
7	Canada	123
8	China	92
9	USA	86
10	Malaysia	56
11	Others	378
12	Grand Total	**4,079**

Source: BE&OE (2020).

2.3.3 Regional Comparison of Manpower Export (2018-19)

In 2019, a total of 7,00,159 emigrant workers proceeded abroad from Bangladesh followed by Pakistan i.e., 6,25,203 and India i.e., 3,68,048. Out of the total labor proceeded abroad, 1, 04,786 were the Bengali women. Labor export from Bangladesh gained momentum during last some years. Similarly, compared to its regional counterparts, women emigration from Bangladesh has increased in various ways. This increase is mainly due to; emigration of skilled work force and; more women at good work ethics.

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[14] BE&OE has established an online job portal for potential overseas job seekers.

Moreover, the Bengali government signed a labor agreement with the KSA, on the supply of domestic workers. As a result, in 2019, more than 62,000 went solely to the KSA. For Bangladeshi women, Jordan is the second destination, as 19,000 women proceed there in 2019. Therefore, high women emigration is the main difference in the supply of labor from Pakistan and Bangladesh. Otherwise, in male emigration, Pakistan is ahead of Bangladesh. India is on the third number. It can also be inferred that India focuses on quality of exports rather than quantity. There a very few skilled overseas Indian workers. These workers are good enough in their salary packages. These skilled workers are capable to send more remittances back home. The regional labor data indicate that as compared to other regional equivalents, workers from Pakistan and Bangladesh are more attracted by overseas jobs.

Figure 2. 3: Regional Comparison of manpower export (2021-22)
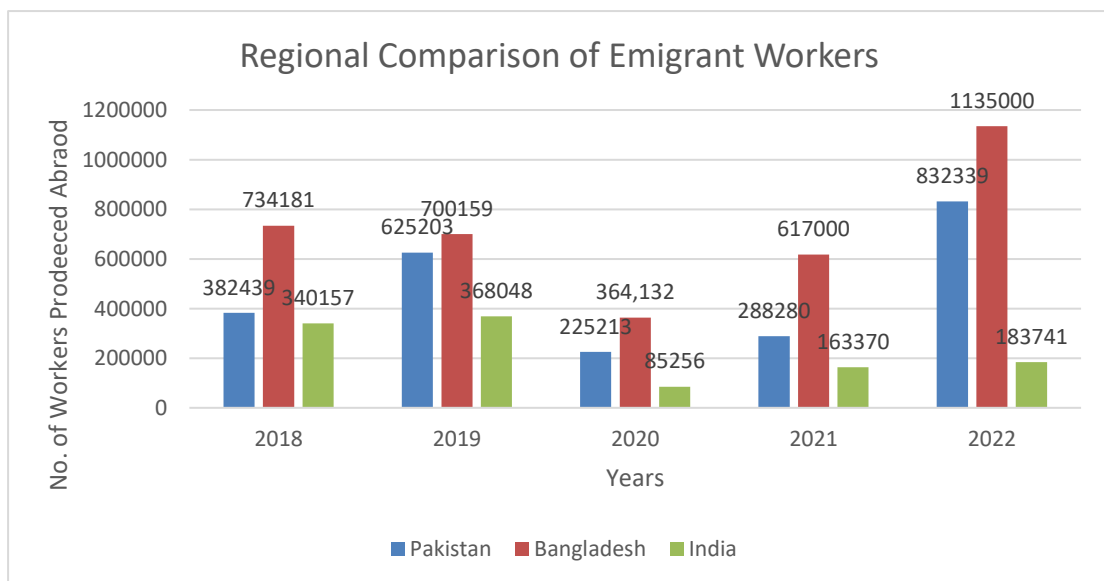
Source: BE&OE (2023), Bureau of manpower Employment and Training (BMET) 2023, Indian Times (2023)

Figure 2.3 provides regional comparison of labor export during the years 2018 to 2022. In these years, export of labor from Bangladesh is high compared to Pakistan and India. In 2019, Bangladesh witnessed a drop of approximately 34,000 employees, compared

to 2018. However, in 2019 as compared to 2018, India has achieved an increase of around 28,000 overseas migrant workers.

Figure 2. 4: Analysis of Manpower Exports in Asian Region in 2022
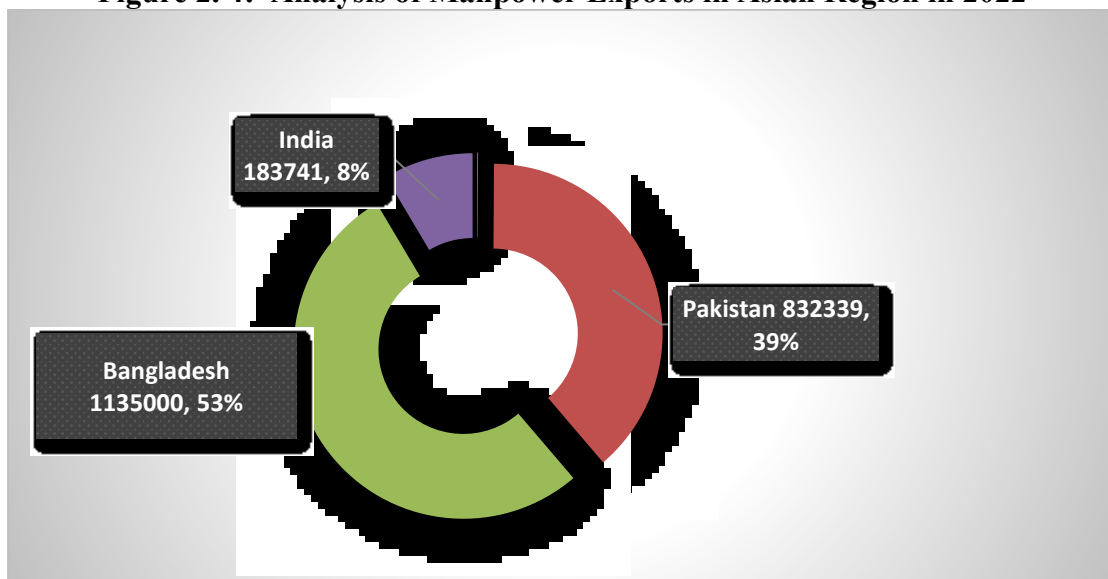
Source: Pakistan: www.beoe.gov.pk, Bangladesh: www.bmet.gov.bd, India: www.emigrate.gov.in.

2.3.4   Contribution of International Migrants in Domestic Economy

The remittances to developing nations have increased over the years (Acosta et al., 2008). The remittances account for about 30 percent of total financial flow to the developing countries. Remittances are equivalent to 2.5 percent of the gross national income of the developing world (World Bank Report, 2018). The international remittances are greater than twice the development aid. Besides stabilizing the economy remittances help alleviating the fiscal deficit issues, second largest contributor after exports to the national exchequer and; the primary source of contribution to the Gross Domestic Product (GDP).

Remittance are migrant's money and essential financial resource for the left behind family members (Cavaliere et al., 2021). Remittances have a positive effect on the domestic economy in terms of aggregate investment; consumption; reduction in current account deficit; external debt burden; flourished education and skills of households.

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During the 1980s, remittances were the most important factor in poverty reduction Pakistan. The data in Table 2.4 shows that workers' remittances have increased over time,reached at its peak in (FYs) 2017-19.

The figure 2.4 shows the trend of remittances in Pakistan. During 2018-19, US$ 21.83 billion were received. This inflow was 3 percent (about US$ 640 million), greater than the targeted (US$ 21.2 billion).   During 2019-20, a total of US$ 23 billion were received. Despite Covid-19, remittances inflow has sharply increased in Pakistan. During 2020-2021, (July–April) US$24.24 billion were received. Primary reason for the rise in remittances include; improved economic prospects in GCC countries; recovery of oil prices in these countries; greater job opportunities available in the Western countries particularly in the United States and the United Kingdom; motivation of Pakistani emigrants to remit money through legal channels; strict measures against illegal money means of money transfer i.e., hundi and hawala.

Figure 2.6 indicates that during 2020, despite Covid-19, there was a rise in receipt of remittances. Among others reasons, extended family support, accumulated savings fearing lay off in 2020, planning to return to Pakistan permanently due to economic slow-down or social service/ donation etc. However, Fig 2.7 indicates the general trend of remittances received in Pakistan from FY15- FY23 up to Feb). The persistent rise in remittances has convinced policy makers that, apart from multiple foreign exchange reserves, if properly managed remittances can also promote economic self-reliance.

Figure 2. 5: Trend of Remittances (US $ in billion) During 2020[15]

Panel (A)

Legend: USA, U.K.

Panel (B)

Legend: Malaysia, Norway, Switzerland, Australia, Canada, Japan, Other Countries

Source: (SBP, 2022)

Remittances

Months (July-June)

Legend: Fy15, Fy16, Fy17, Fy18, Fy19, Fy20, Fy21, Fy22, Fy23
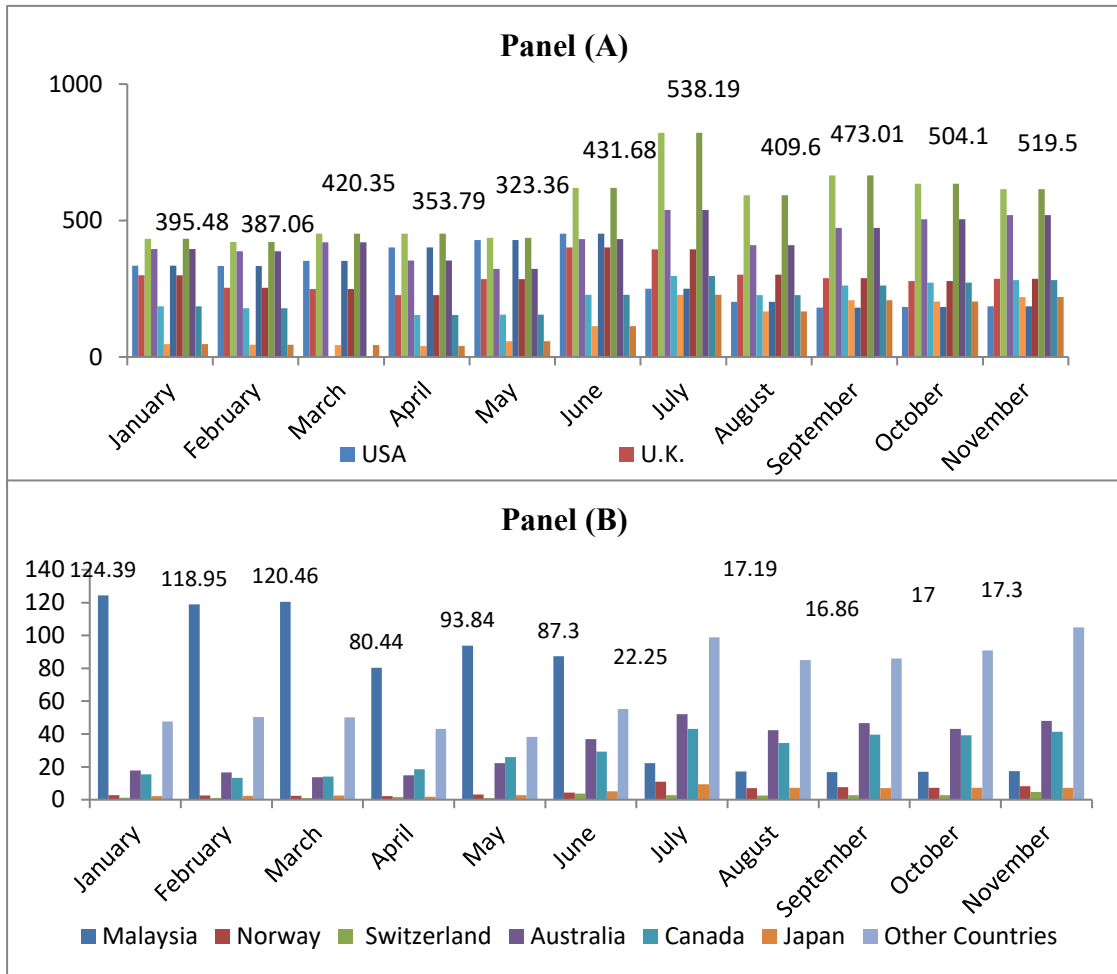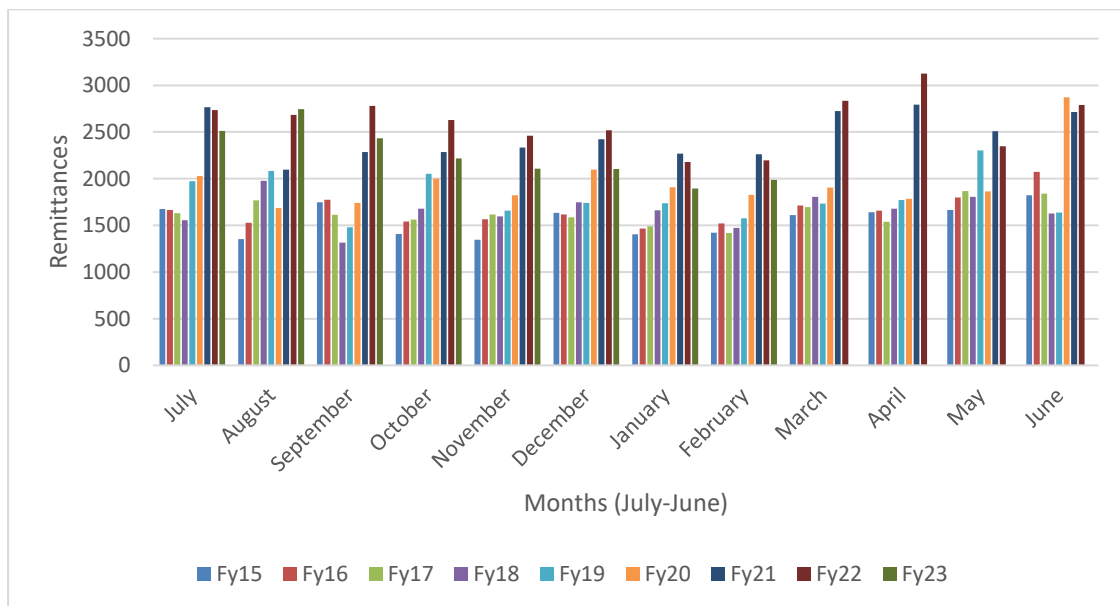
Source: (SBP, 2023)

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[15] The reason for reporting trend of remittances in 2020 is that huge amount was remitted during this Covid-19 period.

2.3.5 Institutional Setup for overseas migration

Importantly, this study focuses on financial and private opportunity cost of migration. Financial cost consists on various components that are officially declared. The only difference in financial cost is due to difference in mode of recruitment i.e., through an OEP or direct employment. Officially, the cost of two individuals going via same mode, in same country, on same contract, should be same. However, in practice, due to existent malpractices in visa markets, agent mafia, unawareness of the migrants, these costs are not being same. Important to indicate that the composition of private opportunity cost of the decision of migration includes certain factors which vary from each migrant to migrant. For example: education, skill and employment status, the monthly stream of earning received in case of employment, foreign job search time, status of trainings attained to match themselves with foreign job. Therefore, being private, there does not exist any institution to fix the private opportunity cost or officially declared it.

It is purely a micro-economic concept that needs accurate information directly from individual migrants, to compute it. Therefore, it is important to indicate that there is private opportunity cost has not earlier been computed, analyzed at any official or non-officially level, no institutional set-up exists to control such costs/ no penalty on any individual if he pays has high financial cost. However, once migrants themselves know and spread information about their own private opportunity cost and fact that it depends on their level of education, skills, marital status, awareness about accurate own private opportunity cost, they concentrate on improving their personal traits/related attributes.

Importantly, there are three migration options available to Pakistani workers: Direct Employment, Overseas Employment Promoters, and Overseas Employment Corporation (OEC). Pakistanis are legally permitted to work abroad either directly or

through a public or private foreign employment promoter. The people are permitted to obtain a foreign employment either on their own initiative or as a result of a friend or relative who is already employed overseas. In the private sector, hiring is done by authorized OEPs. The only "Public Sector Agency" in Pakistan that hires people for jobs abroad is the OEC. However, throughout time, its significance has increasingly diminished. Most frequently, prospective immigrants connect with a foreign job through an overseas employment promotion.

The subsequent processes are thus made easier by the Bureau of Emigration & Overseas Employment. Since the 1970s, more than 11.11 million Pakistani employees have left the country in search of employment (BE&OE, Data and Statistics, 2023) . The majority of them have BEOE registrations. Over the past 50 years, just 1, 39,354 Pakistani workers have used OEC services. Approximately 60% of all migrant workers who travelled abroad formally between 1971 and 2019 did so through an employment marketer. They were followed by 38% of those who made an effort to travel abroad. Only 2% of people used OEC services.

2.3.6   Regulation of Overseas Migration and Recruitment Procedure

Three public sector organizations/departments—the Bureau of Departure and Overseas Employment (BEOE), the Overseas Employment Corporation (OEC), and the Overseas Pakistanis Foundation—work to encourage the orderly and safe emigration of Pakistani workers (OPF). The Ministry of Overseas Pakistanis & Human Resource Development oversees the administrative operations of all three. In   1971 Bureau of Emigration and Overseas Employment (BEOE) was established. Emigration Ordinance 1979 XVIII and its Rules govern how it operates. The Overseas Employment Promoters (OEPs) who handle private sector emigration are subject to regulation, facilitation, and oversight through the BEOE.

Individuals can secure a job offer or a visa directly, through their personal efforts or with the assistance of their relatives and friends residing abroad. It is mandatory for the individuals to get their Foreign Service Agreements (FSAs) or contracts signed by the employer. Subsequently the Embassy of Pakistan abroad may attest these. The OEP prepares FSA on behalf of the employer and approaches the Protector of Emigrants for further process. The OEPs are responsible for going through the detailed contents of contracts with potential emigrant, and the Protector of Emigrants is required to check the fill-in FSA. After meeting the requirements of documentation, they workers are registered with the BE and OE. Similarly, the direct visa holders can also register with the Protector of Emigrants after submitting the required documents.

Almost nine (09) Protector of Emigrants offices across Pakistan have the PoEs offices set up as orientation and briefing centers. These offices are responsible for providing briefings on a range of topics, such as the advantages of registration, working conditions and labour laws in country of destination, terms and conditions of the FSA, proper utilization of remittances, common words of language of the host country, preventive measures against pandemics like Covid-19, and issues, which are related to country of destination.

2.3.7 Cost of Migration for Pakistani–Workers

As reported by (G.M.Arif, 2020), Pakistan is heavily depend on sending low-skilled and semi-skilled workers for foreign employment. Many factors are responsible for such heavy reliance of Pakistan on. One of the major factors includes poor recruitment practices led by intermediaries. Although, intermediaries facilitate meeting the demand for foreign workers, but their business practices have weakened the regular formal recruitment industry (Arif, 2020). In order to ensure regular, safe and fair recruitment in line with international labour standards, Pakistan needs to curb the role of

intermediaries. There are two modes of foreign employment have different fee structure. This difference in fee structure brings difference in cost of migration. The major difference between obtaining a direct foreign job and through the OEP is due to fee (service charges). The emigrants pay the fee to OEP.

By law, a migrant who secures foreign job through a licensed OEP is required to deposit between PKR. 1,500 ($14) to PKR. 10,000 ($96). This money is a service charge to be paid to the promoter, as fee. After three days of departure, the OEP can submit a certificate to Protector of Emigrants office, with the request to release the service charge.

Table 2. 4: Official Fee Structure through Recruitment Channel

Name of Charges	OEP	Direct Employment
OEP Service Charges	6000	NA*
Welfare Fund (OPF)	2000	2000
Sate life Insurance Fund (SLIF)	2500	2500
Registration Fee	500	2500
OEC Fee	200	200
Total	PKR. 11,200/-	PKR. 7200/-

*Not applicable. Source: BE&OE (2019).

In total, a migrant using an OEP have to pay between PKR. 21,125 ($201) and PKR. 31,524 ($301) for a range of costs. Migrants securing employment directly typically pay more, between PKR. 45,575 ($435) and PKR. 48,524 ($463). In addition, biometric fee for KSA and UAE is 750. Unfortunately, migrant workers actually pay is much more (ILO, 2016). Table 2.4 provides detail of officially declared financial cost of migration.

2.3.8 Questionnaire Methodology

Migrants are concerned with welfare that they can obtain from destination countries instead of their birthplace (Deichmann et al., 2009). Pakistani emigrants are no exception. They select countries where they can pay least cost but in return get better opportunities. The study aims to find out the reason of high migration cost for the Pakistani migrant workers. Further, to identify the factor that are responsible to determine the financial and the private opportunity cost. The purpose of this study is to measure the financial and private opportunity cost of migration journey abroad from Pakistan. There is no constraint of country of destination, however, importantly, a significant number of migrants intend to move KSA and UAE (on average, 95 percent).

To achieve our purpose, we have developed a framework that ensures methodology and questionnaire to collect information on migration cost from Pakistani potential emigrant workers. Among other institutional arrangements for migration and re-integration[16] in Pakistan, the Overseas Pakistanis Foundation (OPF) serves[17] the Pakistanis diaspora, workers or their families during their not only work or settlement aboard but also after return to Pakistan. Initially, the return migrants approaching the OPF were targeted to collect information. However, there were many issues i.e., the frequency of visits of return migrants to OPF is very low. Only 17 return migrants were accessed during a period of three months. These 17 migrants did not include any female   All were returned from the United Arab Emirates. Out of total, 16 returned migrants were technically unskilled. Only 3 of total, were married and had families in

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[16] Re-integration of return migrants includes the psychosocial and economic reintegration facilities, guidance for assessing loans through Small and Medium Enterprise Development Authority (SMEDA) etc.

[17] It provides welfare services in form of housing and educational schemes, ambulance services, and prompt resolution of problems / complaints of overseas Pakistanis etc.

Pakistan when they went aboard. Out of total, only 4 were educated having matriculate or intermediate degree. Only 6 were employed in Pakistan before departure. These 06 returnees were unable to provide exact information about any other job (or jobs) offered before joining job abroad, the salary (salaries) they were offered, time span to search for foreign job, the trainings they attained to match a foreign job, the time and money spent on acquiring the kill or training etc.

The return migrants were even unable to tell if they went aboard through an OEP or directly, from where did they obtained visa, what cost did they pay for visa, the services of how many agents they availed, agent fees or other service charges they paid, what other costs they paid? The exact amount of each component of cost and to whom it was paid, poor memory to indicate if the Foreign Service Agreement (FSA) was signed or not etc. They were having inaccurate knowledge about the job market recent trend and scenario in Pakistan and aboard.

2.3.9 Survey Methodology

The information on financial and private opportunity cost expenses were collected directly from the migrants who formed the survey's sample.

2.3.10 Sample Criteria

The sample included migrants who:
i)   were moving abroad for work
ii)   moving in any country aboard, however as Pakistan has major concentration of workers in GCC so most of workers were moving for Saudi Arab and the UAE.
iii)   qualified as regular workers (who were suing a ruler channel to move aboard)
iv)   by default, most of them were low or semi-skilled
v)   there was no restriction of any specific joining job in any specific sector in destination country

vi)   the persons who were well aware of each item/component of cost that they
        paid, for what purpose they paid it, to whom did they pay, the detail of
        payment made to agent or agents.

2.3.11 Locating Sample Participants

The major challenge was to locate participants for this sample who fit the criteria. To begin with, I had started with the return migrants who approach OPF to have for psychosocial or financial re-integration. However, only a very few return migrants were accessed. Further, there were many issues / challenges in collecting data from the returnees. Other than OPF, it is difficult for an individual data collector to collect the data from return migrants. This may arise many issues. The major issues include locating/ accessing the return migrants and inaccuracy of collected data (as return migrant may have forgotten the statistics).

Keeping in view issues including lack of sufficient number of return migrants for empirical analysis, less diversity in their level of education, employment status in Pakistan and destination country, lack of accuracy of statistics regarding costs data shared by returnees, it was deliberated to consider potential emigrants who are about to move aboard after getting their visa stamped from offices of the Protectorate of Emigrants18, Rawalpindi and Peshawar.

Based on questionnaire, the primary data are collected. The author personally interviewed the potential emigrants. The questionnaires were filled from the potential

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[18]The PoEs offices are under the administrative control of BE&OE. There are nine PoE offices in different districts throughout Pakistan. After completing, all other formalities of movement aboard, the emigrants are bound to visit PoE office finally to get their visa/passports protected. Such protection ensures that in case of any misconduct in destination country (either non-implementation of FSA, employer-employee dispute, non-payment of salaries or agreed salaries etc), Government of Pakistan is liable to compensate these workers.

migrants from the Protectorate of Emigrants (PoE) office, Rawalpindi and Peshawar. 650 migrant workers have been surveyed (out of total 650 potential migrants, 585 have provided all inquired information). Out of total 650 emigrants, 13 were females. But they did not co-operate particularly due to their family restrictions. Therefore, only 8 out of 13 females gave response and shared information. These workers are inquired about the various components of financial cost, and the private opportunity cost they paid or faced while taking the decision to migrate. The information regarding socio-economic and demographic characteristics of the potential emigrant workers helped in finding the determinants of the financial and the opportunity cost

2.3.12 Defining Migration Cost for the Survey

The migration costs for the survey are defined as 'financial cost involving all those financial expenses that are incurred by the migrant workers since their decision to migrate until getting visa stamped'. However, until time of getting visa stamped, the migrant worker has met all financials costs. These expenditures involve recruitment, documentation and transportation expenditures. 'The private opportunity cost that comprises willingness of the migrant worker to forgo various opportunities while moving abroad'.

2.3.13 Questionnaire Adaptation and Translation

The questionnaire developed for this study was used in this study with adaptation to the context. Initially, it was developed in English but for the convenience of the migrants, it was translated into Urdu. It was filed test to find out if the languages and questions were easily understood and capture all the information required to meet objectives of survey.

2.3.14 Data Collection Procedure

For data collection, I personally visited the PoE office Rawalpindi and Peshawar. Initially, I carried ut a field test in Rawalpindi to review the performance, shared the questionnaire with the Director General (BE&OE) and the Director (PoE office) Rawalpindi to respond of the migrants, and validity of questionnaire. After field test, I started collecting data and (entered it side by side on daily basis) incorporated the suggestions/ comments on adaptation of the questionnaire and after improving my skills of collecting accurate data.

2.3.15 Survey Methodology and Data Analysis

The information on the cost of migration has been directly obtained from the potential emigrants of Pakistan who have been proceeding abroad to join job. A significant number of workers were moving towards their respective destination countries e,g KSA, UAE, and Oman. Some others were about to join job in Qatar, Bahrain, Korea and Kuwait. As the data have been collected from Protectorate of Emigrants office directly, therefore all the potential workers are going on legal work visa workers. Table 2.5 indicates the country-wise bifurcation of total number of workers moving abroad towards their respective destination countries:

Table 2. 5: Destination wise Number of Migrants

Host Country	KSA	UAE	Oman	Others (Bahrain, Kuwait, Korea etc.)	Total
No. of Potential Migrant Workers	314	196	23	52	585

Source: Survey (2019)

In this sample survey, about 70.8 percent emigrant workers belonged to Punjab. Out of total, 15.89 percent belonged to AJK. 7.3 percent belonged to KP. Other provinces have fewer share in sample survey. The province wise-distribution of migrant workers is given in Table 2.6.

Table 2. 6: Province Wise Distribution of Migrants

Province	Punjab	Azad Jammu &Kashmir	Khyber Pakhtunkhwa	Islamabad	Gilgit Baltistan
No. of Migrants	410	93	43	26	9

Source: Survey (2019)

2.3.16 Socio-Economic characteristics of the Sampled Migrant Workers

Table 2.7 gives detail of average age of the migrants, their education and skill level, their number of dependents etc.

Table 2. 7: Socio-Economic Characteristic of Migrants

Indicator	Value
Average age (years)	29
Unmarried	347
Married	238
Urban migrants	163
Rural migrants	422
Skilled	62
Unskilled	441
Semi-skilled	68
Highly skilled	14
No education	128
Primary education	55
Secondary education	99
Matric	143
Above Matric	160
Average No. of children	03
Average No. of dependents	07
No. of migrants employed (S. E. Said & D. A. J. B. Dickey)	29

Source: Survey (2019)

The source of job information abroad for these migrant workers is relatives, friends, sub-agents, broker and OEP or direct recruitment. The distribution of the emigrant workers with respect to source of job information (abroad) is given in Table 2.8.

Table 2. 8: Present Source of Recruitment

Source of Recruitment	Friends /Relatives	Sub-agent/ brokers	OEP	Others (direct, through internet etc.)	Total
No. of Emigrants	180	215	26	164	585

Source: Survey (2019)

As per sample survey, number of migrants moving aboard though sub-agents//brokers are about 83% higher than friend/relatives are. In finding of the survey, we conclude that friends/relatives are major source of exploitation in terms of cost of migration. However, in case of earning, we may have reverse results. As reported by (Nasra M Shah, 2000) in a survey of 800 South Asian males employed in Kuwait, 34% moved thought friends/relatives, but earned a higher salary compared to those who moves through agents. It is true to state that knowledge about channel of recruitment has key association with degree of success of migration.

The total migration cost is divided into fourteen components namely, the visa cost, agents fee, transports both inland and international transport cost, the contribution in worker's welfare fund, the payment for making passport or renewal fee, medical test fee, insurance premium charges, the OEC fee and other petty charges for briefing fee, clearance, fee, exit fee etc. A look on the components of the cost help in formulating polices to address specific issues. The findings of the survey (Table 2.9) indicate that visa fee (for each destination country reported by potential migrant) is the major components of total financial cost of emigration.

Table 2. 9: Migration Cost Estimates by Components

Components	Visa fee	Chagres/ Agent Fee	International transport	Inland transport	Others	Total
Percentage Share	74	7.52	6.02	4.53	11.93	100

Source: Survey (2019)

The visa fee is about 74 percent of total migration cost. Earlier in 2011, the visa fee was very high for the KSA and the UAE. In KSA, this trend continued to persist until 2015-16. Subsequently, the visa fee (work visa fee) has declined, as there were certain other levies on expatriates, which raised the cost of living in KSA. The levies include implementation of Saudi tax and an increase in fee for the renewal of iqama (new fee

is 1000 SAR per year). Due to increase in these levies, the expatriates were less interested in buying work visa for the KSA. As a result, the work visa fee declined. The high renewal of iqama fee has reduced the demand for work visa. Ultimately, the demand for the work visa has reduced. As a result, the visa fee has declined. This is the reason that during the survey time, the work visa for the security guards, guard, housekeeper and the drivers etc. was available at relatively cheaper rates.

In our sample, visa fee accounts for 74 percent of the total investment by the emigrants (reported in Table 2.12). The workers reported that on average they paid PKR. 2,68,823 for work visa in KSA and PKR. 2,34,62 for the UAE. However, it is important to indicate that majority of the workers moving for the KSA reported that they are unskilled. Therefore, majority of them obtained the visa of security guard and other laborious tasks. On average, for the period under report, work visa for such type of work was available at least from PKR. 90,000. Due to involvement of many agents and middlemen, visa processing starting fee paid by workers is many times high then actual fee. On average, the visa fee that the migrant workers paid ranged from PKR. 1,00,000 to PKR. 3, 00,000.

The second highest cost source of cost is the agent fee. The migrants reported that on average they paid PKR. 32,000 for the agent fee. The workers who were moving for KSA and the UAE, the average agent fee is PKR. 36,000 and PKR. 27, 000 respectively. The high variation in the agent fee[19] from individual to individual indicates that the agents do not charge same fee from all the migrants. The fee also depends on whether the visa has been processed through a relative, friend or a licensed OEP.

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[19]If there are more than one agent involves in provision of services, only the aggregate charges are included.

In our case, if the visa has been processed through an OEP, the agent fee is less then visa processing through relatives or friends. Additionally, in this survey, the emigrants are divided into two parts i) those who financed cost of migration by themselves and ii) the others, who borrowed money to finance cost. Table 2.10 gives the detail in respect of source of finance.

Table 2. 10: Migration cost estimates by components

Source to finance migration cost	No. of emigrant workers
Self-financed	482 (83 percent)
Borrowed Money, from:	Total= 93 (17 percent)
i) from family	64
ii) from friends	16
iii) from money lenders/ OEPs etc.,	23

Source: Survey (2019)

Out of the total respondents, 83 percent financed the cost by themselves. They financed it either through their current income, past savings or by selling assets. 17 percent emigrants borrowed money other than their own assets. Out of total 17 percent, 11 percent of the respondents have to pay interest on their borrowed amount. The emigrants were also enquired about the time they spent to find a foreign job. The higher the time spent on finding a new job, means more private opportunity cost. The detail of time-spent on searching for a foreign job is given Table 2.11.

Table 2. 11: Time-Spent to Connect to Foreign Job

Time spent to connect with foreign job	Response: percentage of migrants
Up to 1 month	35
2 months	15
3 months	36
4 months	7
5 months	4
6 months or above	3

Source: Survey (2019)

To calculate the private opportunity cost, the migrants were also asked about detail of their education, level of skill, employment status, monthly earnings and time (number of hours spent) was it full days or part-time training, and money spent on training (s) / skill (s) acquired, the information about the salary-cut if was applied by their employer, in case of current employment (in Pakistan).

Table 2. 12: Descriptive Statistics for the Total Emigrants Employed in Pakistan

Total Employed Emigrants	168
Average hours per day spent learning skill	2
Average time spent learning skill	6 weeks
Average payment for skill	PKR. 7049
Average wage-cur bearded during leaning skill	PKR. 5500
Average job search time	2 months
Minimum job offer during job search time	1
Maximum No of job offers during foreign job search time	2
Average receipt time of other job offer during foreign job search	after 1 month
Average wage offer during job search time	
Average other charges (internet surfing etc)	PKR. 800

Source: Survey 2019 (by the author)

To present the acquired information, the emigrants were distributed into two groups: employed (in Pakistan) at the time of survey, and non-employed. From among employed migrants, there were emigrants who learn skill, by making payment from where they learn skill, spent some hours/days to learn it, beard transport cost/travel time, to match themselves with foreign job. Some employed emigrant learn skill without payment but faced the other costs, and some emigrants who were employed in Pakistan but did not learn the skill at all (as they did not need, or they were not aware of the job requirement). Similar cases were found for the unemployed workers. Details are tabulated below (Table 2.12 to 2.19) both for employed and non-employed emigrants. All this exercise will support calculation of private opportunity cost of emigration workers.

Table 2. 13: Descriptive Statistics for the total emigrants employed who learnt skill with payment in Pakistan (at the time of survey)

Total Emigrants	**53**
Average hours per day spent learning skill	2
Average time spent learning skill	4 weeks
Average payment for skill	PKR. 7049
Average wage-cut bearded during leaning skill	PKR. 5500
Average job search time	3 months
Minimum job offer during job search time	1
Maximum No of job offers during foreign job search time	2
Average receipt time of other job offer during foreign job search	after 2 month
Average wage offer during job search time	
Average other charges (internet surfing etc.)	PKR. 800

Source: Survey 2019 (by the author)

Table 2. 14: Descriptive Statistics for the total employed emigrants (learnt Skill without payment)

Total Emigrants	**9**
Average hours per day spent learning skill	4
Average time spent learning skill	8 weeks
Average payment for skill	PKR. 7049
Average wage-cut bearded during leaning skill	PKR. 5500
Average job search time	2 months
Minimum job offer during job search time	1
Maximum No of job offers during foreign job search time	2
Average receipt time of other job offer during foreign job search	
Average wage offer during job search time	after 1 month
Average other charges (internet surfing etc.)	PKR. 800

Source: Survey 2019 (by the author)

Table 2. 15: Descriptive Statistics for the employed emigrants (without learn skill)

Total Employed Emigrants who did not learn skill	106
Average job search time	2 months
Minimum job offer during job search time	1
Maximum No of job offers during foreign job search time	2
Average receipt time of other job offer during foreign job search	
Average wage offer during job search time	after 1 month
Average other charges (internet surfing etc.)	PKR. 800

Source: Survey 2019 (by the author)

Table 2. 16: Descriptive statistics for emigrants who were unemployed in Pakistan

Total unemployed emigrants who did not learn skill	398
Average job search time	2.5 months
Average job search hours per day	2 hours
Minimum other job offers during job search time	1
Maximum no. of other job offers during foreign job search time	2
Receipt time of first other job offer during foreign job search	One month after foreign job search
Wage offer during job search time from first offer	PKR. 10000-14000
Wage offer from 2nd job offer during job search period	
Receipt time of 2nd job offer	PKR. 16000
	3 months after
	foreign job search
Average other charges (internet surfing etc.)	PKR. 700

Note: * indicates that payment is made for skill for those who learnt skill therefore from this aspect, the data of total unemployed and those who learnt skill is same. The difference in average payment for skill in both samples is due to small denominator for those learnt skills (19) and large for total unemployed (398). Only one respondent informed that he had two job offers and from second job he was offered 16000 Rs. per month. NA** indicates not applicable.

Table 2. 17: Descriptive statistics for emigrants who were unemployed in Pakistan

Total unemployed emigrants who learn skill with payment	15
Average time spent learning skill	2 hours per day for 4 weeks
Average payment for leaning skill	PKR. 8894.74
Average wage-cut bearded during learning skill	0
Average job search time	2.5 months
Average jib search hours per day	2 hours
Minimum no. of other job offers during foreign job search time	1
Maximum no. of other job offers during foreign job search time	1
Receipt time of first other job offer during foreign job search	One month after foreign job search
Wage offer during job search time from first offer	PKR. 10000-14000
Wage offer from 2nd job offer during job search period	No offer
Receipt time of 2nd job offer	NA*
Average other charges (internet surfing etc.)	PKR. 700

Source: Survey 2019 (by the author)

Table 2. 18: Descriptive statistics for emigrants who were unemployed in Pakistan

Total unemployed emigrants who learn skill without payment	4
Average time spent learning skill	hours per day for 4 weeks
Average payment for leaning skill	0
Average wage-cut beard during learning skill	0
Average job search time	2.5months
Average job search hours per day	2 hours
Minimum no. of other job offers during foreign job search time	1
Maximum no. of other job offers during foreign job search time	1
Receipt time of first other job offer during foreign job search	One month after foreign job search
Wage offer during job search time from first offer	PKR. 8000-12000
Wage offer from 2nd job offer during job search period	No offer
Receipt time of 2nd job offer	NA*
Average other charges (internet surfing etc.)	PKR. 700

Note: * indicates that payment is made for skill for those who learnt skill therefore from this aspect, the data of total unemployed and those who learnt skill is same. The difference in average payment for skill in both samples is due to small denominator for those learnt skills (19) and large for total unemployed (398). Only one respondent informed that he had two job offers and from second job he was offered 16000 Rs. per month. NA** indicates not applicable.

Table 2. 19: Descriptive statistics for emigrants who were unemployed in Pakistan

Total unemployed emigrants	417
Average time spent learning skill	2 hours per day for 4 weeks
Average payment for leaning skill	PKR. 405.28
Average wage-cut bearded during learning skill	0
Average job search time	2.5months
Average job search hours per day	2 hours
Minimum no. of other job offers during foreign job search time	1
Maximum no. of other job offers during foreign job search time	2
Receipt time of first other job offer during foreign job search	One month after foreign job search
Wage offer during job search time from first offer	PKR. 10000-140000
Wage offer from 2nd job offer during job search period	PKR. 16000.
Receipt time of 2nd job offer	3 months after foreign job search
Average other charges (internet surfing etc.)	PKR. 700

Source: Survey 2019 (by the author)

Table 2. 20: Summary of Descriptive Statistics for All Emigrants

Total Emigrants = 585						
No. of Employed Emigrants = 168				**No. of Unemployed Emigrants =417**		
No. of Employed Emigrants who Learnt Skill = 62			No. of Employed Emigrants who did not learn Skill = 106	No. of Unemployed Emigrants Learnt Skill = 9		No. of Unemployed Emigrants who did not learn Skill =398
No. of Employed Emigrants Learnt Skill with Payment = 53		No. of Employed Emigrants without Payment= 9		No. of Unemployed Emigrants Learnt Skill with Payment = 15		No. of Unemployed Emigrants Learnt Skill without payment =4
i. Average hours per day spent learning skill ii. Average payment for skill ii. Average job search time v. Average wage offer during job search time v. Average other charges (internet surfing etc.)	i. 2 ii. PKR. 7049 ii. 3 months v. After2 months v. PKR. 800	i. Average hours per day spent learning skill ii. Average payment for skill ii. Average job search time v. Average wage offer during job search time v. Average other charges (internet surfing etc)	i. 4 ii. PKR. 7049 ii. 2 months v. After 1 months v. PKR. 800	i. Average hours per day spent learning skill ii. Average payment for skill iii. Average job search time iv. Average wage offer during job search time v. Average other charges (internet surfing etc)	i. 2 ii. PKR:8894 iii. 3 months iv. One month after foreign job search v. PKR. 800	i. Average hours per day spent learning skill ii. Average payment for skill iii. Average job search time iv. Average wage offer during job search time v. Average other charges (internet surfing etc.)
						i. 2 ii. PKR. 7049 ii. 3 month v. After2 month v. PKR. 800

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2.3.17 Malpractices in Case of Violation of Rules: The Role of Institutions

There are strict penalties in case of violation of rules and regulation, under 1979 Emigration Ordinance. Violation is typically of; receiving bribes etc., for providing foreign employment; securing or providing employment to or for a person in any country; charging fee in addition to prescribed amount; a fake demand declared by OEP; receiving money or any other valuable thing to give foreign job; and the attempts to demand money or such things to give foreign job. Violations of rules may result in punishment with imprisonment of up to fourteen years; fine; or both.

Since the emergence of migration from Pakistan, many Pakistanis have availed benefits and opportunities for them and their families. Due to malpractices in recruitment process and visa mafia, the actual cost that migrants pay is much high then that the officially announced (ILO, 2016) . Besides other endeavors, Government is in process of finalization of 'National Emigration and Welfare Policy for Overseas Pakistanis'. Implementation of emigration policy will support to strictly monitor migration cost. Implementation of low-cost emigration policy will ensure smooth migratory process from Pakistan.

2.3.18 Common Reasons of High Financial Migration Cost

The visa cost is a service payment to an agent or a number of agents who provide assistance in obtaining visa. The agents may be either formal or informal. Formal agents include professional agents, brokers etc. The informal agents include the friends and relatives. The presence of agents or sub agents increases the cost of migration. The reasons for such a high cost include:

2.3.19 Source of information of job abroad and visa trading

In Pakistan, the visa market is semi-legal cum-illegal (ILO, 2016). The prices of various work visas with respect to the destination countries, duration of stay, skill requirements for the job are established in visa market. The elements that influence financial cost include i) awareness about the functioning of the visa-market ii) tapping the visa market and iii) the payment for visa. The working of visa market is here: some of the employers in KSA and the UAE project the future demand for the labor. The governments of these countries allow such employers to bring a specific number of demands for the workers[20]. To achieve the said purpose, these employers' issue specific number of visas for the projects. These employers sell the work permits in visa and informal markets. The intermediaries[21] buy work permit and visa from the employer and sell to the potential worker. The middleman may be an employer, or a licensed OEP registered with BE&OE in Pakistan, a subagent in Pakistan or any Pakistani migrant worker already working in the host country. The workers already working in host country buy visa for their relatives or friends in Pakistan. Therefore, they may overcharge. The survey in this study, found that the informal sources including friends or relatives are the most common source of finding a foreign job. Besides, a significant number of workers also opted to go abroad through sub-agents or the brokers.

As per sample survey, number of migrants moving aboard though sub-agents//brokers are about 83% higher than friend/relatives are. In finding of the survey, we conclude that friends/relatives are major source of exploitation in terms of cost of migration. However, in case of earning, we may have reverse results. As reported by (Nasra M

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[20]For example: due to Federation International de Football Association (FIFA) World-cup Qatar, there was a demand for 1, 00,000 Pakistani workers since 2015. The other project was Expo 2020, Dubai. The expo was an opportunity for a unique and international stage to the participant countries to engage themselves in cultural diplomacy. It was also an opportunity to interact with the residents of the host country and of other nations, the investors and related trade partners.

[21]The middlemen can be anyone who has good contact with both the employer and the potential worker.

Shah, 2000) in a survey of 800 South Asian males employed in Kuwait, 34% moved thought friends/relatives, but earned a higher salary compared to those who moves through agents. It is true to state that knowledge about channel of recruitment has key association with degree of success of migration. The study found that cost of migration is high if the source of job information is a sub-agent, a broker, the friend or relative of the broker. The results also support the fact that workers moving though the OEPs or recruited directly by the employers are less likely to be exploited. In other words, relatives, friends, sub-agents or the brokers are big source of exploitation.

2.3.20 Previous Job or work experience abroad

About 478 workers out of 585 respondents had no earlier experience of the foreign job. Those who move abroad for other than the first time are more likely to pay lower cost of migration. The reason is that the experienced workers[22] are more familiar with the required procedures of migration. They are in a better position to smoothly manage the processes of migration. The earlier experiences of the potential migrants help them to accurately anticipate inflated visa or agent fee.

2.3.20 Wage-Wedge

Wage wedge helps in explaining why workers are willing to pay the high migration cost (Abella, 2017). It indicates heterogeneity factors and initial conditions of emigrants which may affect individuals' propensity to stay in or leave any of the wage quintiles (Esmaeilzadeh et al., 2018).

The higher the wage-wedge, the greater incentive to migrate (ILO, 2016) . A higher investment is required to reap benefits of the higher return. While deciding to move

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[22]Those who have earlier foreign job experience.

abroad, potential migrants optimize their income, saving and investment technique. They do this according to the employment choices or possibilities at home and in host country. Therefore, high wage differential is positively related to high costs of migration (Abella, 2017).

2.4 Analytical Framework and Econometric Strategy

Just like any other decision, migration decision has certain costs. The overall cost of migration, in terms of its level of impact, can be broken down into the private cost and the social cost. On one hand, the social cost is macro-level cost faced by the society on migration of person. The social cost can be estimated through evaluation of efficiency of migration or the effect of migration on economic growth (Sjaastad, 1962). On the other hand, the migrant himself incurs the private cost. Private costs involve money and non-money costs (Sjaastad, 1962). It is a fact that migration cost is not progressive to its determinants (ILO, 2016) . The migration cost falls with the improvement in the skill level of the potential migrant worker. In other words, the semi-skilled and un-skilled workers are burdened with more migration cost then skilled-migrant-workers. Unfortunately, in Pakistan, more than 80 percent of migrant workers are low skilled. Due to their low level of skill, potential migrants face huge burden of cost of migration.

2.4.1   Theoretical Model

In this section of the study, the cost of migration is examined at the micro level. This study employs a factor price model based on Jevon's Law to accomplish its goals. The Law of One Price (LOOP) and the Place Premium serve as our foundation. The LOOP presupposes that homogenous goods will cost the same amount in various places. According to an economist who studies international trade, the costs associated with trading the good prevent prices from arbitrarily equalizing.

In order to transfer the trade model into model of international migration, we pre-suppose that wages equal the Marginal Product of Labour (MPL). By following for example, the work by Ortega and Peri (2014), we adopt the assumption of iceberg migration costs[23]. The no-arbitrage condition is:

$$w_i^{jk} . \delta_i^{jl} = w_i^{jl} . \delta_i^{jk} \quad .... 1$$

Where w_i^{jk} is the wage of a worker I who belongs to location and migrants to location k, w_i^{jl} are the earnings of this worker in location l with j,k,l∈S, the number of locations, and i∈N, the number of individuals. The δ_i^{jk} depicts worker i's overall costs of migrating from j to k, or to l correspondingly for δ_i^{jl}.

According to Jevons (1871), the no-arbitrage rule only applies to cases where the presumptions are clear. In this research, citing Persson (2008). We specifically refer to the labour factor. First, we consider workers to be wholly homogeneous. Second, the Law of One Wage is not applicable across time. This presents a challenge because we can only see the employee intermittently in both locations. On the one hand, we address this issue with location-based wage adjustments. On the other side, we do a robustness check that disallows gaps of more than a year between jobs. Assuming that (i) unobservable income effects are stable over time (ii) marginal effects of an additional year of observables on wages are negligibly small (iii), (iv) the emigrants are well-informed (v) average expectations are not consistently out of line, and (v) perfect information regarding wages and job conditions is available in the host countries.

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[23]Iceberg trade costs were rest introduced by Samuelson (1954). Transportation costs are modeled as an additional portion of the imported good and therefore have to be 1 in case the good is sold in the same place as it is produced because no portion of the good is prone to be lost on the way.

Fourth, pre-supposing that the rational agents aim to maximize their utility. The proxy for utility is income, given the migration cost that complements mainly the economic incentives for migration.

Fifth, the market is open to everyone. This presumption suggests that there are no restrictions on Pakistani emigrants working in the host nation. This presumption might not be correct. The denial of this premise, however, might be viewed as an institutional barrier that is a component of the expenses associated with migration. In the event that there are no variable markups, the sixth and final position. Consequently, the wages are a reflection of the worker's marginal product. Returning to our model after rearranging:

$$\frac{w_i^{jk}}{w_i^{jl}} = \frac{\delta_i^{jk}}{\delta_i^{jl}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.2$$

We replace l by j for workers earning wages in their home country i, e Pakistan. It reflects that there are no migration costs either in form of the financial or non-financial, which yields:

$$\frac{w_i^{jk}}{w_i^{jl}} = \frac{\delta_i^{jk}}{\delta_i^{jj}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3$$

We assume that migrant workers are paid according to their marginal products. This marginal product at least covers all the financial and non-financial cost; hence, migration is positive. We can, therefore, say that marginal products are proportional to migration costs δ. We model migration costs as a multiplicative factor of the wage received in the home country. Therefore, migration costs are 1 for a worker who stays and does not incur any costs of moving to another location, i.e.δ_i^{jj}=1. In contrast, it is plausible to expect greater than one migration costs greater than one for the migrants and accordingly higher wage in host country. Hence, equation 3 can be re-written as:

$$\frac{w_i^{jk}}{w_i^{jl}} = \delta_i^{jk} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 4$$

Equation 4 indicates that in presence of positive migration cost, wage-differential is equal to the migration cost. The Mδ_i^{jk}PL at destination is the product of the Marginal Product of Labour (MPL) at origin and the costs of migrating. The migration costs depend on a vector of potential cost shiftersx_i^{jk}. As migration costs are assumed positive, they are specified as an exponential function (Bogatzki & Sirries, 2016).

$$\delta_i^{jk} = ex\,p\big(\beta_o + x_i^{ojk} + \beta_1 + \varepsilon_i^{jk}\big)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 5$$

Whereβ_0 denotes a constant and ε_i^{jk} is an error term that is uncorrelated with the repressors with expectation 0. The vector of parameters of interest corresponding to the variables included in $x_i^{jk}$is β_1. Taking logs, we arrive at:

$$lnw_i^{jk} - lnw_i^{jj} = \beta_o + x_i^{ojk}\beta_1 + \varepsilon_i^{jk} \dots\dots\dots\dots\dots\dots\dots\dots\dots 6$$

Place premium $\delta_i^{jk}(x_i^{jk})$ is referred as migration costs. The purpose is to estimate the extent to which migration costs can be explained by some particular x_i^{jk}included inx_i^{jk}. In other words, we want to recover the marginal effects $\partial\delta_i^{jk}/\partial x_i^{jk}$of the variables. Simply, the left-hand side of equation 6 reflects the financial cost. The right-hand side term shows the determinants of financial cost. The same model is replicated for the private opportunity cost and its determinants. With this background, the empirical model shall be estimated separately for the financial and private opportunity cost of migration.

2.4.2 The Econometric Model for the Financial Cost of Migration

For the present study, we begin by financial cost of migration. On left hand side of equation 1, there is the variable of financial cost. Following theoretical literature of

(Sjaastad, 1962), this variable is constructed by adding the components of recruitment cost, the transportation cost and the documentation cost. These components are described in Table 2.7.

The previous discussion on cost of migration explains, that number of visits of the source of job, past experience of overseas job, higher wage-differential (if a migrant was employed in Pakistan: the earrings differential between job in Pakistan and expected earrings from abroad), source of information of foreign job, contribution of employer in cost support to explain why migrants are paid whatever it cost to migrate. However, gender did not affect the cost of migration in any way. At the micro-level, the migrants were different in terms of employment status in Pakistan; level of skill; gender; dependency, spending time and money in job search, acquiring skill to match themselves with foreign job, spending and time on travelling to acquire that required skill.

To further probe the role of these factors and other possible socio-demographic variables, econometric techniques are applied. Two broad analyses are done. Firstly, with total financial cost of migration (after adjusting for reimbursement of some components of financial cost such as visa fee, medical fee or international transportation cost, wherever applied). Secondly, with private opportunity cost of migrants, after dividing the sample data into two categories: number/category of migrants who were employed when they accepted the foreign job offer, number/category of migrants who were not employed when they accepted the foreign job offer. The detail is as under:

Re-writing equation 6, given above, by incorporating the determinants of financial cost, we get the following:

$$TFC_i = +\beta marr + \gamma edu.status + \delta emply.status + \varphi no.ofdepend +$$

$$\tau area.belong + \pi info.source + \vartheta no.ofvisit + \theta empyer.share.cost +$$

$$\delta wage.wedge + \epsilon \qquad\qquad 1$$

Where, TFC_i stands for the total monetary of migration. The financial cost has thirteen components in total. The socio-economic and demographic determinants of the financial cost of migration include, i) marr which represents marital status of migrant ii) education level, namely $edu.status$ iii) employment status $emply.status$ iv) area of belonging i.e. $area.belonging$ v) information source of finding job from abroad i.e. job $infr\_source$ vi) number of visit either first or second namely, $no.ofvisit$ vii) the share of the employer in the total cost namely $emplyer\_share$ viii) number of dependents that a migrant has including children if the migrant is married, namely, $no.ofdependents$ xi) the wage wedge.

2.4.3 Econometric Model for Private Opportunity Cost of Migration

Empirically, the present study is pioneer to identify determinants of private opportunity cost of migration decision. The econometric model for private opportunity cost is presented below:

$$OC = \alpha + \beta age + \emptyset marr + \gamma edu + \vartheta emp.stat + \delta sourc.finance +$$

$$\infty wage.wedge + \epsilon \qquad\qquad 2$$

In equation 1, the dependent variable is the private opportunity cost. The right-hand side contains determinants of private opportunity cost of migration. The determinants of the private opportunity cost of migration are based on the theoretical literature (for example: Sjaastad (1962), Wadycki (1974)). The demographic and socio-economic determinants of private opportunity cost include i) age of the migrants ii) marital status iii) education iv) employment status in Pakistan v) source of financing the cost of

migration and vi) the wage-wedge. As the variable of opportunity cost and its determinants are purely migrant-specific, therefore aggregate analysis of all 585 observations is good enough to draw conclusions.

2.5 Estimation Methodology

The study focuses on identifying components and determinants of cost of international migration. The emigrants can move aboard either directly or through an Overseas Employment Promoter (OEP). The mode of recruitment creates difference in financial cost. In practice, malpractices in visa markets, presence of agent mafia are common reasons of high financial cost.

On the part of the emigrants, low levels of skill and awareness are important factor of high financial cost. Therefore, the financial cost is determined mainly by education, skill, mode of employment of the migrants. Important to indicate that the composition of private opportunity cost of the decision of migration includes certain factors which vary from each migrant to migrant. However, the being private, there does not exist any institution to fix the private opportunity cost or officially declare it. It is purely a micro-economic concept that needs accurate information directly from individual migrants, to compute it. The private opportunity cost has never been computed, analyzed earlier. Unfortunately, no institutional set-up exists to control private opportunity costs. It depends on the education, skill, marital status, etc., of the emigrant including their personal traits as well.

In this study, the objective is to find socioeconomic and demographic determinant of financial and private opportunity cost. Education of emigrant is one of the important determinants of cost of migration. Dickson (2009) clearly identifies that in modeling the "returns to schooling (schooling is education)", endogeneity of schooling is a

problem. However, we do not find any theoretical or empirical evidence of endogeneity in modeling the education as a determinant of cost of migration.

In our study, the determinants of financial cost, bedsides other include the education of the migrant that is suspected to be endogenous therefore; we test for endogeneity of this variable[24]. If there is endogeneity, the use of OLS will produce biased estimates (Shepherd, 2008). In such case, we shall switch to Two-Stage-Least Square Estimation technique. To detect endogeneity, first we run regression by regressing education of migrant on all exogenous variables in the model. In short, we estimate if: Education (of emigrant) =f (all exogenous variables), if outcomes support presence of endogeneity in model, then traditional Ordinary Least Square (OLS) will not give reliable estimates.

To obtain accurate estimates, 2-Stage Least Square will be used. The use of 2SLS estimation technique will require instrumental variable. In literature, alternatives instrument has been used to tackle endogeneity issue of education. For instance, Dickson (2009) indicates that rise in minimum school leaning age and early smoking behavior as valid instruments for education. However, for the study where we are taking financial cost as dependent variable, no previous evidence is available regarding endogeneity of education or any instrument if financial cost is taken as dependent variable. We use the education of father as an instrument for education of the migrant[25].

In case there is no endogeneity, simple OLS will work well. In linear regression model, ordinary least squares (OLS) is a type of linear least squares used to estimate unknown parameters.

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[24] There may be some omitted variables as father's education, etc.
[25] No empirical evidence exists to know what right instrument is if we are interested in finding either education is a valid determinant of financial cost of migration or not.

The OLS chooses specific parameters for the linear function of explanatory variables by adhering to the principle of least squares. It does this by minimizing the sum of the squares of the differences between the values of the variable that is the observed variable in a given dataset and by minimizing the sum of the squares of the differences between those values. Only exogenous regressors make the OLS estimator consistent. The OLS estimator performs well when errors are serially uncorrelated and homoscedastic, according to the Gauss Markov theorem. As a result, if these requirements are satisfied and errors have finite variance, the OLS estimator provides least variance mean-biased estimate. If errors are normally distributed under these assumptions, OLS will be normally likelihood estimator.

2.6 Data and Variables

This section provides the detail of data and construction of those variables that are used for the analysis of the financial cost and the private opportunity cost of migration. The total financial cost has fourteen (14) components, which are added up to get it financial cost. Table 2.20 provides the detail:

Table 2. 21: Components of the Financial Cost of Migration

Sr. No	Components
1.	Visa fee
2.	Agent's fee
3.	International transport
4.	Inland transport
5.	Medical fee
6.	Passport fee
7.	Contract fee
8.	Insurance fee
9.	Briefing fee
10.	Clearance fee
11.	Exit fee
12.	Workers Welfare Fee
13.	Biometric Fee(for KSA & UAE)
14.	Others(form download fee, etc)

Source: BE&OE (2020).

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2.7. Socio-economic and Demographic Determinants of financial cost

In section 2.3.3, the left-hand side of equation 1 contains the socio-economic determinants of the financial cost. These determinants include the i) marital status, ii) place of belonging, iii) education level, iv) employment status in Pakistan, v) number of visits abroad vi) source of information of job and v) the wage-wedge. A there is no empirical evidence of any research on socioeconomic and demographic determinants of financial cost of migration. Therefore, in this part of study we followed Sjaastad (1962) and extracted from the theory of human capital. The detail of the determinants of financial cost of migration is given below:

Marital status: Following the theoretical studies of G. Arif (2004) and P. Martin (2014)the present study has included marital status as a determinant of the financial cost. The married people generally are more desperate to search for foreign job. They are also ready to pay higher cost to go abroad for job (G. Arif, 2004). Marriage has significant positive impact on cost of migration. The reason being that the married migrants have more responsibilities therefore, they are keener to find a foreign job. They borrow money even at high interest rate to meet expenditures of migration. Many low-skilled workers are in debt when they actually depart (P. Martin & Sirkeci, 2017; P. L. Martin, 2016). To repay the loan, they overstay abroad or opt second work. A huge investment, by married worker, in joining foreign job reflects the keenness to support their family (ILO, 2016) . Therefore, marriage and the financial cost of migration are directly linked.

Education: Although not necessary, but most often, migrants are often better educated than non-migrants (Dahl, 2002; Deichmann et al., 2009). Education helps migrants to search, know and learn about foreign jobs. Complete awareness about the

legal procedure to join the foreign job minimize the chances of (P. Martin, 2014). Following P. Martin (2014), this study takes education as a determinant of the financial cost. The coding scheme for the variables of the study is given in Table 2.8.

Employment status in Pakistan: Unemployed potential emigrants (in home country) may have to rely more on loanable funds to meet migration expenditures. They pay interest on the loans. The employed worker is capable enough to fulfill cost of migration out of his own earnings. Therefore, his borrowing need is either little or zero. Therefore, the unemployed pay greater cost of migration (ILO, 2016) . Thus, being employed in Pakistan has negative impact on cost.In the present study, the emigrant workers have reported themselves as employed or not employed, in Pakistan. Therefore, employed emigrants will have fewer borrowing needs leading to low repayment of loan.

Area of belonging: Recruitment of the low-skilled and semi-skilled workers from rural area is a major source of exploiting G. Arif (2004). The migrants who belong to the rural area are more likely to be exploited. In present study, the potential emigrant workers belong either to urban areas or to the rural areas.

Source to find job abroad: An alternate way to match workers and jobs is through social networks (P. Martin, 2014; P. L. Martin, 2016). Potential migrants usually rely on the information passed by i) the migrants already working in host countries or ii) the return migrants. Other than migrants, there are the private recruiting agents or the subagents to learn about the foreign job (S. F. Martin, 2014). Therefore, source of foreign job information is very important in modeling the cost structure of migration. Workers can proceed abroad either directly or through Overseas Employment Promoters (OEPs).

The main sources of information of a foreign job include friends or relatives abroad and sub-agents or brokers. Government licensed OEPs bring demand for foreign job. The OEPs are trustworthy source of information about overseas (GoP, 2020). Being intermediaries, however, the formal sources of foreign job inherently carry bleak chances to the exploit migrant workers. The theoretical literature supports the fact that if the source of foreign job is relatives and friends or sub-agents or brokers, the financial cost of migration might be high. This result is due to their non-accountability to any institute.

Number of Visit abroad: Employees who have not been overseas prefer to worry of international income and foreign living expenses. They also exaggerate the economic benefits of working abroad and encourage themselves them to pay higher fee (P. L. Martin, 2016). This may be the primary reason that the intermediaries may trap them. Therefore, the first time-movers are more likely to be exploited in terms of high cost of migration. The emigrants who move abroad other than first time are well aware of migration process and related information, therefore, have less chances of exploitation.

Employer's Contribution in Cost: The share of employer in cost tends to decline as the skill-level of migrant workers fall (P. Martin (2014). In case, if employers, either fully or partially, pay the recruitment costs, it will reduce the migrant-paid share of cost (P. Martin (2014). Therefore, the emigrants who gain significant contribution of employer in cost are likely to pay less financial cost of migration (ILO, 2016).

Wage-Differential: The maximum fee that a migrant is willing to pay to for job abroad depends primarily on the size of wage-gap (P. Martin et al., 2004). The wage-wedge indicates the difference between wages in Pakistan for employed migrant, and his expected wage from foreign job. Following the theoretical studies, for instance study

by P. Martin et al. (2004) wage-wedge is taken as determinant of the financial cost of migration. The greater wage-wedge indicates the expected earnings from abroad will also be higher, in turn; greater will be the financial cost of migration.

Number of dependents: The numbers of dependents of the emigrants determine the intensity of finding or joining a foreign job. On the pattern of married migrants, those potential emigrants who have more family members as their dependents, they have higher chances of obtaining loan as higher interest rate. The greater the number of dependents the high is the cost (ILO, 2016). Therefore, the number of dependents and the financial cost of migration are positively linked.

2.7.1 Construction of Variable of Opportunity Cost

The variable of private opportunity cost incorporates both the money cost and the time cost of opportunities during travelling, searching and learning a new job (Sjaastad, 1962). Following Sjaastad (1962), the observable components of the private opportunity cost of migration, for this study, include three components that include i) monthly earnings of the respondents, in Pakistan before migration ii) the training cost iii) cost incurred in learning new skill or language and iv) travel cost to learn new language or new skill or taking skill test. All these activities entail time as well. Therefore, a discounted time factor is also involved.

Table 2. 22: Coding Scheme of Variables

Variables	Coding Scheme
Age	1 if < 25 years, 2 if 25-29, 3 if 30-34 …. and 8 if 55-59
Marital Status	1 if married, 0 otherwise.
Education	No education is base category, 1 for primary, 2 for middle, 3 for matric,4 for FA/ FSC/Equivalent,5 for BA/BSC/ Equivalent, above.
Employment status	1 if unemployed, 0 otherwise
Area of Belonging	1 if rural, 0 urban
Source to find foreign job	1 for friends/ relatives, 2 for subagents /brokers, 3 for OEPs, ,4 for others (including direct recruitment or through internet)
No. of visit abroad	1 if first visit, 0 otherwise
Employer's Contribution	1 if employer contributed in cost, 0 otherwise
Wage-Wedge	Difference between wage in Pakistan and expected earnings from abroad in Pakistan Rupees.
No. of dependents	No. of persons dependent on migrant including children if migrant is married.

Source: Author's own findings.

The variable of the private opportunity cost has been constructed on the following lines: Initially, whole data has been divided into two categories: i) employed and ii) the unemployed. Out of total 169 employed individuals, 106 reported that they did not learn skill at all to join job aboard. However, 52 out of total were those learnt skill with payment for the skill and 09 reported that they learnt skill with payment. Therefore, out of the total employed, there are further three categories of individuals i) those who are not learning skill ii) those who are learning skill with payment or iii) those who are learning skill without payment. Present discounted value of the private opportunity cost (of foregone opportunities at time of decision to migrate) is given below:

2.7.2 Present value of opportunity cost of employed not learning skill:

The components through which the variable of opportunity cost is created includes: i) exact number of hours spent on learning skill (=0 in this case) ii) payment for learning skill iii) travel charges and iv) other payments including net surfing etc. (= 0 except for net surfing etc.,) v) per hour wage cut (= 0 in this case as no skill learnt) and vi) receipt of any other job offer during search for job abroad and per month wage offer from that job offer. (Table 2.20 and 2.21 in appendix help to calculate these values). To construct the variable, certain calculation is required: the running wage rate of emigrant is per month 15000 Rupees for 48 hours' service per week. His per hour wage rate is 12000/48(4) = 62.5 per hour salary if he searches for foreign job for 4 months.

The job search time is total 04 months. He spends two hours per day to search for foreign job[26]. Therefore, his private opportunity cost based on his initial wage is simply (30) (62.5) = PKR. 1875 per month. Here 30 represents first 30 days of job search during which he had no other job offer and 62.5 indicates his opportunity cost of wage rate for first month. To proceed further, the present discounted value of initial wage is per month discount rate is required. The average discount rate is 12.5 percent for the year 2019 which needs to be adjusted per hour so 12.5 percent /12 (3) =0.75 percent, where 3 indicates the total job search months. To calculate the present value of opportunity cost at initial wage rate (until no further wage offer), we apply the formula of the present discounted value. The private opportunity cost on initial wage rate/ $(1+r)^n$ = (1875)/ (1+0.75percent)1= PKR. 1861.04 PKR[27].

After one month of foreign job search, the emigrant got an offer (in Pakistan) at wage rate PKR. 15000. The migrant does not accept it as he desperately wants to move

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[26]Job search months and hours vary from person to person and category to category.
[27]

aboard. In his case, there is a need to discount his stream of wages as well as it would also become the part of foregone earnings. The reason is that he could have availed this opportunity, have he not carried-out his present job or has he not carried-out his search for foreign job. Therefore, now the per hour wage rate (with new higher offered wage) is 15000/48(4) = 78.13. The private opportunity cost from first job offer after one month of job search = 78.13(60) = 4687.50 where 60 indicates the remaining days (2 months) after first job offer. Again by applying discounting formula, 4687.50/ (1+0.75percent) n=6978.90 PKR., where n=1, 228.Similarly, the present value of other charges (like net surfing charges etc.,) for three months of job search, are 900/ $(1+0.75)^3$= PKR. 1793.

Lastly, total discounted opportunity cost for all foregone opportunities for an employed person not learning skill but searching for foreign job for three months and getting a job offer after first month of job search = 1861.04+6978.90+1793 = PKR 10,632.94.

2.7.3   Present value of opportunity cost of employed learning skill:

Those employed who are learning skills with payment are spending time on job search and time learning skill, making payment for it and either bearing wage cut or not. The matter of wage-cut is more of a mutual understanding between the employer and employee. If there is no wage cut, then there are no changes in the procedure to get present discounted value of all foregone opportunities. If wage-cut applied (computed on hourly basis), then in 3, it is added with other charges and then applied the discounting rate formula.

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[28] Because one month has passed from total three months of job search then the individual got other job offer. if anyone got two job offers during foreign job searching period, then both offers are taken are forgone opportunities, the procedure to obtain the opportunity cost with 2nd job offer is same as for first job offer.

2.7.4 Present value of opportunity cost of Unemployed learning skill or not:

As the unemployed emigrant is not getting any wage rate, therefore there is no present discounted value of his initial salary. Therefore, the term in equation (1) in section 2.3.4.1 with zero wage-cut either learning skill or not. The rest of procedure calculation is same[29].

2.7.5 Determinants of Private Opportunity Cost of Migration

The detail of determinants of the opportunity cost, given in section 2.3.4 equation 2 is as follows:

Age: Productivity profile of workers changes overtime (Skirbekk et al., 2003). One indicator of productivity is age that is either directly or inversely proportional to the private opportunity cost. A higher age reflects more productive migrant indicating that he would be having expertise, skills and experience towards a single or multiple tasks. The opportunity cost is low if he is having a job offer, which is similar to his expertise, otherwise high. However, elderly individual may spend more time, then young ones, in finding new job, learning new skills or language. Thus, the private opportunity cost may be high. Following (Gurban & Tarasyev Jr, 2016) the present study uses three age groups of migrants within age of economic activity (15-59): where, Y (15-29) for young-age group, M (30-44) middle-age group and O (45-59) older age group.

Marriage: Marriage increase responsibilities. Therefore, a marriage is expected to have positive impact on the private opportunity cost of migration.

Education: Positive correlation between education and propensity to migrate are well-established in literature Sjaastad (1962). Education improves productivity (Horigan et

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[29] Descriptive statistics of the present discount value of the employed and the unemployed are reported, in appendix B, in Table 2.9 and Table 2.10.

al., 2017). Low level of education slows down the economic growth. It damages the earnings of low or un-skilled workers thereby increasing poverty (Akbari & Hyder, 2012). Generally, highly educated people had spent time and money on attainment of education. Being employed (in Pakistan) and more productive (in terms of education), if a worker makes his mind to forgo current wages, he bears high opportunity cost[30]. However, more educated means more vigilant and technically more expert in finding job abroad. Therefore, they can manage to get trainings, learn skill or learn language so it is likely that they may spend less time to fulfill other formalities. Therefore, their opportunity cost of time is low. Finally, the dominant effect leads.

Employment status: Employed workers (in Pakistan) have more opportunity cost of migration as he must be earning some wages from his employment. However, unemployed worker must be earning zero wages so his opportunity cost in terms of wage is zero.

Wage-wedge: Lower the wage-wedge the higher is the monetary opportunity cost. In terms of time, with the similar amount of time spent by two individuals on same job abroad, will have different impact in terms wage cut they received[31]. Individual, who is getting more salary from Pakistan but spends more time to learn new skill etc., will get a greater wage cut so his opportunity cost is high.

2.7.6 Data

Data have been collected from the potential emigrant workers who have completed all formalities of proceeding abroad. These workers were approached in Protectorate of Emigrants office in Rawalpindi, when they come to get their visas stamped. According

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[30] They decide to forego high salary in Pakistan.
[31] By searching learning for foreign job, during their employment in Pakistan.

to the literature, at time of making decision to move abroad, the migrants have taken all the decisions and they perfectly know the financials cost they paid. They are also willing to forego all available opportunities to join the foreign job. More, importantly, the non-financial cost is important until the migrants are in their home country, once they reach and settle abroad, these costs are automatically settled. A sample of 585 migrants, either they are low-skilled, semi-skilled or highly skilled (without specifying the country of destination) has been[32]. Most of the migrants were illiterate so the author personally filled the questionnaires. Questionnaire had different sections. Section 1 contained question related to demographic characteristics of the migrant worker, section 2 pertained to characteristics of his family, Section 3 involved migration-related questions country of migration, related cost etc., (Detail questionnaire is given in Appendix A).

2.7.7 Migration Cost: A Survey – Based Analysis

Migrants are concerned with welfare that they can obtain from destination countries as compared to their place of birth (Ortega & Peri, 2014). Pakistani emigrants are no exception. Migrants select countries where they find least cost but better opportunities. The study aims to find out the reason of high migration cost for the Pakistani migrant workers. Further, to identify the factor that are responsible to determine the financial and the private opportunity cost.

On basis of questionnaire, the primary data are collected. The author personally interviewed the potential emigrants. The questionnaires got filled from the potential migrants from the Protectorate of Emigrants (PoE) office, Rawalpindi. A total of 585 migrant workers have been surveyed and these workers are inquired about the various

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[32]Most of the migrants were illiterate so the author personally filled the questionnaires.

components of financial cost, and the private opportunity cost they paid or faced while taking the decision to migrate. The information regarding socio-economic and demographic characteristics of the potential emigrant workers helped in finding the determinants of the financial and the opportunity cost.

2.7.8 Defining Migration Cost for the Survey:

The migration costs for the survey are defined as 'financial cost involving all those financial expenses that are incurred by the migrant workers since their decision to migrate until getting visa stamped'. However, until time of getting visa stamped, the migrant worker has met all financials costs. These expenditures involve recruitment, documentation and transportation expenditures. The private opportunity cost that comprises the willingness of the migrant worker to forgo various opportunities while moving abroad.

2.7.9 Empirical Results and Discussion

This section provides the results of OLS estimation[33] applied on econometric model 1 and 2 described in section 2.5 respectively. Total financial cost (log) is dependent variable. Table 2.14 reports the parameter estimates for socio-demographic and economic variables for financial cost of emigration for our sampled survey. For robustness of results, three specifications are used.

2.7.10 Empirical Results of Financial cost

The OLS estimation results indicate marriage has considerably positive influence on cost of potential emigration. The coefficient of dummy for married migrant is positive in all three specifications, i.e., 0.01, 0.021 and 0.03. The result is insignificant in

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[33]Appendix C contains the details of endogeneity test and its results.

specification1.The cost of migration is high for married people because married workers have more household needs. To support family, married workers desperately struggle to obtain a job even if they are supposed to make extra investment to obtain that job (ILO, 2016) . The investment in migration decision may be high because of huge borrowing at high interest rate. This study has similar findings for those emigrant workers who have a greater number of dependents. As a result, the coefficient of number of dependents is positive i.e., 0.11 and statistically significant.

On the other hand, the potential educated emigrants typically pay more financial cost. The reason may that 'more educated migrants have greater return to move' (Martin, 2014). Therefore, they need to invest more. The other possible reason may be that the visa cost is typically high for better job opportunities meant for the more educated people. Therefore, high visa cost ends up with high financial cost of migration. However, in this study, the variable of education is found to be insignificant in all three specifications. The reason being that majority of workers are low-skill or unskilled therefore, education level does not matter for their foreign jobs. Similar is the case with those emigrants who are already employed in Pakistan, before migration.

Area of belonging of emigrants reflects their socio-economic status. Estimation results indicate a low cost for a rural migrant as compared to the urban. This result, however, is not statistically significant. One of the possible reasons for this result may be that rural migrants have their effective network of information abroad. This network facilitates them to sought information from aboard. On pattern of transition cost of trade, the network of migrants reduces the information-sharing cost. The network also reduces the chances of being exploited by intermediaries.

Table 2. 23: OLS Results (dependent variable log total financial cost)

Variable	1	2	3
married (1 if married, 0 otherwise)	0.01	0.021**	0.03**
education (1 if educated, 0 otherwise)	0.02	0.23	0.21
unemployed (1 if unemployed, 0 otherwise)	-0.01	-0.08**	-0.17**
area_ of _belonging (1 if rural, 0 otherwise)		-0.04	-0.05
source job_ information (1 if friends or		0.39*	0.41*
Employer share in cost (1 if shared, 0 otherwise)			-1.2**
wage wedge			0.09**
no. of job visit (1 if first job, 0 otherwise)			0.08
no. of dependents			0.11**
C	12.86*	12.65*	12.59*
R^2	0.40	0.40	0.42

Note: *, **, *** indicate significance at 1percent, 5percent and 10 percent level.

Potential sources of job information (or obtaining visa) include i) friends or relatives, ii) brokers or the subagents, iii) the OEPs and iv) internet. Friends or relatives are primary source of exploitation (ILO, 2016) . The reason is that unlike OEPs, the friends and relatives are not accountable at any forum. They may provide fake information about a foreign job. They may obtain visa at very cheap prices and sell it at extra ordinary charges in Pakistan. Therefore, if source of job information are friends or relatives, the financial cost of migration is high. These results are consistent with theoretical contribution of G. M. Arif (2009) in case of Pakistan. Foreign employer may contribute in the visa fee, the international transport, the medical fee or a combination of all these three, at least in this survey. The negative and statistically significant coefficient of contribution of employer in financial cost (i.e. -1.2) indicates that with a rise in share of the employer in cost, the financial cost tends to decline. The finding is also consistent with theoretical literature (for instance: P. Martin (2014).

Estimated coefficient of the wage-differential is positive and statically significant indicating that the financial cost rises with a high wage differential. The results are consistent with the empirical findings of the ILO (2016).

Results of OLS estimation with categories of education and source of job information are reported in Table 2.16[34]. The Table reports results with categories of education and source of information of job abroad. The insignificant results of the dummy for education confirm that the education has no significant influence on the financial cost of emigration, at least in this sample survey. One of the possible justifications for such an insignificant result is huge presence less-educated emigrant in sample survey. Besides, they possess low-level of skill, they trust on existing recruitment system and do not bother to evaluate it. They perceive that they are rightly paying whatever they are paying. Also, the educated people do not care to identify what is right cost.

In all specifications, the relatives (or friends) as source of the job information abroad (or for attaining visa) are taken as the base category. Positive and statistically significant coefficient of the sub-agents or the brokers (i.e., 0.22, 0.23) indicates that the financial cost of migration is high if source of information is a sub-agent or a broker. The negative and statistically significant coefficient of the licensed OEPs (i.e., -0.12, -0.13) and direct sources of foreign job (i, e -0.32, -0.50) indicate lower cost. The results confirm that the relatives (or friends) and sub-agents (or brokers) are the source of exploitation. In case of a licensed OEP, the cost is low. Such a low cost indicates that the OEPs are accountable to government of Pakistan (through the BE&OE) for the

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[34]In this sample data, there are three main host countries: the KSA, the UAE and the Oman. Therefore, the country-specific results for these three host countries are presented in Table 2.16, 2.17 and 2.18, *in Appendix D.*

payments they receive from the emigrants. In case of overcharging, the licensed can be cancelled or may be blacklisted. The results of the study are consistent with theoretical reasoning of G. M. Arif (2009). Moreover, our results are in-line with the empirical findings of the ILO (2016).

2.7.11 Empirical Results of determinants of private opportunity cost

Out of the total sample, 169 potential emigrants were doing job in Pakistan. Out of these, 95 did not learnt any skill for foreign job, 18 learnt skill without payment and 56 made payment to learn skill. Out of the total respondents, 417 respondents are unemployed in Pakistan. Out of the unemployed, 398 did not learn any skill a foreign job while 19 reported that they learnt skill. The empirical results for the determinants of the private opportunity cost both for unemployed and the employed are given below:

Table 2. 24: OLS estimation with categorical variables (dependent variable log TFC)

Variables	1	2	3
marital status (1 if married, otherwise 0)	0.013*	0.040*	0.043*
education categories (no education as base category)			
primary	0.035	0.07	0.07
middle	0.09	0.09	0.09
matric	0.122	0.16	0.02
FA/FSc/Equivalent	0.053	0.04	0.05
BA/BSC/Equivalent/Above	0.09	0.16	0.02
unemployed (1 if unemployed, 0 otherwise)	-	0.212	-
area of belonging (if rural=1, 0 otherwise)		-0.02	-0.02
source_ job information (friends/relatives is base			
sub-agent/broker		0.22*	0.23*
others (direct including through internet etc.)		-0.32*	-0.50*
Licensed Overseas Employment Promoters		-	-
Wage wedge dummy			0.05
Employer share in cost (1 if shared, 0 otherwise)			-0.3*
no. of visit (1 if first visit, 0 otherwise)			
first visit			-
R^2	0.413	0.405	0.421

Note: *, **, *** indicate significance at 1percent, 5percent and 10 percent level.

2.7.12 Private opportunity cost of unemployed potential emigrants:

Tables 2.16 indicate the impact of socio-economic and demographic determinants of the private opportunity cost. The dependent variable is the private opportunity cost. For a sub-sample of all unemployed, the coefficient of the marital status is positive and statistically significant i, e 0.295. For those who either learnt skill or not, the coefficients are positive and statistically significant i.e. 1.637 and 0.129. These coefficients indicate that marriage has positive impact on the private opportunity cost for unemployed emigrants. Primarily, the possible reason is that married people have more responsibilities compared to unmarried.

However, there are mixed results in case of education as a determinant of the private opportunity cost. For the sample all unemployed, the impact of education is negative (i, e -0.063) but statistically insignificant. Similar is the case with those who did not learn skill (i, e -0.0027). The negative impact of education on the private opportunity cost indicates that education has given rise to productivity of these individuals by reducing their job search efforts and time. The opposite is the case for those who learnt skill. The coefficient for such a category is positive i.e., 2.17.

Table 2. 25: OLS Results (dependent variable log PV Oppcost)

Variable	learnt_skill[35]	not_learnt_skill	All unemployed
marital status	1.637***	0.129***	0.295*
education dummy	2.17***	-0.139	-0.063
wage wedge	-0.003***	-0.0027***	-0.0014***
age categories (years)			
2 if 25_29	-1.73***	-1.72***	-0.275**
3 if 30-34	2.75**	0.089***	0.315***
4 if 35-39	0.138***	0.039*	0.272***
5 if 40-44	0.484	0.398***	0.567*
6 if 45-49	no observation	0.072*	0.349***
7 if 50-54	1.24***	-0.742	0.32***
8 if 55-59	no observation	0.651***	-0.393
Constant	8.99*	7.58*	7.68*
No. of Observations	19	398	417

Note: *, **, *** indicate significance at 1percent, 5percent and 10 percent level.

The coefficient of wage-wedge is negative and statistically significant. Wage-wedge reflects the difference between wage rate between expected wage-rate from aboard and wage- from Pakistan. For all these three categories of unemployed respondents, therefore wage from Pakistan is zero. This result indicates that wage-wedge is a negative determinant of private opportunity cost. Therefore, higher expected earnings from foreign job abroad, the lower is opportunity cost.

Different categories of age give mix results. For all three samples of unemployed, no observation falls, in the category of age less than the 25 years. For rest of the age categories, the results in all three estimations are consistent in sign and significance. The results suggest that with increase in age the productivity, experience and expertise rise. This rise in expertise creates positive impact on the private opportunity cost. Estimation results support this logic for the age categories 30-34 to 44-49.

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[35]Due to very low number of observations in category of those who learnt skill, no inference can be drawn from this analysis.

The impact of expertise for the early age category 25-29 is negative and statistically significant indicating that negative impact of early stages of age on the private opportunity cost. The result indicates that people in their early ages of settlement can afford to have lower opportunity cost. At later stages of age, 50-54 the impact of age is positive for all sample (0.32) and sample of unemployed with those who learnt skill (1.24). For the last working age category, the impact of age is positive on opportunity cost for those who did not learn skill but it is negative for whole sample. The conclusion is that age has positive impact on the private opportunity cost of workers, for a certain level of age, otherwise it is negative. Importantly, conclusion both for employed and unemployed prospective migrants, there is positive impact of education, marriage, expected wages and age on the private opportunity cost.

2.7.13 Private opportunity cost of employed potential emigrants

The empirical estimation for the determinants of private opportunity cost for the employed workers are reported in Table 2.18. Fora sub-sample of all employed, the coefficient of the marital status is positive and statistically significant. Similarly, like in case for unemployed, the coefficient of education is positive and statistically significant. However, the coefficient of wage-wedge has negative sign for those who did not learn skill (i.e., -0.0047), who learnt skill without payment[36] (i.e., 1.23) and for an overall sample of employed emigrants. The results are positive and statistically significant for those who learnt skill with payment (i.e., 0.008). These results indicate that from among the employed emigrants the opportunity cost is high for those who have learnt skill by making payment. The results may or may not be true for other sample; the reason is that private opportunity costs vary from worker to worker.

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[36]These are the workers who learnt/ were learning skill from the work they were already doing.

Table 2. 26: OLS Results (dependent variable log pv opportunity cost for employed)

Variables	Not learnt skill	Learnt skill Without payment[37]	Learnt skill with payment	All Employed
marital status(1 if married, 0 otherwise)	-0.630 ***	-0.596***	-0.099***	-0.246***
	(-1.65)	(1.78)	(-1.69)	(-1.78)
Education (1 if educated,0 otherwise)	0.253***	1.23***	0.519***	0.468***
	(1.74)	(1.64)	(1.65)	(1.69)
wage wedge	-0.0047**	-0.001***	0.008***	-0.0043**
	(-2.51)	(-1.93)	(1.65)	(-2.22)
age categories				
1 if (< 25)	no observation	0.0868***	no observation	no observation
		(1.71)		
2 if (25-29)	-0.365***	---	-0.278***	0.190***
	(-1.80)		(-1.87)	(1.69)
3 if (30-34)	0.203***	---	0.363***	-0.00065
	(1.87)		(1.93)	(-0.79)
4 if (35-39)	0.444***	---	-0.187	-0.385
	(1.69)		(-1.36)	(-1.01)
5 if (40-44)	-0.544	---	-1.23	-0.515***
	(-0.86)		(-1.32)	(-1.64)
6 if (45-49)	-1.287	---	no observation	1.15***
	(-1.02)			(1.84)
7 if (50-54)	0.035***	---	-0.441	0.119**
	(1.65)		(-1.45)	(2.12)
8 if (55-59)	0.160***	---	no observation	0.197
	(1.68)			(1.43)
Constant	9.350*	6.497***	10.48*	11.39*
	(25.92)	(1.64)	(11.63)	(15.63)
No. of observations	**95**	**18**	**56**	**169**
R^2	0.49	0.48	0.45	0.46
Adj-R^2	0.48	0.47	0.44	0.45

Note: *, **, *** indicate significance at 1percent, 5 percent and 10percent level. In the 2nd estimation there were no observations of age other than in category 3, therefore, the estimated coefficient represents this category.

2.8 Conclusion and Policy Recommendations

With technology and government cooperation that continue to reduce remittance costs, recruitment is new frontier to lower migration costs and raise pay-off for labour migration (Ratha et al., 2015). Pakistan has a high share of low-skilled migrant workers (drivers, security guards, etc.) and unskilled workers (agriculturists, laborers and farm laborers). Based on the findings of survey, it is found that Pakistani workers are either

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[37]Due to very less number of observations in category of those who learnt skill without payment, no inference can be drawn and results cannot be generalized.

illiterate or possess low level of education. They belong to the poor socio-economic background. The overseas migration provides them an opportunity to improve their socio-economic status.

Pre-migration modalities including i) cost of migration and ii) their restricted capacity to finance the migration cost is great hurdle in smooth migration process. Present study is pioneer to find the financial and the private opportunity cost of potential emigrant workers. The study finds that on average, financial cost of migration is PKR. 3, 20,000. Average financial cost for the KSA it is PKR. 3, 70,000 and for UAE it is PKR. 2, 80,000. The average visa fee is higher for the KSA as compared to UAE. However, the average earnings for KSA are PKR. 32,000 and for UAE PKR. 29,000. Although, cost is high in KSA, yet migrants from Pakistan have a greater tendency to move towards KSA particularly due to the religious affiliation and high demand for labour.

The study finds that visa fee comprises more than 74 percent of the total financial cost.

As reported by (ILO, 2015) and (Nasra M Shah et al., 2020), on average, a Pakistani worker pays several times higher than the fees allowed by the Government. The main reason for such a high fee is includes the fraudulent role of Intermediaries and the practice of visa trading where the sponsor (kafeel) charges high amounts for providing a work visa. The visa trading may occur both in the host country and in Pakistan. The visa providers sell the visa to the Pakistanis already working in the KSA or the UAE, to recruit workers from Pakistan. These visa providers charge high fee of providing visa to the Pakistanis. Therefore, visa trading is a primary source of exploitation of migrant workers. On the other hand, the emigrant workers belonging to rural areas are more likely to be less educated. As a result, the agents may take advantage of the workers' unawareness and charge them high fee.

Higher proportion of visa fee in total financial cost indicates that most of the potential emigrant workers obtained visa either though the sub-agents/ or broker or though relatives/ friends. The results of estimation also support that fact the financial cost of migration is high if the source of job information are relatives (or friends) or the sub-agents (or brokers). The workers who obtained the services of the licensed OEPs paid relatively less cost. The analysis indicates that relatives (or friends) and the sub-agents (or the brokers) are the source of exploitation for the emigrant workers, at least in this sample study. However, there can be no checks on relatives (or friends) in provision of visa. To avoid the exploitation of the emigrant workers, the BE&OE through its Protectorate offices, can make the OEPs (henceforth the brokers or the subagents) accountable by demanding the receipts of original charges.

The analysis of the socio-economic and demographic determinants of the cost reveals that the married potential migrants, who have higher number of dependents with the first-time movement abroad, tend to bear more financial cost. However, the education level of potential emigrants does not significantly affect their financial cost. The emigrants belonging to rural area tend to pay lower cost because they have a strong network of information in the host countries. Moreover, the greater wage-wedge[38]indicates that as compared to present earrings in Pakistan the earnings from abroad are very higher. Therefore, it is associated with higher the financial cost indicating requirement of huge investment in migration process.

The analysis indicates that the private opportunity cost varies from emigrant to emigrant. It depends upon the personal traits of the emigrants. The private opportunity cost is found to be high for the employed and the educated migrants, both in terms of

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[38] if the potential emigrant is employed in Pakistan.

the money and time. The present study finds that the age, the education level, the employment status and the wage-wedge are potential determinant of the private opportunity cost.

An assessment of the private opportunity cost before actual departure need following evaluations before departure: i) the emigrants have to consider the current stream of earning from present employment ii) their capability to search foreign job iii) the skill that needs to be acquired to join foreign job iv) the time cost of money and v) total investment they should make. Therefore, in making decision to move abroad, every potential emigrant must rightly know his private opportunity cost in terms of time and money. A right and complete awareness about the private opportunity cost helps makes the cost and benefit analysis easier. Based on the cost and benefit analysis, the emigrants can decide either to accept the foreign job offer or not. Therefore, with a general reduction in exploitation and increasing awareness of the migrants, the full-benefits of migration can be reaped (ILO, 2016).

Based on the analysis of empirical results certain inferences can be drawn. First, there is no need for additional rules, regulation or any ordinance. Migration system can work better by putting in place certain measures that can help existing regulatory and recruitment system to perform better. The recommendations are based on three axes: i) re-visiting the powers of government-run or government-controlled-institutions ii) enhancing the positive role of potential contributors in visa market, namely the licensed OEPs iii) making the OEPs more efficient, responsible and accountable iii) enhancing the role of potential emigrants. The potential emigrants have double role. They may be more empowered and more vigilant to find the right official charges for the visa and related services. They themselves can better evaluate their own opportunity cost that is solely independent of the opportunity cost of other potential emigrants. From the results

of the present study, it can be inferred that private opportunity cost does not involve exploitation. The primary reason may be that absence of its direct connection with the institutions, the recruiters, the visa mafia, the OEPs, or the other functionaries of the migration process. The following are the guidelines based on the survey's results:

i. On one hand, governmental policies that enhance the effects of unobserved heterogeneity (skills and abilities) draw immigrants (Cavaliere et al., 2021). On the other hand, each OEP should be made legally responsible for providing the BE&OE with the receipts for all payments that emigrant workers' pay in order to control malpractices in the migration process.

ii. The tasks performed by the sub-agents or brokers perform should actually be performed by the emigrant workers themselves, if they can. This may not only reduce cost but also abolish the exploitation of the workers. Moreover, the complaint handling system of BE&OE against the OEPs should be strengthen and made effective on real-time basis.

iii. At government level, to provide awareness regarding the actual cost of migration an awareness campaign needs to start. The contents of this campaign should include i) country and occupation-specific information regarding safe and regular procedures of seeking a foreign job ii) relying on legal means of obtaining fair-price visas iii) avoiding relatives (or friends) [39], sub-agents (or brokers) to obtain visa etc.

iv. Employer-payee models must be used in order to share the financial burden with emigrants. The International Organization of Migration, the International Center for Migration Policy Development, and/or International Labour Organization are just a few of the international organizations that will be needed to help execute this concept.

v. Young, more educated and skilled individuals are more likely to bear less private opportunity cost while deciding to move aboard. Based on these findings, the future emigrants should focus on upgrading their education and skill level to keep their private opportunity cost as low as possible.

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[39]The results of the study indicate that financial cost is high if source of job information is friends/relatives or sub-agents/ brokers. Therefore, relatives/ friends are also source of exploitation of the workers.

CHAPTER 3

GROWTH-IMPACT OF REMITTANCES AND

COMPLEMENTARY POLICIES: A CASE OF PAKISTAN

3.1 Introduction

Many studies indicate that long-term impact of remittances may be positive (Habiyaremye & Ziesemer, 2006), negative (Barajas et al., 2009b) or inconclusive. However, the channel through which remittances affect the long-term economic growth is not clear (Ali, 2020) . An assessment of remittances-growth relationship, however, indicate that remittances are positively associated with the investment activities (P. A. Acosta et al., 2009; Giuliano & Ruiz-Arranz, 2009; Woodruff & Zenteno, 2007). Workers' remittances are mainly private transitions, which are used according to the will of the sender or the receiver. On the one hand, however, the direct policies implemented by the government might not be successful in generating an impact on remittances. Economic growth in developed countries, on the other hand, is dependent on their own macroeconomic policies (Burnside & Dollar, 2000).

It is difficult to find out what kind of direct policy interventions can induce individuals to use investment remittances. If it intervenes by indirect policies, the government will increase the development effect of remittances. Those policies change the incentives for beneficiaries of remittances to use their money in alternative ways. Burnside and Dollar (2000) indicate that with imperfect international capital markets, the impact of international transfers (Yang et al.) on the economic growth depends on whether the transfer is invested or consumed. Therefore, the link is that incentive to invest and productivity will depend on policy environment. Importantly, it is absence of

appropriate directional policies due to which the impact of remittances on economic growth may be negligible or negative.

The present study is based on the hypothesis that although remittances can positively affect economic growth but the growth-enhancing impact of remittances is conditional upon certain complementary policies that are tightly connected with growth. A good mix of complementary policies create a healthy economic environment accelerating the direct benefits of remittances (Burnside & Dollar, 2000) also directing remittances towards productive investment activities. A reliable policy environment is also essential for reducing volatility of economic growth. Therefore, remittances alone do not bring positive impacts on growth unless economic policies are in-line with them (Faini, 2002, 2007) Importantly, what matters more is not the quantity of an implemented policy; it is a package of policies that increase the rate of return of investment through remittances. With this backdrop, the motivation for the present study is to quantify the role of appropriate complementary policies in identifying the remittances-growth relationship. In the present study, following Dollar and Kraay (2002)the complementary policies are identified in the areas of the human capital, the financial depth, the institutional quality and the low level of macroeconomic policy distortion. Essentially this study is contributory in the empirical literature. According to best of my knowledge, there is no comprehensive, time-series; empirical study in case of Pakistan exists that digs-out the complementarity or substitution ability of the economic policies, with remittances. In this study, the focus is on Pakistan as economic growth in Pakistan is highly volatile[40].

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[40] In 2000, the GDP growth rate was 4.26 percent, rising to 4.73 & 5.83 percent in 2015 and 2018.Subsequently, in 2019, the growth rate was 0.99 percent, a 4.85 percent decline from 2018.

On average, Pakistan grew 4.1 percent that is far behind the growth rates of the Bangladesh, India and the China (Faheem et al., 2019). It is among the top ten remittances receiving country and ranked as seventh in the list of middle-income remittances receiving country after the India, China, and the Philippines (ADB, 2019). The inflow of remittances in history of Pakistan is much falcate (Ali, 2020) because remittances are primarily used for consumption (Adams Jr, 1998; Ali, 2020; Irfan, 1986; Irfan et al., 1983).

Remittances are also the primary determinant of stagnant investment to GDP ratio, which has also deteriorated infrastructure (Amjad & Ahmed, 1986). Unfortunately, Pakistan failed to use its high influx of remittances to its best advantage to generate sustainable development (Ali, 2020). One of the possible reasons includes severe challenges to direct these remittances towards growth-oriented platforms. The available literature in context of Pakistan, also, largely ignores the role of policies in defining the remittances-growth relationship (for instance studies by: Irfan et al. (1983); G. Arif and SHAHNAZ (2000); Irfan et al. (1983); Qayyum et al. (2008) Qayyum et al. (2008); Jawaid and Raza (2012) ; Ahmad et al. (2013); Fatima and Qayyum (2016); Tahir et al. (2015); Jawaid and Raza (2012). Therefore, the primary reason for the un-sustainable economic growth in Pakistanis is absence of related fertile research. The study of behavior of remittance with complementary polices is important challenge for the policymakers to identify if the complementarities really exist between remittances and the economic growth. The research may also dig out the way that these police affect the economic growth. Such an exercise is also supportive in creating accurate impact of remittances on economic growth and removing ambiguities[41]. The present study is

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[41]The inconclusive results regarding effect of remittances on economic growth create ambiguities. Such as in case of Pakistan, through a time-series study indicate that remittances effect of remittances on economic growth is positive only in short-run (Waheed and Aleem 2008).

related to identification of such policies, in context of Pakistan, that are in complement with remittances.

The present study also focuses whether remittances can help reduce output growth volatility due to their low pro cyclicality. The study is based on time-series data of 1984-2018 since the data for ICRG institutional quality index is available from 1984. Due to endogeneity of remittances, dynamic Ordinary Least Square (DOLS) estimation technique has been applied (P. Acosta et al., 2008; Bugamelli & Paterno, 2011; Bugamelli & Paternò, 2009).The empirical results of this study are supportive to conclude that the human capital, institutional quality and sound macroeconomic policy environment are complements of remittances. However, financial depth is a substitute.

3.1.1 Major Questions to Answer:

The goals of this study are as follows:
  a) To find the impact of remittances on economic growth.
  b) To find the impact of remittances complemented by complementary policies in areas of human capital, financial depth, quality of institutions and macroeconomic policies (fiscal, monetary and trade policy).
  c) To identify the stabilization role of remittances to reduce output growth volatility.

3.1.2 Contribution and Significant of Study

Government cannot interfere directly to channelize remittances towards productive. The reason being that remittances are the private receipts of the family of the migrant. However, Government can interfere indirectly to channelize remittances in much effective manner through strengthening of appropriate policies, termed as complementary policies. In this study, the complementary policies are investigated in the areas of human capital, the institutional quality, the financial depth, and the stability of macroeconomic policies.

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This pioneering analysis in the context of Pakistan uses time-series data from 1984 to 2018 to determine the precise relationship, whether additive or otherwise, between remittances and the subsequent effect on economic growth.At first, the present study focuses on whether complementarities between human capital and remittances in growth process of Pakistan. Education is the main indicator of human capital and important determinant of growth (Calderon et al., 2008). Educated employees are more capable of adapting rapidly to the sophisticated innovations and changes in production necessary to sustain global competitiveness. Secondly, the quality of political institutions is a potential policy complement in growth literature (P. A. Acosta et al., 2009)

Due to existence of well-functioning good quality institutions, recipient of remittances tends to invest more, in turn, enhancing the significant impact of remittances on growth. Third, in order to recognize profitable investment projects and mobilize savings, the financial sector can be crucial. In theory, the strong financial sector motivates recipients of remittances to save and spend more, encouraging long-term growth. The final collection of policies, as possible complements of remittances in their growth effects, is related to distortions of macroeconomic policy (Faini, 2002). The larger the distortions lower the incentives that remittances recipient will have to invest.

Besides all, remittances, due to their size and low procyclicality can be supportive in stabilization of economic growth (Bugamelli & Paternò, 2009). No time-series study in context of Pakistan is available to indicate the stabilization role of remittances. Therefore, another contribution of this study is to identify the stabilization role of remittances in volatility of output growth volatility. For this purpose, the study uses time-series data from 1974-2018. The outcome of the study would enable policy-

making institutions to take advantage of remittances inflow to attain macroeconomic stabilization. The empirical results would help formulating policies accordingly.

3.1.3 Arrangement of Study

The rest of the chapter is structured as follows: literature is examined in section 3.2. The theoretical and theoretical structure of analysis is clarified in Section 3.3. Section 3.4 defines the econometric technique used to validate proof in the study. The selected country, study time, construction of variables, data sources and data analysis are discussed in section 3.5.

3.2 Review of Literature

Developing countries have serious capital shortages (Ratha, 2003), World Bank, 2009). In these nations, remittances are used to outsource resources in order to fund their economic growth. Literature emphasizes many channels by which the economy is influenced by remittances. In particular, the relationship between remittances and economic growth is referred to in literature. However, it rarely indicates the channels through which remittances can affect the long-run economic growth.

However, there is no consensus in the literature about the effect of remittances on economic development. Some research show that the direct effect of remittances on economic growth is negative or negligible (for instance: Abdih et al. (2012); Barajas et al. (2009b)). Others suggest a positive effect (studies by Woodruff and Zenteno (2007); Catrinescu et al. (2009) Fajnzylber and Lopez (2008); Giuliano and Ruiz-Arranz (2009); Zhunio et al. (2012); Amuedo-Dorantes and Pozo (2004). Besides, there are many cases where the impact of remittances on the economic growth is positive but the channel of impact is not clear (Ali, 2020).

To account for long-lasting structural changes in the economy, it is compulsory to have a good mix of complementary policies with the remittances (P. A. Acosta et al., 2009). Thus, recent literature identifies the new dimensions' remittances in many areas of conditional complementary policies. These areas include the human capital, the institutional quality, the financial depth and the macroeconomic stability (P. A. Acosta et al., 2009). Similarly, the literature also highlights the role of remittances in stabilizing the out-put growth in the home country of migrant (for instance the study by: Barajas et al. (2009b). The detailed review of relevant literature is given below:

3.2.1   Multiple roles of remittances

Migration is a source of link between sending and the receiving countries (Brzozowski, 2012). This link is established through remittances. Remittances play a vital role in economic growth of home country. Remittances tend to i) smooth the consumption pattern of the family of migrants (Bugamelli & Paterno, 2011; Combes & Ebeke, 2011) ii) have the capacity to absorb shocks that may arise from the natural disasters (P. Acosta et al., 2008; Barajas et al., 2009a; Combes & Ebeke, 2011) iii) stabilize the economy by lowering the current account reversals (Bugamelli et al., 2009), iv) enhance the investment opportunities through increased saving, v) reduce the level of poverty (Musakwa & Odhiambo, 2019), vi) contribute in formation of the human capital through investment in education or health, vii) utilize for the productive investment purposes viii) increase per capita income of those left behind, xi) increase investment in education and health of family left behind (Abdih et al., 2012; P. Acosta et al., 2008; Ghosh, 2006).

Literature provides a well-documented insignificant or negative impact of remittances (for instance studies by: Bourdet and Falck (2006), P. A. Acosta et al. (2009); Amuedo-

Dorantes and Pozo (2004); P. Acosta et al. (2008)). Negative impact includes i) causing and deepening of inflation, ii) reducing labour market participation due to labour market shortages and iii) creating real exchange rate appreciation resulting into reduction in exports. There may be no statistically significant relationship between remitted amount and expenditure on health as indicated by (Abdih et al., 2012; Freund & Spatafora, 2005). The reason may include failure of state polices or systematic failure in initiatives taken by state. Another primary reason may be that only a limited portion of remittances is used for the productive purposes. Importantly, beneficiaries of remittances use a greater portion of remittances for carrying out their day-to-day transaction or to purchase short-term consumer goods as highlighted by Martes et al., 2006).

At micro level, remittances help to achieve a minimum standard of living. This living standard, however, is not too strong to promote the social mobility. At macro level, remittances cause an appreciation in the local currency. Such appreciation affects the profitability from exports of the manufactured goods (Gittell & Vidal, 1998).

Additionally, remittances flows cannot be recorded with full accuracy (Chami et al., 2005). There exists asymmetric information in sending and receiving remittances. The primary reason for inaccurate measurement of remittances includes the unavailability of proper monitoring system to keep checks on beneficiary. Thus, beneficiaries of remittances may interact with each other with asymmetric information. Moreover, remittances support beneficiaries in bad economic times. However, remittances can create problems of moral hazards indicated by Chami et al. (2005). The beneficiaries tend to reduce the labor hour's along as inflow of remittances rises. Such problems tend to negatively affect the economic growth. Therefore, remittances may not be termed as a source of capital or economic growth at present nor there any indication for positive contribution of remittances as such, in future (Abdih et al., 2012)

Remittances possibly affect economic growth through inflation as indicated by Barro (1995); Bruno and Easterly (1998); Marbuah and Integration (2010). Remittances inflow lowers poverty level, funds investment and earns foreign exchange. Like other capital flows, remittances flow potentially induces an inflationary pressure in recipient country. Many empirical studies found evidences for this relationship (for instance: Bruno and Easterly (1998); Rahman and Mezbah-ul-Islam (2014). Rahman and Mezbah-ul-Islam (2014).

In case of Bangladesh empirically checked this relationship, in the post-floating exchange regime. They used Johansen (1988) and Johansen and Juselius (1990) co-integration technique of Vector Error Correction Model approach. Their results support the argument that remittances increase inflationary pressure. They particularly found that a one percent increase in remittances inflows would increase general inflation and food inflation by 0.72 percent and 1.91percent, respectively. Therefore, inflationary pressure that arises from remittance inflows is two and half times higher for food inflation compared to inflation.

3.2.2   Remittances: A source of human capital formation

Remittances are supportive for the formation of human capital i.e., health and education (Abdih et al., 2012; Ambrosius & Cuecuecha, 2013; Amuedo-Dorantes & Pozo, 2004, 2011) Bouoiyour and Miftah, (2016). To grasp the idea, many studies used Gross National Income as instrument variable (for instance: study by (Azizi, 2018). He used the data of 122 developing countries for the period 1990-2015.He found a positive impact of remittances on health and education. Aziz reports a high labour force participation rate of remittance recipient countries as compared to pre-migration and post-migration period, where post migration period is a period of remittances.

The earlier studies used the economic indicators of remittances-receiving countries as instrument variables. These instrumental variables included the per capita Gross National Income (Gniniguè & Ali). Unlike the earlier studies, Azizi uses Gross National Income (Gniniguè & Ali), rate of unemployment and real rate of interest of remittances-sending countries as instrument variables. He indicates that remittances positively affect child and infant mortality and under-five years of age mortality. Similar results are found for the pre-primary and secondary enrollment indicated by (Rao & Hassan, 2012)

3.2.3 Role of the institutions in remittances-growth nexus

In the literature (Catrinescu et al., 2009) and among policymakers, there is a general view that remittances play the same role in economic growth as foreign direct investment and other flows of capital. Consequently, remittances have a beneficial effect on economic development (Catrinescu et al., 2009). However, empirically remittances may not be positive in affecting growth because the instruments empirically used are not effective in eliminating the bias. Chami et al. (2005) developed a model of remittances based on family economics. The model suggested that remittances are not profit-driven, but these are the compensatory transfers that appear to compensate their beneficiaries with a negative correlation with the growth of GDP for bad economic performance.

In addition, model has shown that remittances are a replacement for labor income. This is in contrast to the positive correlation between profit-driven capital flows and GDP growth. The model assumes that beneficiaries use remittances to decrease labor supply and labour market participation, so that economic activity can be adversely affected.

Chami et al. (2005) tested the implication of their model using a panel data set on remittances for 113 countries over the 1970-1998. They prove that remittances differ greatly from private capital flows in terms of their motivation. Hence, remittances do not appear to serve as capital for economic development. Therefore, the governments in the recipient countries may view such transfers as stable source of insurance. However, Lucas and Catrinescu (2006) indicated that Chami et al. (2005) could not prove positive impact of remittances on economic growth. The reason is that Chami et al. (2005) did not properly control for endogeneity. Once the model is controlled for endogeneity, remittances can promote the economic growth. In panel data, Generalized Method of Moments and the Dynamic Panel Data can be good options to control for endogeneity (Lucas and Catrinescu, 2006). Hence, the negative effects of remittances on the economic growth eliminated by using proper econometric technique (Anderson and Hsiao, 1981: Bond, 1991).

3.2.4 Role of the financial depth in remittances-growth nexus

Role of financial sector is not negligible in remittances–growth nexus. Well-functioning financial markets can directly affect the inflow of remittances to the projects that may yield the highest return thus promoting economic growth (Giuliano & Ruiz-Arranz, 2009). They found that remittances can be a substitute for low-developed or inefficient credit markets by helping domestic entrepreneurs to start productive investment activities. They include four indicators of the financial sector development to indent the potential link between remittances and growth. One of these four indicators includes the efficiency of banking sector. The quality-based indicators of microeconomic efficiency of banks can best capture this qualitative aspect of financial development.

The countries where the local banking system is effective experience significant effects from remittances. Giuliano et al., investigation has served as the foundation for Bettin et al (2009). However, they used the M2 ratio of the financial system's liquid liabilities to GDP and the GDP ratio of domestic credit given by the banking sector (credit). They employed a quality-based index that measures the efficiency of the banking system to reflect the qualitative side of the financial sector. They made use of the International Country Risk Guide's risk rating indices as well as the Kaufman et al. (2006) produced institutional quality index. They discovered that an effective banking system is required to produce beneficial economic outcomes by examining the data for 66 developing nations for the years 1991 to 2005.

3.2.5 Role of the macroeconomic environment in remittances-growth nexus

By using the data from 1995-2005, and applying Dynamic Panel Data Estimation, Bjuggren et al., (2010) find that circumstances in development countries effect the use of remittances. With good economic environment in terms of less financial constraints and better-quality institution, the incentives for investment are high, resulting in high investment-related activities through remittances received.

The high-quality institutions enhance both the amount of remittances received and the amount used for investment. Long-term growth is highly associated with higher levels of commerce and better institutions, but it may also be associated with lower levels of remittances. Leon and Piracha (2005), who find that improved institutional quality and trade liberalization encourage economic growth, have made similar findings.

3.2.6 Remittances and the economic growth: Pakistan

In case of Pakistan, only a few studies consider foreign remittances as source of economic growth (Ahmed, 2011: Javid, 2012: Junaid Ahmed,2011. Jawaid and Raza

(2012) empirically proved that remittances negatively affected the poverty level and enhanced the economic growth of Pakistan (Jawaid & Raza, 2012). Thus, the remittances are positively related to economic growth. However, the use of different econometric techniques and different variables put forward different results. Ahmad et al., (2013) examine the determinants of growth for Pakistan by using the annual data for the period of 1978–2011. They used multiple regression technique; indicting that a one percent increases in foreign remittances will raise GDP by 0.25 percent. However, the use of co-integration and error-correction model indicate a negative long-run impact on economic growth in case of Pakistan. These findings reported by Waheed and Aleem (2008), by using time series data from 1981-2006.

Therefore, the available studies in case of Pakistan impact of remittances on economic growth have mixed results (Waheed and Aleem, 2008:(Qayyum et al., 2008). One of the possible reasons may be non-inclusion of possible channels through which growth-enhancing effects of remittances can be highlighted. For example, Habib and Nourin (2006) report that the impact of worker remittances on economic growth is mixed in South and South East Asian economies, positive for Pakistan and negative for other South Asian countries. Khathalnai (2012) indicate that remittances, foreign direct investment and exports positively affect the economic growth in long run. There remittances are used to fulfill the domestic requirements thus, reduce the liquidity constraints of the households in the short-run. However, as indicated by Khathalnai (2012), once the liquidity constraints are met, the long run impact of remittances becomes positive with larger magnitude.

3.2.7 Remittances, institution, financial development and output volatility

Besides investigating the impact of remittances on economics of the country of origin, new literature focuses on role of remittances in different phases of business cycle. A number of studies focus on finding the potential factors that are responsible to affect output growth volatility. Incorporation of remittances in the empirical analysis produces different results. These results are based on the direction and magnitude of remittances that bring impact on output-growth volatility. One stance of literate (for example:(IMF, 2005): Moore, 2008: Bugamelli and Paternò (2009) indicate that remittances are procyclical: thus, supportive in lowering the output growth volatility.

Remittances are capable of reducing out-put growth volatility in developing countries. This relationship is empirically tested by many studies including studies by Moore (2008), Bugamelli and Paternò (2009) for the countries other than Pakistan. Moore evaluates the effect of remittances inflow on the economic volatility, by using a panel data of 95 countries, for the period 1970-2005. The result of the study indicates that remittances, when interacted with other relevant variables, play the leading role in reducing the effect of output shock that adversely affects the economy. However, remittances do not play any role in smoothing consumption or investment. The results also vary from country to country. Similarly, by using the data of 60 developing countries, for the period of 1980-2003, using instrumental variable approach, Bugamelli and Paternò (2009) conclude that remittances are important determinants of output growth volatility. Due to inherent features of remittances in terms of their size, and low-procyclicality, remittances can help in smoothing consumption hence investment. Such smoothing element will finally create economic stabilization.

Adding to the results found by Giuliano and Ruiz-Arranz (2009), Bugamelli and Paternò (2009) found that remittances are directly related to growth. Their results indicate that for any given level of stock of migrants, globalization and volatility is different with respect to different indicators of globalization. However, financial openness does not affect volatility. Conversely, they found that trade openness increases output growth volatility. Thus, precisely, the empirical studies support the hypothesis that remittances inflow reduces the output growth volatility.

Another important determinant of output growth volatility is institutions. Institutions potentially affect output volatility as indicated by Acemoglu and Verdier (2000) and Ajide and Raheem (2016). Ajide and Raheem (2016) found the role of institutional infrastructure on out-put growth volatility through remittances. He used a large sample of 71 remittances recipient countries and used the system-generated method of moments. He modified the basic model of Borjas and Ramey (1995) with respect to remittances. Chami et al. (2005), Combes and Ebeke (2011) modified the same by incorporating a variable of institutions. Ajide and Raheem (2016) found three basic outcomes: i) remittances reduce growth volatility, ii) volatility reducing impact of remittances further enhances in presence of well-functioning institutional framework, iii) remittances when coupled with good institutional framework reduce out-put growth volatility. Similarly, Ajide and Raheem (2016) verified that the presence of good institutional framework, remittances affect the investment volatility counter-cyclically. The findings of Ajide and Raheem (2016) are in-line with Combes and Ebeke (2011) indicating that institutions play vital role in reducing output growth volatility.

Ohuwatosin et al., (2017) investigate the relationship between output growth volatility and remittances. They also made use of certain indicators of financial development. By using the data for 71 developing countries for period 1996-2012, they found that both

remittances and financial development create volatility dampening effects. However, this result depends on the measurement of financial development. For instance, if banking and private sector credit are considered, the banking sector credit may give positive and insignificant results. However, the result will be different for private sector credit. The study confirms counter-cyclicality of remittances.

3.2.8 Volatility of remittances in case of Pakistan

Remittances have an increasing trend, in the history of Pakistan. Ahmed and Martínez-Zarzoso (2016) find that the major reason for this rise in remittances is the rise in number of overseas Pakistanis. Remittances in Pakistan have alleviated poverty (Anwar & Mughal, 2012) thereby have created long-run positive impact on the economic growth Ahmed and Martínez-Zarzoso (2016). According to Jafri et al. (2022), both remittances and foreign direct investment can benefit China in terms of lowering its CO_2 emissions. Therefore, remittances may be allocated for use in the economy for green and clean purposes. Financial inclusion is significant because it can amplify remittances' effects on economic growth. The study contributes to elucidating the development conundrum of remittance inflows and financial inclusion in migrant-sending countries to foster economic growth (Chuc et al., 2022).

Anwar and Mughal (2012) find cyclical nature of remittances for Pakistan. By using different filtering technique and impulse response function (IRF)5 through estimation of structural vector autoregressive (SVAR) they find the magnitude of remittances, foreign direct investment (FDI) and official development assistance (Todaro) with changes in output of Pakistan and remittances sending countries. The results of study indicate that remittances are relatively more stable than ODA and FDI. However, FDI is pro-cyclical. Inconclusive results are drawn in case of ODA and economic conditions

of Pakistan. Thus, Anwar and Mughal (2012) conclude that remittances are a more effective source of foreign exchange to Pakistan as compared to FDI and ODA.

3.2.9   Literature Gap

We can evaluate the truths and myths regarding the effects of remittances in the presence of some other linking variables based on empirical evidence. We also talked about how the theoretical literature on remittances might be affected by our findings and took into account any unanswered issues. According to the review, there are several reasons to remit that have varying effects. There are several data to support the beneficial effect of remittances on the domestic economy. However, it is not required that a particular indicator that has been demonstrated to be accurate for one nation also be accurate for others. According to the literature, remittances may have an impact on a wide range of factors involved in the economic development of the recipient country.

There are no established facts about the complementary polices with remittances. Evidence for macroeconomic indicators implied by the response of remittances to these variables such as financial development and investment in education, among many others. Our review of the literature suggests that while there is some evidence that a portion of remittances are altruistic transfers, results show that the impact of remittances is strongly connected with many other factors. Several previous theoretical studies have also assumed a specific relationship between remittances and home country output in order to construct their models (e.g., output decreases and remittances increase). Our review also suggests that the relationship between remittances, policy variable and home country income is at best mix.

Although, the area of remittances-growth is well researched but the results in terms of impact of remittances on investment and aggregate economic growth, there are mixed.

It is case with volatility of output growth. The empirical studies are contradictory in results. Particularly, at macro level, no evidences are found which support the hypothesis that remittances positively affect the growth. The results are so mainly due to absence of comprehensive literature that considers policy complementarities in growth-remittances nexus. Particularly, the literature is silent, in this context, in case of Pakistan. Review of literature confirms that no comprehensive time-series study exists on this subject exists, in case of Pakistan.

In fact, remittances cannot bring good results on economic growth of economy of the home country unless certain pre-requisites are not met. These pre-requisites include safe investment in human capital, good quality of institutions, well-established financial system and good macroeconomic environment. These pre-requisites are termed as complementary policies (Calderon et al., 2008). The area of growth-remittances nexus with complementary polices, in context of Pakistan, is still open to be explored. The substitution or complementarity of policy best suitable in case of Pakistan is essential to capture the positive contribution of remittances. Further, this framework also supports to find contribution of remittances in stabilizing volatility of output growth.

The present study explores the impact of remittances on the economic growth by considering the role of complementary policies such as the human capital, the financial depth, the institutions and the macroeconomic policies. In order to bring more clarity in the role of remittances and complementary policies we use different other growth indicators as well. These indicators include physical capital, fiscal deficit, trade openness and inflation. The empirical results of this study are supportive to formulate policies subject to their complementarities or substitution.

3.3 Analytical and theoretical framework

For policymakers, appropriate policies to promote economic growth have always been a key topic. It is also the ultimate focus of all macroeconomic studies. Different determinants of economic growth are found in the economic models available. One of the most well-known models is Cobb-Douglas function. The model incorporates the labour, physical capital and Total Factor Productivity (Q. H. Le & Nguyen, 2019). Nevertheless, the labour and capital follow diminishing marginal productivity. Hence, investing in these factors is not as efficient as integrating other factors in order to stimulate growth.

In the present study, we investigate another important determinant of economic growth that is worker's remittances. The remittances, however, are not capable of bringing long-term positive effects on economic growth unless conditioned with certain polices. Therefore, in the present study, we empirically check the nexus between economic growth and remittances conditioned on certain complementary policies.

To achieve the purpose, we use a modified neoclassical model of economic growth. The remittances are source of foreign capital that may have long-lasting impacts on economic growth of the developing countries. As remittances are private income transfers, therefore the outcome of remittances received depends on its use. The remittances, if invested, tend to increase the productivity hence output. Therefore, the incentive to utilize remittances are conditioned with various complementary polices. The threshold level of policies determines if the certain policy is complemented or substitute with remittances.

A good policy mixes increase the returns to remittances that are invested. In neo-classical model of economic growth, the impact of remittances is greater given a good

mix of complementary policies. The complementary polices, in the present study, are in the field of the human capital, the financial depth, the institutional quality and the macroeconomic policy (fiscal, monetary and trade policy). Following is the detail of theoretical model, which incorporates the complementary, polices with remittances:

3.3.1 Theoretical Model of Remittances–Growth Model

In the present study, a linear growth model developed by (Steger, 2000) has been extended to catch the potential effect of the remittances on the economic growth. The model presented by Steger model best fits in closed economy. We will convert it into an open economy model. Section 3.2.1 shows the steps to incorporate remittances in Steger's model and section 3.2.2 shows the interactive effects of remittances and the complementary policies adopted by the developing countries, on the economic growth. The model developed by Steger (2000) is based on a closed economy model with subsistence level of consumption. In other words, it means that economy depends only its internal resources to enhance finance domestic investment.

$$\underset{c(t)}{Max} \int_0^\infty \frac{[c(t)-\bar{c}]^{1-q}-1}{1-q} e^{-(r-n)t} dt, \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.1$$

s.t $\quad \dot{k}(t) = (A - \delta - n)k(t) - c(t), k(0) = \dot{k}_o \ , \quad k(t) \geq 0, \bar{c} \leq c(t) \leq Ak(t) \ 2$

Here $\bar{c}$ is subsistence level of consumption.

$$\text{Solving it for} c(t) and k(t), \ c(t) = \ \bar{c} + [c(0) - \bar{c}]e^{\theta-1(A-\theta-p)t} \quad 3$$

$$k(t) = k + [k(0) - \bar{k}]e^{\theta-1(A-\theta-p)t}, \ \bar{k} = \frac{\bar{c}}{A-\theta-n}, A - \theta - n > 0 \ \ 4$$

The developing countries do not rely only on internal resources for their economic development; they also depend on external resources of finance as well. Therefore, the model presented above is not appropriate in case of developing country. Pakistan being a labour surplus country relies heavily on the external sources of finance. It also exports

its labour to finance domestic investment through received remittances. To incorporate remittances, the present study requires an open market model. Thus, the Steger's model has been extended. Here, evolution of per capital stock is equal to the sum of domestic savings and net inflow of capital less depreciation of per capita stock of capital, so

$$\dot{k}(t) = s(t) + f(t) - (\delta + n)k(t) \qquad\qquad 5$$

where $s(t)$ shows the per capita savings, $f(t)$ is net per capita capital inflow, n is the constant growth rate of population and $\theta + n$ is the rate of depreciation of per capita stock of capital. The developing countries need to mobilize their domestic resources and raise foreign exchange earnings to achieve sustainable economic growth. The $s(t)$ and $f(t)$, in equation 5 capture the ability of developing countries to increase the investment from the internal and the external resources. $f(t)$ particularly indicates the ability of the developing countries to achieve and maintain their economic growth with external resources i.e. remittances.

For this study, we assume i) only a single source of foreign capital that is remittance ii) remittance have the ability to affect the physical and human capital iii) any change in the remittance inflow will bring a change in the ability of the receiving country to invest in physical and human capital. Therefore, equation 5 captures ability of Pakistanis to raise investment with external viability) net per capita capital grows at a constant rate μ.

Further, $f(t) = F_o e^{\mu t}$, F_o is the initial stock of capital. We further extend the model by including general policy distortion index in production function[42]. This index will reflect the influence of detrimental policies that can affect the economic growth. We

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[42]In this study we are taking, four complementary polices in the areas of human capital, institution, financial depth and macroeconomic policy index. Any distortionary human capital policy will adversely affect education; distortionary financial sector polices negatively affect financial sector performance. Similarly, bad institutional quality and macroeconomic policies (fiscal, monetary and trade polices) will be harm full remittances to create impact on economic growth.

assume only two factors of production i. e., the capital and labour. It is believed that technology shows continuous returns to scale. This form of technology tends to be easy but capable of capturing any productivity improvement that can be extracted from enhancing the technological and management skills gained through learning-by-doing and information spillover (Sala-i-Martin & Barro, 1995).

To keep things simple, we have assumed that size of labour force and populations are growing at the same rate. Therefore, the per capital out-put level, net of distortion index of complementary polices is given as follows:

$$y(t) = 1 - \pi[Ak(t) + Bk(t)^{\propto}] \text{ or} y(t) = (1 - \pi)\emptyset k(t) \quad 6$$

Where $y(t)$ represents the per capita output, $k(t)$ is per capita stock of capital and π represents the distortion index of complementary polices. $\emptyset$ shows the total productivity. By setting this framework, we can show that a benevolent social planner having dictatorial powers can choose to maximize utility of a representative household subject to resource constraints of the economy. We can proceed as following:

$$\underset{c(t)}{Max} \int_0^\infty \frac{[c(t)-\bar{c}]^{1-\emptyset}-1}{1-q} e^{-(p-n)t} dt, \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7$$

Setting it to resource constraint,

$$\dot{k}(t) = s(t) + f(t) - (\delta + n)k(t) \dots\dots\dots\dots\dots\dots\dots\dots\dots 8$$

$$k(0) = \dot{k}_o k(t) \geq \text{for } \forall t, \ \bar{c} \leq c(t) \leq \emptyset k(t) \dots\dots\dots\dots\dots 9$$

Here, $\bar{c}$ is the subsistence level of per capita consumption, θ shows the time preference, (p) is the individual's time preference rate.

By substituting,

$$s(t) = y(t) - c(t), = (1 - \pi)\emptyset k(t) - c(t) \text{and} f(t) = F_o e^{\mu t} \quad 10$$

into equation, it becomes,

$$\dot{k}(t) = (1 - \pi)\emptyset k(t) - c(t) + F_o e^{\mu t} - (\delta + n)k(t) \ldots..11$$

Maximizing, $\underset{c(t)}{Max} \int_0^\infty \frac{[c(t)-\bar{c}]^{1-\emptyset}-1}{1-q} e^{-(p-n)t} dt, \ldots\ldots\ldots..12$

with resource constraints,

$$\dot{k}(t) = (1 - \pi)\emptyset k(t) - c(t) + F_o e^{\mu t} - (\delta + n) \ldots\ldots..13$$

Setting current values Hamiltonian gives us:

$$H = \frac{[c(t)-\bar{c}]^{1-\emptyset}-1}{1-q} + \lambda[(1 - p)\Phi k(t) + c(t) - (\delta + n)k(t) + F_0 e^{ut}] \; 14$$

As first order conditions, solving for state variables, co-state variable and transversely conditions: Derivative of Hamiltonian w.r.t control variable is as follows:

$$\frac{\partial H}{\partial c(t)}, \frac{(1-\emptyset)(c(t)-\bar{c})^{1-\emptyset-1)} \; -1}{(1-\emptyset)^2} - \lambda(t) = 0, \; \{c(t) - \bar{c}\}^{-\emptyset} = \lambda(t) \qquad 15$$

$\lambda(t) = [c(t) - \bar{c}]^{-\emptyset}$. Derivative of Hamiltonian w.r.t state variable equal to discount rate times co-state variable-derivative of co-state variable w.r.t time.

$$-\theta\{c(t) - \bar{c}\}^{\theta-1}c^o(t) = \lambda^o(t) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.16$$

and $\lambda^o(t) + [(1 - \pi)\emptyset - \delta - \rho\}\lambda(t) = 0 \ldots\ldots\ldots\ldots..17$

By using the resource constraint,

$$k^o(t) = (1 - \pi)\theta k(t) - c(t) + F_o e^{\mu t} - (\theta + n)k(t) \ldots.18$$

and

$$\lambda(t) = [c(t) - \bar{c}]^{-\theta}, \lambda^o(t) + [(1 - \pi)\Phi - \delta - \rho]\lambda(t) = 0 \ldots\ldots..19$$

Putting in $\lambda^o(t) = -\theta[c(t) - \bar{c}]^{-\theta-1}\dot{c}(t), \dot{c}(t) = \frac{\lambda(t)[(1-\pi)-\theta-\delta-\rho]}{\theta[c(t)-\bar{c}]^{-\theta-1}} \; 20$

where $\lambda(t) = [c(t) - \bar{c}]^{-\theta}$ So, $\frac{[c(t)-\bar{c}]^{-\theta}(1-\pi)-\theta-\delta-\rho}{\theta[c(t)-\bar{c}]^{-\theta-1}}$

$$c^o(t) = \theta^{-1}[c(t) - \bar{c}][(1 - \pi)[-\theta - \delta - \rho] \ldots\ldots\ldots\ldots.21$$

$$k^o(t) = (1 - \pi)\emptyset k(t) - c(t) + F_o e^{\mu t} - (\delta + n)k(t) \ldots.22$$

$$k^o(t) = [(1 - \pi)\emptyset k(t) - (\delta + n]k(t) - c(t) + F_o e^{\mu t} \; ..23$$

Using,

$$k^o(t) = [(1 - \pi)(\emptyset - \delta - n]k(t) - c(t) + F_o e^{\mu t}, \qquad k^o(t)$$

$$+[(1 - \pi)\emptyset - \delta - \rho] = 0 \quad\text{...24}$$

and using equation 16, $\lambda(t) = \lambda^o(t) + [(1 - \pi)\emptyset - \delta - \rho\},$ 25

Applying exponent, $\lambda(t) = \lambda_0 \, e^{-((1-\pi)\theta-\delta-\rho)t}$ and using this in equation 15.1,   26

$$[c(t) - \bar{c}]^{-\theta} = \lambda e^{-[(1-\pi)\theta-\delta-\rho]} \text{ and}$$

$$[c(t)]^{-\theta} - [\bar{c}]^{\theta} = \lambda e^{-[(1-\pi)\theta-\delta-\rho]} c(t) = \bar{c} + [c(0) - \bar{c}]e^{\emptyset-1(1-\pi)\emptyset-\delta-\rho)t} \quad 27$$

$$c(t) = \bar{c} + [c(0) - \bar{c}]e^{\theta-1\,(1-\pi)\emptyset-\delta-\rho)t} \quad\text{...............................28}$$

$$c(t) = C_0 e^{\theta-1\,(1-\pi)\emptyset-\delta-\rho)t} \quad\text{...29}$$

now by using equation 30into equation 28 to find the optimal path of capital, k(t), put

value of c(t) in equation), $k^o(t) = [(1 - \pi)\theta - \delta - n]k(t) - c(t) + F_o e^{\mu t}$ 30

$$k^o(t) - [(1 - \pi)\theta - \delta - n]k(t) = C_0 e^{\theta-1\,(1-\pi)\emptyset-\delta-\rho)t}{}_o + F_o e^{\mu t} \quad 31$$

Now by applying integral on both sides,

$$\int e^{-[(1-\pi)\theta-\delta-n]t} \, [\dot{k}(t) - [(1 - \pi)\theta - \delta - n]k(t)]d \quad\text{.....32}$$

$$= -C_0 \int e^{\theta-1[(1-\pi)\theta-\delta-\rho]t-[(1-\pi)\theta-\delta-n]t} \, dt$$

$$+ F_0 \int e^{\mu t-[(1-\pi)\theta-\delta-n]t} \int e^{-[(1-\pi)\theta-\delta-n]t} \, \dot{k}(t) - c(t) + F_o e^{\mu t} -$$

$$[(1 - \pi)\theta - \delta - n] \quad\text{..33}$$

$$= -C_0 \int e^{\theta-1[(1-\pi)\theta-\delta-n]t-[(1-\pi)\theta-\delta-n]t} \, dt + F_0 \int e^{\mu t-[(1-\pi)\theta-\delta-n]t}$$

$$k(t) - \bar{k} + [k(0) - \bar{k}][e^{-[(1-\pi)\theta-\delta-n]t} + F_1 e^{\mu t}] \quad\text{............34}$$

where $\bar{k}$ shows the subsistence level of capital, and its values is similar to that obtained

by Steger's (2000), now it is:$\bar{k} = \dfrac{\bar{c}}{(1-\pi)(\emptyset-\delta-n)}.$

With no remittances F_1 would be =0 and model have similar properties as linear growth

model of Steger (2000) in closed economy with subsistence consumption. Here, the

developing countries are supposed to catch into poverty trap, as both per capital

consumption and capital stock are equal to subsistence level. Therefore, i) the marginal product of capital is (not level) is fairly less than the time preference ii) the marginal product of capital (net level) is fairly lower than time performance. The result is that people at their subsistence level of income do not have enough income or other words they do not possess enough prosperity to save or to contribute in raising investment.

In absence of remittances, the country can achieve high economic growth only if marginal product of capital is higher than the time performances. In case, the country receives remittances, the complementary policy will support utilizing remittances raising ability of household to invest. They will need proper and functional good institutional mechanism. This institutional mechanism will help attaining good health by investing more on health, thereby reducing mortality rate and rising life expectancy. As a resulting the rise in ability to invest will rise the growth rate of per capital. The per capita capital stock will reach the balance growth path. Hence the growth rate of consumption this stage will be:

$$\lim_{t\to\infty}\frac{\dot{c}(t)}{c(t)}\ ,\frac{\dot{c}(t)}{c(t)}=\frac{[c(o)-\bar{c}]\theta^{-1}[(1-\pi)\theta-\delta-n]e^{\theta^{-1}[(1-\pi)\theta-\delta-n]t}}{\bar{c}[c(o)-\bar{c}]e^{\varphi^{-1}[(1-\pi)\theta-\delta-n]t}} \qquad 35$$

By applying L'hopital rule,

$$\lim_{t\to\infty}\frac{\dot{c}(t)}{c(t)}=\lim_{t\to\infty}\frac{[\dot{c}(t)]}{[c(t)]}\longrightarrow \theta^{-1}[(1-\pi)\theta-\delta-n]\text{and}\frac{\dot{k}(t)}{k(t)}\text{the growth rate of capital,}$$

$$\lim_{t\to\infty}\frac{\dot{k}(t)}{k(t)}=\frac{[k(o)-\bar{k}]\left[\vartheta^{-1}[(1-\pi)\theta-\delta-n]e^{\vartheta^{-1}[(1-\pi)\theta-\delta-n]t}+\mu F_1 e^\mu\right]}{\bar{k}+[k(o)-\bar{k}]\left[e^{\vartheta^{-1}[(1-\pi)\theta-\delta-n]t}+F_1 e^\mu\right]}\ 36$$

Property of balanced growth path is that economy would be able to rely on its domestic savings to finance investment, hence if remittances are no longer received, then$f(t)=\mu F_1 e^\mu=0$, so,

$$\frac{\dot{k}(t)}{k(t)}=\frac{[k(o)-\bar{k}]\left[\vartheta^{-1}[(1-\pi)\theta-\delta-n]e^{\vartheta^{-1}[(1-\pi)\theta-\delta-n]t}\right]}{\bar{k}+[k(o)-\bar{k}]\left[e^{\vartheta^{-1}[(1-\pi)\theta-\delta-n]t}\right]} \qquad 37$$

again by applying L'Hopital rule,

$$\lim_{t\to\infty}\frac{k(t)}{k(t)} = \lim_{t\to\infty}\frac{[k(t)]}{[k(t)]} \to \vartheta^{-1}[(1-\pi)\theta - \delta -] \qquad 38$$

In order to get policy function, we use time-elimination method in (16) and (17),

$$\dot{c}(t) = [c(o) - \bar{c}]\vartheta^{-1}[(1-\pi)\theta - \delta - n] \qquad 39$$

$$\dot{k}(t) = [(1-\pi)\theta - \delta - n]k(t) - c(t) + F_0 e^{\mu} \qquad 40$$

$$\dot{c}(k) = \frac{\dot{c}}{k} = \frac{[c(k)-\bar{c}]\vartheta^{-1}[(1-\pi)\theta-\delta-n]}{[(1-\pi)\theta-\delta-n]k-c(k)+F_0 e^{\mu}} + \frac{c'(k)\vartheta^{-1}[(1-\pi)\theta-\delta-n]}{[(1-\pi)\theta-\delta-n]c'(k)} \qquad 41$$

In simple form, $c'(k)\big[[(1-\pi)\theta - \vartheta - n] - c'(k)\big] =$

$$c'(k)\vartheta^{-1}[(1-\pi)\theta - \delta - n] \qquad 42$$

$$[c'(k)] = \frac{c(t)-\bar{c}}{k(t)-\bar{k}} = [(1-\pi)\theta - \delta - n] - \vartheta^{-1}[(1-\pi)\theta - \delta - n], \Rightarrow c(t) =$$

$$z\big[k(t) - \bar{k}\big] + \bar{c} \qquad 43$$

The transitional path for saving rate is $s_y(t) = \left(1 - \frac{c(t)}{y(t)}\right)$.

$$c(t) = \{[(1-\pi)\theta - \delta - n] - \vartheta^{-1}[(1-\pi)\theta - \delta - n]\}\big[k(t) - \bar{k}\big] + [(1-\pi)\theta -$$

$$\delta - n]\bar{k} \qquad 44$$

$$c(t) = [(1-\pi)\theta - \delta - n]\big[k(t) - \bar{k}\big] - \vartheta^{-1}[(1-\pi)\theta - \delta - n]\big[k(t) - \bar{k}\big]$$

$$+ [(1-\pi)\theta - \delta - n]\bar{k}$$

$$-c(t) = -\vartheta^{-1}[(1-\pi)\theta - \delta - n]\big[k(t) - \bar{k}\big] - [(1-\pi)\theta - \delta - n]k(t) \qquad 45$$

The symmetrical position for balance payments would be,

$$i(t) + f(t) = s(t) + f(t) \qquad 46$$

$$[(1-\pi)\theta - \delta - n]k(t) - c(t) + f(t) = s(t) + f(t) \qquad 47$$

$$[(1-\pi)\theta - \delta - n]k(t) - c(t) = y(t) - c(t) \qquad 48$$

Removing c(t) from above equation and then multiplying both sides by $\frac{c(t)}{y(t)}$,

$$[(1-p)\Phi - d - n]k(t)\frac{c(t)}{y(t)} = c(t), \qquad 49$$

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Substituting $-\frac{c(t)}{y(t)} = s_y - 1$ into the above equation gives:

$$[(1 - \pi)\theta - \delta - n]k(t)s_y(t) = \vartheta^{-1}[(1 - \pi)\theta - \delta - n][k(t) - \bar{k}], \qquad 50$$

$$s_y(t) = \frac{[(1-\pi)\theta-\delta-n]}{\vartheta[(1-\pi)\theta-\delta-n]} \cdot \frac{k(t)-\bar{k}}{k(t)} . \qquad 51$$

The transitional dynamics of growth rate of per capita capital and output is

$$\frac{\dot{y}(t)}{y(t)} = \frac{\dot{k}(t)}{k(t)} = [(1 - \pi)\theta - \delta - n] - \frac{c(t)}{k(t)} + \frac{f(t)}{k(t)} \qquad 52$$

Clearly, the remittances are instrumental in determining per capita capital as well as output. However, the distortionary rule or existence of distortionary policies will adversely affect the output growth. The higher the value of distortionary index, the lower would be the impact of remittance on output growth. From the last equation, we can state that at the steady state path, growth rate of output and per capita stock of capital in presence of remittances, are equal. Assuming f(t), that shows the incoming remittances affect the economy through i) per capita consumption, c(t) or ii) per capita physical stock of capital k (t) or both. Therefore, in simple open economy model, with labour and capital as two factors of production an enhanced positive impact of remittances on economic growth can be captured through 'productivity' of factors of production and a good mix of complementary polices.

3.4 Estimation Methodology

The time-series data outcome most often produces spurious results if the variables included in the empirical analysis are non-stationary. To deal with problem of spurious regression, unit root and co-integration tests are applied. In order to check the stationary of the variables, this study applies two unit-root tests namely: Augmented Dickey-Fuller (ADF) Dickey and Fuller (1979) and Phillips and Perron (1988)

3.4.1 Augmented Dickey Fuller (ADF) Test

We consider a simple AR (1) process:

$$y_t = \rho y_{t-1} + x_t^` \delta + \varepsilon_t \qquad\qquad 1$$

Where x_t are the optional exogenous regressors that may consist on constant, or a constant and trend, ρ and δ are the parameters to be estimated and the ε_t are assumed to be white-noise. If $|\rho \geq 1|$, y is a non stationary series and the variance of y increases with time and approaches infinity. If $|\rho \leq 1|$, is a trend-stationary series. Thus, the hypothesis of trend-stationarity can be evaluated by testing whether the absolute value of ρ is strictly less than one. The unit root test has the null hypothesis $H_o: \rho = 1$ against the one-sided alternative $H_1: \rho < 1$. In some cases, the null is tested against a point alternative. In contrast, the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) Lagrange Multiplier (LM) test evaluates the null of $H_1: \rho < 1$ against the alternative $H_1: \rho = 1$.

The standard Dickey-Fuller test is carried out by estimating equation 1. Subtracting y_{t-1} from both the sides of the equation 1:

$$\Delta y_t = \alpha y_{t-1} + x^` \delta + \varepsilon_t \qquad\qquad 2$$

where $\alpha = \rho - 1$ The null and alternative hypotheses may be written as,

$$H_o := 0, H_1 = \alpha < 0 \qquad\qquad 3$$

and assessed using the traditional t-ratio, where t = /(s( )), s( ) being the coefficient standard error and being the estimated value of. According to Dickey and Fuller (1979), this statistic does not follow the typical student's t-distribution under the null hypothesis of a unit root. Additionally, they simulate critical values for various tests and sample sizes and obtain asymptotic results. In comparison to the simulations tallied by Dickey and Fuller, a substantially bigger collection is implemented by MacKinnon (1991, 1996) in more recent times.

Additionally, MacKinnon calculates Dickey-Fuller critical values and -values for any sample size using response surfaces he estimates for the simulation results. Only when the series follows an auto-regressive (AR) (1) process is the straightforward Dickey-Fuller unit root test appropriate. The assumption of white noise disruptions fails if the series is coupled at higher order lags. By assuming that the y series follow an AR () process, the Augmented Dickey-Fuller (ADF) test constructs a parametric correction for the higher-order correlation. Equation 5 is created by adding lagged difference terms of the dependent variable y to the test regression's right-hand side:

$$\Delta y_t = \alpha \Delta y_{t-1} + x_1^{`}\delta + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \cdots + \beta_p \Delta y_{t-p} + v_t \qquad 4$$

Then, using the t-ratio, equation 3 is tested using this expanded specification (given in equation 4). The asymptotic distribution of the t-distribution for is independent of the amount of lagged initial differences included in the ADF regression, which is a significant finding made by Fuller. Furthermore, Said et al. (1984a) show that the test is asymptotically valid in the presence of a moving average (MA) component if sufficient lagged difference terms are included in the test regression, despite the fact that the assumption that follows an autoregressive (AR) process may appear restrictive. Furthermore, it seems restrictive to assume that a series follows an autoregressive (AR) process.

But Said et al. (1984a) show that even with a Moving Average (MA) component, the test is still asymptotically valid. In this situation, the test regression must contain a sufficient number of difference terms in order to produce valid test results. In order to perform ADF practically, we must decide whether to include exogenous variables in the test regression.

We have the choice of including a constant, a constant and a linear time trend, or neither in the test regression. However, inclusion of irrelevant regressors in the regression will reduce the power of the test to reject the null of a unit root. It is therefore; better to choose a specification that is a good description of the data under both the null and alternative hypotheses (Hamilton & Susmel, 1994). Second, it is important to specify the number of lagged difference terms (lag length) to test regression. The lag-length should be sufficient so that to remove serial correlation in the residuals.

3.4.2 Phillips–Perron-Test

The Dickey–Fuller test involves fitting the regression model

$$\Delta y_t = \rho_{yt-1} + (\text{constant, time trend}) + u_t \qquad\qquad 1$$

Ordinary Least Squares (OLS) can solve this problem, although serial correlation will be a challenge. The test regression of the Augmented Dickey-Fuller includes lags of the first differences of yt to account for this. Fitting (1) is required for the Phillips-Perron (1988) test, and the outcomes are used to compute the test statistics. Instead of estimating equation 1, they estimate equation:

$$y_t = \pi_{yt-1} + (\text{constant, time trend}) + u_t \qquad\qquad 2$$

The ut parameter in equation 1 is I(0) and may be heteroskedasticity. By altering the Dickey Fuller test statistics, the PP tests adjust for any serial correlation and heteroskedasticity in the errors non-parametrically. By employing the Newey-West (1987) heteroskedasticity- and autocorrelation-consistent covariance matrix estimator, the test statistics of Phillips and Perron can be seen as Dickey-Fuller statistics that have been made resistant to serial correlation. The PP Zt and Z statistics have the same asymptotic distributions as the ADF t-statistic and normalised bias statistics under the null hypothesis that = 0. The fact that the PP tests are resistant to all common types of

heteroskedasticity in the error term ut gives them an edge over the ADF tests. One more benefit of the PP tests over the ADF tests is that the PP tests are robust to general forms of heteroskedasticity in the error term u_t. Another advantage is that the user does not have to specify a lag length for the test regression.

3.4.3 Co-Integration tests

The co-integration residual tests are simply unit root tests (Engle & Granger, 1987; Phillips, 1995) applied to the residuals obtained from the following SOLS calculation.

$$y_t = x_t'\beta + DD_{1t}'\gamma_1 + u_{1t} \qquad\qquad 1$$

All linear combinations of (yt, Xt'), including the SOLS residuals, are unit root non-stationary if the series are not co-integrated. The unit root test of the null of non-stationary against the alternative of stationarity, thus, corresponds to a test of the null of no co-integration against the alternative of co-integration. The Engle-Granger test employs a parametric Augmented Dickey-Fuller (ADF) strategy, whereas the Phillips-Ouliaris test employs a nonparametric Phillips-Perron (PP) strategy to account for serial correlation in the residual series. The a-lag enhanced regression of the form is estimated by the Engle-Granger test.

$$\Delta u_{1t} = (\rho - 1)u_{t-1} + \sum_{j=1}^{\rho} u_{1t-j} + v_t \qquad\qquad 2$$

With the (zero-lag) sample size T, the number of lagged differences should increase infinity, but at a slower rate than T(1/3). For testing the null hypothesis of non-stationarity = 1, we take into account the two common ADF test statistics, one based on the t-statistic and the other directly on the normalised autocorrelation coefficient.

$$\hat{r} = \hat{\rho} - \frac{1}{s\epsilon(\hat{\rho})} \qquad\qquad 3$$

$$z = T\,(\hat{\rho} - 1)/(1 - \sum_j \hat{\delta}_j) \qquad\qquad 4$$

where $S\epsilon(\widehat{\rho})$ is the usual OLS estimator of the standard error of the estimated$(\widehat{\rho})$. The test statistics corresponding to equation 1 are:

$$S_\epsilon(\widehat{\rho}) = S_v(\textstyle\sum_t u_{1t-1}^2)^{-1/2} \qquad\qquad 5$$

The asymptotic distributions of the Engle-Granger and Phillips-Ouliaris statistics, as with ADF and PP statistics, are non-standard and rely on the specification of the deterministic regressors, so that essential values are obtained from simulation results for the statistics. Notice that, despite the fact that the auxiliary regressions themselves exclude the deterministic; reliance on deterministic exists.

 In addition, the critical values for the ADF and PP test statistics must account for the fact that the residuals used in the tests depend upon estimated coefficients.

MacKinnon (1996) provides response surface regression results for obtaining critical values for four different assumptions about the deterministic repressors in the co-integrating equation (none, constant with level, linear trend and quadratic trend) and values of$k = m_2 + 1$ from 1 to 12, where m_2 is max (n-p_2, 0) is the number of co-integrating repressors less the number of deterministic trend repressors excluded from the co-integrating equation.

Hansen (1992) illustrates a test of the null hypothesis of co-integration against the alternative of no co-integration. Hansen indicates that with the alternative hypothesis of no co-integration, one should expect to see evidence of parameter instability. He proposes (among others) use of the L_c test statistic, which arises from the theory of Lagrange Multiplier tests for parameter instability, to evaluate the stability of the parameters S_t statistic examines time-variation in the scores from the estimated

equation. Let L_c be the vector of estimated individual score contributions from the estimated equation, and define the partial sums,

$$S_t = \sum_{t=2}^{T} \widehat{S}_t \qquad\qquad 6$$

$$\widehat{S}_t = (Z_t u_t^+ - \begin{bmatrix} \varphi_{12}^+ \\ 0 \end{bmatrix} \qquad\qquad 7$$

$$\widehat{u_t} = \widehat{y}_t - x_t' \emptyset \qquad\qquad 8$$

$$L_c = \sum_{t=2}^{T} S_t' G^{-1} S_t \text{ where G is } G = \widehat{w}_{12} \left[\sum_{t=2}^{T} z_t z_t'\right] \qquad\qquad 9$$

Where S_t and G may be defined analogously to least squares for Canonical Co-integration (CCR) using the transformed data. For DOLS S_t is defined for the subset of original regressors may be computed using the method employed in computing the original coefficient standard errors.

The distribution of L_c is nonstandard and depends on the number of co-integrating regressors less the number of deterministic trends regressors excluded from the co-integrating equation and the number of trending regressors in the system. Hansen (1992) has tabulated simulation results and provided polynomial functions allowing for computation of p-values for various values of $m_2 and p$.

3.4.4 Dynamic Ordinary Least Square Methodology (DOLS)

Despite strong theoretical link of remittances with the economic growth, the potential role of the complementary policies in empirical literature of remittances-growth nexus has been severely neglected. The available literature is also inconclusive to develop the long-run relationship between remittances and the economic growth on one hand and remittances, the economic growth and volatility of economic growth on the other hand (for instance studies by: Piracha, 2005, Bugamelli and Paterno (2011)). Further, the

available literature although confirms causality between remittances and economic growth (for example studies by: Arellano and Bover: 1995, Bugamelli and Paterno (2011), Azizi (2018)) but there is no consensus on the exact form of causality and endogeneity (Ebeke& Goff, 2011). The causality may be due to omitted variable bias or a double causal relationship between remittances and the growth or any other reason. Some previous studies (for example, Arellano and Baver,1995: Azizi (2018); Bugamelli and Paterno (2011); Rajan and Subramanina, 2005; Aggarwal and Peria (2006); Adjasi, 2018 and Calderon et al. (2008)) have either employed Generalized Method of Movement (GMM) or Generalized Method of Movement, Instrumental Variable (GMM-IV) methodology to prevent reverse causation between remittances and the economic growth. However, GMM methodology is only applicable if the data are stationary. Some empirical studies (for example by: Khathalnai, 2015) used Auto Regressive Distributed Lag (ARDL) approach to find short and long run estimates between remittances and the economic growth. The ARDL approach, however, is best applicable on small sample size. Besides, it is largely criticized due to its inherent inability to tackle endogeneity.

The present study tends to estimate single co-integrating vectors that characterize long-run relationship among the variables in output growth model of Pakistan with remittances. Each of models is being estimated with a complementary policy. To estimates the model of economic growth with remittances and complementary policy, we apply Dynamic Ordinary Least Square (DOLS) methodology. The Fully Modified Least Square (FMOLS), the CCR and Dynamic Ordinary Least Square (DOLS) appear to be similar. In case of endogeneity in the variables of the model, the DOLS is the best technique.

DOLS is capable to use address the econometric issues comprehensively. Saikkonen (1992) and Stock and Watson (1993) strongly advocate the DOLS technique. This technique involves the augmentation of co-integrating regression that includes lags and leads (ΔM_t) of independent variable. Therefore, error term resulting from co-integrating equation is irrelevant to history of stochastic repressors innovations, such that:

$$y_t = M_t'\beta + D_{1t}'\theta + \sum_{j=-q}^{l} \Delta M_{t+j}'\delta + \varepsilon_{1t} \qquad\qquad 1$$

With the assumption that adding q lags and l leads of the differenced regressions absorbs all long-run correlation between u_{1t} and u_{2t} the OLS esitmate of $\varphi = (\beta', \theta')$. An estimator of the asymptotic variance matrix of $\varphi^{\wedge}$ can be computed by computation of OLS coefficient covariance. We can that by replacing the usual estimator for residual variance of ε_{1t} and with the estimator of long-run variance of residual. After estimation by the DOLS, the unit-root is applied on residuals. The stationarity of residual affirms the reliability of estimated long-run co-integrating relationship.

3.4.5 Empirical Model for aggregate analysis

The available literature has shown mix results regarding impact of remittances on the economic growth. Particularly, the negative effect of remittances on the economic growth is dominant. The growth model developed under the analytical and theoretical framework highlights the importance of policy complementarity for the economic growth. In this part of study, we have taken the macroeconomic time-series data for Pakistan to test which polices are complementary with remittances to create positive impacts on economic growth. We have identified complementary policies in the areas of human capital, the institutional quality, the financial depth and macroeconomic policy index. As the ICRG index of the quality of institutions was available only since

1984, therefore the period of analysis in this study is from 1984-2018. The country under analysis is Pakistan.

At first, we investigate the aggregate impact of remittances along with complementary policies on the economic growth. The country selected is Pakistan. In the next section, we disaggregated the same analysis for one of the critical channels of the economic growth that is investment. In absence of appropriate directional policies, the impact of remittances on economic growth may be negligible or negative. Therefore, each model also contains detail of reason to select the complementary polices under consideration.

The study is significant enough to find the policies that are complementary with the remittances in context of Pakistan. The results of empirical analysis are supportive to advocate that human capital, institutional quality and favorable macroeconomic policies are complementary with remittances to create larger positive impact on the economic growth. However, the financial depth is found to be a substitute. The results suggest the policy-making institutions to make such arrangement in economic, socio-economic, political, and financial system of Pakistan so that growth-enhancing impact of remittances can be materialized at their full length.

3.4.6 The Econometric Model

The estimate able model includes the per capita gross domestic product of Pakistan as dependent variable. Bedsides including the control variable, it includes complementary polices in the areas of the human capital, the institutional quality, the financial depth and the macroeconomic policy index. These models are presented below:

3.4.7 Econometric Model with Human Capital

The literature related to the endogenous growth finds the critical role of the human capital in the long-run economic growth (for instance Lucas 1988). According to

endogenous growth theory, the effects of human capital counteract the diminishing returns in other inputs i. e physical capital. Therefore, on the pattern of the physical capital, the human capital creates a long-term effect on growth (Calder et al. 2005). Similarly, some studies in literature (for instance: Galor and Tsiddon, 1997: Otani and Villanueva, 1990: Romer (1989)) found that there are certain channels through which human capital plays a direct role as growth determinants. Besides, human capital is complementing to other factors as physical capital and the natural resources including land (Bravo-Ortega and De Gregorio; 2002).

The investment in the human capital promotes technological innovations and facilitates technological adsorption in developing countries (Lopez et al., 2008). Thus, when remittances are potentially used to build human capital their impact on log-run growth will not only be rapid but also sustainable (Lopez et al., 2008). Although, human capital has a positive impact on economic growth, it is difficult to find out an appropriate proxy for it. One of the important proxies for human capital is education. The education is also a key measurement tool and proxy for the quality of human capital. The reason being that educated and skilled workers can have an important contribution to production and growth (Florin et al., 2015). A great contribution to subject of human capital thus education was made by researchers like Barro (1995) and Sala-i-Martin and Barro (1995).

The significance of education indicates that investment on education may be the best tool to measure the performance of the human capital. Many studies take secondary education as a best measure of human capital (for instance Giuliano and Ruiz-Arranz (2009): Calder et al., 2005: Lopez et al., 2008). Following this literature, we use the ratio of total secondary enrollment regardless of age to population of the age group

corresponding to that level as a proxy for human capital. The econometric model of economic growth with and without complementary polices of education is as follow:

$$logypc = \beta logk + \delta loginf + \rho logfd + \tau logto + e \qquad \text{Basic Model}$$

$$logypc = \beta logk + \delta loginf + \rho logfd + \tau logto + \gamma logrem + e \qquad 1$$

$$logypc = \beta logk + \delta loginf + \rho logfd + \tau logto + \gamma logrem + +logHc + e \qquad 2$$

$$logypc = \beta logk + \delta loginf + \rho logfd + \tau logto + \gamma logrem + \partial log(Hc) +$$
$$\mu log(rem)(Hc) + e \qquad 3$$

where all the variables are in log form.

The estimate able models 1 and 2 take the per capita Gross Domestic Product (GDP) of Pakistan ypc as dependent variable. The control variables include the physical stock of capital k, rem stands for remittances, the inflation inf, the fiscal deficit fd, and the trade openness to. In equation 1, we do not include variables of complementary policies. Hence, the coefficient of capital is expected to have positive sign, inflation and fiscal deficit is expected to indicate negative sign. However, the coefficient of remittances (direct impact) may or may not be positive.

Model 1 includes remittances as independent variables to find its direct impact on per capita GDP. Model 2 is our model of interest. The model includes remittances (rem) and level of human capital (Hc) to check their direct impact on the economic growth. In order to capture effect of complementarities or substitution, an interactive term $log(rem)(Hc)$ is added in model b. The direct impact of remittances and sign of interactive term is utmost important to draw inference about policy complementarities or substitutions. A positive sign of this interactive term indicates that human capital is complement with remittances to create growth-enhancing impact of remittances.

3.4.8 Econometric Model with the Institutional Quality

At the beginning of the chapter, we stated that "ultimate" economic growth determinants refer to variables such as government efficiency, structures, political and administrative systems, cultural and social variables, geography and demography. Many empirical studies test the role of institutions on the economic growth (for instance study by: Acemoglu and Verdier (2000) (Grosse & Trevino, 2005) Kaufman and Wei, 2000: (T. Le, 2009) Arusha 2009, Aisen and Veiga, 2013, (Meyer & Shera, 2017) . The well-performing political, social and economic institutions and their quality reflect performance of government. Therefore, following P. A. Acosta et al. (2009) this study takes the quality of the institutions as complementary policy with remittances. The institutional quality is proxied by International Country Risk Guide (ICRG) index of political risk published by the Political Risk Service (Skirbekk et al.) Group. It is a non-economic determinant of economic growth as indicated by Boldeanu (2015). It refers to the factors like government efficiency, institutions, political and administrative systems and corruption.

Model of economic growth is as follows:

$$logypc = \beta logk + \gamma logrem + \delta loginf + \rho logfd + \tau logto +$$
$$\partial(institutions\_index) + e \qquad\qquad 1$$

$$logypc = \beta logk + \gamma logrem + +\delta loginf + \rho logfd + \tau logto +$$
$$\partial \log(rem)(institution\_index) + e \qquad\qquad 2$$

where all the variables are in log form. The interactive term $log(rem)(institution\_index)$ is added in model 2 to find if the institutions and remittances complements or substitutes.

3.4.9 Econometric Model with the Financial Depth

Another complementary policy area is the financial depth. A well-functioning financial system creates significant effect on economic efficiency through various channels. Well-performing financial markets help in diversifying risk associated with investment through trading, hedging and pooling the financial instrument (Burnside & Dollar, 2000; Easterly et al., 2000; Ross Levine, 1997; Lucas Jr, 1988; Romer, 1989). The well-performing financial markets induce remittances-recipients to utilize remittances for profitable investment activities, promoting long-run investment hence the economic growth (Lopez, 2008). Therefore, by following Beck et al. (2000), Calderon et al. (2008), Jalil and Ma (2008), Ul Haq (2020). We use the ratio of private domestic credit supplied by private financial institutions to GDP as a proxy for the financial depth.

We use private domestic credit to private sector is that private agents have strong privileges to perform efficiently. Secondly, data for this variable is widely available. Thirdly, this variable is good proxy for the size and activity of the financial markets in recently available empirical studies (Levine et al., 2000). Fourthly, this variable is also significantly correlated with other proxies of financial depth such as M2/GDP that is the traditional measure of the financial depth, and indicators of some other aspects of the financial markets, such as the size and activity of stock markets.

Model of economic growth is as follows:

$$logypc = \beta logk + \gamma logrem + \delta loginf + \rho logfd + \tau logto +$$
$$\gamma \, log(dom\_cre) + e \qquad\qquad 1$$

$$logypc = logk + \gamma logrem + \delta loginf + \rho logfd + \tau logto + \gamma \, log(dom\_cre) +$$
$$\mu log(rem)(dom\_cre) \qquad\qquad 2$$

Where all the variables are in log form.

As in model 1, the estimate able model 2 takes per capita Gross Domestic Product of Pakistan as the dependent variable, with same control variables. This model takes the financial depth as complementary policy.

3.4.10 Econometric Model with the Macroeconomic Policy Index

A sound economic environment generates long-lasting effect of remittances on the economic growth (Burnside & Dollar, 2000). The last complementary policy area includes the macroeconomic policies. The macroeconomic policies combine the fiscal, monetary and the trade policies. Here, the role of government is reflected through the government burden. Government plays a good role for economy and there will be a burden on government if it imposes high taxes and uses its revenue for inefficient public sector programs. This will result in distortionary market incentives and will affect the economy by limiting the role of the private sector (Corden, (1991); Fischer (1993); (Engen & Skinner, 1996)).

Following Calderon et al. (2008) the impact of macroeconomic policies, the trade openness, fiscal policy and the monetary policy can be captured through the Macroeconomic Policy Index (MPI). Following Dollar and Kraay (2002) Faini (2007) and Javid (2014), MPI is constructed by using Principal Component Analysis (PCA), where a high MPI indicates less macroeconomic distortions hence, greater positive impact of remittances on the economic growth.

Model of economic growth is as follows:

$$logypc = \beta logk + \gamma logrem + \alpha(MPI\_index) + e \qquad\qquad 1$$

$$logypc = \beta logk + \gamma logrem + \alpha(MPI\_index) + \mu log(rem)(MPI\_index) \qquad 2$$

Where all the variables are in log form.

In equation 1, we do not include variables of complementary policies. Here, ypc stands for per capita gross domestic product, k stands for capital and rem stands for remittances. The coefficient of capital is expected to have positive sign, inflation and fiscal deficit is expected to indicate negative sign. However, the coefficient of remittances (direct impact) may or may not be positive. The sign of the interactive term in equation 2 determines if MPI in case of Pakistan is a complement or a substitute.

3.4.11 Role of interactive terms in model with complementary polices

The novelty of study lies in identifying the combined effects of remittances and the complementary polices (the human capital, financial development, institutions and the macroeconomic policies). In order to incorporate the role of complementary polices, this study has introduced an interactive tern between remittances and the human capital, remittances and the financial development, remittances and the institution and lastly the remittances and the macroeconomic policy index. The unique impact of remittances on economic growth of Pakistan is not limited to γ but it also depends on the value of μ and the human capital, the financial development, the institutions and the macroeconomic policy index. In simple words, γ and μ provide information regarding marginal impact of remittances on growth that is in this study conditional upon the complementary policies. Further, if in equation 2, γ is positive and μ is negative, this show those remittances are contributory if the financial systems are shallower. Putting in other words, it would mean that negative interaction term means remittances are substitute for the financial services.

On the other hand, if the effect of remittances is negative, that is γ is negative and significant; however, the interactive term of remittances with the complementary policy is positive that is μ positive it would indicate that the remittances and the financial

system are complements for the economic growth. It is the case that with better the human capital; good governance, better functioning-financial systems and effective macroeconomic policies remittances enhance the economic growth However; to have a positive impact of remittances on the economic growth, there will be a threshold level of the human capital, the financial depth, the institutional quality and the macroeconomic policies index. After that threshold level, the growth impact of remittances accompanied with the policies will be positive.

3.4.12 Volatility of Economic Growth and Remittances

Finally, to check the contribution of remittances in volatility of the economic growth, we use the following econometric model:

$$vly = \alpha + \beta lrem + \gamma linf + \delta ldom.cre + \pi lagr_{share} + \vartheta lM_2 + \varepsilon_i \qquad 1$$

$$vly = \alpha + \beta lrem + \gamma linf + \delta ldom.cre + \pi lagr_{share} + \vartheta lM_2 + \sigma ltrade_{openess} + \varepsilon_i \qquad 2$$

$$vly = \alpha + \beta lrem + \gamma linf + \delta ldom.cre + \pi lagr_{share} + \vartheta lM_2 + \sigma ltrade_{openess} + \tau lnetFDI + \varepsilon_i \qquad 3$$

where vly is the dependent variable that is volatility of includes the control variables of inflation, the domestic credit to GDP ratio, the agriculture shares in the GDP, the trade openess, the net foreign direct investment inflow and the M2/GDP (broad money as ratio of the GDP). All the variables are in log form.

3.4.13 Remittances, Economic Growth and Complementary Polices: A dis-aggregate analysis

The argument used in this study is to justify complementarities between remittances and some policy interventions. This concept is based on the idea that with some existing conditions in remittances-receiving countries, the incentives of investing the corresponding funds will rise. Following Lartey (2011) and Calderon et al. (2008), this

part of study focuses on providing evidence for existence of a disaggregated channel that can promote economic growth. This is the channel of investment channel through which remittances contribute to support a sound macroeconomic environment and economic growth. Same investigation process focuses on role of complementary polices as well.

Therefore, to test if complementarities exist between remittances and other polices, at disaggregate level, there is a need to extend the model to determinants of investment. Therefore, we now proceed to the empirical estimation of models that relate investment to a set of control variables, remittances, interaction between remittances and complementary polices to capture impact of such policies. Following the empirical studies for the determinant of investment, the present study includes the following determinants of domestic investment: i) per capita output growth (Calderon et al., 2008) Adams, 2009: Mallick, 2012: Le Thanh Tang, 2015) ii) inflation (Jongwanich and Kohpaiboon, 2008: Balde, 2011: Le Thanh Tang: 2015) and iii) real interest rate (Calderon et al., 2008).

For the cost of investment, the different studies use different proxies: for example, the call money rate (Ahmed, 2021; Nooren et al., 2015, in case of Pakistan), the lending rate (Wuhan Li and Adnan Churched, 2015), the price of investment goods (Calderon et al. (2008) as proxy for cost of investment. However, it is the real interest rate with which investors, saver or de posits are concerned. Therefore, this study takes real interest rate as determinant of investment. The Fisher equation (1907) is used to forecast the nominal and real interest rate. Let r denotes the real interest rate: i indicates the nominal interest rate and π denote the inflation rate, thus the Fisher equation is:

$r = i\text{-}\pi,$

where i the discount rate is used proxy for nominal interest rate. By using the data from 1984-2108, for the Pakistan we find that the correlation between real interest rate and investment is negative (-0.032) and π is inflation CPI. Besides adding the traditional determinants of investment, we include the variable of remittances to investment function to test the hypothesis if remittances are contributory to physical stock of capital or not. The econometric model that analyzes the impact of remittances on domestic investment, in Pakistan, is presented as follows:

3.4.14 Remittances, the Human Capital and Investment

The model of investment with policy complementarities of human capital is given below:

$$logI = \beta logr + \gamma logypc + \delta loginf + e \text{Basic Model}$$

$$logI = \beta logr + \gamma logy \ pc + \delta loginf + \tau logrem + \partial logHc + e \qquad 1$$

$$logI = \beta logr + \gamma logypc + \delta loginf + \tau logrem + \partial logHc +$$

$$\mu log(rem)(Hc) + e \qquad\qquad 2$$

In the above model, gross total investment as percentage of GDP (logI) is the dependent variable. In order to re-examine the effects of some key macro variables on domestic investment in the case of Pakistan, this study uses basic model including some other macro variables having significant impact on domestic investment. These determinants include real interest rate (r), the annual GDP per capita growth (ypc) and inflation (inf). However, model (a) includes remittances as percentage of GDP (logrem) as additional variable. On pattern of aggregate model, the disaggregate model incorporates complementarities in the areas of the human capital, the financial depth, the institutions and the MPI. All these complementary policies incorporate the same indicator as are in used aggregate analysis. All the disaggregated models with complementary polices are given below:

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3.4.15 Remittances, Institutional Quality and Investment

The model of investment with policy complementarities of institutional quality is given below:

$$logI = \beta logr + \gamma logypc + \delta logInf + \rho logrem + \partial log(inst) + e \qquad 1$$

$$logI = \beta logr + \gamma logypc + \delta logInf + \rho logrem + \partial log(inst) +$$
$$\mu \, log(rem) \, (institution) + e \qquad 2$$

3.4.16 Remittances, Financial Depth and Investment

The model of investment with policy complementarities of financial depth is given below:

$$logI = \beta logr + \gamma logypc + \delta logInf + \tau logrem + \gamma logdom_{cre} + e \qquad 1$$

$$logI = \beta logr + \gamma logypc + \delta logInf + \tau logrem + \gamma logdom_{cre} +$$
$$\mu log(rem)(dom_{cre}) \qquad 2$$

3.4.17 Remittances, MPI and Investment

The model of investment with policy complementarities of institution is given below:

$$logI = \beta logr + \gamma logypc + \delta logInf + \tau logrem + \gamma logMPI \qquad 1$$

$$logI = \beta logr + \gamma logypc + \delta logInf + \tau logrem + \gamma log(MPI) +$$
$$\mu log(rem)(MPI) \qquad 2$$

3.5 Variable Construction and Data Source

The ultimate determinants of the economic growth refer to the factor including government efficiency, the institutional quality, the political and administrative system, culture and the social factors, geography and the demography. A part from traditional determinants of economic growth, some empirical studies take remittances as a major determinant of economic growth. These studies, however, given conflicting results with

respect to effect of remittances on economic growth. These studies ignore the role of certain complementary policies to create positive impact on economic growth in presence of remittances.

In this study, we empirically test the impact of remittances in complement with four complementary policies, without which the impact of remittances on the growth output is either negligible or negative. Following theoretical framework developed in section 3.3 of this study and empirical study by P. A. Acosta et al. (2009), the complementary policies included in this study are cover the areas of i) human capital ii) institutional quality iii) financial depth and iv) macroeconomic policy distortions. These policy complementarities are used for all empirical investigation of aggregate and disaggregate level of analysis. The dependent variable is per capita Gross Domestic Product.

The data are taken from World Development Indicators, the World Bank. Another part of the empirical analysis, measures the output growth volatility measured in presence of remittances. The time-period of study is 1984-2018. The country of analysis is Pakistan. For the empirical estimation, we use Dynamic Ordinary Least Square estimation method. The following is the detail of the variables used for the empirical investigation and their construction

3.5.1 Set of Variables and Variable Construction

A) Control Variables:

The variables used in aggregate and disaggregate level analysis are described as under:

i. Gross Domestic Product (GDP) per capita:

GDP is an indicator of a country's economic activity. It highlights the overall market value of products and services within the territorial limits of an economy over a particular period. Following P. A. Acosta et al. (2009), this study uses per capita GDP as a proxy for economic growth. GDP per capita is used as dependent variable in aggregate analysis.

ii. Secondary School Enrollment:

Following the empirical literature (for instance: P. A. Acosta et al. (2009) in this study, the ratio of total enrolment in secondary school, irrespective of age, to the population of that age group, corresponding to that level, is used as the human capital proxy. Compared to stock variables related to educational attainment of adult population or life expectancy, this indicator will better capture latest government policies on schooling and human capital expenditure. Secondary school enrollment is used as complementary policy with remittances in both aggregate and disaggregate analysis.

iii. Domestic Credit to Private Sector.

Following P. A. Acosta et al. (2009) domestic credit to private sector has been used as a proxy for the financial depth. The measure for financial depth is stock of claims on private sector by deposit money banks and other financial institutions, expressed as ratio of GDP. In both aggregate and disaggregate research, domestic credit to the private sector is used as a complementary remittance scheme.

iv. Institutions:

The Political Risk Rating includes 12 weighted variables covering both political and social attributes. The purpose of political risk rating is to provide means of assessing political stability of country. In empirical analysis, studies P. A. Acosta et al. (2009) commonly use six indicators including Bureaucratic Quality, Corruption, Democratic Accountability, Government Stability, Law & Order and Military in Politics.

In this study, the Principal Component Analysis has been used to construct this index. The Policy index for the period 1984-2018 is based on this equation:

$$PolicyIndex = \varepsilon BQ + \theta Corr + \gamma DA + \rho GS + \pi LO + \mu M \qquad 1$$

Where $\varepsilon, \theta, \gamma, \rho, \pi, \mu$ are the weights assigned to Bureaucratic Quality (BQ), Corruption (Corr), Democratic Accountability (DA), Government Stability (Bergstrand), Law & Order (LO0 and Military in Politics(MP). The weights obtained through PCA have been rescaled to add up to one. The following weighs are assigned to the indicators:

Policy Index = 0.121 BQ+0.193 Corr+0.234 DA+0.053 GS+0.192 LO+0.207 MP 2

Institutional quality is used as complementary policy with remittances in both aggregate and disaggregate analysis.

v. Macroeconomic Policy Index:

Following Calderon et al. (2008); Burnside and Dollar (2000), Pradhan et al., (2008), this study uses inflation, fiscal deficit and trade openness to construct macro policy index. Inflation represents the monetary environment of the country, while the fiscal balance accounts for the government burden.

The stabilisation of the macroeconomic system depends on trade openness. There are numerous ways that it influences economic growth (Lederman, 1996). First, trade enables nations to capitalise on comparative advantage, which increases specialisation and raises total factor production. The second benefit is that it gives domestic businesses access to potential markets, enabling them to benefit from economies of scale and consequently boost productivity. Third, trade fosters managerial practices improvement by allowing domestic businesses to interface with overseas businesses and markets. Trade openness and economic growth are thus positively correlated. As a result, the favourable effects of trade openness on economic growth will be further amplified by remittances in the context of trade openness.

The construction of Macroeconomic Policy Index (MPI) is in Appendix E. MPI is used as complementary policy with remittances in both aggregate and disaggregate analysis.

vi.   **The Worker's Remittances:** The variable of interest is remittances. It is used as an independent variable in aggregate and disaggregated analysis. Remittances refer to the current transfers by the migrant workers who are employed in host countries and they are resident of those host countries. Following, P. Acosta et al. (2008) and Catrinescu et al. (2009) and remittances received from the workers as percentage of GDP are used as a proxy for remittances.

vii.   **Total Gross Investment: T**otal gross investment is the total amount invested in any asset or business without deducting depreciation. Hence, the total addition into the stock of economy in a given period is termed as Gross Investment. Following the empirical studies of P. A. Acosta et al. (2009) and Catrinescu et al. (2009) this study has used total gross investment as a dependent variable in disaggregate analysis.

viii.   **Agriculture share in GDP:** A country is economically sound if it possesses stable agricultural basis (Ullah, 2013). To achieve food security, alleviate poverty and attain overall sustainable growth, it is fundamental to improve agriculture sector and utilization of land.   Following Bugamelli and Paternò (2009) and Ullah (2013), agriculture as percentage of share of GDP has been used as independent variable to determine volatility of output growth.

ix.   **Net Foreign Direct Investment (FDI) inflows:** FDI is a major source of foreign exchange earnings representing a long-term relationship between the direct investor and resident entity (Bugamelli & Paternò, 2009; Ullah, 2013). As expressed in the balance of payment, FDI is the amount of equity capital, earnings re-investment, short-term and long-term capital. Following Bugamelli and Paternò (2009) in this study, this study has used net FDI inflow, as independent variable, to determine volatility of output growth.

B) Set of Control Variables: The control variables of aggregate level of analysis include the capital[43], average annual consumer price inflation as a proxy of lack of price stability, the fiscal deficit, the trade openness. The detail of these variables is given as follows:

i.   **Physical Capital:** The physical capital is one of which the economists call the three main inputs i. e land, labour and capital. It consists on fabricated tangible goods that assist in the process of creating a product or service. Therefore, the machinery, plants, firms, factory, buildings etc that an organization owns is considered as its physical capital.

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[43]The GDP per capita that has been taken as dependent variable in this study breaks down economic output of a country per person. It is calculated by dividing country GDP by its population. As we take per person GDP as dependent variable, so we do not take labour as independent variable.

ii.   **Trade Openness:** Following P. A. Acosta et al. (2009) this study uses volume of trade (real exports plus imports) over GDP as a measure of trade openness[44]. Trade openness can be beneficial to economic growth through growing influence of economies of scale, technological transfer and increased competition (Silajdzic & Mehic, 2018). Therefore, the relationship between trade openness and the economic growth can be positive. Following P. A. Acosta et al. (2009) and Javid et al. (2018) this study has used trade openness both in aggregate; disaggregate level of analysis and volatility of output growth.

iii.   **Inflation:** Consumer price inflation is a measure of how much prices have changed on average for a basket of goods and services over time among consumers. Inflation is another name for the CPI. A country's currency unit's purchasing power is measured by the CPI, which makes an effort to quantify the overall price level in an economy. The inflation rate therefore reflects changes in the cost of living. Inflation that is very high is not good for the economy or for people. The value of money is diminished as a result of high inflation. There are very few opportunities for savers to find any real return when inflation is very high. As a result, generally speaking, inflation has a negative impact on economic growth. With rise in inflation, the cost of investment goods rises. Therefore, it reduces the incentives to invest. At aggregate level, inflation is a determinant of the economic growth. Similarly, at disaggregated level, inflation is a major determinant of investment. The empirical studies by Appienti et al., (2016) and Nooren et al., (2020) confirm expected negative association with both the economic growth and investment. Following the empirical studies of P. A. Acosta et al. (2009),

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[44]or sum of exports and import as ratio to GDP.

Appienti et al., (2016); Nooren et al., (2020) and Danila et al. (2020), this study inflation as a control variable both for aggregate and disaggregate levels of analysis.

iv.   **Fiscal Deficit:** Fiscal deficit indicates government borrowing to finance its expenditures. It is total dollars spent in excess of income and calculated as a percentage of GDP. The fiscal deficit is also calculated as total expenditures fewer total receipts. Therefore, the income figures include only taxes and the other revenues. It excludes the money borrowed to make up all shortfall. Expected impact of this variable is negative. Following P. A. Acosta et al. (2009) fiscal deficit is used as control variable, both for aggregate and disaggregate analysis.

v.   **Real Interest Rate:** Economic theory indicates that the saver[45], borrowers and the lenders care about the real interest rate instead of nominal rate. A rise in real interest rate dampens investment. This fact is confirmed by empirical studies (for example: Hyder et al. (2003); James E. Larsen, 2004: Calderon et al. (2008); Bader and Malawi, 2010: Wuhan, 2015: Nooren et al., 2020). Following empirical study of Hyder et al. (2003) in case of the Pakistan, James E. Larsen (2004) for the United States and Bader and Malawi (2010) for the Jordon, this study uses real interest rate as primary determinant of investment. This variable is important in disaggregate level of analysis.

vi.   **Annual GDP per capital growth:** The empirical analysis (for instance by Calderon et al. (2008); K. Hyder and Ahmed (2003); James, 2004: Bader and Malawi, 2010: Nooren et al., 2020) indicate that an annual GDP per capita growth and investment have positive relationship. Hence, it is a primary determinant of investment. GDP per capita growth indicates the annual percentage growth rate of per capita GDP

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[45]while making any saving or investment decision.

based on constant local currency. However, aggregates are based on constant 2010 U.S dollars.

For a disaggregate level analysis between remittances and the economic growth through investment, this study follows the research of P. A. Acosta et al. (2009) , Le Tanuk Tang (2015) and Nooren et al., (2020). Therefore, the present study uses per capita growth as proxy for the per capita income growth.

3.5.2   Data Source

In this study, the data of per capita real GDP (at constant 2010 US $),GDP per capita growth rate, the secondary school enrollment, domestic credit to private sector as percentage of GDP, remittances at constant US $, trade openness, inflation (consumer price) and the FDI are taken from World Development Indicators, the World bank.

The variable of gross fixed capital formation is taken from the World Development Indicators, the World Bank, to generate the series of capital by using Perpetual Inventory Method. This data is used to calculate the series of capital stock for the period under consideration i.e., 1984-2018. Data of the fiscal deficit are taken from various issues of Pakistan Economic Survey. The data for agriculture share as percentage of GDP are collected from various issues of the Economic Survey. The data of total gross investment as percentage of GDP has been taken from International Financial Statistics. The data of total gross investment is available at current million rupees. The same has been divided by data series of Consumer Price Index (CPI). The data of CPI has been taken from World Development Indicators, the World Bank. To get data series of real interest rate, that is discount rate less inflation, the data of proxy of nominal interest rate (that is discount rate) are taken from International Financial Statistics. The data of

inflation (CPI) has been taken from the World Development Indicators, the World Bank.

3.6 Empirical Results and Discussion

3.6.1 Remittances, Complementary Polices and Economic Growth

In presence of well-functioning institutions, remittances recipient can invest more. The right direction of investment (either physical or human capital) creates significant impact of remittances on economic growth. Primarily, to mobilize savings towards investment opportunities, the financial sector including banks are crucial. Good financial sector motivate remittances beneficiaries to save and spend more thus these institutes promote long-term growth. However, the distortions lower the incentives that remittances recipient will have to invest. Thereby reduce the level of investment hence growth. It is important to decide that what to choose. The choices available can be among investment in human capital, financial institutions macroeconomic stabilizers or any other relevant policy.

Theoretical and empirical literature presented in section 3.2 indicates that remittances may or may not promote the long-run economic growth. The empirical literature does not either considers the necessary policy variables in remittances-growth relationship or does not precisely determine the linkage between the set of the necessary policy indicators, the remittances and the economic growth. Similarly, the long-run linkage between remittances and investment is unclear. Earlier literature is also silent in investigating out-put stabilizing role of remittances in presence or absence of required policy variables.

A careful review of literature indicates that no empirical study is available in case of Pakistan where out-put growth enhancing and out-put growth volatility stabilizing role

of remittances has been investigated in complement with necessary policies. The lack of empirical literature in this field indicates that there is still a room to further investigate the growth-enhancing effect of remittances in complement with certain polices. Thus, the objective of this part of study is to empirically explore the impact of remittances on the economic growth in complement with certain policies. Following Calderon et al. (2008) and others, the complementary policies introduced in this study induce the human capital, the financial depth, the institutional quality and the macroeconomic policies.

One of important contribution of this study is that, by using time-series data from 1984-2018, for Pakistan, this study makes a comparative analysis of these complementary policies and finds out the most appropriate and effective policy or mix of policies in growth enhancing route for Pakistan. The study is also contributory in finding the stabilization role of remittances for long-run economic growth in context of Pakistan.

3.6.2 Discussion on Results

The results of both the unit root tests i,e., ADF & PP are presented in Table 3.1. The results indicate that all the data series under consideration are unit-root stationary or I (1) except for logy (real GDP) and $logM_2$ that is log broad Money as ratio of GDP. In particular, all specifications of ADF and PP test cannot reject null hypothesis of a unit root process at 1 percent, 5 percent and 10 percent level of significance, except for the logy and $logM_2$[46].

Given that, all the data series to be incorporated in model are I (1) or unit-root stationary, as reported in Table 3.1, in particular, all specifications of ADF and PP tests

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[46]Descriptive stats of data are given in appendix.

cannot reject the null hypothesis of a unit root process for series used in Model 1 to Mode 4. However, when the data series are tested in their first difference, null hypothesis of a unit root process is rejected both according to ADF and PP tests. Therefore, ADF and PP unit root tests conclusively show that all variables are I (1).

To establish that dependent variable (real GDP per capita) is structurally related to remittances, complementary polices and other explanatory variable, we employ Dynamic Ordinary Estimation Technique (DOLS). DOLS technique is appropriate to deal with problem of non-stationary repressors and simultaneity bias due to endogeneity of remittances variable on right-hand side of equation.

Table 3. 1: Stationarity Test/Unit Root Test

Variables	ADF		PP		ADF	PP
	At level		At level		First difference	
	T&D	D	T&D	D	with constant	
Logypc	-2.37	0.22	-2.22	-0.37	-3.44**	-3.45**
Logy	**-3.49****	**-0.28**	**-2.89**	**-1.135**	**---**	**-3.48****
Logk	-2.76	-1.67	-2.85	-1.42	-3.99*	-3.94*
Logrem	-2.14	-1.71	-2.47	-1.79	-4.67*	-4.67*
logTo	-2.75	-1.72	-2.75	-1.73	-6.56*	-6.56*
Logfd	-2.81	-2.49	-2.93	-2.5	-8.06*	-8.17*
Loginf	-2.44	-2.49	-2.44	-2.51	-7.05*	-7.02*
logHc	-2.47	-1.04	-2.53	-0.715	-5.93*	-6.52*
logdom_cre	-2.27	-1.9	-2.2	-1.34	-4.16*	-4.15*
logbm_GDP	**-3.77****	**-1.25**	**-2.48**	**-1.88**	**-4.54***	**-5.29***
lognetFDI_inflow	-2.78	-2.8	-1.77	-1.93	-3.85*	-3.83*
logAgri_share	-3.22	-1.47	-2.54	-1.46	-3.99*	-4.02*

Note: T stands for trend and D for drift. *, **, *** denotes significant at 1percent, 5percent and 10percent level of significance.

In all empirical models of the economic growth with complementary polices, after

obtaining estimates with the DOLS[47] for the period 1984-2018 for Pakistan, we apply

Engle-Granger and Phillips-Ouliaris residual-based test of co-integration to identify the

long run relationship among the variable of interest. The Hansen's instability test is

applied to check if parameters are stable. The results are reported in Table 3.2. The

existence of co-integration indicates that DOLS results are reliable. Therefore, for each

model, before presenting empirical estimates from DOLS, co-integration results are

reported.

Model 1: Remittances, Growth and Human Capital: Empirical Estimation

After establishing a co-integration relationship between the real GDP per

capita(ypc)and the remittances (rem), we now turn to estimate the impact of remittances

and complementary polices on ypc. Based on four complementary polices, four

different models have been estimated. Each model contains two separate estimations;

first equation in each model is without policy interaction with remittances and the

second with policy interaction. The results are reported in Table 3.2.

Table 3. 2: Test for Co-integration and Parameter Stability

Test	12		3	4
Engel Granger tau test	-3.05	-3.03	-4.86	-5.21
	(0.04)	(0.02)	(0.04)	(0.04)
Engle Granger z stat	-16.17	-17.03	-27.18	-14.31
	(0.03)	(0.013)	(0.03)	(0.02)
Philips Ouliaris tau stat	-3.32	-13.42	-3.99	-3.47
	(0.04)	(0.02)	(0.02)	(0.03)
Philips Ouliaris z stat	-17.45	-3.32	-19.4	-17.78
	(0.03)	(0.01)	(0.01)	(0.01)
Hansen Instability	1.2	1.05	1.02	1.4
	(0.01)	(0.02)	(0.03)	(0.03)

Note: p-values are given in parenthesis.

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[47]The number of leads and lags are selected according to Swartz criteria.

In Model 1, regression results of base specification with and without including variable of remittances, with policy that is the human capital and interactive term of remittances with policy are presented in Table 3.3 columns 1, 2, 3 and 4. Secondary school enrolment rate is the proxy for the human capital. Physical stock of capital, inflation and trade openness are the significant variables in the regression (1). The variables have the intuitive signs but fiscal deficit is insignificant. Specification (2) of the growth equation (that includes remittances), indicates that the signs of all the variables are similar to specification 1 with slight difference in magnitude.

The sign of remittances to GDP variable is not only negative but also not significantly different from zero. However, when policy interactive terms are entered, remittances indicate their positive and direct impact on growth. However, this impact is positive only if the conditional policy is complementary to remittances. In estimation of all model of growth with remittances, the same set of variables is retained, even if any variable has low significance. However, when remittances are interacted with complementary policy, i.e., the secondary school enrollment rate, the coefficient of fiscal deficit also became significant.

Table 3. 3: dependent variable logypc (Model 1)

Variables	1	2	3	4
Logk	0.23*	0.21*	0.22*	0.57*
	(6.46)	(6.80)	(5.35)	(3.54)
Logfd	-0.51	-0.55	-0.58	-0.13*
	(-1.02)	(-0.29)	(-1.31)	(-3.84)
Loginf	-0.05	-0.05	-0.04	-0.25***
	(-0.77)	(-1.52)	(-1.43)	(-1.82)
logTo	1.08*	1.07*	0.79*	0.78**
	(3.72)	(9.36)	(8.84)	(2.73)
Logrem		-0.07	-0.071	0.26
		(-1.37)	(-1.30)	(1.39)
Logedu			0.41***	0.40***
			(1.74)	(1.71)
log(rem)(edu)				0.23*
				(3.94)
D_2005		0.036***	0.032***	0.39***
		(1.94)	(1.86)	(1.69)
D_1994	0.09		0.09	1.27***
	(0.445)		(0.33)	(1.86)
D_1996	0.12***			
	(1.86)			
S.E of reg	0.015	0.016	0.011	0.011

Note: *, **, *** indicate significance at 1, 5 and 10 percent level.

The coefficient of capital stock is positive and significant in all specifications. This result indicates that elasticity of log of GDP per capita (real) with respect to physical stock of capital is 0.57 in specification 4. The coefficient is statistically significant at 1percent level of significance. A rise in capital stock generates domestic investment activities and employment opportunities. As a result, contributes to improve economic growth. The result is consistent with the findings of earlier empirical findings of Shahbaz et al., (2008) and Afriadi (2016) for Pakistan.

The marginal contribution of inflation is negative (-0.25). The result is significant at 10 percent level of significance. A lower inflation rate reduces that opportunity cost of holding money and subsequently saving. As a resulting, stock of capital increase that

ultimately increases growth. A reverse is true for high inflation rate. The finding is consistent with findings of Barro (1995). Barro (1995), Kasidi and Mwakanemela (2013). Study by Ayyoub et al., (2011) and Shahbaz et al., (2008) confirm the negative relationship of inflation with economic growth of Pakistan.

The coefficient of fiscal deficit is negative and significant in specification 4 at 10percent level. (Navaratnam & Mayandy, 2016) , Avila (2011) and Tung (2011), Cebula, (1995), Ghura, (1995), Biza et al., 2015; Armbands et al., (2016) also report the similar findings. In case of Pakistan, the results are consistent with findings of Fatima et al., (2011, 2012). Fiscal deficit routes through inefficient revenue generation mechanics, higher ratio of indirect taxes, low tax payment ratio, narrow tax base, inelastic tax system, heavy reliance on foreign trade taxes, and large tax exemptions and incentives (Fatima et al., 2011, 2012), heavy defense expenditures and debt servicing & reliance on domestic banking and non-banking borrowing resulting in slowing down economic growth.

The positive coefficient of trade openness indicates that trade openness positively affects economic growth. A one percent increases in trade openness results in 0.78 percent increase in real GDP per capita. Trade openness allows market forces to channel resources towards more productive sectors. By generating economies of scale, it increases markets avenues for new products. As a result, trade openness leads to increase in efficiency. The findings are against the results of Dodzin and Vamvakidis (2004) for the developing countries and the developed countries. Hye and Quantity (2012) in case of Pakistan, also reports a reverse result. However, our results are consistent with the theoretical explanation and empirical findings of Romer (1990), Edwards (1989), Villanueva (1994), Edward (1992), Wacziarg (2001) and Yanikkaya

(2003), Din et al., (2003). In the case of Pakistan, the findings are in-line with the empirical findings of Khan et al. (2005) and Chaudhary et al., (2010).

Education is effective in creating a positive impact on the economic growth. Increase in the stock of human capital in any economy attracts investment in physical capital, which in turn increases output Abbas and Mujahid-Mukhtar (2000). Education is the most important determinant of human capital (Bergheim, 2005). It rises the efficiency to increase output in smaller time, enhances absorption capacity of individuals, increasers labour force participation, and creates awareness of benefits of healthy living, that in turn, increase output per capita.

Specification 3[48], besides other variables, includes secondary school enrollment as complement of remittances. The coefficient of policy variable is positive and significant. The results indicate that growth benefits of remittances rise as the level of human capital increases. Thus, remittances are critical for sustainable economic growth of Pakistan. The result confirm earlier results as advanced by different authors, for example, Hanson and Woodruff (2003), Wets (2004), Dustmann and Speciale (2006), Lu and Treiman (2007), Yang and Martinez (2006); Calderon et al. (2008) Dessy and Rambeloma (2009), Cattaneo (2005), Bredl (2010). Reported studies assumed that remittances are very important source to help finance education. However, these results are different from the empirical findings of Bargelli (2013). Bargelli indicate direct and negative impact of remittances even in a model with interaction of remittances with policy variable.

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[48]The specification 1 and 2 are same for all next models whatever policy variables are used. Therefore, these models will not be explained repeatedly. Specification 3 and 4 will be termed as specification 1 and 2.

Based on theoretical framework developed in the study and the empirical findings, we argue that effectiveness of remittances is likely to depend on policy variables. To identify whether this hypothesis is true and for an empirical evidence for policy complementarity, in specification 4, education is entered with interaction of remittances. The regression estimates of specification 4 indicate that policy variable education retains its magnitude, sign and significance (0.40) as in it has in specification 3 that is (0.41). The results in specification 4 are worth explaining with respect to variable of interest, that has positive but insignificant coefficient (0.26). However, when remittances are interacted with education, it becomes significant. First important result from specification 4 is that the impact of remittances on per capital real GDP is a positive function of the level of policy, at least for the time under study i.e. 1984-2018. Secondly, the positive sign of interactive term indicates that education is complementary with remittances to create large positive impact on growth. Moreover, a significantly positive slope of derivative of growth in policy dimension indicates that in a sufficient good level of policy, remittances are more effective than in bad policy environment. In this study, the slope is significantly positive.

Table 3.4 reports the results of unit –root test (ADF and PP). The results indicate that residuals from co-integrating regressions 1, 2, 3 and 4 are stationary. Therefore, co-integrating regression models are not spurious.

Table 3. 4: Stationarity Test on Residuals

	1	2	3	4
ADF	-4.64*	-8.57*	-5.09 *	-16.44*
PP	-5.96*	-15.82*	- 5.36*	-6.26*

Note: * indicate significance at 1 percent level.

Model 2: Remittances, Growth and Institutions

After estimation of Model 2 with DOLS, Engle-Granger and Phillips-Ouliar is tests are applied. Moreover, residual-based test of co-integration is applied to identify the long run relationship among the variable of interest. Hansen test of instability has been applying to check if parameters are stable. The results are reported in Table 3.5.

Table 3. 5: Test for Co-integration and Parameter Stability

Test	1	2
Engel Granger tau test	-3.72	-4.24
	(0.03)	(0.03)
Engle Granger z stat	-20.11	-24.11
	(0.01)	(0.02)
Philips Ouliaris tau stat	-3.72	-4.27
	(0.03)	(0.02)
Philips Ouliaris z stat	-19.16	-23.20
	(0.01)	(0.01)
Hansen Instability	1.50	1.30
	(0.02)	(0.02)

Note: p-values are given in parenthesis.

The results indicate that there exists long-run relationship among the variables in the model. Existence of co-integration confirms that estimates of DOLS are reliable. Therefore, the estimation results are reported in Table 3.6.

The estimation results presented in Table 3.6 indicate the effect of policy i.e. quality of institutions is positive at 10 percent level of significance in both specifications. The presence of politically sound institutions mitigates the direct insignificant impact of remittances. This result indicates that institutions are complement with remittances in growth-remittances-nexus of Pakistan. The results are in-line with the findings of , Catrinescu et al. (2009) and Calderon et al. (2008). A government's attempt to motivate remittances to invest may be unlikely to have significant economic benefits (Kapur &

McHale, 2003). However, indirectly this motivation is possible through sound political, transparent political institutions.

Table 3. 6: DOLS Result (dependent variable is log ypc)

Variable	1	2
Logk	0.21*	0.22*
	(5.06)	(6.06)
Logfd	-0.17	-0.16**
	(-1.27)	(-2.52)
Loginf	-0.24*	-0.27*
	(-5.01)	(-4.03)
Logto	0.62*	0.60*
	(5.11)	(6.64)
Logrem	-0.12	0.27**
	(-1.34)	(2.42)
Institutions_index	0.037**	0.053***
	(2.77)	(1.84)
log(rem)(institution_index)	---	0.24**
		(2.29)
D_2005	---	0.08**
		(2.56)
D_1999	0.38***	0.067**
	(1.87)	(2.25)
S.E of regression	0.016	0.016

Note: t-values are reported in (). *, **, *** indicate significance at 1percent, 5 percent and 10 percent level.

The variable of interest remittances, in specification 4 is positive but insignificant unless interacted with institutional quality. Therefore, for Pakistan, institutional quality is complementary with remittances to create larger impact on growth. The empirical results suggest that institutions matter for the manner in which remittances are used, therefore, the good option for government is to ensure secure and politically sound institutions so that remittances automatically move towards higher investment to promote economic growth. It requires improvement in the quality of institutions, ensure government stability, reduce corruption, and increase transparency in bureaucratic quality and democratic accountability, promotion of law and order condition.

Table 3. 7: Test for Stationarity of residuals

	1	2
ADF	-5.2*	-4.55*
PP	-5.11*	-4.40*

Note: * indicate significant at 1percent level.

Table 3.7 indicates the residual stationarity test based on ADF and PP tests. Both the tests indicate that residual is stationary at 1 percent level of significance. Therefore, co-integrating regression models 1 and 2 reported in Table 3.6 are not spurious.

Model 3: Remittances, Growth and Financial Depth:

The results of the co-integration test are presented in Table 3.8. After confirming the existence of long-run association among variables of the model, the DOLS estimates are resented in the Table 3.9.

Table 3. 8: Test for Co-integration and Parameter Stability

Test	1	2
	-4.80	-4.73
Engel Granger tau test	(0.03)	(0.02)
	-26.51	-27.52
Engle Granger z stat	(0.01)	(0.01)
	-4.84	-4.78
Philips Ouliaris tau stat	(0.04)	(0.03)
	-24.14	-3.32
Philips Ouliaris z stat	(0.02)	(0.01)
	1.06	1.02
Hansen Instability	(0.03)	(0.01)

Note: p-values are given in parenthesis.

The estimation result indicates that elasticity of real GDP per capita with respect to remittances effect growth positively. The direct positive impact of remittances on economic growth is attributed to the increase in domestic credit for investment and the general increase in domestic consumption that is a source of supply into the aggregate national income. Therefore, the direct impact of domestic credit on real GDP per capita is positive. The result is consistent with Khan et al. (2005) in case of Pakistan. The findings in this specific case are consistent with the majority of literature findings,

including Giuliano and Ruiz-Arranz (2009). As these revenues are used as capital transfers to the most active private sector, domestic investment in remittance receiving countries is highly established (Woodruff & Zenteno, 2007). Therefore, remittances are important for sustainable transactions.

Table 3. 9: DOLS Results (dependent variable logypc)

Variables	1	2
Logk	0.26*	0.27*
	(7.87)	(8.90)
Logfd	-0.09**	-0.21*
	(-0.92)	(-2.39)
Loginf	-0.53**	-0.54**
	(-1.74)	(-1.86)
Logto	0.67**	0.68**
	(2.06)	(2.29)
Logrem	0.27**	0.29**
	(1.67)	(1.70)
logdomestic_credit	0.26**	0.28**
	(1.90)	(2.75)
log(rem)(domestic_credit)	----	-0.29**
		(-2.21)
D_1994	-0.010	0.047
	(-1.26)	(1.07)
D_1996	0.06**	0.28**
	(2.23)	(1.72)
S.E of regression	0.013	0.011

Note: *,**,*** report significance at 1 percent, 5 percent and 10 percent level.

The negative and significant coefficient interactive term of remittances and domestic credit i.e -0.68 and statistically significant imply the following two important points: Firstly, resorting of private financing for investment purpose on remittances as access to banking services is not easy. These results are consistent with findings by Giuliano and Ruiz-Arranz (2009). These studies indicate a positive impact of remittances on economic growth while a negative association of remittances and financial depth.

Secondly, as private investors opt for readily available and cheap non-banking services through remittances, the substitution hypothesis holds in our analysis. As private

investors move from banking services to remittance earnings, the outcome also suggests the presence of financial market failures. High-cost systems, lack of confidence in the financial sector and lack of banks, its services or access may be the major contributing factors. Overall, the results are consistent with the findings in literature for example Bandura and Dzingirai (2019); Bettin and Zazzaro (2012). Secondly, as private investors opt for readily available and cheap non-banking services through remittances, the substitution hypothesis holds in our analysis. As private investors move from banking services to remittance earnings, the outcome also suggests the presence of financial market failures. High-cost systems, lack of confidence in the financial sector and lack of banking and banking access.

Table 3. 10: Test for Stationarity of residuals

	1	2
ADF	-5.34*	-8.32*
PP	-9.8*	-18.2*

Note: * show significance at 1percent level.

Model 4: Remittances, Growth and MPI:

Table 3. 11: Test for Co-integration and Parameter Stability

Test	1	2
Engel Granger tau test	-5.77 (0.04)	-5.27 (0.03)
Engle Granger z stat	-27.68 (0.01)	-37.10 (0.01)
Philips Ouliaris tau stat	-5.63 (0.02)	-5.10 (0.04)
Philips Ouliaris z stat	-13.59 (0.01)	-29.35 (0.03)
Hansen instability	1.04 (0.02)	1.02 (0.01)

Note: p-values are given in parenthesis

After estimation of Model 4, we employ Engle-Granger and Phillips-Ouliaris tests. The results of Engle-Granger and Phillips-Ouliaris tests are reported in Table 3.11. After confirmation of a long-run relationship and stability, we turn to report DOLS results in

Table 3. 12: DOLS Results (depend variable l_real_Y_pc)

Variables	1	2
Logk	0.27*	0.29*
	(14.89)	(3.68)
log rem	-0.021	0.49**
	(-1.01)	(2.16)
MPI	0.88*	0.86***
	(7.43)	(1.89)
log(rem)(MPI)		0.34***
		(1.84)
D_1994	2.039*	2.11*
	(5.32)	(4.56)
D_1996	1.32*	0.07
	(3.24)	(1.48)
S.E of regression	0.03	0.01

Note: *, **, *** report significance at 1, percent, 5 percent and 10 percent level.

Table 3. 13: Test for Stationarity of residuals

	1	2
ADF	-5.43*	-7.93*
PP	-5.42*	-7.50*

Note: * show significance at 1 percent level

3.7 Volatility of output and stabilization role of remittances

The International Monetary Fund (IMF) highlights that volatility in developing countries is driven by country-specific factors that outweigh global and regional shocks. The empirical literature indicates that the financial development, the trade openness, the institutional quality and the financial openness are determinants of output growth volatility (Bugamelli & Paternò, 2009). Therefore, the hypothesis in part of study is to test if remittances inflow, because of their size and cyclical properties, can support in smoothing consumption and investment thus contributing in long-run economic stability and growth.

This part of study carries-out a time-series analysis for the period 1974-2018, for Pakistan. Here, the dependent variable is volatility of real GDP of Pakistan. The

literature, however, divides the determinants of volatility of output growth into four categories Bugamelli and Paternò (2009) that includes i) globalization ii) financial depth iii) monetary policy distortion and volatility iv) some others. The variables of globalization variables include trade openness (sum of exports and imports over GDP). The other variable that is the financial depth is measured by domestic credit to private sector as a ratio to GDP. The monetary distortion is represented by inflation and volatility of broad money. The measure of monetary policy distortion and volatility, include inflation (in log) and volatility of changes of money supply i, e that are measured by M_2 over GDP. Bugamelli and Paternò (2009) argue that the most accurate measure of volatility of monetary policy impulses is M_2. This variable captures the unanticipated changes in money supply.

Following Bugamelli and Paternò (2009) we capture the financial sector openness net Foreign Direct Investment (FDI) inflow. Besides, agriculture share of GDP, used in analysis to capture its impact on volatility of output growth. To find out if the role of remittances is of a stabilizer or otherwise, remittances as percentage of GDP have been included as additional explanatory variable. To tackle endogeneity of remittances, we apply DOLS estimation technique.

3.7.1 Empirical Results for Co-integration, Normality Test and DOLS

All the series in volatility of output growth model are unit-root stationary, or I (1) particularly, all specifications of ADF and PP tests in Table 3.14, for the variable under consideration in this part of study. Therefore, we cannot reject the null hypothesis of a unit root process. However, when the data series are tested in their first difference, the null hypothesis of a unit root process is rejected both according to ADF and PP tests. Thus, ADF and PP unit root tests conclusively show that the variables are I (1). The

results of the DOLS for three specifications are reported in Table 3.15. The number of leads and lags were selected according to Swartz criteria. The time-period of study is 1974-2018. The country under consideration is Pakistan.

Table 3.14 displays the results of the residual-based Engle-Granger and Phillips-Ouliaris tests for the three different requirements specified in section 3.4.7. These findings show that the null hypothesis (indicating that series are not co-integrated) is rejected in all cases. In both cases, however, the normality test (null hypothesis is that residuals are generally distributed) is acknowledged, suggesting normal distribution.

Table 3. 14: Co-integration test

Test	1	2	3
Engle_Granger tau-test	-4.73 (0.04)	-4.26 (0.03)	-4.81 (0.04)
Engle-Granger z-stat	-21.51 (0.03)	-22.52 (0.01)	-26.18 (0.03)
Philips Ouliaris tau stat	-4.83 (0.04)	-4.71 (0.03)	-3.88 (0.02)
Philips Ouliaris z stat	-24.10 (0.03)	-3.23 (0.02)	-19.3 (0.01)
Hansen instability	1.05 (0.03)	1.08 (0.01)	1.06 (0.02)

Note: p-values are given in parenthesis.

We define output growth volatility as three-year standard deviation of the GDP (measured at constant 2010 US$) over the period 1974-2018. We use three different specifications to check validity of estimates. The specification 1 includes the variable of interest that is remittances as percentage of GDP with the basic control variables including inflation, domestic credit to the GDP, agriculture share of the GDP and volatility of changes in board money (M_2). In addition, specification 2 includes the trade openness. The specification 3, however, includes the variable of the financial openness as well. The proxy for the financial openness is the net FDI inflow over GDP. The results in all three specifications are consistent in both magnitude and sign. We are particularly concerned with the output volatility that relates to the size and frequency

of the shocks that affect an economy Cavallo et al. (2008). It is linked with the manner in which an economy tackles the shocks.

The estimation results indicate that elasticity of output volatility with respect to inflation is negative and significant in all three specifications. The elasticity coefficient is -0.39 (in specification 1), -0.52 (in specification 2) and -0.57 (in specification 3). The consistency of this result indicates that inflation dampens output growth volatility. The finding is consistent with the empirical findings of Bugamelli and Paternò (2009). The measure of financial development domestic credit to GDP that has similar impact as inflation does. The elasticity of output volatility with respect to the financial development is negative and statistically significant. The output volatility elasticity with respect to financial openness (net FDI inflow) is negative but statistically insignificant. One strand of literature highlights the importance of the financial development through its role in long-run macroeconomic performance.

Table 3. 15: DOLS Results (dependent variable volatility of log y)

Variables	1	2	3
Logrem	-0.029*	-0.024*	-0.023*
	(-14.41)	(-9.30)	(-6.92)
Loginf	-0.39*	-0.57*	-0.51*
	(-4.06)	(-3.43)	(-7.60)
logdom_cre	-0.480*	-0.49**	-1.01*
	(-3.39)	(-2.63)	(-4.16)
log_agriculture_share_,GDP	0.135**	0.12**	0.12***
	(1.96)	(1.95)	(1.94)
volatility of changes in M2	4.04*	4.70*	4.16*
	(24.02)	(6.09)	(8.389)
log_to		0.82	0.83*
		(0.836)	(7.49)
lognet_FDI_ inflow			-0.005
			(-0.149)
dummy 1999		0.029	-0.054
		(0.69)	(-1.41)
dummy2005	0.0017	0.106***	0.100**
	(0.052)	(1.94)	(2.12)
S.E of regression	0.0224	0.017	0.0301
lag-length selection criteria Sharwaz			

Note: *, **, *** indicate significance at 1, 5 and 10 percent level.

Certain studies for example Gertler (1988) and Ross Levine (1997) indicate that financial development helps in reducing the acquisition cost of information. Therefore, it facilitates lower transaction costs. One of the reason of lower cost may be that the financial development helps in reducing asymmetries in information, besides improving corporate governance, leading to better allocation of resources (M Tariq Majeed & Noreen, 2018). It also enables financial institutions to improve their risk management, allocates liquidity and funds to the most productive use (Greenwood & Smith, 1997).

Our empirical results are consistent with findings of Dynan et al. (2006), Denizer et al. (2007) and Ang (2011). Denizer et al. (2007) report that improved financial systems reduces fluctuations in per capita output growth whereas Bekaert et al., (2006) find that financial liberalization often results in lower (consumption) growth volatility. Dynan et al. (2006) indicate that financial innovations contribute to stabilization and help reduce output volatility. The results are also in-line with findings of Bugamelli and Paternò (2009) and Easterly et al. (2000). The agriculture share of the GDP boosts the volatility of output. The elasticity of output volatility in terms of agriculture share of GDP is positive and statistically significant (0.035, 0.30, and 0.12). The positive sign of agriculture shares of GDP, in this study, indicates that agriculture sector magnifies output volatility. In fact, agriculture sector is dependent to certain natural, political and economic factors. As a result, agriculture production inherent high risk. High risk signals more investment risk. Rise in risk discourages investment in agriculture sector hence slowing down economic growth. Similarly, this high risk remains persistent in case of volatility of output (Kehinde & Agnes, 2017). As a result, agriculture sector (by its contribution in GDP) magnifies volatility of output.

At a 1% level of significance, the trade openness coefficient is significant and positive. Theoretically, increased output volatility is linked to greater trade openness. A nation is more susceptible to shocks from abroad the more exposed it is to commerce. While there seems to be agreement that opening up to trade flows promotes domestic growth, Kose et al. (2006) and Cavallo et al. (2008) argue that this openness also makes a country more susceptible to external shocks. Given the strong link between internal and external shocks, greater production volatility is implied by increased external shock vulnerability. Therefore, trade openness raises production volatility and growth. This outcome is consistent with the theoretical justification put forward in the literature by Cavallo et al (2008) and empirical findings of Bugamelli and Paternò (2009).

The coefficient of variable of interest, that is remittances as percentage of GDP, is negative. It is statistically significant in all three specifications having a little difference in magnitude. All specifications verify that remittances dampen output growth volatility by a statistically significant amount. Relative to the private capital flows; remittances are stable and tend to increase during periods of economic downturns or natural disasters (Yang et al., 2006) The volatility dampening effect of remittances in our study can also be attributed, primarily to negative relation between household earrings and their propensity to migrate. This intensifies the fact that the inflow of remittances is towards low-income households. Therefore, remittances are source of finance to those agents who would otherwise credit-constrained (as indicated by Chami et al. (2005) and Bugamelli and Paternò (2009). Therefore, remittances in case of Pakistan have proven to be stabilizer, lowering persistent fluctuation and amplitude of cyclical fluctuations that are shock-driven.

The other possible reason is remittances are a significant by-product of emerging crucial phenomenon of international migration (Bugamelli & Paternò, 2009). Remittances due to their size and cyclical properties help in smoothing consumption and investment in periods of high output volatility. Thus, they play important role in economic stability.

Although, remittances as a share of the GDP of Pakistan are continuously on rise[49], however, remittances have little correlation with GDP that is almost equal to 0 (-0.01 percent). The negative sign of correlation indicates the motive of migrant to remit. A positive correlation coefficient follows from predominate investment motive. The negative correlation indicates the consumption patterns of left behind. The remittances clearly play a stabling role in latter case; however, in former case also, remittances can also act as stabilizer. The reason is that these are less procyclical than other source of finance (for instance: the international capital inflows and the credit to private sector).

3.7.2 Unit root /Stationary test on residuals

The results of the ADF and PP unit –root tests are reported in Table 3.16. From unit root test results, it is concluded that residuals from co-integrating regressions are stationary. Therefore, as in earlier models, the co-integrating regression models are not spurious.

Table 3. 16: Unit Root test on residuals

	1	2	3
ADF	-6.46*	-7.31*	-6.64*
PP	-14.84*	-20.3*	-7.83*

Note: * indicate significance at 1percent, 5 percent and 10 percent level.

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[49] Compared to 2000, in 2019, remittances grew by 3.63 percent.

3.8   Empirical Results and Discussion (for Disaggregate Analysis)

The model presented in earlier section disaggregates the analysis. The model incorporates the investment level Calderon et al. (2008).

3.8.1 Empirical Results for Co-integration, Normality Test and DOLS

The results of unit root tests are presented in Table 3.17. These results indicate that the data series under consideration are either trend stationary (at level) or I (1). In particular, the specifications of ADF and PP test reject null hypothesis of a unit root process at 1 percent, 5 percent and 10 percent level of significance, for log per capita output growth (logy_pc_growth) and log investment (log I). Therefore, these two variables are trend stationary. The ADF and PP test for log real interest rate (log r), the ADF and PP unit root result indicate that this variable is stationary at first difference.

Table 3. 17: Stationarity Test/Unit Root Test

Variables	ADF		PP		ADF	PP
	At level		At level		At first diff	
	T&D	D	T&D	D	with constant	
logy_pc_growth	-3.36***	_	-3.37***	_	_	_
logI	-6.99*	_	-13.06*	_	_	_
log r	-2.31	-2.31	-2.47	-2.5	-7.2*	-7.09*

Note: T stands for trend and D for drift. *, **, *** denotes significant at 1percent, 5percent and 10percent level of significance.

The other variables included in disaggregate estimation are the human capital (logHc), the financial depth (log dom_credit) and the remittances (logrem). These variables are also part of aggregate level analysis. Thus, these three variables are stationary at first difference as indicated in Table 3.1.

To establish that logI (log gross total investment) is structurally related to remittances, complementary polices and other explanatory variable, DOLS methodology is employed. The DOLS technique is appropriate to deal with the problem of non-stationary repressors and simultaneity bias due to endogeneity of remittances variable

on the right-hand side of the equation. In this study, the number of leads and lags are selected according to Swartz criteria. The time-period of this study is 1984-2018.

In all empirical models of investment, after obtaining estimates with DOLS, we have applied the Engle-Granger and Phillips-Ouliaris, residual-based test of co-integration. The purpose of this co-integration analysis is to identify the long run relationship among the variable of interest and Hansen's instability test to check if parameters are stable. The existence of co-integration indicates that DOLS results are reliable. Therefore, for each model, before presenting empirical estimates from DOLS, co-integration results are reported in Table 3.18.

For empirical estimation, we have considered three specifications. The first model considers the co-integration results of basic model with log I and its determinants, which includes the real interest rate, the inflation and the GDP per capita growth rate. The specification 2a is the extension of basic model with remittances and the human capital. Similarly, model 2b is extension of model 2a with interactive term of remittances with the human capital. On similar pattern, the models3a, 3b are with the institutional quality; the models 4a and 4b are with macroeconomic policy index and the models 5a and 5b are with the financial depth. Therefore, the co-integration results of all these models are reported in Table 3.18.

Table 3. 18. Co-integration Test

Model	Engle-Granger tau-stat	Engle-Granger z-stat	Phlips - Ouliarris tau-statistics	Phlips - Ouliarris z-statistics	Hansen stability
basic Model (1)	-6.339 (0.006)	36.7 (0.005)	-6.52 (0.004)	-34.18 (0.01)	1.5 (0.02)
rem_edu (2a)	-5.99 (0.012)	-34.89 (0.01)	-6.19 (0.008)	-30.71 (0.0410	1.3 (0.02)
rem-edu_interaction (2b)	-5.09 (0.001)	-29.30 (0.000)	-5.16 (0.003)	-28.19 (0.001)	1.4 (0.03)
rem_institutions (3a)	-5.12 (0.002)	-28.84 (0.001)	-4.964 (0.004)	-27.25 (0.001)	1.32 (0.31)
rem_institutions_interaction (3b)	-5.57 (0.042)	-2.46 (0.038)	-5.69 (0.042)	-28.7 (0.031)	1.25 (0.029)
rem_dom_cre (4a)	-6.66 (0.003)	-38.6 (0.003)	-7.11 (0.001)	-33.19 (0.019)	1.42 (0.19)
rem_dom_cre_interaction (4b)	-6.84 (0.005)	-39.22 (0.004)	-7.48 (0.0013)	-33.03 (0.0012)	1.54 (0.031)
rem_MPI (5a)	-6.62 (0.003)	-38.17 (0.003)	-6.96 (0.000)	-33.94 (0.014)	0.31 (0.24)
rem_MPIinteraction (5b)	-5.96 (0.005)	-25.21 (0.019)	-5.98 (0.009)	-20.23 (0.003)	1.34 (0.03)

			Table 3. 19: DOLS Results (dependent variable logI)		
Variables	basic model	rem_edu	rem-edu_interaction	rem_insti	rem_insti_interaction
Logr	-0.023**	-0.024**	-0.007**	-0.025***	-0.067*
	(-2.18)	(-2.61)	(-2.07)	(-1.94)	(-3.09)
loginf	-0.014*	-0.038**	-0.016*	-0.011***	-0.042*
	(-7.26)	(-2.78)	(-3.17)	(1.84)	(-3.82)
logy_pc growth	2.36**	2.068**	1.88***	0.296*	1.498*
	(1.90)	(4.89)	(1.87)	(8.73)	(8.84)
logrem	-0.026*	-0.034**	0.349**	-0.023***	0.083***
	(-15.17)	(-2.34)	(2.73)	(-1.69)	(1.86)
logedu	–	2.18**	0.389**	–	–
		(2.67)	(1.94)		
(rem)*(edu)	–	–	0.206***		
			(1.65)		
instituon_index	–	–	–	0.297**	-0.892*
				(2.41)	(-3.08)
log(rem)*(institutions)	–	–	–	–	0.012
					(0.321)
C	14.2*	-14.849*	16.31*	–	-10.11*
	(5.30)	(-4.37)	(8.13)		(-5.85)
Trend	0.059	–	-0.238*	–	–
	(0.838)		(-7.51)		
dummy_2007	0.135	0.31***	0.0259	0.359	–
	(0.843)	(1.87)	(0.566)	(1.53)	
dummy_2006	–	–	-1.09*	-0.854*	–
			(-24.36)	(-5.48)	
dummy_2005	–	–	–	–	0.022
					(0.48)
dummy_1997	–	-0.28	0.042	0.359	-0.486*
		(-0.38)	(0.95)	(1.53)	(-8.60)
dummy_1994	–	–	–	–	-1.35*
					(-16.26)
dummy_1993	–	0.162	–	–	0.539*
		(0.99)			(7.57)
S.E of reg	0.012	0.017	0.0111	0.0186	0.029

Note: *, **, *** indicate significant at 1percent, 5percent and 10 percent level.

Table 3. 20: DOLS Results (dependent variable logI)

Variables	rem_dom_cre	rem_dom_cre_interaction	rem_MPI	rem_MPI interaction
logr	-0.031***	-0.031***	-0.014***	-0.0037***
	(-2.67)	(-1.85)	(-1.64)	(-1.73)
loginf	-0.024***	-0.027***	-0.039*	-0.002**
	(-1.76)	(-1.78)	(-3.13)	(-2.42)
logy_pcgrwoth	1.06*	1.21*	0.451**	1.612*
	(6.01)	(5.45)	(2.03)	(11.98)
logrem	-0.009	-0.42	-0.07*	-0.55*
	(-0.71)	(-0.087)	(-3.46)	(-3.302)
logdom_cre	0.333***	1.39***	_	_
	(1.94)	(1.85)		
log(rem)*(dom_cre)	_	-0.297***	_	_
		(-1.79)		
MEI	_	_	4.16*	1.27***
			(4.23)	(1.64)
(rem)*(MEI)	_	_	_	0.6143*
				(3.321)
C	-7.70*	-6.90**	3.293***	-12.33*
	(-3.32)	(-2.43)	(1.95)	(-7.88)
Trend	0.241	2.351***	_	_
	(.023)	(1.75)		
dummy_2007	_	_	_	0.142**
				(2.93)
dummy_2006	_	_	_	-0.83*
				(-13.39)
dummy_1997	_	_	_	-0.1202**
				(-2.57)
S.E of reg	0.0119	0.013	0.0102	0.017

Note: *, **, *** indicate significant at 1percent, 5percent and 10percent level.

After establishing a co-integration relationship between logI and remittances, we now turn to estimate the impact of remittances and complementary polices on investment. Based on four complementary polices, four different models have been estimated. Each model contains two separate estimations, first without policy interaction with remittances and the second with policy interaction. After observing data series at level and their first difference, structural breaks are observed. The structural breaks are also introduced in the estimation to capture the changes observed in time series data. As some data series are trend stationary therefore the estimation also includes trend. The results are reported in Table 3.19.

Table 3. 21: Stationarity test/Unit root test on Residuals

Model	ADF	PP
basic model (1)	-6.2*	-10.9*
rem_edu	-7.12*	-9.56*
rem-edu_interaction	-6.68*	-15.99*
rem_insti	-3.45**	-3.31**
rem_insti_interaction	-7.69*	-23.38*
rem_dom_cre	-5.57*	-12.15*
rem_dom_cre_interaction	-7.07*	-13.72*
rem_MPI	-6.55*	-10.65*
rem_MPI interaction	-5.66*	-10.33*

Note: *, **,*** indicate significant at 1percent,5percent and10percent level.

Table 3.20 reports the results of unit –root test (ADF and PP). The results indicate that residuals from all co-integrating regressions (1 to 9) are stationary. Therefore, co-integrating regression models are not spurious.

3.9 Conclusions and Policy Implications

To remove the ambiguous impact of remittances on the economic growth, this study has implemented a number of complementary policies that are in addition to pro-growth

per se. these policies can result in an additional bonus in presence of significant remittances inflows. For empirical the estimation, the study used data from 1984-2018. No empirical study is available in context of Pakistan on the quantitative role of complementary polices. The DOLS estimation technique is applied with all its formalities. The results indicate that incentives to invest remittances in productive activities are sensitive to some structural features and economic policies in Pakistan. The direct impact of remittances is negative; however, it becomes positive and growth-friendly when in case of Pakistan is coupled with high level of secondary school enrollment, the better institutional quality and good macroeconomic environment. However, these are not the only complementary polices available with any nation. With the changes scenario of the world, the complementary polices and the level of complement may change. The same needs to be investigated.

Based on estimation results, the following are the policy recommendations:

i. To take full advantage of the remittances received, it is proposed that the primary function of the banking sector should be strengthened effectively by providing credit to the private sector. From now on, well-developed financial structures must be in place.

ii. State institutions are primary facilitator for economic growth. These institutions play important redistributive role in the economy. The institutions ensure proper allocation of resources and protection of economic resources for poor or vulnerable. The complementarity of remittance institutions indicates that there is a need to reinforce the quality of institutions in order to achieve sustainable economic growth through transparency, political stability, the absence of violence and extremism, government effectiveness, the rule of law and the control of corruption. Better functioning of institutions automatically promotes utilization of remittances through ensuring secure investment and returns to investment. This reiterates the need of better quality institutions, strict measures

to reduce corruption, increased bureaucratic quality and accountability to ensure proper utilization of major portion of remittances for productive investment.

iii. To reap the long-term growth-enhancing effects of remittances, there is a dire need to increase government expenditure on education. Formulation of effective policies and efforts for proper management of remittances through indirect channels is supportive in raising the level of the human capital. Thus, public awareness to channelize remittances towards investment activities is crucial.

iv. Sound macroeconomic policies in terms of the lower inflation, the trade openness, increased exports and low budget deficit is crucial to enhance effectiveness of remittances in economic growth.

Some general policies implications are as follows:

i. It is vital for the policy makers to reduce the persistent high levels of fiscal deficit to achieve the desired levels of growth by i) either decreasing current expenditure by lowering its size or ii) by increasing tax revenue. Tax net should be expanded to capture all taxable individuals and business. At the same time, attempt to maintain the trade balance at a stable sustainable level can also support to mitigate the exiting fiscal deficit.

ii. More revenue from domestic fees and taxes should be generated by the government, which focuses on household spending on luxury goods from abroad, thereby reducing imports. In the public sector, decreasing the size of its workforce (to minimize public wage financing) will help reduce the deficit in the future.

iii. Trade, export and import substitution policies needs to be revised to fully complement the growth through remittances. Industrial sector needs to expand their production capability so that their products could be competitive in the global market. Overall productivity of such companies needs to be improved.

iv. By keeping i) inflation rate low through controlled money supply ii) and raising the production of goods will help to make the economy grow in accelerated manner.

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CHAPTER 4

TESTING THE EMIGRATION-EXPORTS NEXUS: EMPIRICAL EVIDENCE FROM PAKISTAN

4.1 Introduction

Many developed and oil-rich countries heavily rely on migrant workers in order to meet their labour shortages. Most of migrant workers satisfying the labour needs of the developed countries originate from the South-East Asia and South Asia. Although, migration deprives the country of origin of human capital in short-run however; its impact is no more negative in long-run (Solimano, 2002).

Migrant workers mitigate the labour shortage of the host countries and strengthen its economic activities (ILO, 2019). Migration is a solution to decent work for youth (ILO, 2011). Migrant-sending countries get benefits of migration through a reduction in the labour pool, poverty and an increase in income of remaining workers. Remittances also reduce unemployment rate (S. Hyder et al., 2016) also, emigrants send money home, enhancing the living standard of their family, thereby contributing to balance of trade of their nation (Asch & Reichmann, 1994).

Many researchers who see migration as a growth-enhancing phenomenon claim that remittances are second only after foreign direct investment (FDI) has been used for development activities {for instance: (Aggarwal & Peria, 2006; Ahmad et al., 2013)}. In addition, remittances sent by emigrants are invested in home countries, increasing the level of physical domestic investment (S. Hyder et al., 2016; Triandafyllidou, 2015) ,human resources (Azizi, 2018), accumulation of rural assets (Adams Jr, 1998) and acquisition of land or buildings (Adams Jr, 1998; Alderman, 1996) Remittances reduce

the level of poverty and provide access to basic services of life (Chimhowu et al., 2005;, flourish business hence; increase the opportunities of international trade (Ballard, 2003b).

In short, remittances are important source of economic growth (Iqbal & Sattar, 2010) (Vishwesh, 2021) shows that a 10 percent rise in a country's per capita remittances results in a 0.4 percentage point reduction in the poverty headcount ratio in the 25 Asian countries. Evidence are available that emphasize that in the Philippines, remittances minimize household poverty rates through both direct and spillover impacts.

In addition, remittances sent by immigrants help fuel economic growth. In addition, host nations will benefit from skilled migrants who fill positions that match their skill levels (Wahba, 2015). Emigrants themselves play a crucial role in the socio-economic growth of both the home and host countries, apart from the formal contribution of emigrants by remittances. The direct contribution of emigrants is linked with international trade. The barriers of international trade primarily include transportation costs (Dărăbanț et al., 2012). Emigration is a potential source of reducing transaction cost of trade.

Therefore, emigration and international trade are interlinked. Gould (1994)claims that migration in several ways promotes foreign exchange between emigrants' homes and host countries: First, emigrants prefer products of their own country. Also, while residing in the host country, emigrants have a 'taste for home-country products'; thus, they are a source of demand for their homeland product (Dunlevy & Hutchinson, 1999). Therefore, they help increase exports from their home country.

Second, migrants are mindful of their own culture, language, and customs. They can make information simpler for buyers and sellers living in different countries by making

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use of this expertise. Third, in a poor foreign trade contract compliance environment, emigrants can be a strong source of contract enforcement.

Fourth, the emigrants' network in the host countries can help to promote trade between their countries of origin and destination. The network includes both physical presences of already settled in the host countries and the network of knowledge. The network helps to reduce transaction cost of trade. In order to exchange business knowledge with exporters in both the receiving and exporting countries, emigrants play a critical role with the help of this network.

Emigrants also develop business contacts and cultural ties between their home and host country. These contacts can be developed through their common language in home and host country. Besides, the superior knowledge of emigrants regarding political and social institutions of home and host countries is the primarily reason for developing cultural ties. Above all, the freer-trade agreements promote labour migration that in turn; increase the volume of exports from home country. These results are empirically true for trade between United States and Canada. "Migrant networks are sets of interpersonal ties that link migrants, former migrants and non-migrants through ties of kinship, friendship and shared community origin in the areas of origin and destination" (Massey et al., 1993).

Connectivity is the primary channel through which migration can benefit development. Therefore, the connectivity is essential for exchange of money, knowledge, information, and ideas between the home and host countries. Emigrants foster creativity that in turn helps to generate new ideas and specialization effects (Peri & Sparber, 2009). Finally, by reducing contract creation and compliance costs, emigrants are a

safer source of contract enforcement in the face of asymmetric knowledge or uncertainties associated with foreign trade (Rauch, 2001).

In order to increase their amount of trade, many developed countries prefer to implement various market and institutional reforms Hyder et al., 2016). While these countries are the key source of migrants in the developing world, academic circles have drawn relatively little attention to the effect of their expatriate workers on trade ties between home and host countries. In the sense of migration between developed and industrialized countries, most of the studies on this topic are (for example: Findlay et al. (1998), Adams Jr (1998) and Khatri et al. (2006).

A study by Akbari and Hyder (2012) is the only available study in the context of Pakistan. This study considers the contribution of overseas Pakistanis in exports. The importer countries include the countries in Organization for Economic Cooperation and Development (OECD). The Pakistani nationals residing in OECD countries were the key contributors in exports.

It is true that huge number of overseas Pakistanis[50]reside in United States of America (USA) and United Kingdom (UK) as per data of Ministry of Foreign Affairs, 2020. However, the major concentration of Pakistani emigrant workers[51] is in the Kingdom of Saudi Arabia (KSA), the United Arab Emirates (UAE), the Oman, the Qatar, the Malaysia, the Kuwait and the Korea[52] (GoP, 2020). Besides others, importantly, these emigrant workers are major contributors in worker's remittances as well. Although,

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[50]As defined by Overseas Pakistanis Foundation (OPF), an overseas Pakistanis is the one who has National Identity Card (Piper & Foley), Pakistan Origin Card (POC) or National Identity Card for Overseas Pakistanis (NICOP). Therefore, an overseas Pakistanis is one who is residing / working or studying abroad.

[51] The emigrant workers are temporary migrant workers settled abroad for the purpose of employment.

[52]Briefly, these are the Gulf Cooperative Council countries. There is Government-to-Government agreement with South Korea. According to that agreement, there is a significant export of Pakistani manpower from Pakistan to South Korea. The Pakistani workers move Korea through Overseas Employment Corporation, which is a public sector Overseas Employment Promoter (OEP).

the Gulf Cooperative Council (GCC) countries are the major hub of Pakistani emigrant workers but the time-series, empirical analysis on contribution of Pakistani emigrant workers residing in GCC [53], in exports of Pakistan, is missing. About 98 percent of Pakistani workforce annually proceeds towards the GC Countries (BE&OE, 2020) . Among other non-Gulf countries, South Korea [54] and Malaysia are the major destinations for Pakistani migrants.

Since long, Pakistan has been struggling to increase exports. At present, the share of exports of Pakistan in GDP is about 8.79 percent as compared to 20.97 percent for the Indonesia, 31.68 percent for the Philippines, 65 percent for the Thailand, 44.01 percent for the Korea and 22.70 percent for the Sri Lanka. These statistics indicate that exports of Pakistan have a narrow base. The reason being that products are less diversified with respect to markets. Emigration from Pakistan has the potential to exert a significant influence on exports of economy in general and trade patterns in particular. Vohra (2001) pointed out that exports have a substantial positive effect on a country's economic growth when that country hits a certain stage of economic development. Pakistan is now ranked among the low-middle-income countries with a per capita income of US$1,357 for the year 2019.

Therefore, the factors that cause rise in exports will, in turn, increase economic development. Using the above-mentioned reasons as a precedent, it is accurate to say that foreign trade is directly influenced by international emigration, affecting exports more strongly than imports (Gould, 1994). In this part analyze the contribution of Pakistani emigrants working in the major destination countries, in the exports of

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[53] Any other non-GCC country having sizable stock of Pakistani emigrants.
[54] Other than Gulf Countries, South Korea is the only country the eastern region of the Asian continent with which Pakistan has Government-to-Government agreement. There is special quota for Pakistani manpower. Therefore, there is regular export of Pakistani manpower. Therefore, there is significant stock of Pakistani manpower although less than that prevails in Gulf countries but still notable.

Pakistan. This research is therefore an attempt to examine the effect on international trade between developed countries of international emigration.

Pakistani emigrants use made-in-Pakistan products while residing abroad. The argument has been developed on the basis of the assumptions made in earlier empirical research conducted in this field. For example, the study conducted by Akbari et al. (2012) and S. Hyder et al. (2016) found a positive relationship between emigration growth and exports growth in case of Pakistan. The finding of the later study clearly exhibits that migrant workers from Pakistan have strong preference for their home's country products. The other reasons being cited are social networking within community, exploration of new markets for home products and over-coming language barriers etc. Besides reporting evidence provided in this study on country-specific analysis, the use of panel unit root tests, co-integration test, and panel estimation procedure enhance the utility of the study. Following the earlier studies of Dunlevy et al. (2001); P. B. Girma et al. (1999); Gould (1994) and so forth, the robustness of results is checked by use of the gravity model of the international trade.

Thrust of study is that, there is a significant number of Pakistani workers in Gulf countries, Korea and Malaysia. These are also trade partners of Pakistan. Using data from 1980 to 2018, this study makes use of panel unit root and panel co-integration tests that allow for cross-sectional heterogeneity. Additionally, use of panel fully modified ordinary least square (FMOLS) and error correction model (ECM) on aggregate and country-specific data indicate that Pakistani worker are really contributing significantly in exports hence growth of Pakistan.

4.1.1 Main Questions to Answer: The research goals are as follows:

i.   The main objective of this study is to establish the quantitative nexus between emigration from Pakistan (towards major host countries) and exports (towards the host countries of emigrants).

ii.   To identify the supply-capacity of Pakistan and market-capacity of selected host countries.

iii. To identify the importance of demographic variables (distance, population and income) for export creation.

iv.   To analyze the effect of variables indicating the domestic economic activity such as Gross Domestic Product and real effective exchange rate on exports from Pakistan.

4.1.2 Significance of Study

Every year, more than 240,000 Pakistani people settle abroad. The latest data indicates that at present, 8.6 million Pakistanis are living/working or studying abroad (GoP, 2022) . On the other hand, the BE&OE, reports that 10.9 million workers went abroad during 1971 to 2019[55]. Based on the availability of data for Pakistani emigrant workers, this study focuses on the contribution of Pakistani emigrants in exports of Pakistan with six oil-exporting Gulf Countries and two non-Gulf countries namely South Korea and the Malaysia.

Pakistan is among the primary source country of labour supply for the Gulf countries[56].With a population of over 1.5 million, Pakistanis are the second-largest national group in the United Arab Emirates (UAE) after Indians, constituting 12.5 percent of the total population of the country. They are the third-largest overseas Pakistani community in Kingdom of Saudi Arab (KSA) and the UAE. The majority is found in Dubai, Abu Dhabi, Sharjah, and other areas. Dubai alone accounts for more

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[55]Since each worker has to report in BE & OE office, every time before he moves aboard for work, therefore, this data suffers from issue of double counting.
[56]Characteristics of relevant data for these countries are reported in Appendix .

than 400,000 of Pakistani emigrants. On the other hand, the economic relationship between Pakistan and South Korea has periodically strengthened since the 1980s. Approximately, there is a bilateral trade of US$1.1 billion between the two countries is (Overseas Employment Corporation, 2020). In improving trade ties between Korea and Pakistan, the Korea Trade Centre (KOTRA)[57] plays a vital role. Pakistan maintains a strong base in South Korea due to more trade agreements and a friendly treaty signed by both countries.

As far as Malaysia is concerned, Pakistanis forms the largest Pakistani diaspora in Southeast Asia and the 6th most significant group of foreign workers in Malaysia. The number of people of Pakistani origin and their descendants in South Korea and Malaysia are close to 214,000 (Ministry of Foreign Affaris, 2020).

Besides having significant number of Pakistani emigrant workers, the Gulf countries, Korea and Malaysia are trade partners of Pakistan. Data on these countries are consistently available from 1980 to 2018. Instead of using the traditional static gravity model of international trade, this study makes use of panel unit root and panel co-integration tests that allow for cross-sectional heterogeneity. Use of panel fully modified ordinary least square (FMOLS) and error correction model (ECM) on aggregate and country-specific data enhance the utility and authenticity of estimates.

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[57]KOTRA (Korea Trade Promotion Corporation initially, Korea Trade-Investment Promotion Agency since 1995) is an organization funded by the state of South Korea. The objective of this organization is the promotion of trade and investment. It was established in 1962 as a national trade promotion organization. Since then, it has facilitated exports-led rapid economic growth of Korea through various trade promotion activities. These activities include overseas market surveys, Small and Medium Enterprises (Hamilton et al.) export promotion, trade info services, government-to-government exports, Foreign Direct Investment in Korea (FDI) promotion and business matchmaking.

Kavoussi (1985) has suggested that in developing countries' economic development, foreign trade plays a vital role. Therefore, studies that demonstrate the economic effect of overseas Pakistanis will, in turn, display their role in the country's economic growth.

More specifically, the present study contributes in the following ways: i) it establishes the nexus between Pakistani emigrant workers with exports of Pakistan, this is the first study that considers Gulf countries Korea and Malaysia as host countries of Pakistani emigrant workers, ii) the analysis uses time-series unit root tests and panel unit root tests to analyze the data's stationary properties. Given the sample size and time spans usually available, otherwise a range of panel-based test is needed because the power of the standard unit root test of time series can be very limited iii) in addition to the Johanson co-integration test, panel co-integration tests are used so that the test does not suffer power loss due to an infinite sample iv) co-integration vectors are measured using the FMOLS estimation method for heterogeneous co-integrated panels (Pedroni, 2004). A consistent and accurate estimation of co-integrating vectors is possible via this approach.

We argue below why this methodology retains the flexibility of the (Ross Levine et al., 2000) approach while at the same time: (a) it allows consistency of the long-run relation with short-run adjustment (b) it deals with the endogeneity of repressors, and (c) respects the time-series properties of data in that integration and it explicitly takes into account the co-integration properties. The short-run estimates through Error Correction Model (ECM) enhance the utility of available data. The negative and significant estimates of ECM term indicate that any divergence from equilibrium will be corrected according to country-specific speed of adjustment.

4.1.3 Arrangement of the Study

The rest of the chapter is organized as follows: Section 4.2 provides a literature review, Section 4.3 explains the study's analytical and theoretical framework, Section 4.4 describes the selected county, period, variable building, data sources and data analysis in the econometric strategy used in the study to check the evidence, Section 4.5. The analytical outcome is recorded and discussed in Section 4.6, Section 4.7 concludes the study by providing policy recommendations.

4.2 Review of Literature

The available empirical studies on the topic of our research are quite helpful to understand the nexus between emigration and exports. According to these studies, the major factors behind international migration include political and economic characteristics of home and host countries. In empirical literature, the important set of variables affecting emigration include the set of gravitational demographic variables, set of variables involving domestic economic activities, set of variables of financial performance of the host country and variables related to domestic politics.

The available empirical studies that establish nexus between international trade and international emigration are in the context of developed countries. Besides, these studies find the combined effect of international migration on international trade without focusing on any particular country of destination.

At present, these are only three international studies that have analyzed the country-specific trade effects by using the gravity model approach. In this context, the studies by important. Head et al. (1998) report a statistically significant contribution of immigrant's regarding imports and exports to and from Canada's 136 trading partners. The results of the study indicate the greater contribution of immigrants on imports of

the host country. The author attributes this surprising result in the preference of immigrants for their home country products. Another possible reason may be involvement of immigrant in the import business.

Similarly, Dunlevy et al. (1999) found that the impact of immigrants on imports from English-speaking countries was greater for the USA. The study finds that the immigrant's network effect is robust for imports originating from English-speaking countries. One of the possible reasons for this impact is the presence of immigrant networks in host countries. With common language and culture in host and home countries, the relationship between international trade and immigrant networks is enhanced. Gould (1994) also documented the effect of US immigrants on bilateral trade with the countries of origin of their immigrant populations.

The study found strong trade enhancing effect of immigrants in cases of consumer-manufactured goods as compared to produce goods. The reason for this enhanced impact is the presence of reliable information and knowledge-sharing network of immigrants.

S. Girma et al. (2002) , in their study for the United Kingdom (UK), indicated that immigrants from non-commonwealth countries help to increase exports; however, reduced imports. This result was due to import substitutions in the manufacturing sector of the UK, as this sector had a huge demand for immigrant workers. In the case of Bolivia, Ehrlich et al. (2006) found a small intra-industry trade marginal effect of emigrant stock. There are two possible reasons for this result: a reduction in transaction costs and preference of migrants for home-made-products.

In the case of Asian countries, Rauch et al. (2002) identified the impact of ethnic Chinese networks on bilateral trade for those countries where Chinese emigrants reside.

By making use of data from 63 countries for the years 1980 and 1990, gravity equation estimates showed that Chinese immigrants significantly contribute to international trade for countries where they reside. Similarly, Kumagai (2007)compared the position of Chinese and Japanese networks in international bilateral trade with other countries, including China and Japan. The study found that while Japanese networks have an effect on foreign trade, their impact on trade, as in the case of Japan, is not influential. A gravity model of foreign trade was used in all of the studies noted above.

For Asian countries, the effect of ethnic Chinese networks on bilateral trade for those countries in which Chinese emigrants reside was established by Rauch et al. (2002). By using data from 63 countries for the years 1980 and 1990, estimates of the gravity equation showed that for countries where they live, Chinese immigrants substantially contribute to foreign trade. Akbari et al. (2012) report the impact of international migration from Pakistan on international trade. Authors particularly consider OECD countries as destination countries for Pakistani emigrants by bifurcating OECD countries into English and non-English speaking countries. They use panel data estimates and avoid Fixed Effect Model (FEM) as FEM is mostly criticized for unobserved heteroskedasticity between error term and independent variable (Santos et al., 2006).

The use of Generalized Least Square (GLS) estimates for exports suggests that the emigrant stock variable is positive and statistically relevant for English-speaking countries, but negligible for non-English-speaking countries. However, in the case of imports, for both English and non-English-speaking nations, the migration stock component is negative and statistically important. The commonality of language also has a greater effect on exchange. The study concluded that in English-speaking

countries, every additional migrant contributed $ 1,800 to net exports while this contribution was smaller, i.e. $ 710 in non-English speaking countries.

A study by S. Hyder et al. (2016) found the Pakistani emigrants residing in Middle East the key instrument in enhancing trade. For the period 1982-2013, the studies conclude that Pakistani emigrants residing in Middle East have contributed $422 into annual exports of Pakistan. However, the annual contribution of Pakistani emigrants living in Middle Eastern countries is less than those living in OECD countries. Martínez-Zarzoso et al. (2003) uses the traditional gravity model of international trade for bilateral trade flows among 47 countries. The data analysis for the period 1980-99 indicates that income elasticity of exports is higher than the corresponding elasticity to import. These results indicate the importance of the production capacity of the countries in promotion of exports. Martínez-Zarzoso et al. (2003) indicates that the negative estimated coefficient for the population of the exporter country indicates: i) an absorption effect, and ii) a negative relation between size of the exporting country and its exports.

The contribution of emigrants in international trade is evident through reduction in transaction cost of international trade. Besides having strong social, cultural and business ties with the home country, emigrants possess superior knowledge about products of their home country. The networks of emigrants help in sharing business-related information among communities. The information-sharing network of emigrants lower the transaction cost associated with international trade (Head et al., 1998). The study by Head et al. (1998) gives an empirical evidence of international trade of Canada with its 136 trading partners. The study uses the augmented gravity model of international trade. For the years 1980-1992, highlight that a 10percent

increase in immigrants' is associated with a 1 percent increase in Canadian exports to the immigrants' home country and a 3 percent increase in imports.

Migrants have three categories inducing family, refugees and immigrants. Empirically, gravity model of trade relating the volume of bilateral trade and immigration indicates that immigrants admitted because of skills or plans to establish a new business have a greater effect on trade than those admitted because of family connections or as refugees (Head et al., 1998). These findings are consistent with the hypothesis that knowledge of the immigrants and their connection to the home country generally lowers the transaction cost associated with international trade.

4.2.1 Findings from Literature

The empirical studies available that create a correlation between international trade and international migration are in the context of developed countries. The empirical research confirms that migrants are a powerful source of trade between their countries of origin and host countries. Some of the sources from which emigrants contribute to growing trade are the reduction in transaction costs of trade, preference for products from home countries, popular language and culture.

4.2.2 Literature Gap

The review of available literature indicates that no comprehensive study is available quantify the contribution of Pakistani migrant workers, residing in GCC, Malaysia and Korea, in exports of Pakistan. In this context, the present study is the first attempt. This study considers GCC, Malaysia and Korea as major destination countries for Pakistani migrant workers. These countries are major sources of workers' remittances well. The study takes the panel data from the period 1980-2018 to identify the exact quantitative contribution of overseas Pakistanis in exports of Pakistan. Primarily, this study

considers the traditional determinants of exports i.e., GDP and population of home and host countries, real effective exchange rate and distance between home and host countries. Additionally, to quantify the role of Pakistani emigrant workers, the analysis includes an independent variable of stock of migrant workers.

In this study, the Panel unit root tests, Panel co-integration tests and Panel Fully Modified Ordinary Least Square (FMOLS) method is applied for estimation. The traditional gravity model is used to check robustness of estimates. There are several advantages of the use of the panel data estimation techniques over cross-section data. Among other advantages, one of the major advantages of panel data estimation is its capacity to monitor the possible but unobservable changes in trading partner's individual affects. The panel data allows controlling for the variables that change overtime however, such variables are constant across entities (Javid et al., 2018).

The Panel data estimation methodology also allows grasping the relevant relationship among variables over time. The results of the Panel F1MOLSindicate that Pakistani migrant workers residing in GCC, Malaysia and Korea are contributing significantly in total exports of Pakistan, for time period under analysis.

The results of this study are important for the policy-making institutions. The study provokes the need to make Pakistani emigrant workers aware of the critical economic situation of country. At the same time, it suggests the Pakistani emigrant workers to demand Pakistani products at maximum. While residing in host countries, the Pakistani emigrant workers can buy made-in- Pakistani products for themselves. These emigrants need to be motivated to promote made-in-Pakistan products among other nationalities as well. The rise in exports from Pakistan will certainly create better long-term impact on economic growth of Pakistan.

4.3 The Analytical Framework and Estimation Strategy

The study uses two techniques for analytical estimation. First, it uses a basic model that combines the real effective exchange rate and stock of Pakistani migrant workers, including the GDP and population of the home and host countries. The typical variables of the gravity model of international trade, such as distance between home and host countries, common language, are not included in this first model.

To check the robustness of results, the study incorporates the gravity model. The gravity model analyzes the bi-lateral trade flows between geographic entities. The gravity model of international trade is similar to the physics function of Isaac Newton, who presented his theory in 1680s. The physics function describes the forces of gravity. The gravity model of international trade is due to Tinbergen (1962).

Tinbergen finds the flows of trade between a pair of the countries as being proportional to their economic 'mass' that is 'national income'. The model describes inverse distance between two trading countries as inversely proportional to trade. Tinbergen specified the gravity model as follows:

$$trade_{ij} = \alpha\big[(GNP_i \times GNP_j).\beta_1\big]/[(dist_{ij})\beta_2 \qquad\qquad 1$$

where i stands for home country and j stands for the host country. $trade_{ij}$ indicates the value of bi-lateral trade between i and j, GNP_i and GNP_j gross national products of the home and host country. $dist_{ij}$ is a measure of bi-lateral distance between the home and host country. Here, α and β are the parameters. β_1 is positive because with the rise in the national income of the home or host country, there is an expected rise in the trade volume of the both countries. β_2 is negative because with the greater distance between

home and host country, the trade volume is expected to decline. The corresponding estimate able equation by taking the natural log of equation 1 is as follows:

$$trade_{ij} = \alpha + \beta_1 log(GNP_i \times GNP_j) - \beta_2 logdist_{ij} + u_{ij} \qquad 2$$

The error term u_{ij} captures any other random event that may affect bi-lateral trade between the home and host country. The error term has a zero mean and constant variance. Equation 2 is the basic equation of the gravity model. This equation predicts that the bi-lateral trade is a positive function of incomes of the home and host country and a negative function of distance between them.

4.3.1 The Theoretical Framework

A strong and expanding external sector is the backbone of any developing economy. The most striking example, in this context, is experience of the East Asian countries. Over all for East Asian countries, exports have increased by 720 percent during the last two decades. The identification of the elements that can potentially affect the export performance of a country help to design such policies that help to improve export performance a country ultimately economic growth.

To analyze the effect of emigration on the export sector of Pakistan, we begin with the traditional Cobb-Douglas utility function. We consider that the world economy consists of Pakistan (the home country) and the rest of the world. Firms (in all the countries including Pakistan) use labour (priced as w) and a composite manufacturing intermediate good to produce output. Here we have a simple assumption that the composite intermediate good is the same as the composite consumption good. We further assume that the j_{th} country is an importing country from all the countries of the world including Pakistan. The representative utility function for the jth is given by:

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$$U_j = M_o^\alpha M_p^\beta \qquad\qquad 1$$

where M_0 stands for the manufacturing goods produced by all the other countries. M_p stands for the manufacturing goods produced by Pakistan. To find the demand functions of Pakistan and the other countries, the budget constraints:

$$E_j = Q_j M_o + Q_j M_p \, or \, E_j = Q_j(M_o + M_p) \qquad\qquad 2$$

where Q_j is the price index. We assume a unique price level prevailing worldwide. We maximize utility subject to the budget constraint:

$$L = M_o^\alpha M_p^\beta + \gamma\{E_j - Q_j(M_o + M_p)\} \qquad\qquad 3$$

By applying the first order conditions and solving simultaneously, we get:
$M_p = (\beta/\alpha)M_o$, Now putting this in the budget constraint and solving for M_o:

$$M_o = (\alpha E_j)/K \text{ and } \quad M_p = (\beta E_j)/K \qquad\qquad 4$$

The inverse of utility function gives the expenditure function,

$$E_j = \frac{U_j Q_j}{K} \qquad\qquad 5$$

There is now a need to put price index in expenditure function, therefore the price index is:

$$Q_j = \{n_p(P_p^* T_{pj})^{1-\sigma} + n_o(P_o^* T_{pj})^{1-\sigma}\}^{1-\sigma} \qquad\qquad 6$$

where n_p is the number of varieties of the manufactured goods is produced in Pakistan, P_p^* is the price of product of Pakistan sold in the jth country and T_{pj} is the transport cost of bringing the product from the boarder of Pakistan to border of the jth country. Similarly, n_o is the number of varieties of manufactured goods produced in other countries, P_p^* is the price of other county's product sold in j^{th} country and T_{pj} is transport cost of bringing the product from the bored of other countries to the border of the jth country. After putting the price index in the expenditure function and taking derivates with respect to P_p^*, we get the demand for each variety from Pakistan:

$$x_{pj} = n_{pj} E_j(Q_j)^{\sigma-1}((P_p^*)^{-\sigma}(T_{pj})^{-\sigma}) \qquad\qquad 7$$

By following the same procedure, we get the demand each variety from 'other countries',

$$x_{pj} = n_{pj}E_j(Q_j)^{\sigma-1}\left((P_o^*)^{-\sigma}(T_{pj})^{-\sigma}\right) \qquad 8$$

In the above framework, the demand in country j for every variety that is produced in Pakistan and the 'other countries', is a function of country's total expenditure on differentiated products E_j, the producer price (P_p^*, P_o^*) and the price index Q_j alongwith the set of the varieties produced in Pakistan and in the other countries $(n_{pj} and n_{oj})$.

To find the value of total exports from Pakistan to the country j, our focus is on equation 7. From equation 7, the elasticity of demand is identical across varieties and equal to σ. $E_j(Q_j)^{\sigma-1}$ is a scale factor that indicates the shape of the demand curve in market j. We assume the producer price P_p^* to be same for all varieties produced in country I, transport frictions, that reflect cost of picking product to and from Pakistan to the country j, are set proportional to the producer price. This cost is decomposed into two elements: the cost of getting the product to and from the border in countries j and Pakistan (t_p, t_j) and the cost of getting the product to and from the border in Pakistan and country j (T_{pj}). Therefore:

$$p_{pi} = P_p^* t_p T_{pj} t_{jor} P_p^* = p_{pi}(t_p T_{pj} t_j)^{-1} \qquad 9$$

Assuming that the network of Pakistani emigrants is already here in the jth country. Additionally, the Pakistani workers are moving from Pakistan to the jth country. The presence of emigrants reduces the trade-related transaction cost. This idea needs to be incorporated here. Transaction cost (related to trade) is the cost from factory to port (the transportation cost, labour cost, communication cost etc.) and the marketing cost. The former cost component indicates that presence of Pakistani emigrants in the jth country

would reduce the cost of access to the foreign markets (as markets are already explored through presence of network of emigrants). The networking of emigrant will also reduce the advertisement cost of the product. It is also possible that the exporters from Pakistan need to take support of trade insurance of their consignments. The Pakistani exporters does not need the trade insurance of his consignment in presence of network of Pakistani emigrants in the jth country. The above description supports our fundamental hypothesis that emigration improves trade flows and reduces transaction cost associated with international trade. From equation 9, we can find the value of total exports of Pakistan to the jth country:

$$x_{pj} = n_p P_p^* n_p E_j (Q_j)^{\sigma-1} (P_p^*)^{-\sigma} (T_{oj})^{-\sigma} \qquad \text{10a}$$

Equation 10a is taken as the theoretical support for the estimation of a gravity trade model. It can be re-written as:

$$n_p P_p^* x_{pj} = \{n_p^2 (p_{pj})^{1-\sigma} (t_p)^{\sigma-1}\}(T_{pj})^{-1}\{E_j (Q_p/t_j)^{\sigma-1}\} \qquad \text{10b}$$

International trade is decomposed into market access and supply capacity (Krugman et al., 1995). On the left hand side of equation 10a, the first term reflects the Supply Capacity of PakistanSC_p. It is the product of the number of varieties $n_p^2$and their price competitiveness, which is reflected through the price of the product and the internal transport costs. The next term reflects the trans-border transport costs. The higher the trans-border transport cost lowers the value of the Pakistani exports. On the extreme right-hand side, there is the market capacity of thej^{th}country. The termsE_j and $Q_p$have positive affect on the value of the exports from Pakistan. The external transport cost tends to reduce the value of the exports from Pakistan. The total value of exports of Pakistan is:

$$X_p = sc_p \in_{i \neq j} (Tpj)^{1-\sigma} m_j \qquad 11$$

The log-liner form of the equation 11 is as follows:

$$lnX_p = lnsc_p + ln(\in_{i \neq j} (Tpj)^{1-\sigma} m_j) \qquad 12$$

$lnsc_p$ reflects the supply capacity of Pakistan. The term $ln(\in_{i \neq j} (Tpj)^{1-\sigma} m_j)$ represents the market capacity of Pakistan. The product of supply capacity and foreign market access gives the total value of exports from Pakistan. The supply capacity of Pakistan improves with the presence of network of Pakistani emigrants and reduction in trade-related transaction cost. Therefore, in this study, besides identifying the role of emigrants in exports of Pakistan, we focus on the supply capacity of Pakistan.

4.4 The Econometric Model and Estimation Technique

The analysis is focused on a pooled time series and cross-sectional data covering the period from 1980 to 2018. Most of the Pakistani migrant workers are destinated in the Gulf countries, Malaysia and South Korea. Pakistan has strong trade and investment relationships with these selected destination countries of migrant workers. To empirically investigate the relationship between stock of Pakistani migrant workers in these selected destination countries and exports from Pakistan towards these countries, we use the following model:

4.4.1 The Econometric Models

1) **Model 1**

$$logexp_{pjt} = \alpha + \gamma logy_{pt} + \emptyset logy_{jt} + \pi logPop_{pt} + \delta logPop_{jt} + \partial logREER +$$

$$\vartheta logOP_{pjt} + e_t \qquad 1$$

where p stands for exports of Pakistani to j country where j indicates the host countries. Moreover, t is time that is from1980 to 2018. The logarithmic form presented in the above model indicates that the coefficient of each variable represents the elasticity of exports concerning that variable. In the above model, the dependent variable is exp_{pjt} that is exports from Pakistan to j^{th} country (each host country) or the dollar value of goods and services exported to j^{th} (each host country). The jth countries are selected based on a cluster of overseas Pakistani workers. y_{pt} is Gross Domestic Product of Pakistan and y_{jt} is GDP of each host country. GDP is a proxy for wealth. GDP of the domestic country is believed to reflect supply capacity to export goods (Kristjánsdóttir, 2005). In macroeconomic models GDP determines a country's exports or imports.

Pop_{pt} is population of Pakistan, Pop_{jt} is population of each of the host country. Population reflects the strength of network originating from a single (Massey et al., 1993). GDP and population of Pakistan indicate export capacity of Pakistan. The coefficient for host country population is generally, expected to be positive. The bigger market in the host country is expected to create demand for more goods. Population of the exporter country is also expected to have positive effects on exports. The exporter country is expected to be capable of supplying more products as its population grows in size. Moreover, with rise in expatriate population of a country in destination countries, there come greater ties of relationship such as kinship, friendship and most importantly feeling of a shared origin. Following Massey et al. (1993), these feelings are indication of formation of a network of emigrants originating from a common single country.

Real Effective Exchange Rate (REER) measures value of a nation's own currency against the weighted average of several foreign currencies divided by index of cost or

price deflator. Rise in REER implies that exports have become more expensive while imports have become cheaper. Exchange rates significantly affect the trade flows. With more strong national currency, exports reduce while imports may raise (Tamas, 2017). Overall; it indicates loss in trade competitiveness for exporting country.

The primary objective of this study is to quantitatively evaluate the effect of the Pakistani migrant network on Pakistan's exports. An independent variable, Overseas Pakistanis OP(pjt), is used as an independent variable in the model to achieve this goal.

2) Model 2

To check the robustness of results reported in the study, we estimate the traditional gravity model of international trade. Additionally, gravity model should use common language, adjancy and $Dist$ that indicates geographic distance between home and host country. Since the language is not common between Pakistan and any of the selected host country this variable is excluded for model 2. Similarly, none of the selected host country has common border with Pakistan, therefore, this variable is also excluded.

$$logexp_{pjt} = \alpha + \gamma logy_{pt} + \beta logy_j + \pi logPop_{pt} + \partial logPop_{jt} + \mu logREER + \\ \infty logDist_{pj} + \vartheta logOP_{pt} + \epsilon_t \qquad 2$$

All other variables have same notation as in model 1. Additionally, the variable of distance incorporates the effect of transaction and transport cost of exports that rise with increase in distance. It represents all possible sources of cost of international trade (Javid et al., 2018). Huge distance between trade partners reduces international trade as well as investment. Therefore, the exports from Pakistan and distance are expected to be negatively related. In this study, distance between Pakistan's capital city, Islamabad and capital cities of respective importing countries is calculated by great

circular formula[58]. The model has been estimated by using gravity model of estimation.

4.4.2 Estimation Methodology

Different estimation methods are used by both models. However, both models use the panel data system. Cross-section data or time series data are less favored over panel data. The explanation is that, compared to those using OLS, the approximate results produced by the panel data are more stable (Koutsoyiannis, 1977).

Due to the decrease in collinearity problems, the estimates obtained by the panel data are better and more effective (Noyori et al., 1986). A broad sample is given by the use of pooled time series and cross-section data. In addition, it is also predicted that pooled time-series and cross-section data would yield effective parameter estimates. Importantly, not all individuals on a panel can have the same characteristics.

The primary step to check the properties of the data is to check the order of integration of the variables in the data. Therefore, it is important to check the order of the variables in both models 1 and 2. For the purpose we need to ensure that the variables are integrated of order I (1), I (2) or I (3). Identification of order of integration is important to avoid spurious results. In this study, both the time series and panel unit-root tests are applied. The time-series unit root test involves Augmented Dickey Fuller test. The panel data unit root tests are carried out using the Lev, Lin and Chu.

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[58]The great circle formula is determined after Head (2003) as follows:

D ij=3962.6 arc COS ({sin(Y-(i)))) sin(Y-j) })+({cos(Y-i) cos(Y-j)cos(X-i-X-j)],

Where X is longitude in degrees, to translate it to radius, X multiplies by 57.3 and Y is latitude multiplied by -57.3 (assuming that it is measured in degrees west).

i. Time-series Unit Root Test:

In fact, the unit root checks whether the variables of the time series are non-stationary and have a unit-root. The time-series unit root test null hypothesis typically determines the existence of a unit-root. The alternative hypothesis depends on the test used: either stationarity, explosive or pattern stationarity.

ii. Augmented Dickey Fuller(ADF) Test:

We consider a simple AR (1) process:

$$y_t = \rho y_{t-1} + x_t^` \delta + \varepsilon_t \qquad\qquad 1$$

Where x-t are the optional exogenous regressors that can consist of a constant or a constant and trend, the parameters to be computed and the ε-t are presumed to be white-noise. If | v1|,y is a non-stationary sequence, and with time, the variance of y increases and approaches infinity. If| v1|, the sequence is trend-stationary. The hypothesis of trend-stationarity can therefore be tested by w-testing. Thus, the hypothesis of trend-stationarity can be evaluated by testing whether the absolute value of ρ is strictly less than one. The unit root test against the one-sided alternative $H_o : \rho = 1$ has the null hypothesis $H_1 : \rho < 1$. The null is evaluated against a point alternative in certain instances.

 The Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Lagrange Multiplier (LM) measure, on the other hand, tests the null of $H_1 : \rho < 1$ against the alternative $H_1 : \rho = 1$. Standard Dickey-Fuller test is carried out by estimating equation 1. Subtracting y_{t-1} from both the sides of the equation 1:

$$\Delta y_t = \alpha y_{t-1} + x^` \delta + \varepsilon_t \qquad\qquad 2$$

where $\alpha = \rho - 1$ The null and alternative hypotheses may be written as,

$$H_o := 0, H_1 = \alpha \prec 0 \qquad\qquad 3$$

and evaluated using the conventional t-ratio for

$$t_\alpha = \frac{\hat{\alpha}}{s\varepsilon(\hat{\alpha})} \qquad\qquad 4$$

Where alpha is the estimate of alpha and sε(alpha) is the standard error coefficient. (Dickey et al., 1979) suggest that this figure does not obey the t-distribution of the traditional student under the null hypothesis of a unit root. Asymptotic outcomes are often derived and essential values are simulated for different test and sample sizes. More recently, a much greater range of simulations has been introduced by MacKinnon (1996)than those tabulated by Dickey and Fuller. In addition, for the simulation outcomes, MacKinnon estimates response surfaces, allowing the estimation of critical Dickey-Fuller values and χ values for arbitrary sample sizes.

The simple Dickey-Fuller unit root test is applicable only if the series is an Auto Regressive (AR) (1) process. If the series is correlated at higher order lags, the assumption of white noise disturbances ε_t violates. The Augmented Dickey-Fuller (ADF) test constructs a parametric correction for the higher-order correlation by assuming that the y series follow an AR (ρ)process. By adding lagged difference terms of the dependent variable y to the right-hand side of the test regression, equation 5 is obtained:

$$\Delta y_t = \alpha \Delta y_{t-1} + x_1'\delta + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \cdots + \beta_p \Delta y_{t-p} + v_t \qquad\qquad 5$$

This improved specification is then used to use the t-ratio to evaluate equation 3 (given in equation 4). The asymptotic distribution of the t-distribution for alpha is independent of the number of lagged initial differences included in the ADF regression, an important finding obtained by Fuller. Moreover, while the assumption that follows an autoregressive (AR) process may appear restrictive, Said et al. (1984a) demonstrate that

the test is asymptotically valid in the presence of a moving average (MA) component, if sufficient lagged difference terms are included in the test regression. Moreover, the assumption that the series follows an autoregressive (AR) process appears restrictive. However, Said et al. (1984a) demonstrate that the test remains asymptotically valid even in the presence of a Moving Average (MA) component. In such case, to get the valid results from the test, it is necessary to include sufficient difference terms in the test regression.

We have to choose whether to include the exogenous variables in the test regression while practically performing the ADF. We have the choice of including, in the test regression, a constant, a constant and a linear time trend, or neither. However, the inclusion of irrelevant regressors in the regression will reduce the power of the test to reject the null of a unit root. It is therefore; better to choose a specification that is a good description of the data under both the null and alternative hypotheses. Second, it is important to specify the number of lagged difference terms (lag length) to the test regression. The lag-length should be sufficient so that to remove serial correlation in the residuals.

Panel Unit Root Test:

Panel databased unit-root tests carry higher power than individual time-series unit root tests. Fisher-type tests include Levin et al. (2002), Im et al. (2003), Breitung et al. (2005), Moon et al. (2006). These are the most commonly used panel unit-root tests. The Augmented Dickey-Fuller Test (ADF) and Philips-Perron (PP) tests used in these tests are Maddala et al. (1999).

ADF and PP tests are simply multiple-series unit root tests that can be applied on panel data structures. In panel data, the presence of cross-sections generates multiple series

out of a single series. We can classify the unit root tests based on whether there is any restriction across section or cross-section on the autoregressive process. Considering the following Auto Regressive (AR-1) process for panel data:

$$y_{it} = \rho_i y_{it-1} + X_{it}\delta_i + \epsilon_{it} \qquad 1$$

Where i= 1, 2, 3,…N cross-section units or series, that are observed over periods t= 1, 2, …, T_i.

In equation 1, X_{it} represents all the exogenous variables in the model, including fixed effects or individual trends. The ρ_i are the autoregressive coefficients. The errors ϵ_{it} are assumed mutually independent and idiosyncratic disturbance. It is assumed that if $|\rho_i| < 1, y_i$ is said to be weakly or trend-stationary. If $|\rho_i| = 1, y_i$ it indicates a unit root.

There are two theories that we may make about the vér-i. First, the persistence parameters are prevalent across cross-sections, so that for all I ¥i= value. This assumption is used in unit root tests, including the Levin, Lin, and Chu (LLC), Breitung, and Hadri tests. Instead, we can also allow i to differ freely across the cross-sections. Unit-root examinations, including Im, Pesaran, and Shin, these are as follows:

Tests with Common Unit Root Process:

Unit root tests by Levin et al. (2002), Breitung et al. (2005) and Hadri (2000) presume that there is a standard unit root process; Tag I is the same across cross-sections. The first two experiments use a null hypothesis of a unit root, whereas a null of no unit root is used for the Hadri test. LLC and Breitung consider the following basic ADF specification:

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{\rho_i} \beta_{ij} \Delta y_{it-j} + \acute{X}_{it}\delta + \epsilon_{it} \qquad 1$$

where we assume a common $\alpha = \rho - 1$, but allow the lag order for the difference terms, ρ_i to vary across cross-sections. The null and alternative hypotheses for the tests are as under:

$$H_0: \alpha = 0 \quad \text{and} \quad H_1: \alpha < 1 \qquad 2$$

where the null hypothesis that there is a unit root, while under the alternative that there is no unit root.

iii. Levin Lin and Chu Test:

The method of Levin et al. (2002) derives estimates of α from the proxies of Δy_{it} and y_{it} that are standardized, free from autocorrelations and the deterministic components. For a pre-defined given set of lag orders, starting by estimating two additional sets of equations, hence by regressing both Δy_{it} and y_{it-1} on lag term that is Δy_{it-1} (for j = 1, 2, ...ρ_i) and the exogenous variables X_{it}. The estimated coefficients of these two regressions can be denoted as $(\hat{\beta}\hat{\delta})$ and $(\dot{\beta}\dot{\delta})$ respectively. We define $\Delta\acute{y}_{it}$ by taking Δy_{it} by removing the autocorrelation and the deterministic components using the first set of auxiliary estimates:

$$\Delta\acute{y}_{it} = \alpha y_{it} - \sum_{j=1}^{\rho_i} \beta_{ij} \Delta y_{it-j} + \acute{X}_{it}\delta \qquad 1$$

On the same pattern, defining the analogous $\acute{y}_{it-1}$ by the use of second set of coefficients:

$$\acute{y}_{it-1} = \alpha y_{it-1} - \sum_{j=1}^{\rho_i} \dot{\beta}_{ij} \Delta y_{it-j} + \acute{X}_{it}\dot{\delta} \qquad 2$$

In the next step, by obtaining the proxies through standardizing both $\Delta\acute{y}_{it}$ and $\acute{y}_{it-1}$, then dividing by the standard error of regression:

$$\Delta y_{it} = \left(\frac{\Delta\acute{y}_{it}}{s_i}\right) \text{ and} \acute{y}_{it-1} = \left(\frac{\Delta\acute{y}_{it-1}}{s_i}\right) \qquad 3$$

where s_i represents the estimated standard errors by estimating each ADF in equation 2. Finally, an estimate of the coefficient α can be obtained from the pooled proxy equation:

$$\Delta y_{it} = \alpha y_{it-1} + \eta_{it} \qquad\qquad 4$$

LLC indicates that under the null of unit root, a modified t-statistic for the resulting $\hat{\alpha}$ is normally distributed which is where t_α the t-statistic (standard) for is $\hat{\alpha} = 0$, $\hat{\sigma}^2$ represents the estimated variance of the error term η, $se(\hat{\alpha})$ is the standard error of $\hat{\alpha}$, and

$$T = T - \left(\sum_i {}^{p_i}\!/_N\right) - 1 \qquad\qquad 5$$

The standard deviation ratio S_N (which is average) represents the mean of the ratios of the long-run standard deviations to the innovation standard deviation for each individual. Its estimate is derived by using kernel-based techniques. The remaining two terms, namely, μ_{mT^*} and σ_{mT^*} are called the adjustment terms for the mean and standard deviation. The LLC method has the requirement of specification of the number of lags used in each of the cross-section ADF regression, p_i as well as kernel choices are used for computation of S_N. In addition, it is also required to specify the exogenous variables used in the entire test equations. The available choices include: (i) no exogenous repressors, (ii) individual constant terms, and (iii) individual constants and trends.

iv.   Tests Containing Individual Unit Root Processes:

The unit root tests including Im, Pesaran, & Shin, the Fisher-ADF and PP allow for individual unit root processes so that ρ_i may vary across cross-sections. These tests are

having the characteristic of combining the individual unit root tests to derive a panel-specific result.

v.   Im, Pesaran, and Shin:

Im et al. (2003) begin by specifying a separate ADF regression for each cross section:

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{p_i} \beta_{ij} \Delta y_{it-j} + \acute{X}_{it}\dot{\delta} + \epsilon_{it} \qquad 1$$

The null hypothesis and alternative hypothesis in this unit root test can be written as:

$$H_0: \alpha = 0, for all i and H_1 = \begin{cases} \alpha_i = 0 & for i = 1,2,...,N1 \\ \alpha_i < 0 & for i = N+1,N+2,...N \end{cases} \qquad 2$$

where i(it may be re-ordered if it is necessary) that may be interpreted as a non-zero fraction of the individual processes is stationary. After estimation of the separate ADF regressions, the average t-statistics for α_i, from the individual ADF regressions, that is:

$$t_{iT_i(p_i)}: \overline{t_{NT}} = \frac{\left(\sum_{i=1}^{N} t_{iT_i(p_i)}\right)}{N} \qquad 3$$

is adjusted in order to arrive at the desired test statistics. In the case of zero lag order ($p_i = 0 \ for all i$) the simulated critical values for $\overline{t_{NT}}$ are given in the IPS (Im et al., 2003) paper indicating different numbers of cross sections that is N, series length that is T, and for test equations which contains either intercepts, or intercepts and linear trends. In the general case when the lag order in equation (1), in IPS can be non-zero for some of the cross-sections, IPS indicates a properly standardized $\overline{t_{NT}}$ has an asymptotic standard normal distribution:

$$W_{\overline{t_{NT}}} = \frac{\sqrt{N}\left(\overline{t_{NT}} - N^{-1}\sum_{i=1}^{n} E\left(\overline{t_{iT}}(p_i)\right)\right)}{\sqrt{N^{-1}\sum_{i=1}^{N} Var\overline{t_{iT}}(p_i)}} \rightarrow N(0,1) \qquad 4$$

The notation for the expected mean and variance of ADF regression t-stat,$E\left(\overline{t_{iT}}(p_i)\right)$ and $Var\overline{t_{iT}}(p_i)$ are given by IPS for different values of T and p for different test equation assumptions. The IPS test statistic has the requirement of specification of the lag-numbers. The IPS also requires the specification of deterministic component for each of the cross-section ADF equation. The available choices include; (i) constants terms, (ii) individual and constant term and (iii) the trend terms.

vi. Fisher-ADF & Fisher-PP:

The alternative approach to the unit root tests in panel data use result to derive tests (Fisher, 1932). These tests combine the p-values that are obtained from individual unit root tests. This specification has been offered by Maddala et al. (1999) and also by Choi (2001).The Fisher ADF and Fisher PP test allow defining π_i as the p-value from any individual unit root test for cross-section i then under the null of unit root for all N cross-sections. It assumes the asymptotic result that is as under:

$$-2\sum_{i=1}^{N} log(\pi_i) \rightarrow x_{2N}^2 \qquad\qquad 1$$

In addition to above test, Choi demonstrates that:

$$Z = \frac{1}{\sqrt{N}}\sum_{i=1}^{N} \Phi^{-1}(\pi_i) \rightarrow N(0,1) \qquad\qquad 2$$

Where Φ^{-1} is the inverse of the standard normal cumulative distribution function. The test-stat of both the asymptotic X^2 and standard normal statistics by using the ADF and Phillips-Perron individual unit root tests are required to be reported in analysis. It is interesting that the null hypothesis and the alternative hypotheses are the same as just like IPS test of unit root.For both Fisher tests, it is necessary to define the exogenous variables. The available choices include: (i) no exogenous repressors (ii) individual constants effects, and (iii) individual constant and trend terms. Additionally, when the

Fisher tests are based on ADF test statistics, you must specify number of lags used in each cross-section ADF regression. Instead, for the PP form of the test, it is important to specify a method for estimating f_0.

4.4.3 Co-integration Test

The study incorporates the time-series and panel co-integration test. The detail of these tests is given below:

i. Time-series test for co-integration:

The time-series co-integration test includes the popular co-integration Johansen test (1991). Named after Soren Johansen, the Johansen testis is a method for checking the co-integration of many time series. These time series can be referred to as asking. This test helps more than one partnership to co-integrate. It is therefore more important than the Engel-Granger test that is based on the Dickey-Fuller or Augmented Dickey-Fuller test for unit roots in the residual from single estimates co-integrating relationship. Vector Auto Regressive (VAR)-based co-integration tests using the methodology developed in Søren Johansen (1995); Soren Johansen et al. (1990) performed using a Group object or an estimated VAR object.

Consider a VAR of orderρ,

$$y_t = A_1 y_{t-1} + \cdots + A_p y_{t-p} + B x_t + \epsilon_t \qquad\qquad 1$$

$$\text{Where} y_{t-1} + \sum_{i=1}^{p-1} \tau_i \Delta y_{t-i} + B x_t + \epsilon_t \qquad\qquad 2$$

$$\pi = \sum_{i=1}^{p} A_i - I \qquad\qquad 3$$

$$\tau_i = -\sum_{j=i+1}^{p} A_j \qquad\qquad 4$$

The Granger's representation theorem asserts that if the coefficient π matrix r < k has reduced rank then there exist k ×r matrices$\alpha and \beta$ each with rank r such that$\pi =$

$\alpha\beta^`$ and $\beta^` y_t$ is $I(0)$, r is the number of co-integrating relations (the co-integrating rank) and each column of β is the co-integrating vector. As explained below, the elements of α are known as the adjustment parameters in the Vector Error Correction (VEC) model. The Johansen method is to estimate the π matrix from an unrestricted Vector Auto Regressive (VAR). It also tests whether we can reject the restrictions implied by the reduced rank of π. The data series may have none zero mean and deterministic trends as well as stochastic trends. Similarly, the co-integrating equations may have intercepts and deterministic trends.

The asymptotic distribution of the Likelihood Ratio (Song et al.) test statistics for co-integration does not have the usual distribution and depends on the assumptions made with respect to deterministic trends. Therefore, in order to carry out the test, we need to make assumption regarding the trend underlying the data. The five deterministic cases considered by Johansen (1995) are summarized as under:

i.   The level data y_t have no deterministic trends and co-integrating equations do not have intercepts.

$$H_2(r): \pi y_{t-1} + \beta x_{t-1} = \alpha\beta^` y_{t-1} \qquad 5$$

ii.   The level data y_t have no deterministic trends and the co-integrating equations have intercepts.

$$H_1^*(r): \pi y_{t-1} + \beta x_{t-1} = \alpha\beta^` y_{t-1} + p_o \qquad 6$$

iii.   The level data y_t have linear trends but the co-integrating equations have only intercepts.

$$H_1(r): \pi y_{t-1} + \beta x_t = \alpha(\beta^` y_{t-1} + p_o) + \alpha_1 y_o \qquad 7$$

iv.   The level data y_t and the c-integrating equations have linear trends.

$$H_1^*(r): \pi y_{t-1} + \beta x_{t-1} = \alpha(\beta^` y_{t-1} + p_1 t) + \alpha_1 y_o \qquad 8$$

v.   The level data y_t have quadratic trends and the co-integrating equations have linear trends.

$$H_1(r): \pi y_{t-1} + \beta x_t = \alpha(\beta` y_{t-1} + p_0 A + p_1 t) + \alpha_1(\gamma_0 + \gamma_1 t) \quad 9$$

The terms associated with α_1 are the deterministic terms "outside" the co-integrating relations. When a deterministic term appears both inside and outside the co-integrating relation, the decomposition is not uniquely identified. Johansen (1995) identifies the part that belongs inside the error correction term by orthogonally projecting the exogenous terms onto the α pace so that α_1 is the null space of α. We can identify the part inside the error correction term by regressing the co-integrating relations $\beta` y_t$ on a constant and linear trend. The two types of test statistics given in the Johansen test are called trace statistics and the maximum eigen values. The test also includes the number of co-integrating relations under the null hypothesis. The test results report the 5 percent and 1 percent critical values.

The non-standard distribution critical values are taken from MacKinnon et al. (1999), so they differ slightly from reported in Johansen and Julius (1990). In order to determine the number of co-integrating relations γ, conditional on the assumptions made about the trend, we can proceed sequentially from $\gamma=0$ to $\gamma = k - 1$ the alternative of k co-integrating relations corresponds to the case where none of the series has a unit root and a stationary VAR may be specified in terms of the levels of all of the series. The trace statistic for the null hypothesis of k co-integrating relations is computed as:

$$LR_{max}(\gamma(\gamma + 1) = -Tlog(1 - \varphi_{\gamma+1}) , =LR_{t\gamma}(\frac{\gamma}{K} - LR_{t\gamma}(\gamma + 1)K) \quad \text{for } \gamma =$$

$$0,1, ... K - 1 \qquad\qquad 10$$

The results of the test report the maximum eigen value statistic that tests null hypothesis of co-integrating relations against the alternative of no co-integrating relations.

However, trace statistic and the maximum eigen value statistic may yield the conflicting results. For such cases, it becomes necessary to examine estimated co-integrating vector and based on choice of the interpretability of co-integrating relations; Johansen and Juselius (1990). In some cases, the individual unit root tests will show that some of series are integrated, but co-integration test will indicate that the matrix has full rank ($\gamma = k$). This apparent contradiction may be result of low power of the co-integration tests, stemming perhaps from a small sample size or serving as an indication of specification error.

ii. Panel data test for co-integration:

The availability of panel data has led to an emphasis on extending various statistical tests to the panel data. Recent literature has also focused on the tests of co-integration in a panel setting. The types of the panel co-integration tests include: Kao (1999), Pedroni (2004) and a Fisher-type test using an underlying Johansen methodology (Maddala et al., 1999). The Pedroni and Kao tests are based on Engle et al. (1987) two-step residual-based co-integration tests. The Fisher test is a combined Johansen test.

iii. Pedroni (Engle-Granger based) Co-integration Tests:

The (Enders et al., 2001; Engle et al., 1987) co-integration test is based on an examination of the residuals of a spurious regression performed using I (1) variables. If the variables are co-integrated then the residuals should be I (0). On the other hand, if the variables are not co-integrated then the residuals will be I (1) Pedroni (2004) and Kao (1999) extend the Engle-Granger framework to tests involving the panel data. Pedroni proposes several tests for co-integration that allow for heterogeneous intercepts and trend coefficients across cross-sections. Considering the following regression:

$$y_{it} = \alpha_i + \delta_i t + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + \ldots, \beta_{Mi} x_{Mi,t} + \epsilon_{i,t} ..1$$

For t = 1,…,T; i = 1, …, N; and m = 1, …, M

where y and x are assumed to be integrated of order one or I(1). The parameters α_i and δ_i are individual and trend effects, which may be set to zero if desired. Under the null hypothesis of no co-integration, the residuals $\epsilon_{i,t}$ will be I(1). The general approach is to obtain residual from the above equation and then to test whether residuals are I(1) by running the auxiliary regression:

$$\epsilon_{i,t} = \rho_i \epsilon_{i,t-1} + \mu_{i,t} \text{ or,} \qquad\qquad 2$$

$$\epsilon_{i,t} = \rho_i \epsilon_{i,t-1} + \sum_{j=1}^{\rho_i} \Psi_{ij} \Delta\epsilon_{it-j} + v_{it} \qquad\qquad 3$$

for each cross-section. Pedroni describes various methods of constructing statistics for testing for null hypothesis of no co-integration ($\rho_i = 1$). There are two alternative hypotheses: i) the homogenous alternative, $(\rho_i = \rho) < 1\ foralli$ (which Pedroni terms the within-dimension test or panel-statistics test), and ii) the heterogeneous alternative, $\rho_i < 1\ foralli$ (referred as the between-dimension or group statistics test). The Pedroni panel co-integration statistic $\mathfrak{y}_{N,T}$ is constructed from the residuals from above equations. A total of eleven statistics with varying degree of properties (size and power for different N and T) are generated. Pedroni shows that the standardized statistic is asymptotically normally distributed

$$\frac{\mathfrak{y}_{N,T} - \mu\sqrt{N}}{\sqrt{v}} \rightarrow N(0,1) \qquad\qquad 4$$

where $\mu\ and\ v$ are Monte Carlo generated adjustment terms.

iv.   Kao (Engle-Granger based) Co-integration Tests:

The Kao test follows the same basic approach as the Pedroni tests, but specifies cross-section specific intercepts and homogeneous coefficients on the first-stage repressors. In the bi-variate case described in Kao (1999), we have

$$:y_{it} = \alpha_i + \beta x_{it} + \epsilon_{it}, \qquad 1$$

$$for y_{it} = y_{it-1} + \mu_{i,t}, x_{it} = x_{it-1} + \epsilon_{i,t} \qquad 2$$

$$for\ t = 1\dots\ T;\ i = 1\dots\ N.$$

More generally, we may consider running the first stage regression Equation (1). It requires the α_i to be heterogeneous and β_i to be homogeneous across cross-sections. It is also necessary to set all of the trend coefficients γ_i to be equal to zero. Kao then runs either the pooled auxiliary regression:

$$\epsilon_{it} = \rho_i \epsilon_{it-1} + v_{i,t} \qquad 3$$

or the augmented version of the pooled specification:

$$\epsilon_{it} = \tilde{\rho}_i \epsilon_{it-1} + \sum_{j=1}^{p} \Psi_j \, \Delta\epsilon_{it-j} + v_{it} \qquad 4$$

Under the null of no co-integration, Kao shows following the statistics:

$$DF_\rho = \frac{T\sqrt{N}(\hat{\rho}-1)+3\sqrt{N}}{\sqrt{10.2}} \qquad 5$$

$$DF_t = \sqrt{1.25}t_\rho + \sqrt{1.875N}, \qquad 6$$

$$DF_\rho^* = \frac{\sqrt{N}T(\hat{\rho}-1)+3\sqrt{N}\hat{\sigma}_v^2/\hat{\sigma}_{0v}^2}{\sqrt{3+36\hat{\sigma}_v^4/5(\hat{\sigma}_{0v}^4)}}, \qquad 7$$

$$DF_\rho^* = \frac{t_\rho + \sqrt{6}N\hat{\sigma}_v/(2\hat{\sigma}_{0v})}{\sqrt{\hat{\sigma}_{0v}^2/(2\hat{\sigma}_v^2)+3\hat{\sigma}_v^2/(10\hat{\sigma}_{0v}^2)}}, \qquad\qquad 8$$

and for p> 0, (i.e the augmented version),

$$ADF = \frac{t_\rho + \sqrt{6}N\hat{\sigma}_v/(2\hat{\sigma}_{0v})}{\sqrt{\hat{\sigma}_{0v}^2/(2\hat{\sigma}_v^2)+3\hat{\sigma}_v^2/(10\hat{\sigma}_{0v}^2)}} \qquad\qquad 9$$

Converg to N(0,1), asymptotically, where the estimated variance is $\hat{\sigma}_v^2 = \hat{\sigma}_u^2 - \hat{\sigma}_{u\epsilon}^2 \sigma_v^{-2}$ with estimated long variance $\hat{\sigma}_{0v}^2 = \hat{\sigma}_{0u}^2 - \hat{\sigma}_{0u\epsilon}^2 \sigma_{0\epsilon}^{-2}$ .The covariance of $w_{it} = \begin{bmatrix} u_{it} \\ \epsilon_{it} \end{bmatrix}$ is estimated as:

$$\hat{\Sigma} = \begin{bmatrix} \hat{\sigma}_u^2 & \hat{\sigma}_{u\epsilon} \\ \hat{\sigma}_{u\epsilon} & \hat{\sigma}_\epsilon^2 \end{bmatrix} = \frac{1}{NT}\sum_{i=1}^{N}\sum_{t=1}^{T} \omega_{it}(\omega_{it}\acute{}) \qquad\qquad 10$$

and the long run covariance is estimated using the usual kernel estimator,

$$\hat{\Omega} = \begin{bmatrix} \hat{\sigma}_{0u}^2 & \hat{\sigma}_{0u\epsilon} \\ \hat{\sigma}_{0u\epsilon} & \hat{\sigma}_{0\epsilon}^2 \end{bmatrix} = \frac{1}{N}\sum_{i=1}^{N}\left[\frac{1}{T}\sum_{t=1}^{T}\omega_{it}(\omega_{it}\acute{}) + \frac{1}{T}\sum_{\tau=1}^{\infty}k(\tau/\right.$$

$$\left. b)\sum_{t=\tau+1}^{T}\omega_{it}(\omega_{it-\tau})\acute{} + \omega_{it-\tau}(\omega_{it}\acute{})\right] \qquad\qquad 11$$

where k is one of the supported kernel functions and b is the bandwidth.

4.4.4 Estimating the long run relationship

The results of co-integration test indicate if the depend variable is structurally related to the explanatory variables. The test confirms the existence of a long run equilibrium relationship among the variables in the model. The next step is to estimate the model by the method of Fully Modified Ordinary Least Square (FMOLS) that is appropriate for heterogeneous co-integrated panels (Pedroni, 2004). FMOL also addresses the possible endogeneity due to presence of GDP variable as independent variable in the model. FMOLS methodology addresses the problem of non-stationary of regressors and the problem of simultaneity bias. "OLS estimation yields biased results because in

general the regressors are endogenously determined in I (1) case" (Ross Levine et al., 2000).

Following Christopoulos et al. (2004) we can write,

$$y_{it} = \alpha_i + \acute{x}_{it}\beta + u_{it}, \qquad 1$$

$$x_{it} = x_{i,t-1} + e_{it}, \qquad 2$$

$$\xi_{it} = [u_{it} + e_{it}] \qquad 3$$

Following Phillips and Hansen (1990) a semi-parametric correction can be made to the OLS estimator that abolishes the second order bias caused due to the endogenous regressors. (Pedroni, 2004) follows the same principle in the panel data context. Pedorni also allows for the heterogeneity in the short-run dynamics and the fixed effects.

$$\hat{\beta}_{FM} - \beta = \left(\sum_{i=1}^{N} \hat{\Omega}_{22i}^{-2} \cdot \sum_{t=1}^{T}(x_{it} - \bar{x}_t)^2\right)^{-1} \qquad 4$$

$$\sum_{i=1}^{N} \hat{\Omega}_{11i}^{-1} \cdot \hat{\Omega}_{22i}^{-1}\left(\sum_{t=1}^{T}(x_{it} - \bar{x}_t) \cdot u_{it}^* - T\hat{\gamma}_i\right) \qquad 5$$

$$u_{it}^* = u_{it} - \hat{\Omega}_{22i}^{-1} \cdot \hat{\Omega}_{22i} \qquad 6$$

$$\hat{\gamma}_i = \hat{\Gamma}_{21i} + \hat{\Omega}_{21i}^{0} - \hat{\Omega}_{22i}^{-1}\hat{\Omega}_{21i}\left(\hat{\Gamma}_{21i} + \hat{\Omega}_{22i}^{0}\right) \qquad 7$$

$$\Omega_i = \Omega_i^{0} + \Gamma_i + \Gamma_i, \hat{\Omega}_i^{0} \qquad 8$$

where the covariance matrix can be decomposed such as $x_{io} = \hat{x}_{io} + c_i$. Here, x_{io} defines contemporaneous covariance matrix. c_i is a weighted sum of auto-co-variances. $\hat{x}_{io}$ denotes appropriate estimator of x_{io}.

4.4.5 Error Correction Method

If two variables are co-integrated then we can express the relationship between these two variables with an ECM term that is under:

$$y_t = a_o + b_1 x_t - \hat{\pi}_{ut-1} + e_t \qquad 1$$

The model 1 will now have the advantage of including both short and long-run information. In this model, b_1 is the impact multiplier (the short-run effect). It measures an immediate impact a change in x_t will have on a change in y_t. On the other hand, π is

the feedback effect, or the adjustment effect. It shows how much of the disequilibrium is being corrected. In other words, π indicates the extent to which any disequilibrium in the previous period affects the adjustment in y_t. Therefore, from the equation given below, β_2 is also the long-run response

$$\hat{u}_{t-1} = y_{t-1} - \hat{\beta}_1 - \hat{\beta}_2 x_{t-1} \qquad\qquad\qquad 2$$

Model 2 now emphasizes basic approach of co-integration and error-correction models. The spurious regression problem arises due to use of non-stationary data, but in model 2, everything is stationary. The change in X and Y is stationary because they are assumed to be (1) variables. The residual from levels regression is also stationary, by the assumption of co-integration. So, model 2 fully conforms to our set of assumptions about classic line regression model and OLS should perform well.

4.4.6 Estimation Methodology for Model 2

The data used in economics are cross-section, time-series or a combination of both time-series and cross-section. The time series data are distinguished from the cross section as follows: a time series data has x_t which can take several values over time when t = 1, 2, 3... T. The path of the time series data can be modeled over the time. This path may also depend on other variables that have several time series. The cross-sectional data is always observed at a single point in time for many individuals, countries and assets. In cross–section data, x_t,   i = 1, 2, 3...N. The interests of researchers lie in modeling the identification of single individuals, the heterogeneity across individuals, in cross-sectional data. The panel data is a mixture of time series as well as cross-sectional data. The benefits of panel data include: (i) specifically taking into account individual-specific heterogeneity; (ii) time and cross-sectional data combination; (iii) explicitly taking into account individual-specific heterogeneity; iv)

less collinearity, and v) greater degrees of independence. Because of these panel data benefits, theory suggests that panel data is more appropriate for studying the 'dynamics of change' than cross-sectional data. In addition, panel data is better suited to evaluating conventional behavior. In identifying, evaluating and calculating the effects that cannot found in either cross section, panel data is stronger.

 The static model with i=1,2,3…N and t=1,2,3...T is as under:

$$y_{it} = \beta_o + x'_{it}\beta + \varepsilon_{it} \hspace{3cm} 1$$

where x'_{it} is a vector with K-dimension that includes explanatory variables. This vector does not include the constant term. β_o is the intercept. β_o is independent of i and t. β is a (K × 1) vector. The slope of $\beta vector$ is independent of t and i. ε_{it} is error term. The error term varies over time i and t. Individual characteristics z_i, invariant over time, z_i, may be included:

$$y_{it} = \beta_o + x'_{it}\beta_1 + z'_i\beta_2 + \varepsilon_{it} \hspace{3cm} 2$$

we assume that:

$$E(e)_{it} = 0 \ \ and E\left(x_{it,}\epsilon_{it}\right) = 0 \hspace{3cm} 3$$

As contrast to the pooled data, the individual characteristics I, are repeatedly observed. Further,

$$\text{Corr}(\varepsilon_{is,}\epsilon_{it}) \neq 0 \text{ with S} \neq t \hspace{3cm} 4$$

The result will that i) standard errors are misleading, and ii) OLS is inefficient as compared to Generalized Least Square (GLS). The solution for the observed heterogeneity is that the unobserved (constant) individual factors if not all z_i variables are available, can be captured by α_i. Therefore, we can decompose ε_{it} as $\varepsilon_{it} = \alpha_i + u_{it}$ with u_{it} has mean = 0. $Here u_{it}$ is homoscedastic and serially un-correlated. All human characteristics in this decomposition, including all observed features, such as $z'_i\beta$ and unobserved ones are that over time, do not vary. The same are summarized in

$\alpha'_i s$. The varying nature of the structural, political and institutional characteristics makes it difficult to impose a single relationship to all the units due to fear of suppressing information. In order to avoid the loss of information, this uses approach of uniform shifts.

There are two approaches in econometric for the uniform shifts indicated Maddala et al. (1999) and Balestra et al. (1984). These approaches include the Fixed Effects Model (FEM) and the Random Effects Model (REM). After applying the panel and time-series unit root test, the Fixed Effect Model or the Random Effect Model are estimated. The Fixed Effects Model and the Random Effects Model (REM) lie on the assumptions that we have about the intercept, the slope coefficient and the error term. For the estimation of the panel data, generally two models are considered, i) the Fixed Effects Model and ii) the Random Effects Model. In the Fixed Effects Model, α_i is the individual intercept that is fixed for given N.

$$y_{it} = \alpha_i + x'_{it}\beta + u_{it} \qquad\qquad 5$$

The overall intercept of the model is usually not included in the model. Under the Fixed Effect Model, the consistency does not require that individual intercepts that haveα'_i(as coefficients) and u_{it}, are uncorrelated. Only$E(x_{it}u_{it}) = 0$ is required to hold. There are N-1 added parameters to capture individual heteroskedasticity. Here,$\alpha_i \sim iid(o, \sigma_\alpha^2)$.

$$y_{it} = \beta_0 + x'_{it}\beta + \alpha_i + u_{it} \qquad\qquad 6$$

The $\alpha'_i s$ are random variables with the same variance. The value α'_i is specific for individual i. Theα's of different individuals are independent. They have zero mean. Their distribution is assumed to be not too far away from normality. The overall mean is captured in β_0. $\alpha_i$is time invariant and homoscedastic across individuals. Only one additional parameter is there that isσ_α^2. Only α_i contributes$(\epsilon_{is,}\epsilon_{it})$. α_i determines both

ϵ_{is} and ϵ_{it}. As long as $E(x_{is}, \epsilon_{it}) = E[x_{it}, (\alpha_i, u_i)] = 0$, $x_{it,}$ are uncorrelated with α_i & μ_i, the explanatory variable is exogenous and consistent in the estimates. There are important situations in which this hypothesis of exogeneity is likely to be broken. It is possible to prevent the resulting inconsistency by considering the Fixed Effects Model instead. The model can be calculated using the estimation method of Generalized Least Square (GLS). In general, GLS is more effective than the traditional Least Square e-method.

Fixed Effects Model

If we use the deviations from the individual means as variables, the fixed effect estimators are obtained. The model in individual mean is given as

$$y_{it} - \bar{y}_i = (x_{it} - \bar{x}_i)'\beta + (u_{it} - \bar{\mu}_i) \qquad 1$$

where intercepts vanish due to deviation from the mean. Here, the deviation of y_{it} from mean y_i is explained. Here the estimators for β is called within or Fixed Effect estimator. The terms within refers to variably (overtime) among observations of individuals.

$$\hat{\beta}_{FE} = \sum_i \sum t (x_{it} - \bar{x}_i) \{(x_{it} - \bar{x}_i)'\}^{-1} \sum_i \sum t (x_{it} - \bar{x}_i)(y_{it} - \bar{y}_i) \quad 2$$

This equation is identical to the formula:

$$\hat{\beta} = (x'x)^{-1} x'y \quad \text{for all N} \qquad 3$$

The same is de-meaned with respect to the data of individual i with the repeated T observations.

Generalized Least Square Method

When the assumption of constant variance is not satisfied, one of the possible solutions is to transform the data to achieve constant variance. For instance, we can take the log of the explanatory variables to have constant variance. The other approach is based on generalized Least Square method that is a modification of Ordinary Least Square. It takes into account the in-equality of variance in the observations. In standard linear

regression models, we observe data $[y_i, x_{ij},]$, i=1…n, j=2…k on n statistical units. The response values are placed in a vector:

$$y= \{(y_1, ….. y_n)\}^T \qquad\qquad 1$$

and the predictor values are placed in the design matrix $\{x_1^T, … … x_n^T\}^T$ .where $x_i = (1,, x_{i2}, … … . x_{ik})$ is a vector of the k predictor variables (including a constant) for the ith unit. The model forces the conditional mean of Y given X to be a linear function of X. It also assumes the conditional variance of the error term given X is a known non-singular covariance matrix Ω. This is usually written as:

$$y = X\beta + \varepsilon, E[\epsilon|X| = 0, \text{Cov} [[\epsilon|X| = \Omega \qquad\qquad 2$$

Here $\beta \epsilon R^k$ is a vector of unknown constants. These repressors are known as known as 'regression coefficients' that must be estimated from the data. We suppose that b is a candidate estimate for β. Then the residual vector for b will be $y - xb$. The generalized least squares method estimates β by minimizing the squared Mahanobis length of this residual vector:

$$\beta = arg_b \, min(y - x_b) \, \Omega^{-1}(y - x_b) \qquad\qquad 3$$

Since the objective is a quadratic form in b, the estimator has an explicit formula:

$$\beta = (x^T\Omega^{-1})X^T\Omega^{-1}y \qquad\qquad\qquad\qquad 4$$

The GLS estimator is unbiased, efficient, consistent and asymptotically normal with:

$$\text{E} [\beta|x|] = \beta \text{ and Cov } [\beta]|x|] = (X^T\Omega^{-1}x) \qquad\qquad\qquad 5$$

GLS is equivalent to applying ordinary least squares to a linearly transformed version of the data set for instance using the Cholesky decomposition. Then if we pre-multiply both sides of the equation $= X\beta + \varepsilon$ by C^{-1} , we get an equivalent linear model:

$$y^* = X^*\beta + \varepsilon^* \qquad\qquad 6$$

where, $y^* = C^{-1}, X^* = C^{-1}X, \varepsilon^* = C^{-1}\varepsilon \qquad\qquad 7$

in this model, Var $[\varepsilon^*|x|] = C^{-1}\Omega(C^{-1}) = I \qquad\qquad 8$

where I is the identity matrix. Thus, we can efficiently estimate β by applying OLS to the transformed data, which requires minimizing the following:

$$(y^* - x^*\beta)\,(y^* - x^*\beta) = (y - X\beta)\Omega^{-1}(y - Xb) \qquad\qquad 9$$

This has the effect of standardizing the scale of the errors and "de-correlating" them. Since OLS is applied to data with homoscedastic errors, the Gauss-Markov the rmo applies. This is the reason that the GLS estimate is the best linear unbiased estimator for β.

The Random Effects Model

The Random Effects Model can be written as under:

$$y_{it} = \beta_o + x'_{it}\beta + \alpha_i + u_{it} \text{ and } \alpha_i \sim iid(o,+\sigma_\alpha^2) \qquad 1$$

where ($\alpha_i + u_{it}$) is an error that consists of two components: i) an individual specific component, which is not allowed to vary over time that is α_i ii) α_i and μ_{it} are mutually independent of all $x_{js.}$ Simple Ordinary Least Square (OLS) does not take into account this specific error term therefore Generalized Least Square (GLS) is better to use for estimation. In GLS estimation method, following the error of individual i, α_i and u_{it} are

taken into a column vector, $(\alpha_i + u_{it})$. It that is simply $\alpha_i l_t + u_i$. Here α_i is constant for I individual, $lT = (1,2,3...I)'is(T \times 1)$ vector of only ones. $u_i = (u_{1i,}u_{2i}, u_{3i} ... . u_{iT})'$ is a vector that collects all $u_{it}'s$ for individual i. Here, lT is a T-dimensional identity matrix. As errors of different individuals are independent, the co-variance matrix consists of N identical blocks in diagonal. Here, the block i is as under:

$$v(\alpha_i l_i + u_i) = \omega = \sigma_\alpha^2 lT l'T + \sigma_u^2 lt. \qquad 2$$

Inverse of a block-diagonal matrix is a block diagonal matrix with inverse blocks in the diagonal. Therefore, it is enough to conside

r individual blocks. The GLS estimator can be written as:

$$\hat{\beta}_{GLS} = \left(\sum_i \sum_t (x_{it} - \bar{x}_i)(x_{it} - \bar{x}_i)' + \varphi \sum_i T (\bar{x}_i - \bar{x})(\bar{x}_i - \bar{x})'\right)^{-1} \quad 3$$

$$x\left(\sum_i \sum_t (x_{it} - \bar{x}_i)(y_{it} - \bar{y}_i)' + \varphi \sum_i T (\bar{x}_i - \bar{x})(\bar{y}_i - \bar{y})'\right) \qquad 4$$

if $\varphi = 0$, $(\sigma_u^2 = 0)$, the GLS estimator is equal to Fixed Effects Estimator, as if N are individual intercepts. If $\varphi = 1$, $(\sigma_u^2 = 0)$ the GLS estimator becomes the OLS estimator. In this model, like pooled model, only one overall intercept is indented. If T→∞ then $\varphi \to 0$, the Fixed Effects estimator and the Random Effects estimators for β are equivalent for large T. However, these are not equivalent for fix T and N→∞. The unbiasedness, efficiency and consistency of estimates are some of the properties of GLS estimator.

Hausman Test

(Hausman, 1978) introduced a test to select between Fixed Effects Model and Random Effects model. The Hausman tests the H_o that x_{it} and α_i are uncorrelated. We compare two estimators; the one that is consistent under both hypotheses, and the second, that is

consistent and efficient only under the null hypothesis. A significant difference between both indicates that H_o is unlikely to hold.

$$H_o : \text{Random Effect Model:} \quad y_{it} = \beta_o + x_{it}'\beta + \alpha_i + u_{it}$$

$$H_A: \text{Fixed Effect Model: } y_{it} = \beta_o + x_{it}'\beta + u_{it}$$

The estimated coefficient from random effects model, that is $\hat{\beta}_{RE}$ is consistent and efficient under H_o. The same is not consistent and efficient under alternate hypothesis H_A. $\hat{\beta}_{FE}$ is consistent and efficient, under H_o, not under H_A. We consider the difference of both estimators to decide between selecting a Fixed Effects Model and Random Effects Model. In case of large difference, we reject the null hypothesis. The Hausman statistics under H_o is as under:

$$(\hat{\beta}_{FE} - \hat{\beta}_{RE})'\{V^{\wedge} (\hat{\beta}_{FE}) - V^{\wedge}(\hat{\beta}_{RE}) \}^{-1} (\hat{\beta}_{FE} - \hat{\beta}_{RE}) \qquad 1$$

which asymptotically equals chi-squared (k). However, the test of overall significance that is R^2 of the Fixed Effect and the Random Effect is not valid. The reason is that α_i 's in the Fixed Effect are taken as explanatory variables, while in the Random Effects Model these α_i 's belong to unexplained error. A generalization of the Durbin-Watson statistic for autocorrelation of order 1 can also be obtained:

$$DW_p = \sum i \sum_{t=2}^{T}(\hat{u}_{it} - \hat{u}_{it})^2 / \sum i \sum_t \hat{u}_{it}^2 \qquad 2$$

The critical values depend on T, N and K.

In Panel data, Breusch-Pagan (1979) test is also applicable. Here, σ_u^2 is tested whether it depends on set of a third variable called Z, $Vu_{it}=\sigma^2 h(Zit',\gamma)$.

where the null hypothesis is $\gamma = 0$, that is error variances are all equal. The alternative hypothesis is opposite to the null hypothesis. If the p-value of test stat is less than an appropriate threshold level (e.g. $p < 0.05$) then the null hypothesis of homoskedasticity

is rejected, otherwise accepted. Generally, the Fixed Effects Model does not control for heterogeneity, therefore Generalized Least Square method is used instead of Fixed Effects Model.

4.5 Variable and Data Sources

This section provides descriptions of the variables used in empirical calculation, including the home and host countries' gross domestic product and population, the actual effective exchange rate, the difference between home and host countries, and the exports to host countries from Pakistan. Finally, the empirical calculation contains the interest variable that resists the stock of Pakistani emigrant jobs. Lastly, the empirical estimation includes the variable of interest that is stock of Pakistani emigrant workers residing in the Gulf countries, Malaysia and the South Korea. The construction of these variables and their data sources are given below:

i.   Gross Domestic Product:

The production level represents the Gross Domestic Product (GDP). Also, GDP is a measure of an economy's scale. The amount of the gross value added by all resident producers in the country reflects GDP at the purchase price. It covers taxes on products, minus any subsidies not included in the value of the products.

In studies of exports, the GDP has been used by many authors for instance Brada et al. (1988). For the exporter country, the GDP represents the potential of production. GDP also indicates the purchasing power of the importer (Tamas, 2017). GDP has a positive influence on international trade flows. The reason being that the greater production potential leads to many products available for export (Koo et al., 1994). After Muhammad Tariq Majeed et al. (2006) empirical estimation included GDP. It is the export supply side determinant of Bertil (1968). The key cause of export expansion is

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the higher level of development in the host nation. The explanation is that in international markets, the surplus of output can be depleted. In a closed economy, the demand surplus leads to a decline in prices. The reduction in price, in turn, creates pessimism among the producers.

In an open economy, surplus creates foreign reserves by exporting the production. Therefore, it is expected that there is positive impact of the GDP of the home country on exports from the home country. In empirical literature Muhammad Tariq Majeed et al. (2006) confirm the positive impact of GDP on exports. Additionally, literature vastly uses production level of the trading partners in determining the export level of the home country (for instance: S. Hyder et al. (2016). With a rise in production level of the host country, the demand for exports from home country rises. Therefore, it is expected that exports from home country and production level of the trading partner are directly related.

ii.   Population:

Total population of the home or the host country accounts for all residents regardless of their legal status or citizenship. Population of the home country represents market or supply capacity. The population of the host country represents the imports from home country. It also reflects the absorption capacity of the host country. It is expected that with a rise in the population of the home country less amount of output is left for exports. The result is that the exports decline. As opposite to population and exports from the home country, with the increase in the population of the host country, it is expected that demand for exports from the home country rise.

iii. Real Effective Exchange Rate (REER):

Real effective exchange rate measures value of a nation's own currency against the weighted average of several foreign currencies divided by index of cost or price deflator. The exchange rates significantly affect the trade flows (Tamas, 2017). With more strong national currency, exports can reduce while imports may rise (Koo et al., 1994). In other words, a rise in REER implies that exports have become more expensive while imports have become cheaper. Generally, the rise in REER indicates a loss in trade competitiveness. Therefore, there is negative impact of real effective exchange rate on expansion of exports (Muhammad Tariq Majeed et al., 2006).

iv.   Distance:

Distance is an important indicator of the international trade. It is a measure of bilateral distance between the importing and the exporting country (Batra et al., 2007). Distance is constant of proportionality (Batra et al., 2007). Distance represents all possible sources of costs of international trade (Javid et al., 2018),

It includes transaction and transport costs of trade. The transaction and transport cost of trade rise with increase in distance between or among the trading partners. The higher distance between the trade partners reduces the international trade and investment (Egger et al., 2008). Therefore, in this study the exports from Pakistan towards selected host countries and distance are expected to be negatively related. The distance between the capital cities of Pakistani, e, Islamabad and of the respective host countries is calculated by great circular formula[59].

v.   Exports:

The dependent variable is the exports of Pakistan towards the selected host countries for Pakistani emigrants. Following Akbari et al. (2012) and S. Hyder et al. (2016) the variable of exports has been included to check the contribution of Pakistani emigrants in the exports of Pakistan.

vi.   Overseas Pakistani Migrant Workers:

The hypothesis of the study is to find the contribution of Pakistani emigrants in the exports of Pakistan. Therefore, the variable of interest is stock of emigrant workers residing in host countries. Based on the analysis of Akbari et al. (2012) and S. Hyder et

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[59]*After Head (2003), the great circle formula is $D_{ij} = 3962.6 \ arc \ COS \ (\{sin(Y_{i)}) \ sin(Y_j)\}) +$*
$(\{cos(Y_i) \ cos(Y_j)cos(X_i - X_j)$, X is longitude in degrees multiplies by 57.3 to convert it to radius and Y is latitude multiplied by -57.3 (measured in degrees west).

al. (2016), it is expected that overseas Pakistanis contribute positively in the exports from Pakistan.

4.5.1 Data Sources

The data comes from different sources; International Financial Statistics (IFS), World Development Indices, World Bank (WB), Pakistan Economic Survey, Government of Pakistan, various issues.

Pakistan's export data is taken from the International Monetary Fund's (IMF) Foreign Trade Figures, expressed in US dollars.

The data for GDP is taken from the World Development Indices, the World Bank (2019), in constant US Dollar 2010, and population data. GDP is estimated without deduction for the depreciation of produced assets or the loss of natural resources.

Real Effective Exchange Rate data is derived from International Financial Statistics (IFS). Centr d'Etudes Prospective et d' information's Internationals (CEPII) is a French international economics research center. The kilometer distance data (dist) are collected from their official website[60].

The data on annual flow of Pakistani migrant workers towards eights host countries are obtained from the website of Bureau of Emigration and Overseas Employment, Government of Pakistan (2019)[61]. To obtain the reliable results, the data has been converted into data of the stock of Pakistani emigrant workers[62].

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[60] http://www.cepii.fr/anaisgraph/bad/distance.ht.

[61] https://beoe.gov.pk

[62] Migration stocks are the numbers of migrants living in the specified countries, at a given point in time while migration flows are the number of migrants entering or leaving these countries during a specific period. The simplest method to estimate migration flows from origin country i to destination country over the period t to t + 1 is based on

4.6 Empirical Results and Discussion

In this study, following Bergstrand (1985) and Nuroglu (2010) the exporter country (Pakistan), is denoted by i. The recipient country (importer) is denoted by j that varies from 1, 2, 3…8. However, in this study we can omit it as there is only one exporting country that is Pakistan. The major host countries of Pakistani emigrant workers are also significant trade partners of Pakistan. These host countries include the Gulf Cooperative Council countries, South Korea[63] and Malaysia. According to the official statistics of Bureau of Emigration & Overseas Employment (BE&OE) and Overseas Employment Corporation (OEC)[64], these countries are the major destination countries for the Pakistani emigrant workers[65]. Descriptive statistics of the data for the period of study under consideration 1980-2018 are reported in Table 4.1.

Table 4. 1: Descriptive Statistics of Data

Variables	UA	KSA	Kore	Om	Qat	Mal	Bah	Kuwa
average exports from Pak	768.68	251.95	192.47	67.90	45.92	76.96	37.25	49.80
average GDP(constant2010	1879 50.9	17180 2.55	65930 1.48	3614 252	2772 96.2	1591 91.8	1530 17.5	7398 28.0
average population(in	5097 77.7	18629 9289	36476 808	2077 612	9540 28.0	5000 60.8	7058 52.2	1974 185
average stock of Pakistani migrants	2853 54.5	20396 4.33	13190 43.2	2878 54.16	5828 4.42	1559 1.28	7443 4.63	1090 69.8 6

Note: Calculation is based on data for the period 1980-2018.

4.6.1 Discussion of Results

In order to check stationarity of the model, both time-series and panel unit root test are applied. The results of time-series ADF tests are reported in Table 4.2. The

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the difference between the migrant stock data. To calculate the stock of Pakistani migrants in each country, the method for estimation of migration flow has been reverted.

[63]There is Government-to-Government (G-to-G) agreement with South Korea. According to that agreement, there is a significant export of Pakistani manpower from Pakistan to South Korea.
[64] BE&OE and OEC are the employment promoting agencies of government, named as Bureau of Emigration and Overseas Employment and Overseas Employment Corporation. To promote work force abroad, BE&OE issues license to Overseas Employment Promoters (OEPs) while OEC is a public sector OEP.
[65] More than 96 percent of the Pakistani work force annually proceeds abroad towards GCC countries.

GDP (y_{jt}) for Kuwait, Korea and Bahrain is trend stationary at level; however, for rest of the host countries, GDP is stationary at first difference. Population of host country i.e., Pop_{jt} is level stationary for Korea and Malaysia while stationary at first difference for rest of the countries. The variable of Pakistani emigrant workers in each host country $logOP_{jt}$ and exports from Pakistan to each of the host country i.e. $logexp_{jt}$ is stationary at first difference for all host countries. ADF tests in first differences show that most of the series are stationary at their first differences.

Therefore, the results of ADF test are inconclusive. To get more reliable unit-root test results, panel unit root tests are conducted. The results of the panel unit root tests are reported in Table4.3. The results support the hypothesis of a unit root in all variables across countries and hypothesis of zero order integration in first difference. One of the pre-conditions for applying panel co-integration test is that the model should be non-stationary that is satisfied. Therefore, both the time-series and the panel data co-integration tests are applied on the data. The results of the country-specific Johansen maximum likelihood co-integration reported in Table4.4 indicate that hypothesis of no co-integration is rejected for all countries.

To authenticate the country-specific co-integration relationship, three panel co-integration tests conducted. The results are reported in Table 4.5 and 4.6. Table 4.5 contains Kao Engle Granger test and Pedroni tests. Table4.6 contains results of Fisher chi-square test. The results of panel co-integration tests are conclusive. Kao, Pedroni and Fisher chi-square tests support presence of co-integrating vectors. Therefore, both time series and panel-based tests agree existence of co-integrating vectors. These results also indicate the existence of long-run relationship among variables in the model. Based on the individual and panel co-integration test results, we can safely state

that our estimated relations are indeed co-integrating. Therefore, long-rum equilibrium relation does exist.

FMOLS estimation captures the long-run relationship among the variables. Table 4.7 contains results of country-specific and Panel FMOLS estimates of co-integrating relationships. The time-series (or the country-specific) FMOLS results indicate that the elasticity of exports from Pakistan to each of the host country with respect to income of Pakistan is negative. For instance, the elasticity estimate is -1.83 and -1.58 for KSA and UAE respectively.

Table 4. 2: Time-series Unit Root (ADF test: Ho: there is unit root)

		$logy_{pt}$	$logy_{pt}$	$logREER$	
Pakistan	Lev	-0.92	-1.52	-2.09	
	Ist diff	-3.62**	-4.17*	-4.82*	
Countries		$logy_{jt}$	$logPop_{jt}$	$logOP_{pjt}$	$logexp_{pjt}$
KSA	Lev	-0.08	-0.54	-2.52	-2.36
	Ist diff	-3.84*	-3.78*	-5.13*	-5.33*
UAE	Lev	-2.14	-0.68	-0.66	-1.4
	Ist diff	-4.65*	-7.68*	-5.22*	-6.58*
Bahrain	Lev	-4.69*	-1.79	-1.21	-1.09
	Ist diff	…	-8.04*	-5.96*	-7.52*
Kuwait	Lev	-10.09*	-1.025	-2.4	-1.34
	Ist diff	…	-4.92*	-5.87*	-6.55*
Qatar	Lev	-2.42	-0.055	-1.45	-2.65
	Ist diff	-4.33*	-6.88*	-6.42*	-7.17*
Oman	Lev	-0.28	-0.56	-0.66	-1.4
	Ist diff	-3.78*	2.85***	-5.22*	-6.58*
Malaysia	Lev	-2.03	-4.5*	-1.13	-2.15
	Ist diff	-15.32*	…	-6.75*	-7.82*
Korea	Lev	-5.6*	-7.78*	-1.88	-2.14
	Ist diff	…	…	-5.74*	-6.14*

Note: Lev is the Niveaus. In levels and first variations, Lev and Diff denote augmented Dickey-Fuller t-tests for unit root. The number of lags was chosen using the AIC criterion. (*), (**) and (***) signify rejection of the unit root hypothesis at the 1percent, 5percent and 10percent levels.

Table 4. 3: Panel Unit Root Test

Country	Max Eigen value Statistics Ho: rank=r					
	r=0(46.23)	r ≤ 1 (40.09)	r≤ 2 (33.87)	r ≤3 (27.58)	r ≤ 4 (21.13)	r ≤ 5 (14.26)
KSA	118.02*	67.95*	47.98*	34.57*	31.53*	8.3
UAE	144.65*	98.51*	65.58*	47.07*	32.55*	12.13
Bahrai	123.003	79.84*	66.72*	33.11*	21.13*	11.6
Kuwait	141.16*	70.51*	45.32*	31.94*	23.18*	10.51
Qatar	134.92*	97.68*	81.25*	45.77*	34.52*	9.1
Oman	139.27*	94.89*	69.6*	44.77*	33.15*	5.65
Malays.	131.35*	36.75*	45.008*	34.84*	24.27*	8.12
Korea	132.49*	73.89*	39.42*	33.66*	22.48*	9.28

Note: r denotes the number of co-integrating vectors. The optimal lag lengths for the VARs were selected by the AIC criterion. The numbers in parentheses next to r = 0, r ≤ 1 1, r ≤ 1 2, r ≤ 1 and 3 r ≤ 4 represent the 5percent critical values of the test statistic. An (*) indicates rejection of null hypothesis of no co-integration at 5percent level of significance.

The elasticity estimates for exports of Pakistan with respect to income of each of the host country has mix results. For example, the elasticity of export with respect to income of KSA is negative i.e., -0.14 but for UAE it is positive i.e., 1.93. Similarly, mix are the results for the elasticity of exports with respect to the population of Pakistan, population of the host countries and for real effective exchange rate. Except for the Korea, the elasticity of exports of Pakistan with respect to respective Pakistani emigrant workers is positive. For instance, the elasticity estimates are 0.186, 0.028 and 0.23 for KSA, UAE and Bahrain respectively. This result indicates that with the increase in number of Pakistani emigrants in the host country, there is a rise in exports from Pakistan towards that country.

Table 4. 4: Johansen Co-integration tests (country-specific)

Country	Max Eigen value Statistics Ho: rank=r					
	r=0(46.23)	r ≤ 1 (40.09)	r ≤ 2 (33.87)	r ≤3 (27.58)	r ≤ 4 (21.13)	r ≤ 5 (14.26)
KSA	118.02*	67.95*	47.98*	34.57*	31.53*	8.3
UAE	144.65*	98.51*	65.58*	47.07*	32.55*	12.13
Bahrain	123.003*	79.84*	66.72*	33.11*	21.13*	11.6
Kuwait	141.16*	70.51*	45.32*	31.94*	23.18*	10.51
Qatar	134.92*	97.68*	81.25*	45.77*	34.52*	9.1
Oman	139.27*	94.89*	69.6*	44.77*	33.15*	5.65
Malaysia	131.35*	36.75*	45.008*	34.84*	24.27*	8.12
Korea	132.49*	73.89*	39.42*	33.66*	22.48*	9.28

Table 4. 5: Kao Engel-granger and Pedroni Test

Kao-test: Ho: No Co-integration. t-stat=2.61				probability= 0.0045		

Pedroni test:

	Case 1 (No deterministic T)		Case 2 (Deterministic Inter &T)		Case 3 (No deterministic Inter or T)	
	Static	Weighted Stat	Static	Weighted Stat	Static	Weighted Stat
Alternative hypothesis: Common AR Coefficient (within dimension)						
Panel V-stat	-2.00 (0.9773)	-3.093 (0.999)	-3.14 (0.992)	-4.27 (0.830)	-1.69 (0.954)	-2.56 (0.994)
Panel Rho-stat	0.65 (0.742)	2.64 (0.995)	2.00 (0.9875)	3.82 (0.999)	-0.17 (0.432)	1.82 (0.954)
Panel PP-stat	0	-3.09* (0.001)	0	0	-5.14* (0.000)	-0.05 (0.136)
Panel ADF-stat	0	-6.33* (0.000)	–	–	-4.38* (0.000)	-5.11* (0.000)
Alternative hypothesis: individual AR Coefficient (Between Dimension)						
Group rho-stat	2.28 (0.998)		3.41 (0.999)		1.534 (0.938)	
Group PP-stat	0		0		-0.002 (0.528)	
Group ADF-stat	-5.64* (0.000)		0		-4.40* (0.000)	

Table 4. 6: Fisher Chi-Square test for Panel Co-integration

r=0	r≤1	r≤2	r≤3	r≤4	r≤5
159.3 (0.000)	86.76 (0.000)	68.23 (0.000)	48.18 (0.248)	32.14 (0.0124)	29.13 (0.2537)

Note: Critical values for Fisher Chi-squared test are 37.57 and 31.41 at 1percent and 5 percent significance level. Fisher's Co-integration test is computed based on rho—values from Johansen's maximum likelihood co-integrating method. Hence, the test is applied regardless of dependent variable.

The Panel data represents average estimates for variables included for host countries under-consideration. The Panel FMOLS (Table: 4.7) results indicate that the elasticity of exports with respect to income of the host countries i.e., log yj is 1.26. The elasticity of exports with respect to the income of Pakistan (log yp) is negative i.e., -2.03. One of the possible justifications for this negative relationship is existence of sub-optimality of production in the case of Pakistan.

The other reason is that the economies of scale that are accounted by size of GDP of Pakistan do not seem to be influential for the overall level of exports. These results may be because exports of Pakistan are largely driven by the agricultural products, raw or semi-manufactured finished products. The results are in-line with the findings of (Kristjánsdóttir, 2005) . He examined the determinants of the Ice-Landic exports of marine products towards 16 countries, for period 1988-97. By using the gravity model, he found that export elasticity of the exporter country with respect to its GDP is negative i.e., -0.361. He attributes this result largely to the exports of seafood exports since the supply potential primarily depends on natural resources and size of fishing stock.

The estimated coefficient of the export elasticity with respect to the income of the host country (logyj) is positive and significant (1.259). The results indicate that given everything else equal, a 1 percent increase in the income of the host country, will increase exports from Pakistan by 1.25 percent. It reflects that imports of the host countries from Pakistan are more influential towards their own income. The positive and significant coefficient of GDP of host countries implies increased demand for exports as economic size of the trading country increases. These results are in line with the results of Javid et al. (2018) and Kristjánsdóttir (2005)

Javid et al. (2018) used gravity model to investigate the role of oil prices its volatility and real exchange rate on bilateral trade flow between GCC and Northeast Asian countries for the time period 1980-2014. With the coefficient value of 0.41, the results of their study indicate that importer income has positive and statistically significant relationship with the GCC exports. The study by Kristjánsdóttir (2005) concluded that with a rise in GDP of the host country, there is 3.59 percent rise in the exports from the Ice-land. The high positive export elasticity coefficients for population of Pakistan (log pp), i.e. 3.73 indicate that growing level of the population of Pakistan is contributing more in the exports of Pakistan. It also indicates higher value-added for exports of Pakistan. The results also indicate that the market size of Pakistan, reflected through rise in population, is very influential for exports going from Pakistan towards the recipient countries.

Nuroglu (2010) investigate the bilateral trade flows across 15 European Union countries for the period 1964-2003. With the coefficient value of 0.67 for the population of the exporter country, the study concluded that rising population of home country is supportive to raise its exports. Therefore, the results of our study confirm earlier findings of the Nuroglu (2010).

The Panel FMOLS results indicate the negative and statistically significant import elasticity of host country i.e., -1.14. An increase by 1 percent in population of host country is estimated to negatively affect the exports by about -1.14 percent. It further implies negative interaction between demand and population, resulting in more exports to countries as they are less populated. There are two possible justifications for this result. First, by following Kristjánsdóttir (2005) , it can be justified, in case of two countries, one of which country has low population and the other has significantly high population. These countries will receive significantly different proportion of exports

from home country. Country having less population will get more shares of exports as compared to the country having more population.

Secondly, for a country that had initially less population but later on its population increased, allowing for declining imports. It is also an indicator of higher value-added allowing for population of the host country. The negative effect of population of host country on exports from home country is in-line with that reported by (Kristjánsdóttir, 2005). The results of his study indicate that with a 1 percent rise in population there is 1.91 percent decline in Ice-Landic exports of marine products. The exports elasticity with respect to real effective exchange rate (log REER) is negative i.e.,-0.643 and statistically significant. It implies that with rise in the real exchange effective rate domestic currency appreciates resulting in exports more expansive for the importers. As a result, exports decline. The findings are in-line with theoretical literature.

The variable of interest, that is the stock of the emigrant workers (log OP), in Panel FMOLS estimation, has a positive and significant coefficient i.e. 0.092. This shows that Pakistani emigrants are contributing positively in promotion of exports from Pakistan. More specifically, given all other variables constant, with 1 percent increase in stock of emigrants from Pakistan there is 0.092 percent increase in exports. The results support that Pakistani emigrants bring with them knowledge about culture and heritage of Pakistan: hence, they are instrumental in promotion of exports between Pakistan and the host countries.

Table 4. 7: FMOLS Estimates: (dependent variable is log exp)

Country	Constant	$\log y_{pt}$	$\log y_{jt}$	$\log Pop_{pt}$	$\log Pop_{jt}$	$\log REER$	$\log OP_{pjt}$	R^2
KSA	39.19*	-1.83*	-0.14*	2.96*	-0.69**	-0.79*	0.186*	
	(9.25)	(-8.14)	(-9.91)	(11.25)	(-2.51)	(-13.4)	(16.53)	0.59
UAE	-44.09*	-1.58*	1.93*	-2.39*	1.39*	-2.21*	0.03***	
	(-6.34)	(-4.21)	(13.11)	(-3.09)	(11.95)	(-18.9)	(1.65)	0.94
Bahrain	-1.86*	-4.40*	-1.7**	-8.02*	-1.6***	-0.96*	0.23*	
	(-2.23)	(-4.57)	(-2.31)	(-3.77)	(-1.98)	(-3.09)	(2.84)	0.92
Kuwait	-7.64	-9.43*	-1.53*	-1.69*	-1.28*	-2.96*	0.195*	
	(-1.14)	(-6.04)	(-6.22)	(-6.49)	(-3.01)	(-5.96)	(5.31)	0.91
Qatar	-53.64*	-3.78*	2.54*	-5.07*	-2.62*	-1.14*	0.127*	
	(-6.35)	(-4.59)	(8.1)	(-3.22)	(-9.73)	(-5.53)	(3.02)	0.81
Oman	-59.67*	-0.49*	-2.17*	-6.58*	-3.62*	-3.49*	0.02***	
	(-13.93)	(-2.93)	(-9.02)	(-9.07)	(-12.4)	(-24.9)	(1.74)	0.79
Malaysia	-10.53*	-0.53	-0.59*	-7.1***	-6.3***	-0.6***	0.10**	
	(-2.40)	(-0.48)	(-5.35)	(-1.67)	(-1.64)	(-1.97)	(2.56)	0.82
Korea	-10.36*	5.72*	-0.08**	-2.95*	-4.82*	-2.94*	-0.22*	
	(-3.66)	(-4.81)	(-2.05)	(-6.38)	(-3.58)	(-4.83)	(-8.82)	0.94
Panel	-20.35*	-2.03*	1.259*	3.73**	-1.142*	-0.64*	0.092*	
	(-8.72)	(-4.702)	(4.74)	(2.41)	(-8.52)	(-3.56)	(3.25)	0.93

Note: t-stat are given in brackets. *,**,*** shows significance at 1percent, 5 and 10 percent level. Auto Schwar Certieria, Barklett and Bandwidth method is Neway-West Automatic.

There are multiple sources of contribution of the emigrants in exports. At first, the Pakistani emigrants have special taste, preference and demand for Pakistani precuts i, e dresses, basmati rice, kinu, and certain grocery items including masala jaat and sports goods. Therefore, in whatever part of the world these emigrants reside, they demand only made-in-Pakistan products.

During their stay in host countries, the emigrants seek the knowledge of taste of the natives. Through preferred use of the made-in Pakistan products, the emigrants try to develop the taste of natives for Pakistani products. As they have developed the taste for Pakistani products, so wherever they reside they buy only made-in-Pakistan products.

These emigrants also contribute in reducing trade-related transaction cost. This channel is two-fold: they create network knowledge of the Pakistani markets, business and cultural ties such as common language and preferences hence help in reducing trade-related transaction cost. A reduction in trade cost creates an additional demand for products from Pakistan further supporting to reduce balance of payment deficit of Pakistan. These channels of contribution of emigrants strengthen the argument that Pakistani emigrants do contribute significantly in raising exports from Pakistan.

Moreover, emigrants prefer to engage themselves and their friends or relatives in development of such goods within Pakistan, which were previously imported in Pakistan, after obtaining requisite technical training and capital in the destination countries. Therefore, with an increase in stock of Pakistani emigrants above a certain threshold level, their contribution to Pakistan can safely be expected.

The results are in line with Akbari et al. (2012) empirical findings. Akbari et al. (2012) used panel data for the period 1990-2003 between Pakistan and 9 countries belonging to the Organization for Economic Co-operation and Development (OECD). Their study found that Pakistani expatriates had a positive impact on Pakistani exports to English-speaking countries.

We also measure the monetary effect on exports between Pakistan and selected host countries of each additional Pakistani emigrant worker. We used the elasticity of the exports with respect to Pakistani emigrants, measured at their average value and the average stock of Pakistani emigrant workers, to obtain the contribution. Each additional immigrant contributed $ 200 per year to exports to towards GCC, Malaysia and Korea. However, this contribution is lower as compared to Pakistani emigrants working in OECD countries as reported by Akbari et al. (2012).

Table 4. 8: Short-Run Estimates: Error Correction Model

	KSA	UAE	Bahrain	Kuwait	Qatar	Oman	Malaysia	Korea
Dlog(xp(-1))	0.33*** (-1.67)	0.38** (-2.2)	0.11** (-2.48)	0.048** (-2.28)	0.29*** (-1.69)	0.32** (-2.126)	0.19** (-2.01)	-0.01** (-2.15)
Dlog(xp(-2))	_	0.36** (-2.09)	_	-0.27*** (-1.75)	-0.01** (-2.09)		0.36** (-2.24)	_
Dlog(yp)	-2.04*** (-1.98)	-2.64*** (-1.83)	_	_	_	-5.13** (-2.09)	_	_
Dlog(yp(-1))	_	_	_	_	_	-9.15** (-2.72)	_	_
Dlog(yj)	_	0.09** (-2.73)	1.48*** (-1.75)	_	_	_	0.76** (-2.42)	5.50* (-3.93)
Dlog(yj(-1))	_	0.17** (-2.44)	_	-1.05** (-2.49)			-0.26*** (-1.78)	_
Dlog(yj(-2))	_	_	_	0.53*** (-1.79)	_	_	0.54*** (-1.67)	_
Dlog(pp)	_	_	_	_	0.49*** (-1.76)	2.53** (-1.75)	_	_
Dlog(pp(-1))	_	-7.09*** (-1.63)	0.61** (-2.21)	3.04*** (-1.64)	-0.22*** (-1.74)	-1.78*** (-1.65)	5.67*** (-1.64)	-9.54*** (-1.98)
Dlog(pj)	4.72** (-2.16)	_	-0.08** (-2.08)	_	_	2.57** (-2.76)	_	_
Dlog(pj(-1))	4.51** (-2.13)	_	_	_	_	2.68*** (-1.64)	_	_
Dlog(pj(-2))	_	0.63*** (-1.87)	_	_	0.78*** (-1.68)	_	_	_
Dlog(reer)	_	-1.28*** (-1.84)	-1.06*** (-1.64)	_	_	_	_	_
Dlog(reer(-1))	_	_	_	_	-0.83*** (-1.94)	_	_	_
Dlog(reer(-2))	_	1.19** (-2.05)	_	0.25** (-2.27)	0.92*** (-1.65)	_	_	_
ECM(-1)	-0.65* (-3.27)	-0.88** (-2.05)	-0.61** (-2.43)	-0.32** (-2.40)	-0.39** (-2.81)	-0.90* (-4.39)	-0.78* (-3.93)	-0.47** (-2.67)
R^2	0.591	0.47	0.42	0.46	0.498	0.63	0.56	0.46
Adj-R^2	0.449	0.4618	0.41	0.43	0.42	0.483	0.433	0.493
S.E of Reg	0.214	0.013	0.0124	0.132	0.25	0.0312	0.032	0.035

Note: t-stat are given in brackets. *,**,*** shows significance at 1percent, 5percent   and 10 percent level .

The relationship between emigrants and exports also exists in short-run. The estimated short-run results are reported in Table4.8 are in line with the long-run estimates. The negative sign of country-specific Error Correction Term indicates the existence of a long-run relationship between emigration and exports from Pakistan. In fact, there is a reasonable speed of adjustment (i.e., -0.65 for KSA and -0.88 for UAE) between short term and long-term equilibrium behavior of exports and its explanatory variables. The results of post estimation test are reported in Table4.9. These results indicate that

data set is well modeled, correctly specified and variance of the errors in a regression model is homoscedastic.

Table 4. 9: Post-Estimation Tests

Country	Normality Test (Jarque-Bera test)	Ramsey Reset Test (F-stat value)	White-Hetro Test (F-tat-value)
KSA	4.401	4.125	0.019
	[0.746]	[0.0730]	[0.8872]
UAE	0.121	3.236	1.678
	[0.941]	[0.0811]	[0.2462]
Bahrain	0.729	0.913	1.188
	[0.992]	[0.3470]	[0.3714]
Kuwait	3.258	3.153	2.273
	[0.196]	[0.0867]	[0.1686]
Qatar	0.469	1.362	0.297
	[0.791]	[0.2962]	[0.5893]
Oman	0.681	1.010	0.138
	[0.711]	[0.3351]	[0.7122]
Malaysia	6.921	6.306	0.818
	[0.07]	[0.0862]	[0.9883]
Korea	3.682	0.274	2.653
	[0.158]	[0.6042]	[0.7031]

Note: probabilities are given in brackets.

4.6.2 Empirical Estimation Results: Model 2

The Model 2 in section 4.4 includes the variables of the traditional gravity model. These variables include the GDP and population of the home and host, and the Real Effective Exchange Rate. Importantly, the variable of distance has been included as per requirement of the gravity model. The stock of Pakistani emigrant workers is added to determine the effect of emigration on exports from Pakistan. The period of analysis is 1980 to 2018.

Due to the existence of heteroskedasticity of an unknown nature between the error term and the independent variables, the fixed effects model is largely criticized (Akbari et al., 2012; Santos et al., 2006). In this study, in order to account for the unobserved

heteroskedasticity[66] , Generalized Least Square (GLS) method is used. In Table 4.9, the dependent variable is exports from Pakistan to the selected host countries.   In all specifications, the results are consistence in terms of signs of the coefficients. However, the magnitude of estimates varies. The exports elasticity of all estimated models for the GDP of Pakistan ($logy_{pt}$) is negative and statistically significant. The results are similar to the estimates of the Panel FMOLS.

With 1percent increase in the GDP of Pakistan, the exports from Pakistan decrease by 2.12 percent (specification 5). The exports elasticity of Pakistan with respect to each of the host country ($logy_j$) is positive and statistically significant. It indicates that with 1 percent increase in the GDP of the host countries, the exports from Pakistan towards these host countries increase by 0.196 percent. This result is also in line with the results of the Panel FMOLS estimates. Similarly, the exports elasticity of population of Pakistan ($logPop_{pt}$ that is equal to 4.39) is positive. It indicates that population of Pakistan positively contributes in exports from Pakistan. Similar is the case with the population of the host country ($logPop_{jt}$ that is equal to 0.423).

The export elasticity with respect to real effective exchange rate (log REER) is negative and significant. It indicates that with increase in real effective exchange rate, domestic currency appreciates and exports become expansive for importers. This results in decline in exports from home country. Same result was obtained with panel FMOLS estimation.

As per expectations, distance is inversely related to exports from host country (-0.006). With rise in distance from Pakistan to the selected host countries, there comes a fall in exports from Pakistan towards that country.

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[66] The association between the error term and independent variables may have resulted in heteroskedasticity.

Table 4. 10: GLS: (dependent variable is exp)

Variables	1	2	3	4	5
C	4.51*	6.14*	28.24*	10.38*	8.80*
	(2.51)	(2.73)	(10.69)	(4.35)	(3.38)
$logy_{pt}$	-2.68*	-2.66*	-2.38*	-3.09*	-2.12*
	(-3.06)	(-3.06)	(-3.18)	(-4.57)	(-3.14)
$logy_j$	0.03**	0.03*	0.15*	0.11*	0.19*
	(2.61)	(3.72)	(5.31)	(4.97)	(5.76)
$logPop_{pt}$	0.63	6.10*	4.72*	6.05*	4.39*
	(0.41)	(4.10)	(3.78)	(5.20)	(3.83)
$logPop_{jt}$	0.33*	0.37*	0.671*	0.53*	0.42*
	(3.18)	(3.22)	(21.36)	(16.61)	(14.86)
logREER		-0.19	-0.21	-0.29	-0.85*
		(-0.83)	(-1.04)	(-2.59)	(-4.31)
$logDist_{pj}$			-2.68*	-0.005*	-0.01*
			(-30.07)	(-12.07)	(-10.74)
$logOP_{pt}$				0.11*	0.07*
				(5.21)	(5.42)
d_Bah					-0.99**
					(-2.74)
d_Kor					0.68*
					(5.98)
d_KSA					-0.58*
					(-4.74)
d_Kuw					-0.65*
					(-7.20)
d_Qat					-0.77*
					(-6.57)
d_UAE					0.063*
					(5.14)
d_Oman					-0.84*
					(-8.68)
d_Mal					-1.0**
					(-2.24)
R^2	0.90	0.91	0.88	0.88	0.99
Adj-R^2	0.90	0.91	0.86	0.88	0.99
F-stat	257.6	240.9	209.2	154.3	230.9
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
S.E of reg	0.0482	0.0482	0.0615	0.0657	0.0420

Note: *, **, *** indicate significance at 1percent, 5percent and 10 percent level.

The coefficient of migrant workers in host countries ($logOP_{pt}$) is positive and statically

significant. The magnitude of this variable is very important. It indicates that with 1

percent increase in stock of emigrants from Pakistan, the exports from Pakistan increase exports by 0.07 percent[67].

The estimates of Random Effect Model are reported in Table 4.11. It is pertained to mention that we have used four speciation to check the robustness of results. The results in specification 5 indicate that ($logy_{pt}$) is negative as in case of Fixed Effects Model. Here, although $logy_j$ that is population of the host country is although positive but it is insignificant. $logPop_{pt}$ moreover, $logPop_{jt}$ both are positive and significant. log REER and $logDist_{pj}$ are although negative but insignificant. The coefficient of the stock of emigrant workers is positive and bigger in magnitude (0.12) as compared to that obtained by the GLS estimation.

Table 4. 11: Random Effects Model (dependent variable is exports)

Variable	1	2	3	4
C	-0.53 (-0.18)	0.97 (0.29)	14.61* (3.57)	8.59*** (1.78)
$logy_{pt}$	-1.62 (0.78)	-1.56** (-2.07)	-1.7** (-2.38)	-2.17* (-3.59)
$logy_j$	0.04 (0.60)	0.026 (0.40)	0.08 (1.28)	0.01 (0.156)
$logPop_{pt}$	4.7* (3.86)	4.48* (3.70)	4.37* (3.66)	5.22* (5.11)
$logPop_{jt}$	0.20 (1.31)	0.02 (1.39)	0.36* (3.05)	0.24*** (1.78)
logREER	---	-0.189 (-0.92)	-0.21 (-0.05)	-0.28 (-1.61)
$logDist_{pj}$	---	---	-1.55** (-2.61)	-0.59* (-0.87)
$logOP_{pt}$	---	---	---	0.12* (4.99)
R^2	0.681	0.682	0.682	0.711
Ajd-R^2	0.677	0.676	0.678	0.704
S.E of reg	0.487	0.487	0.493	0.468
F-Stat	163.96 (0.000)	131.35 (0.000)	109.03 (0.000)	107.03 (0.000)

Note: *, **, *** indicate significance at 1percent, 5percent and 10 percent level.

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[67]The elasticity of all the variables has been defined in detail in case of panel FMOLS estimates.

The results indicate that with one percent rise in stock of emigrant workers from Pakistan, there is 0.12 percent increase in exports from Pakistan[68].As the host countries are not randomly selected, therefore GLS gives the better results.

This part of the study has used panel data for exports from Pakistan to the selected eight host countries. The selected host countries are the GCC, Malaysia and Korea. The period of analysis is 1980 to 2018. The study found that Pakistani expatriates have a positive effect on the exports of the country towards the selected host countries. The results are consistent with the findings of the earlier studies (Akbari et al., 2012; S. Hyder et al., 2016). A positive impact on exports could be because most Pakistani emigrants use 'made in Pakistan 'while residing aboard. Besides, these emigrants shave strong preferences for the products of the home country.

4.7 Conclusion and Policy Implications

The present study examines the relationship between stock of Pakistani emigrant workers in selected host countries and their contribution in the exports towards these selected countries. To achieve the objective, this study uses the time-series and panel data. The long-run estimates are obtained by using Fully Modified Ordinary Least Square (FMOLS) method. The time-series and panel FMOLS estimation results indicate the positive contribution of Pakistani emigrant workers in the exports of Pakistan. Besides, country-specific Error Correction Terms indicate a reasonable speed of adjustment in the short-run. The calculations show that each additional Pakistani migrant worker has per year contributed US $ 200 in exports of Pakistan, towards these selected countries.

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[68]The results are interpreted in detail in panel FMOLS estimates.

The positive impact of emigrants on exports can be attributed to taste and preferences of have export-enhancing impact has a strong implication for economic growth. By using the time-series data Vohra (2001) indicated that there is strong link between exports and the economic growth in the Philippines, Malaysia and Thailand. The export-growth linkage can also be strengthened in case of Pakistan. Since 2019with a per capita income of US$1357, Pakistan has now moved from category of low-income country to the lower-middle income country.

The finding of this study indicates that there is a need to promote liberal market policies that have potential to encourage exports. These policies can have a positive impact on economic growth of Pakistan. The findings of present study are in line those of the Bolivia and China, as reviewed earlier.

The findings suggest export policy in developing countries should review the network of expatriate that is a viable source of enhancing exports. In case of Pakistan, there is a need to make proper institutional arrangements at the level of government. Primarily, there is a need to promote safe, regular and low-cost migration from Pakistan. Legal status abroad is key to peace of mind for the emigrant that in turn, earns good will for Pakistan. Good will is channel through which expatriates can prove themselves good ambassadors. While residing abroad and having good social, cultural and economic terms with foreign community, they can develop demand for Pakistani product among foreign community as well.

Secondly, the temporary migrant worker regularly visits Pakistan during their leaves. Therefore, Government can assist overseas migrant workers to make them aware regarding available investment opportunities in Pakistan. The establishment of business by the emigrants can prove helpful in promoting export. Thirdly, there is a

need to open regional offices of the Migrant Resource Centre (MRC), working in Islamabad. The establishment of such resource and counseling centers can help connecting overseas emigrants with residents and businesspersons. In this regard, flexibility in movement of financial and physical capital is an important concern.

Learning from the experience of China, Pakistan can also facilitate overseas entrepreneurs in opening high-tech firms. Zweig et al. (2004) in case of China indicate that those who migrate to cities where they do not have personal or business networks as the Beijing or Shanghai are motivated to move into science parks. In these science parks, official formalities of settlement are expedited that saves time. Besides, foreign passport holders are provided with long-term residence permits and facilitated in meeting educational requirements of their children.

Pakistan still lags behind China in provision of multiple services required by expatriates. However, Ministry of Overseas Pakistanis and Human Resource Development is actively working with the mandate to promote export of manpower from Pakistan and facilitating in provision of welfare services to families of migrant workers back home. The condition of having National Identity Card for Overseas Pakistanis (NICOP)[69] has been removed for migrant workers while proceeding abroad. However, NICOP is still a condition to buy property, start a business or to open foreign bank account.

There is still a need that the network of facilities provided to already establish business of overseas Pakistanis, such as Kentucky Fried Chicken (KFC), McDonalds restaurants in different Pakistani cities, Reebok plant in Sialkot may be extended. Besides, return-emigrants from different parts of the world possess multiple skills, trainings certificates

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[69]The cost to make NICOP is high. Instead of NICOP, at present, CINIC serves the same purpose.

and human capital. Omer Libran Engineering Industries, Ghazi Fabrics, Bestway Cement and Food Industry are some examples of business established on basis of foreign-obtained skills. Establishment and extension of skill-based business not only help abolish import dependence but also reduce unemployment there by increasing economic growth.

The following are recommended:

i.   For better understanding and awareness of Pakistani emigrants, there is a need to develop a system to educate potential migrants. These potential migrants may be educated regarding characteristics and availability of export able products of Pakistan. Such awareness will be supportive to enhance exports from Pakistan that in turn will contribute in enhancing the economic growth.

ii. There is a need to promote safe, orderly and low-cost migration from Pakistan. The low–cost migration can make emigrants free from worries related to emigration process. It also makes the settlement process of emigrants easier in host countries. Through these arrangements, overseas Pakistani migrants can prove themselves good ambassadors of Pakistan. The emigrants while residing abroad can have good social, cultural and economic terms with foreign community, therefore they can develop demand for Pakistani product within foreign community.

iii. The existence of sub-optimality in production and non-influential economics of scale with size of Gross domestic product of Pakistan is hurdle for low contribution of gross domestic product of Pakistan. To overcome these problems, there is need to switch exports from primary product to semi-manufactured or manufactured products.

Pakistan is a big source of immigrants to many western countries (Akbari et al., 2012). In this report, the review of the quantitative contribution to exports of Pakistani emigrants provides some insight to the debate on the economic effect of emigration in developing countries. In other related topic-based survey studies, the findings can be improved by adopting a comparative study of other labour sending countries and the

contribution of their emigrants in exports. In a continuously changing world economic environment, the findings of this study can be verified or rejected in future.

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CHAPTER 5
CONCLUSION AND POLICY IMPLICATIONS

Migration is a positive global phenomenon. It contributes more powerfully to development than any other means we know. If states work together and chose to adopt better-informed policies, they can generate broad economic and social gains (Sutherland, 2013).

The decision to migrate incurs cost. Cost of migration involves cost of transport, information cost, and cost associated with leaving family behind and settling in new environment P. Martin (2014). Then how migration is a source of human capital formation? In fact, to ascertain human capital formation through migration and maximize benefits of migration, it is immensely important to know factors of high migration cost, personal traits role of markets and in lowering such costs. For example, reducing recruitment costs is an important key to ensure that migrant workers are paying right amount for being recruited hence protected. Likewise, highly innovative project works provide access to remittance recipients to additional financial services that meet their needs. Direct contribution of emigrants themselves and indirect contribution through remittances, can positively affect rate at which development occurs in migrant-sending countries.

Based on this backdrop, the present study is based on three-axis of migration. The first axis is pre-migration analysis of cost of migration. The other two-axis are related to post-migration contribution of migrant in economic growth. This contribution is two-fold: i) in terms of inflow of remittances, and ii) exports from home country. Pakistan possesses high share of illiterate low-skilled or semi-skilled migrant workers in total

migration. The overseas migration provides an opportunity to improve the socio-economic status of workers (ILO, 2016). High cost of migration restricts the migration capacity of poor workers. Due to high cost of migration, poor people need to borrow money.

Present study is pioneer to use microeconomic data collected from potential Pakistani emigrants to find financial and private opportunity cost of migration. Based on the primary data of 585 emigrant workers, collected in 2019, and OLS as empirical estimation technique, the study also explores the demographic and socio-economic determinants of financial and private opportunity cost. Results of survey indicate that more than 74 percent of total financial cost is spent on visa fee. The high visa fee is attributed to visa trading. Most of the migrant workers obtain visa either though sub-agents/ broker or through relatives/ friends. These sub-agent or broker and friend or relatives are main source of exploitation.

The study finds that those workers who attain services of licensed Overseas Employment Promoters (OEPs) pay relatively less cost of migration, at least in this sample study. The results of estimation indicate that uneducated and married migrants having greater number of dependents, or first-time movers tend to pay more financial cost.

The study also indicates that migrants belonging to rural area pay lower cost. The reason for such low cost is that they may have a strong network of information in host countries. It supports the fact that the greater wage-wedge indicates higher earnings abroad. The greater wage-wedge is associated with the higher financial cost. Such higher migration cost indicates huge investment requirement in migration process. The

findings of the study show that the cost of personal opportunity varies from migrant to migrant. It depends on personal traits of the emigrants.

The study finds higher opportunity cost (in terms of both time and money) for those emigrants who are employed in Pakistan and are better educated. This study finds that age, education, employment status and wage-wedge are significant demographic and socio-economic determinants of opportunity cost of migration. However, due to absence of any empirical microeconomic literature of the cost of migration, the results of this part of study cannot be compared.

Secondly, the present study is pioneer in case of Pakistan as it identifies clear impact of remittances on the economic growth. To remove ambiguity, the study considers a number of policies that result in an additional bonus on economic growth, in presence of significant remittances flows. The study takes into account such complementary policies that lead to the positive effect that remittances have on economic development. The complementary polices are found in the areas of human capital, institutional quality and good macroeconomic environment. The evidence is provided for Pakistan for the time-series data from 1984-2018. The estimation results obtained from the estimation technique of Dynamic Ordinary Least Square (DOLS) indicate that the incentives for investing remittances in productive activities depend on the country's structural features and economic policies.

Remittances in absence of complementary polices cannot create direct positive impact on economic growth, however, with growth-friendly economic policies, this impact become positive and significant. The study found that the human capital, the institutional quality and the sound macroeconomic policies are complements for

economic growth. The financial depth is found to be substitute for remittances at least in this study. These results are consistent with earlier literature.

Thirdly, this is first study to find out the role of Pakistani emigrants in promotion of exports. For the purpose, an aggregate (overall) and disaggregate (country-specific) analysis of Gulf Cooperative Council countries, Malaysia and Korea has been carried out for period of 1980-2018. The results of time-series and panel FMOLS estimations indicate that Pakistani emigrant have a significant contribution in exports of Pakistan. The results are consistent with earlier studies (Akbari et al., 2012; S. Hyder et al., 2016).

The positive effect of emigrants on exports from Pakistan could be due to the reason that Pakistani emigrants prefer the 'made in Pakistan' products. Additionally, the network of Pakistani emigrants in the selected host countries, significantly contributes reduced trade-related transaction cost. Based on the study's results, the estimated monetary effect on exports between Pakistan and selected host countries of each additional Pakistani emigrant worker is US$ 200 million annually. This contribution is lower as compared to that reported by (Akbari et al., 2012) in case of OECD countries. Still, the contribution of emigrants in the present study is significant.

The recommendations from this study are based on two axes:

1) Re-visiting the powers of government-run/ controlled-institutions
2) Enhancing the positive role of emigrants.

According to the results of the study, role of government should be as under:

i. To abolish exploitation of emigrant workers, there is a need to centralize complaint handling-mechanism monitored on real-time basis. The Government should opt measures against those overseas employment promoters (OEPs) who charge migration fee above the officially described fee.

ii. Government should negotiate with foreign government, to make implement employer-payee model. Such implementation will help in reducing the cost of migration.

iii. Government institutions should promote re-location of resources enabling poor to take advantage of these resources. Proper functioning of these institutions automatically drives remittances, towards secure investment activities. Besides, public awareness to channelize remittances towards investment activities is crucial. The greater share of remittances in investment activities reduces its share for the purpose of consumption. Besides public awareness to use remittances, the role of the Government is equally important to channelize remittances towards investment activities. Above all, the institutional quality, human capital, and stable macroeconomic policies are the fundamental factors for promoting inflow of remittances and their proper utilization.

iv. The hypothesis that human capital positively contributes in economic growth has empirically proven to be true in this study. Therefore, at level of government, the spending on education that is an important indicator of human capital as throughout remained low. There is a dire need to increase government expenditure on education, to reap long-term growth-enhancing effects of the remittances. For proper management of remittances through indirect channels, there is a need to formulate effective policies in raising the level of human capital. Lower inflation rate, greater trade openness, low budget deficit increased level of exports is crucial to enhance effectiveness of remittances in economic growth. However, a supplement to the results is that reducing the cost of sending remittances would bring right directional change in utilization of remittances.

v. Government should assist the potential and actual overseas migrants as well as to return migrants in establishing businesses. This can be easily done through provision of soft loans. Establishment of advisory centers that connect overseas migrants with the Pakistani businesspersons through easy and flexible movement of financial and physical assets can also work for the purpose.

vi. Human capital positively contributes in economic growth has empirically proven true in this study. At level of government, spending on education that is an important indicator of human capital as throughout remained low. There is a dire need to increase government expenditure on education, to reap long-term growth-enhancing effects of the remittances. For proper management of

remittances through indirect channels, it requires to formulate effective policies in raising the level of human capital. Lower inflation rate, greater trade openness, low budget deficit increased level of exports is crucial to enhance effectiveness of remittances in economic growth.

Government of Pakistan is in process of formulation of National Emigration and Welfare Policy for Overseas Pakistanis. Besides other, the main objective of policy includes low cost migratory flow from Pakistan to labour receiving countries and welfare of overseas Pakistanis & their family left behind (National Emigration & Welfare Policy for Overseas Pakistanis).

Like other studies, this study also has certain limitations. The important objective of this was to have a deep micro-level analysis of opportunity cost of migration. However, analysis can be strengthened by incorporating a marco-level analysis. Such an analysis would not only support migrants to re-visit quickly the migration decision but also helpful in designing aggregate policy. Secondly, analysis considered all Pakistani emigrants as homogenous due to the issue of data availability but this is not the case.

Emigrants from Pakistan have different skills and knowledge levels. It would be interesting if some future study conducted on same area, could look consider migrants with their diversified attributes and find their relation with cost at macro-level. Similarly, the emigrants' impact on Pakistan trade can be re-visited while taking into account the heterogeneity in their academic, and skills level. Fourthly, trade data at more disaggregated level can help us in understanding migrants' networks effect at a disaggregated level of trade. This exercise would help in having much deeper level of understanding. Further, the effectiveness of the National Emigrational and Welfare Policy for Overseas Pakistanis has not been addressed in this study but is of great interest for future research.

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APPENDIX A

سوال نامہ

تاریخ:_____

A1 (i)۔ آپ بطور مزدور/پروفیشنل جس ملک میں جا رہے ہیں، اس ملک کا نام بتائیں؟

A2 (i) ۔ آپ کا نام:

A2 (ii)۔ آپ کس صوبہ سے تعلق رکھتے ہیں؟

A2 (iia)۔ آپ دیہی علاقے سے تعلق رکھتے ہیں یا شہری علاقے سے؟

A2 (iib)۔ آپ کے والد کی عمر کتنی ہے؟

A2 (iic)۔ آپ کے والد کی تعلیم کتنی ہے؟

A2 (iid)۔ آپ کی والدہ کی تعلیم کتنی ہے؟

A2 (iii) ۔ تحصیل کا نام:

A2 (iv)۔ قومیت:

A2 (v)۔ رابطہ نمبر:

A2 (vi)۔ مرد/عورت:

A2 (vii)۔ اگر شادی شدہ ہیں تو بچوں کی تعداد:

A2 (viii)۔ مادری زبان:

A2 (ix)۔ عمر: _____ سال

A4 (i)۔ کیا خاندان آپ کیلئے اہمیت رکھتا ہے؟ ہاں نہیں

A4 (ii)۔ کیا دوست آپ کیلئے اہمیت رکھتے ہیں؟ ہاں نہیں

A4 (iii)۔ کیا کاروبار آپ کیلئے اہمیت رکھتا ہے؟ ہاں نہیں

A4 (iv)۔ کیا فارغ وقت آپ کیلئے اہمیت رکھتا ہے؟ ہاں نہیں

A4 (v)۔ کیا سیاست آپ کیلئے اہمیت رکھتی ہے؟ ہاں نہیں

A4 (vi)- کیا کام آپ کیلئے اہمیت رکھتا ہے؟   ہاں ☐   نہیں ☐

A4 (vii)- کیا مذہب آپ کیلئے اہمیت رکھتا ہے؟   ہاں ☐   نہیں ☐

A (5) - کیا زندگی کے فیصلے آپ خود کرتے ہیں؟   ہاں ☐   نہیں ☐

A (6) - آپ کا تعلق کس طبقہ سے ہے؟

نچلہ طبقہ ☐   درمیانہ طبقہ ☐   بر تر طبقہ ☐

A7 (i)- کیا آپ سکول جاتے ہیں/پڑھنے جاتے تھے؟   ہاں ☐   نہیں ☐

A8 (i)- سب سے آخری جماعت کونسی پڑھی/آپ کی تعلیم؟   ☐☐☐

A9 (i)- کیا آپ نے کبھی پیشہ ورانہ تربیتی ادارے سے تربیت حاصل کی ہے؟   ہاں ☐   نہیں ☐

A9 (ii)- اگر ہاں، آپ کی پیشہ ورانہ تعلیم کیا ہے؟

ڈپلومہ ☐

ایڈوانس ڈپلومہ ☐

گریجویٹ ڈپلومہ ☐   کوئی اور ہے تو بتائیں۔ ☐☐☐

A10 (i)- کیا آپ اس وقت تعلیم حاصل کر رہے ہیں؟   ہاں ☐   نہیں ☐

A10 (ii)- آپ کا پیشہ کیا ہے؟   ☐☐☐

A10 (iii)- کیا آپ اس وقت کسی پیشہ ورانہ تربیتی ادارے میں جا رہے ہیں؟   ہاں ☐   نہیں ☐

A10 (iv)- اگر ہاں، تو مندرجہ ذیل میں سے کونسی تعلیم حاصل کر رہے ہیں؟   ☐   ☐

ڈپلومہ ☐

ایڈوانس ڈپلومہ ☐

گریجویٹ ڈپلومہ ☐   اگر کوئی اور ہے تو بتائیں۔ ☐☐☐

A (11) - آپ کے علاقے کی آبادی تقریباً کتنی ہے؟   ☐☐☐

A (12) - کیا آپ اپنے گھر کی معاشی حالت سے مطمئن ہیں؟   ہاں ☐   نہیں ☐

A (13) - کیا آپ اپنی زندگی سے مطمئن ہیں؟   ہاں ☐   نہیں ☐

A (14) - کیا آپ کے پاس اپنا کمپیوٹر/لیپ ٹاپ ہے؟   ہاں ☐   نہیں ☐

(15) A ـ آپ اس وقت نوکری کر رہے ہیں؟   ہاں ☐   نہیں ☐

(16) A ـ اگر ہاں تو کس کمپنی کے ساتھ؟ کس کے ساتھ؟   [_____]

(17) A ـ کیا اس نوکری سے آپ کو تنخواہ ملتی ہے؟   ہاں ☐   نہیں ☐

(17a) A ـ پاکستان میں ملازمت سے ملنے والی مہینہ وار تنخواہ بتائیں   [_____]

(18) A ـ کیا آپ پورا دن کام کرتے ہیں؟   ہاں ☐   نہیں ☐

(19) A ـ کیا آپ ہاتھ سے کام کرتے ہیں؟   ہاں ☐   نہیں ☐

(20) A ـ کیا آپ سرکاری ملازم ہیں یا پرائیویٹ: سرکاری ☐   پرائیویٹ ☐

(21) A ـ اگر ابھی آپ بیروزگار ہیں تو ماضی میں اگر کوئی تنخواہ/آمدنی والا کام کرتے تھے، اس کی تفصیل بتائیں؟

[_____]

(22) A ـ ماضی میں کتنے سال وہ کام کیا؟   [_____سال]

(23) A ـ کیا ماضی سے ہاتھ سے کام کرتے تھے یا دماغی کام کرتے تھے؟

ہاتھ سے کام ☐   دماغی کام ☐

(24) A ـ کیا آپ دوسروں کے کام کی نگرانی کرتے تھے؟   ہاں ☐   نہیں ☐

(25) A ـ گھر کے کتنے افراد آپ پر انحصار کرتے ہیں؟   [_____افراد]

(26) A ـ کیا آپ گھر میں اکیلے کمانے والے ہیں۔   ہاں ☐   نہیں ☐

(27) A ـ اگر نہیں تو کیا گھر کا سربراہ کماتا ہے؟   ہاں ☐   نہیں ☐

(28) A ـ کیا اس وقت کوئی کاروبار کر رہے ہیں؟   ہاں ☐   نہیں ☐

(29) A ـ کاروبار شروع کرنے سے پہلے تقریباً کتنا عرصہ سوچا؟

چھ ماہ ☐

ایک سال ☐

دو سال ☐

تین سال ☐

چار سال ☐

(30) A ـ آپ کتنے عرصے سے یہ کاروبار کر رہے ہیں؟ ⬚

(31) A ـ آپ نے اپنے کاروبار میں کتنی رقم لگائی ہے؟ Investment ⬚

(32) A ـ یہ کاروبار شروع کرنے سے پہلے دوستوں/رشتے داروں کی رائے لی تھی؟

ہاں ⬚　　　　نہیں ⬚

(33) A ـ اگر کاروبار نہیں کر رہے تو کیا مستقبل میں کاروبار کرنے کا ارادہ ہے؟

اگر ہاں تو A34 کا جواب دیں　　ہاں ⬚　　　　نہیں ⬚

(34) A ـ اگر آپ پاکستان میں کاروبار کرنا چاہتے ہیں تو درست جواب پر نشان دیں۔

(D34-1) (a) میں کاروبار سے زیادہ کما سکتا ہوں۔ ⬚

(D34-2) (b) پاکستان میں کاروباری ماحول اچھا ہے۔ ⬚

(D34-3) (c) میں پاکستان میں ٹیکس پر نرمی سے فائدہ اٹھانا چاہتا ہوں۔ ⬚

(D34-4) (d) کاروبار کرنے سے میرے موجودہ سرمائے میں اضافہ ہوگا۔ ⬚

(D34-5) (e) کوئی اور وجہ ہے تو بتائیں۔ ⬚

(35) A ـ اگر آپ پاکستان میں کاروبار کرنے کی بجائے باہر کسی ملک میں کاروبار کرنا چاہتے ہیں تو پاکستان میں کاروبار نہ کرنے کی وجہ پر نشان لگائیں۔

(D35-1) (a) میرے پاس پاکستان میں اچھی نوکری موجود ہے۔ ⬚

(D35-2) (b) میرے پاس کاروبار کرنے کی رقم نہیں ہے۔ ⬚

(D35-3) (c) میرے پاس کاروبار کرنے کی معلومات نہیں ہیں۔ ⬚

(D35-4) (d) میرے پاس صلاحیت/تجربہ نہیں کاروبار کرنے کا۔ ⬚

(D35-5) (e) پاکستان میں کاروبار محفوظ نہیں ہے۔ ⬚

(D35-6) (f) کوئی اور وجہ ہے تو بتائیں۔ ⬚

(36) A ـ اگر آپ کاروبار باہر کے کسی ملک میں کرنا چاہتے ہیں تو ملک کا نام بتائیں۔ ⬚

(37) A ـ کیا کاروبار کرنا چاہتے ہیں؟ ⬚

(38) A ـ کیا آپ کو دوسرے ملک میں کاروبار کرنے کے اصول معلوم ہیں؟

ہاں ⬚　　　　نہیں ⬚

A (39) ۔   دوسرے ملک میں کاروبار کرنے کیلئے کتنا پیسہ لگائیں گے؟   _____ روپوں میں

B1۔   آپ باہر کے ملک اگر جانا چاہتے ہیں تو جانے کی وجہ بتائیں۔

i۔   نوکری کرنے   □   ii۔   نوکری کی تلاش میں   □

iii۔   پڑھنے کیلئے   □   iv۔   اپنی زندگی کو بہتر بنانے   □

v۔   شہریت حاصل کرنے   □   vi۔   اپنے خاندان کے پاس   □

vii۔   میں باہر کے ملک میں ہی رہتا ہوں۔   □

B2۔   آپ کس ملک میں جا رہے ہیں؟   □   کس ملک جانا چاہتے ہیں؟   □

B3۔   کیا آپ پہلی دفعہ باہر جا رہے ہیں؟   ہاں   □   نہیں   □

B4۔   اگر پہلی دفعہ نہیں جا رہے تو پہلی دفعہ کس جگہ سے واپس آئے ہیں؟

ملک کا نام: □

B5۔   آپ پہلی دفعہ کس مقصد کیلئے گئے تھے؟   □

B5 (i)۔ آپ پہلی دفعہ کتنی دیر/عرصہ باہر رہے تھے؟   □

B6۔ ابھی حال ہی میں آپ نے باہر نوکری پر جانے کیلئے/کاروبار کرنے کیلئے کیا ہنر سیکھا؟   □

B7(i)۔ آپ نے اس ہنر کو سیکھنے میں کتنا عرصہ لگایا؟

B7(ii)۔ اگر کوئی ہنر سیکھا ہے تو کیا پورا دن ہنر سیکھتے تھے یا کچھ گھنٹے۔

پورا دن۔   □   کچھ گھنٹے۔   □

B7(iia)۔ مندرجہ ذیل میں سے درست پر نشان لگائیے۔

میں پاکستان میں بے روزگار ہوں اور ابھی بیرون ملک ملازمت پر جانے کے لیے میں نے کوئی ہنر نہیں سیکھا۔

میں پاکستان میں بے روزگار ہوں اور ابھی بیرون ملک ملازمت پر جانے کے لیے میں نے ہنر سیکھا ہے۔

ہنر کی تفصیل   □

میں پاکستان میں برسر روزگار ہوں اور باہر جانے کے لئے میں نے ابھی کوئی ہنر نہیں سیکھا۔

میں پاکستان میں برسر روزگار ہوں اور باہر جانے کے لئے میں نے پیسے دے کر ہنر سیکھا ہے۔

ہنر کی تفصیل۔   □

میں پاکستان میں برسر روزگار ہوں اور باہر جانے کے لئے میں نے پیسے دیئے بغیر ہنر سیکھا ہے۔

ہنر کی تفصیل۔ ☐

B7(iib)۔ اگر نہیں تو کتنے گھنٹے ہنر سیکھتے تھے

1.نوکری کے ساتھ دو گھنٹے روزانہ چھ ہفتے تک۔

2. نوکری کے ساتھ روزانہ تین گھنٹے ایک مہینے تک۔

3. نوکری کے ساتھ روزانہ دو گھنٹے پندرہ دن تک

4. نوکری کے ساتھ دو گھنٹے روزانہ ایک ماہ تک

5. مکمل پندرہ دن تک

6. پندرہ دن سے زیادہ

7.ایک سے دو گھنٹے روزانہ دو ہفتے تک

8.ایک سے دو گھنٹے روزانہ ایک ماہ تک

9.ایک سے دو گھنٹے روزانہ چھ ہفتے تک

10. دو سے تین گھنٹے روزانہ دو ہفتے تک

11.ایک مکمل مہینہ

12. تین مکمل مہینے

13. تین سے زیادہ مہینے

14. ایک سے دو گھنٹے روزانہ نوکری کے بعد

15. دو گھنٹے سے زیادہ روزانہ نوکری کے بعد (گھنٹوں کی تعداد بھی بتائیں)

B7(iii)۔ آپ نے ہنر کتنے عرصے میں سیکھا؟

1. _____ ٹوٹل گھنٹے میں.

2. _____ ٹوٹل دنوں میں.

3. ———————————— ٹوٹل مہینوں میں.

B7(iv)۔ اگر آپ برسر روزگار ہیں اور ہنر سیکھا ہے تو اس ہنر کو سیکھنے کے لئے کل کتنے پیسے خرچ کیے۔

_____ پاکستانی روپے.

B7(v)۔ ہنر سیکھنے کے ادارے یا جگہ تک آنے جانے کے لیے آپ نے کل کتنا خرچہ اٹھایا.

_____ پاکستانی روپے.

B7(vi)۔ برسر روزگار ہونے کی صورت میں ہنر سیکھنے جانے میں آپ کی تنخواہ کی کٹوتی ہوئی؟ ہاں ☐ نہیں ☐

اگر کٹوتی ہوئی تو برائے مہربانی بتائے کہ

1 ۔ایک گھنٹہ کتنی کٹوتی ہوئی؟

2 ۔ٹوٹل کتنی کٹوتی ہوئی؟

B7(vii)۔ کیا بیرون ملک ملازمت ڈھونڈنے کے دوران آپ کو پاکستان یا باہر کے ملک سے کوئی اور نوکری کی آفر ہوئی؟

ہاں ☐   نہیں ☐

اگر ہاں تو آفر کی تعداد بتائیں. ☐

B7(viii)۔ موجودہ بیرون ملک ملازمت کو ڈھونڈنے کے کتنے عرصے کے دوران / درمیان آپ کو کسی دوسری ملازمت کی آفر ہوئی

1. پہلے پندرہ دن کے بعد۔

2. ایک ماہ کے بعد۔

3. ڈیڑھ ماہ کے بعد۔

4. دوماہ کے بعد۔

5. تین ماہ کے بعد۔

6. چارماہ کے بعد۔

7. پانچ ماہ کے بعد۔

8. چھ ماہ کے بعد۔

یہی سوال دوسری اور تیسری آفر (اگر ہے) تو ان کے متعلق بھی ہے

ان سب ملازمتوں میں آپ کو کتنی تنخواہ کی آفر ہوئی؟

پہلی آفر _____ پاکستانی روپے.

دوسری آفر _____ پاکستانی روپے.

تیسری آفر _____ پاکستانی روپے.

بیرون ملک نوکری کی تلاش میں انٹرنیٹ اور موبائل کارڈ پر آپ کے کل کتنے پیسے خرچ ہوئے؟

_____ پاکستانی روپے.

چھ ماہ سے کم عرصہ ☐		تین ماہ سے کم عرصہ ☐	
ایک سال سے زیادہ عرصہ ☐		ایک سال سے کم عرصہ ☐	

B8۔ کیا آپ بحیثیت ایک مزدور کے جا رہے ہیں؟   ہاں ☐   نہیں ☐

B9۔ اگر آپ مزدور ہیں تو اپنا پیشہ بتائیں۔   ☐

B8(ii)۔ کیا آپ کو پاکستان میں موجودہ جاب/کاروبار کو چھوڑ دینے کی فکر ہے؟   ہاں ☐   نہیں ☐

B8 (iii)۔ کیا ہجرت کا فیصلہ آپ کیلئے اہم ہے؟   ہاں ☐   نہیں ☐

B9۔ کیا دین آپ کیلئے اہم ہے؟   ہاں ☐   نہیں ☐

B10۔ کیا سیاست آپ کیلئے اہم ہے؟   ہاں ☐   نہیں ☐

B11۔ کیا تعصب پسند ہیں؟   ہاں ☐   نہیں ☐

C1۔ اگر ماضی میں آپ نوکری پاکستان سے باہر کر رہے تھے تو وہ نوکری آپ کو کیسے ملی؟

i۔ ایجنٹ کے ذریعے۔   ☐

ii۔ نوکری کا میرے دوست نے بتایا جو پاکستان میں رہتا ہے۔   ☐

iii۔ نوکری کا میرے رشتہ داروں نے بتایا جو پاکستان میں رہتے ہیں۔   ☐

iv۔ میرے دوست نے بتایا جو باہر کے ملک میں رہتا ہے۔   ☐

v۔ نوکری کا میرے رشتہ داروں نے بتایا جو باہر کے ملک رہتے ہیں۔   ☐

vi۔ انٹرنیٹ کے ذریعے پتہ چلا۔   ☐

vii۔ میں نے خود جا کر کمپنی میں اپلائی کیا/ڈائریکٹ نوکری۔   ☐

viii۔ کوئی اور ذریعہ؟   ☐

C2۔ ابھی آپ کو جو نوکری ملی، پاکستان سے باہر، وہ نوکری آپ کو کیسے ملی؟

i۔ ایجنٹ کے ذریعے۔   ☐

ii۔ اس نوکری کا میرے دوست نے بتایا جو پاکستان میں ہے۔ ☐

iii۔ نوکری کا میرے رشتے داروں نے بتایا جو پاکستان میں ہیں۔ ☐

iv۔ میرے دوست نے بتایا جو باہر کے ملک میں رہتا ہے۔ ☐

v۔ نوکری کا میرے رشتہ داروں نے بتایا جو باہر کے ملک میں رہتے ہیں۔ ☐

vi۔ انٹرنیٹ کے ذریعے پتہ چلا۔ ☐

vii۔ میں نے خود جا کر کمپنی میں اپلائی کیا/ڈائریکٹ نوکری۔ ☐

viii۔ کوئی اور ذریعہ؟ ☐

C3۔ آپ کی موجودہ کل کمائی/تنخواہ کتنی ہے؟ جس کو چھوڑ کر آپ پاکستان سے باہر جا رہے ہیں؟ روپے _____

C4۔ کیا ماضی میں باہر جانے سے پہلے آپ نے ملازمت کا معاہدہ دستخط کیا؟ ہاں ☐ نہیں ☐

C5۔ کیا ابھی باہر جاتے وقت آپ نے ملازمت کا معاہدہ دستخط کیا؟ ہاں ☐ نہیں ☐

C6۔ اگر ابھی آپ کاروبار کر رہے ہیں اور اس کو چھوڑ کر باہر جا رہے ہیں۔ وہ کتنی آمدنی ہے؟ روپے _____

C7۔ آپ کاروبار اگر بند کر کے جا رہے ہیں تو کل کتنی آمدنی/خرچہ آیا؟ روپے _____

D1۔ اگر آپ پہلے باہر گئے تو ماضی میں آپ کی ہجرت کا خرچہ کس نے اٹھایا؟

i۔ میں نے خود اپنی کمائی سے۔ ☐

ii۔ اپنے خاندان کے کس بندے سے خرچہ/پیسہ لیا۔ ☐

iii۔ اپنے کسی دوست سے پیسہ ادھار لیا۔ ☐

iv۔ کسی پیشہ ور پیسہ دینے والے سے ادھار لیا۔ ☐

v۔ کوئی اور ذریعہ جس سے پیسہ ادھار لیا ہے تو بتائیں۔ ☐

D2۔ اگر ابھی آپ باہر جا رہے ہیں، تو آپ کے باہر جانے میں خرچ کس نے اٹھایا؟

i۔ میں نے خود اپنی کمائی سے خرچ اٹھایا۔ ☐

ii۔ اپنے خاندان کے کسی بندے سے خرچہ/پیسہ لیا۔ ☐

iii۔ اپنے کسی دوست سے ادھار لیا۔ ☐

iv۔ کسی پیشہ ور ادھار دینے والے سے ادھار لیا۔ ☐

v۔ کوئی اور ذریعہ جس سے پیسہ ادھار لیا تو بتائیں۔

(i) D2۔ ماضی میں آپ باہر جانے کیلئے/ابھی باہر جانے کیلئے آپ نے مندرجہ ذیل کی مد میں کتنا خرچہ کیا؟

D3۔ ویزہ فیس

D4۔ ایجنٹ فیس

D5۔ پاکستان سے باہر جا کر اگر کوئی خرچہ کیا۔

D6۔ پاکستان کے اندر رہ کے سفر کر کے آپ نے جو خرچ باہر جانے کیلئے کیا۔

D7۔ پاسپورٹ فیس۔

D8۔ میڈیکل فیس:

D9۔ معاہدہ کی فیس:

D10۔ سٹیٹ لائف انشورنس فیس:

D11۔ ابتدائی ہدایت/بریفنگ فیس۔

D12۔ سیکورٹی کلئیرنس فیس۔

D13۔ Exit fee/باہر جانے کی فیس۔

D14۔ Worker ویلفیئر فنڈ کی فیس۔

D15۔ کوئی اور فیس ہے تو بتائیں۔

D۔ ابھی باہر جا کر نوکری کرنے میں پیش آنے والی خرچ کی تفصیل لکھیں۔ (پاکستانی روپے میں لکھیں)

D16۔ موجودہ ویزہ فیس۔

D17۔ ایجنٹ فیس۔

D18۔ اگر آپ باہر کے ملک نوکری حاصل کرنے کیلئے، پاکستان سے باہر جا کر کے کوئی انتظام کر کے آئے تو اس پر آپ کا کتنا خرچ آیا؟ International Transport، رہائش، ٹکٹ وغیرہ

D19۔ پاکستان کے اندر کسی اور کے گھر، ہوٹل میں رہ کر اگر باہر کی نوکری کیلئے کوئی انتظام کیا تو اس پر کیا خرچہ آیا؟

D20۔ پاسپورٹ فیس۔ ☐

(i) D20۔ پاسپورٹ نیابنوایاہے؟ ہاں ☐ نہیں ☐

D21۔ میڈیکل فیس۔ ☐

D22۔ معاہدے کی فیس۔ ☐

D23۔ اسٹیٹ لائف انشورنس فیس۔ ☐

D24۔ بریفنگ فیس۔ ☐

D25۔ کلیئرنس فیس۔ ☐

D26۔ باہر جانے کی فیس ☐

D27۔ ویلفیئر فنڈ کی فیس۔ ☐

D28۔ کوئی اور خرچہ ہے تو بتائیں۔ ☐

موجودہ کل خرچہ (باہر جانے کا) ☐

D29۔ کیا آپ نے باہر کی نوکری اپلائی کرنے کیلئے Application فارم کیلئے پیسے دیئے؟ ہاں ☐ نہیں ☐

اگر ہاں تو کتنے پیسے دیئے؟ ☐

D30۔ باہر جانے کیلئے کوئی نئی زبان سیکھی؟ ہاں ☐ نہیں ☐

D31۔ اس زبان کو سیکھنے کیلئے کتنی رقم ادھار کی؟ فیس؟ ☐

D34۔ کیا اوپر بیان کردہ تمام اخراجات میں سے کوئی خرچ آپ کو واپس مل جائے گا باہر جانے کے بعد؟ Reimbuncement of fee?

ہاں ☐ نہیں ☐

D35۔ معلومات کی فیس۔ ہاں ☐ نہیں ☐

D36۔ زبان سیکھنے کا خرچ۔ ہاں ☐ نہیں ☐

D37۔ ہنر سیکھنے کا خرچ۔ ہاں ☐ نہیں ☐

D38۔ پاسپورٹ کا خرچ۔ ہاں ☐ نہیں ☐

D39۔ میڈیکل کا خرچ۔ ہاں ☐ نہیں ☐

D40۔ ہنر کے اسٹیٹ کا خرچ۔ ہاں ☐ نہیں ☐

D41۔ سیکورٹی کلیئرنس کا خرچ۔   ہاں ☐   نہیں ☐

D42 ۔ معاہدہ کا خرچ۔   ہاں ☐   نہیں ☐

D43۔ انشورنس فیس۔   ہاں ☐   نہیں ☐

D44۔ ویلفیئر فنڈ کا خرچہ۔   ہاں ☐   نہیں ☐

D45۔ ویزا فیس۔   ہاں ☐   نہیں ☐

D46۔ ملک کے اندر سفر کا خرچ۔   ہاں ☐   نہیں ☐

D47۔ بیرون ملک سفر کا خرچ۔   ہاں ☐   نہیں ☐

D48۔ بریفنگ کا خرچ۔   ہاں ☐   نہیں ☐

D49۔ اگر آپ اس وقت باہر رہتے ہیں تو موجودہ آمدنی۔ ☐

D50۔ اگر کاروبار کر رہے ہیں تو موجودہ کل آمدنی۔ ☐

D51۔ آپ باہر جس نوکری پر جا رہے ہیں وہاں آپ کو کتنی آمدنی/ تنخواہ ملے گی؟ _____ روپے

E1۔ آپ کی متوقع آمدنی باہر کے ملک سے؟ ☐

E2۔ کیا ہجرت کے اصلی خرچ سے زیادہ 25 ہزار دینے کیلئے تیار ہیں؟

   ہاں ☐   نہیں ☐

E3۔ آپ اصلی خرچ سے زیادہ 50 ہزار دینے کو تیار ہیں؟

   ہاں ☐   نہیں ☐

E4۔ 15 ہزار زیادہ دینے کو تیار ہیں؟

   ہاں ☐   نہیں ☐

E5۔ ہجرت کے اصلی خرچ سے کتنا زیادہ دینے کو تیار ہیں؟ ☐

E7۔ آپ اصلی خرچ کے علاوہ زیادہ رقم دینے کیلئے کیوں تیار ہیں؟

i۔ مجھے نوکری کی اشد ضرورت ہے۔ ☐

ii۔ میں باہر کاروبار کرنا چاہتا ہوں۔ ☐

iii۔ مجھے اپنے مستقبل کی فکر ہے۔ ☐

iv۔ میرا مستقبل باہر محفوظ ہے۔ ☐

v۔ کوئی اور وجہ ہے تو بتائیں۔ ☐

E8۔ اگر آپ ہجرت کے اصل خرچ سے زیادہ دینے کو تیار نہیں ہیں تو وجہ بتائیں؟

i۔ میری گنجائش نہیں ہے۔

ii۔ مجھے یہاں رہ کے کام کرنے یا باہر جانے میں کوئی فرق نہیں۔

iii۔ مجھے نوکری کی کوئی خاص ضرورت نہیں۔

iv۔ میں باہر مستقل طور پر نہیں جانا چاہتا۔

v۔ میرا مستقبل پاکستان میں محفوظ ہے۔

vi۔ میرا خاندان پاکستان میں محفوظ ہے۔

vii۔ کوئی اور ہے تو بتائیں۔

F1۔ آسانی سے کیا آپ اپنی موجودہ جاب چھوڑ کر پاکستان سے باہر جا سکتے ہیں؟

ہاں ☐ نہیں ☐

F2۔ کیا آپ اپنا پاکستانی موجودہ کاروبار چھوڑ کر باہر آسانی سے جا سکتے ہیں۔

ہاں ☐ نہیں ☐

F3۔ کیا آپ اپنا خاندان چھوڑ کر آسانی سے جا سکتے ہیں؟

ہاں ☐ نہیں ☐

F4۔ کیا آپ اپنے دوست چھوڑ کر آسانی سے جا سکتے ہیں؟

ہاں ☐ نہیں ☐

F5۔ کیا آپ اپنا فارغ وقت چھوڑ کر باہر جانا پسند کریں گے؟

ہاں ☐ نہیں ☐

F6۔ کیا آپ اپنی سیاسی سرگرمیاں چھوڑ کر آسانی سے باہر جا سکتے ہیں؟

نہیں ☐   ہاں ☐

F7۔   کیا اپنی مذہبی سر گرمیاں چھوڑ کر آسانی سے باہر جا سکتے ہیں۔

نہیں ☐   ہاں ☐

F8۔   کیا اپنا موجودہ کام کا ماحول چھوڑ کر آسانی سے جا سکتے ہیں؟

نہیں ☐   ہاں ☐

F9۔   کیا آپ یا آپ کے خاندان کا سر براہ معاشی طور پر مضبوط ہے تو آسانی سے باہر چلے چلے جائیں گے؟

نہیں ☐   ہاں ☐

کوئی اور معلومات دینا چاہتے ہیں؟

APPENDIX B

Workers' Remittance: The Balance of Payments and the Foreign Investment Status Manual (BPM5) describes the transfers made to their relatives in their country of origin by migrants working and resident in the recycling economy. Workers' remittances provide cash and in kind transfers from household to household.

APPENDIX C

Dickson (2009) clearly identifies that in modeling the returns to schooling (schooling is education)", endogeneity of schooling is a problem. However, we do not find any theoretical or empirical evidence of endogeneity in modeling the effect of education on cost of migration. In our study, the determinants of financial cost, bedsides other include the education of the migrant that is suspected to be endogenous therefore; we test for endogeneity of this variable[70]. If there is endogeneity, the use of OLS will produce biased estimates (Shepherd, 2008). In such case, we shall switch to Two-Stage-Least Square (2 SLS) Estimation technique.

In literature, alternatives instrument have been used to tackle endogeneity issue of education. For instance, Dickson (2009) indicates that rise in minimum school leaning age and early smoking behavior as valid instruments for education. However, for this particular study where we are taking financial cost as dependent variable, no previous evidence is available regarding endogeneity of education or any instrument if financial cost is taken as dependent variable. We use the education of father as an instrument for education of the migrant[71].

Detecting Endogeneity: First, we run regression by regressing education of migrant on all exogenous variables in the model. In short, we estimate:

Education of migrant = f {all exogenous variables)   A

The outcomes are listed in Table 1. Then we got series for predicted residual and used these residuals in the structural equation. In the structural equation, the financial cost is

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[70] There may be some omitted variables as father's education, etc.

[71] No empirical evidence exists to know what right instrument is if we are interested in finding, either education is a valid determinant of financial cost of migration or not.

a dependent variable while education and predicted residuals as independent variables. In Table 1 the results are listed.

Table 1: OLS estimates (dependent variable log education of migrant)

Variable	Coefficient	Z stat
married (1 if married, 0 otherwise)	0.0144**	2.51
rural area(1 if rural, 0 otherwise)	-0.044	-1.4
unemployed (I if unemployed, 0 otherwise)	-0.598**	-1.92
information_source_job: friends/relatives(1 if friends, 0 otherwise)	0.062**	2.16
emplyer_paid(1 if shared,0 otherwise)	-0.0356	-2.81
wage_wedge	0.171*	5.68
first visit(1 if first visit, 0 otherwise)	-0.98	-0.73
no. of dependents	0.0036*	2.01
father_education(1 if educated, 0 otherwise)	0.383*	3.65
Constant	0.8038*	14.85
R2	0.3943	

We tested the significance of estimated coefficient of errors is the following regression equation to see if the coefficient of errors is significant or not. This test is known as Hausman test of endogeneity.

Table 2: Dependent variable is log financial cost

Variable	Coefficient	Z stat
education (1 if educated, 0 otherwise)	0.23	0.40
e	0.73	0.290
Constant	0.8038*	14.85
R^2	0.3943	

The coefficient estimate of error is 0.73 that is not significant. The insignificant value of this coefficient indicates that endogenity does not exist. Therefore, OLS is a relevant estimation technique. Therefore, we can run OLS.

APPENDIX D

Besides other statistics, Table 1 indicates that average present discount value of opportunity cost is highest for those who learnt skill while lowest for those who learnt skill without payment. However, the minimum present value of opportunity cost is for those who did not learn skill at all the variations in the average, minimum or maximum present value of the cost of opportunity depend on different factors including the wage rate the prospective migrant is earning from employment in Pakistan, the number of hours searched for job, the hourly wage rate, the discount rate and number of job offers alongwith the foregone wage rate for job offer (offers).

Table 1: Descriptive Stats of Opportunity Cost for Employed

	total employed	learning skill with payment	learning skill without payment	not learning skill
no. of observations	169	53	09	103
i. average hours per day spent learning skill	2	2	4	0
ii.average time spent learning skill	6 weeks	4 weeks	8 weeks	0
iii.average payment for skill	7049 Rs.	7049 Rs.	0	0
iv. average wage-cur bearded during leaning skill	5500 Rs.	5500 Rs.	0	0
minimum	2000 Rs.	2000Rs.	0	0
maximum	8000 Rs.	8000Rs.	0	0
v.average job search time	2 months	3 months	2 months	2 months
minimum job offer during job search time	1	1	1	1
max. no of job offers during foreign job search time	2	2	2	2
vi. average receipt time of other job offer during foreign job search	after 1 month	after 2 months	after 1 month	after 1 month
vii. average wage offer during job search time average other charges (internet surfing etc)	800 Rs.	800 Rs.	800 Rs.	800 Rs.
PV of All opportunity costs [72]				
average PV opp. Cost	45,734.42	52,222.093	3,227.48	45, 253.6
minimum	392.76	7278.05	392.76	111.69
maximum	408773.17	124835.45	10274.22	10349.13

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[72]In calculation of present discounted value of all opportunity cost, all actual values not average values (actual wage rate in Pakistan, wage offer from other jobs during job search time, actual time spent on job search, other charges etc) are considered.

Table 2: Descriptive stat for unemployed

	not learning skill	learning_ skill	total unemployed
No of observations	398	19	417
i. average time spent learning skill	0	2 hours per day for 4 weeks	2 hours per day for 4 weeks
iii. average payment for skill	0	8894.74 Rs.	405.28Rs.*
iv. average wage-cut bearded during leaning skill	0	0	0
minimum	0	0	0
maximum	0	0	0
v. average job search time	2.5 months	2.5months	2.5 months
vi. average job search hours per day	2 hours	2 hours	2 hours
minimum other job offers during job search time	1	1	1
maximum no. of other job offers during foreign job search time	2	1	2
vi. receipt time of first other job offer during foreign job search	One month after foreign job search	One month after foreign job search	One month after foreign job search
vii. wage offer during job search time from first offer	10000-14000 Rs.	10000-14000 Rs.	10000-14000 Rs.
viii. Wage offer from 2nd job offer during job search period	16000 Rs.	no offer	16000 Rs.
receipt time of 2nd job offer	3 months after foreign job search	NA**	3 months after foreign job search
average other charges (internet surfing etc)	700 Rs.	700 Rs.	700 Rs.
PV of All opportunity costs			
average PV opp. cost	2818.05	27759.63	3954.8
minimum	297.92	198.39	297.92
maximum	46491.21	90116.97	90116.97

Note: * indicates that payment is made for skill for those who learnt skill therefore from this aspect, the data of total unemployed and those who learnt skill is same. The difference in average payment for skill in both samples is due to small denominator for those learnt skills (19) and large for total unemployed (398). Only one respondent informed that he had two job offers and from second job he was offered 16000 Rs. per month. NA** indicates not applicable.

APPENDIX E

The section 1 of questionnaire focusses on the demographic characteristics of Pakistani emigrant workers. The demographic characteristic includes their gender, age, education, marital status, area of belonging, district, language, family size, education of father of emigrant, marital status family's dependency ratio, decision-making capability of the emigrant etc. Next section contains the questions regarding importance of family and relatives of the emigrant, spending leisure time, work, friends, politics, and religion in his life. The same sections also inquiries about the economic class he or she belongs, the detail of formal and the technical education, the ongoing class of study, if any, the highest education level attained, the current employment/ business/ work status, either he/she is full-time or part-time worker and the level of skill etc. The next sections incorporate the questions related to the decision of migration, name of the host country, number of visit aboard, the skills acquired for the joining job abroad, the time and the money spent to acquire that skill, the source of job information, the total earnings of emigrant in Pakistan , the detail of Foreign Service Agreement, if he/she has worked abroad then detail of the previous job, the source to meet cost of migration, the detail of present migration expenditures and its break-ups, the decided salary and the expenditures that would be reimbursed by the employer. The last section is regarding details of present job in Pakistan, if any, and working environment.

Appendix F

Table 1: The OLS estimation results for the KSA (dependent variable log T_FC)

Variable	1	2	3
marriage(1 if married, 0 otherwise)	0.031*** (1.90)	0.033*** (1.92)	0.05*** (1.93)
education (no education base category)			
primary	0.181*** (1.79)	0.181*** (1.79)	0.195*** (1.92)
middle	0.092 (1.31)	0.099 (1.17)	0.085 (1.56)
matric	0.214 (1.17)	0.086 (1.61)	0.098 (1.07)
FA/FSC/ Equivalent	0.089 (1.15)	0.084 (1.27)	0.083 (1.33)
BA/BSA/ Equivalent /Above	0.048 (0.68)	0.004*** (1.65)	-0.0075 (-0.12)
Unemployment(1 if unemployed, 0 otherwise)	0.041 (0.88)	-0.073** (-2.91)	-0.0772** (-2.93)
Area belonging (1 if rural, 0 otherwise)		0.002*** (1.97)	0.003*** (1.98)
catagories_job_information			
sub-agent/broker		0.201* (4.59)	00.195* (4.84)
Overseas Employment Promoters		-0.535* (-4.77)	-0.514* (-4.83)
Others (direct, internet etc.)		-0.309* (-7.11)	-0.309* (-7.66)
wage wedge			0.0714*** (1.95)
employer share in cost (1 if employer paid, 0 otherwise)			-0.334* (-6.79)
no. of dependents			0.0439** (2.12)
no. of visit (1 if first visit, 0 otherwise)			0.1002** (2.45)
Constant	12.75* (123.7)	12.76* (186.70)	12.79* (189.23)
R^2	0.39	0.41	0.42
No. of observations	317		

Note: *, **, *** indicate significance at 1 percent, 5 percent and 10 percent level.

Table 2: The OLS estimation results for the UAE (dependent variable log T_FC)

Variable	1	2	3
Marriage(1 if married, 0 otherwise)	0.082** (2.02)	0.073** (2.01)	0.077** (2.01)
education (no education base category)			
Primary	-1.33 (-1.14)	1.088 (-1.16)	0.094 (1.07)
Middle	0.193** (2.12)	-1.086 (1.47)	-0.939 (-1.36)
Matrix	0.0183 (0.20)	0.067 (0.92)	-0.075 (1.10)
FA/FSC/ Equivalent	0.022 (0.22)	0.019 (0.23)	0.038 (0.50)
BA/BSA/ Equivalent /Above	-0.119 (-1.03)	0.019 (1.19)	0.056 (0.62)
Unemployment(1 if unemployed, 0 otherwise)	-0.039 (-0.54)	-0.048*** (-1.89)	-0.048*** (-1.90)
Area belonging (1 if rural, 0 otherwise)		0.036*** (1.67)	0.038*** (1.67)
catagories_job_information			
sub-agent/broker		0.230* (4.15)	0.252* (4.84)
Overseas Employment Promoters		-0.795* (-6.47)	-0.766* (-6.64)
others (direct, internet etc.)		-0.253* (3.50)	-0.261* (-3.88)
wage wedge			0.035** (2.71)
employer share in cost (1 if employer paid, 0 otherwise)			-0.436* (-5.43)
No. of dependents			0.345** (2.15)
no. of visit (1 if first visit, 0 otherwise)			-0.26*** (-1.67)
Constant	12.89* (136.13)	12.85* (186.70)	12.79* (189.23)
R^2	0.456	0.4194	0.4151
No. of observations	196		

Note: *, **, *** indicate significance at 1 percent, 5 percent and 10 percent level.

Table 3: The OLS estimation results for the Oman (dependent variable log T_FC)

Variable	1	2	3
marriage (1 if married,	0.247***	0.666**	0.128**
0 otherwise)	(1.94)	(2.12)	(2.48)
education (no education base category)			
Primary	-0.099	0.012	0.237
	(-0.17)	(1.04)	(0.59)
Middle	0.729	0.078**	0.727
	(1.20)	(2.67)	(0.44)
Matrix	0.647	0.437	0.620
	(1.22)	(1.09)	(1.49)
FA/FSC/Equivalent	0.668	0.344	0.415
	(1.12)	(1.37)	(0.87)
BA/BSA/ Equivalent /Above	0.248	0.366	0.559
	(0.41)	(1.20)	(1.24)
unemployment (1 if unemployed,	-0.029**	-0.431**	-0.450**
0 otherwise)	(-2.10)	(-2.15)	(-2.93)
area belonging (1 if rural,		0.261**	0.271**
0 otherwise)		(2.11)	(2.15)
catagories_job_information			
sub-agent/broker		0.201*	0.241***
		(4.59)	(1.99)
Overseas Employment Promoters		-0.535*	0.563
		(-4.77)	(1.21)
Others (direct, internet etc)		-0.309*	-0.092***
		(-7.11)	(-2.32)
wage wedge			0.238***
			(1.99)
employer share (1 if employer paid,		-1.557*	-0.481***
0 otherwise)		(-3.82)	(-1.98)
No. of dependents			0.034***
			(1.92)
no. of visit (1 if first visit,			0.213***
0 otherwise)			(1.98)
Constant	12.355*	12.435*	11.371*
	(22.27)	(30.78)	(20.14)
R^2	0.3712	0.4378	0.4712
No. of observations	23		

Note: *, **, *** indicate significance at 1 percent, 5 percent and 10 percent level.

APPENDIX G

The Construction of Macroeconomic Policy Index:

Fischer (1993) notes that causation runs from good macroeconomic policies towards economic development. Fischer argues that high inflation, large budget deficits, and a skewed exchange rate are inversely correlated with productivity. Huge inflation and budget deficit reduce the economic growth through reduction in investment and productivity growth. Non-inflationary monetary policy and low budget deficits are the essential instruments for savings to accumulate capital (Randel et al., 2004). Trade openness can also facilitate economic growth. Developing countries can achieve economic growth with appropriate fiscal, monetary policy and trade policy. However, the volatility in behavior of these polices causes macroeconomic instability (Montieland Serven, 2004). Therefore, the fragile behavior of these variables creates negative affect on the economic growth (Easterly and Rebelo, 1993). In case of Pakistan, the empirical evidence show that the budget deficit is negatively related with growth rate of economy (for instance: studies by Iqbal and Zahid, 1998). There are two reasons for inverse relationship of the fiscal deficit and the economic growth; firstly, when the fiscal deficit is financed through distortionary taxes, the investment and saving incentives declines. The reduction in saving and investment lowers the rate of capital accumulation hence economic growth. Secondly, the higher budget deficit crowds out the private investment. However, the trade openness and the other favorable macroeconomic policies give access to the advanced abroad. Therefore, the in turn, it creates the possibility of catching-up, gives larger access to a wider range of inputs for production and easy access to broader markets. All these arrangements raise the efficiency of domestic production hence increasing specialization (Durbarry et al. 1998).Based on the effectiveness of

fiscal, monetary and trade policies, we follow Javid et al. (2011)[73] to construct the Macroeconomic Policy Index. Following Javid et al. (2011) we construct the index method of Principal Component Analysis (PCA)[74]. In PCA method, the policy variables are given weights. These weights are assigned according to their correlation with the economic growth. The policy index is constructed for monetary (inflation, CPI), fiscal (fiscal deficit as a percentage of GDP) and trade policy (trade openness as a percentage of GDP).

The Policy index for period (1984-2018) is based on the following equation:

Policy Index=$-\beta_1$ inflation$-\beta_2$ budget deficit $+\beta_3$trade openness   1

where β1, β2, β3 represent the weights assigned to inflation, budget deficit and the trade openness respectively. The first principal component, in this study, represents the high correlation. Therefore, we use the first components to construct the index. Finally, after assigning weights to each policy, the equation becomes:

Policy index= -0.296*FD+0.377*To - 0.325Inf2

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[73] Burnside and Dollar (1997, 2000) initially used Principal Component Analyses (PCA) method to construct Macroeconomic Policy Index but first principal component did not represent the high correlation. Therefore, they used estimation method for construction of index.

APPENDIX H

ICRG index: This index is generated by assigning risk points to a group of factors that are called components of political risk. The minimum number of points assigned to each component is zero, but the maximum number of points depends on the set weights assigned to each component in the overall assessment of political risk. The lower risk point reflects the greater the risk and the greater the risk.

APPENDIX I

Table 1: Remittances, Growth, Complementary Polices Summary Statistics[75]

	y_pc	Rem/ GDP	Human Capital	Institutions (Index)	Financial Depth	MEI (Index)
Mean	3.3	4.72	1.466	2.25	1.36	4.12
Median	3.3	4.86	1.489	2.04	1.38	4.11
Std. Dev	0.002	1.96	0.102	3.44	0.083	1.26

Note: The summary stats are reported with log values (log is not applied on index**).**

Table 2: Remittances, Growth, Complementary Polices Summary Statistics

	Y_pc	Rem/ GDP	Human Capital	Institutions (Index)	Financial Depth	MEI (Index)
Mean	877	4.72	30.03	2.25	23.23	4.12
Median	824	4.86	30.86	2.04	24.21	4.11
Std. Dev	148.98	1.96	6.73	3.44	4.16	1.26

Note: The summary stats are reported without log values. No difference in values of indices and rem/GDP.

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[75]The measure of education is enrollment in high school regardless of age for the population of that age group. Dom-Cre applies to private sector domestic loans as a proportion of GDP. MEI refers to the Environmental Macroeconomic Policy Index, established by PCA macroeconomic policies, including inflation, fiscal deficit and openness to trade.

APPENDIX J

Pakistani Emigrants and Exports:								
	UAE		Korea		KSA		Oman	
Period	Exports	Emigrants	Exports	Emigrants	Exports	Emigrants	Exports	Emigrants
1980-85	1007.57	270999	118	389	1163.27	1087871	138.74	439579
1986-1990	1650.75	3691272	648.23	1129	1230.41	1381093	143.15	646501
1991-1995	1778.5	5914056	7082.9	2529	1264.43	1911445	158.22	856297
1996-2000	2340.68	7717093	1134.47	9804	1835.52	2147057	243.27	1028966
2001-2005	4890.93	9702990	1119.96	32181	1845.83	3782988	246.099	1105157
2006-2010	`8679.40	11988657	1184.56	66304	1879.81	6550725	721.95	1462754
2011-2015	8792.07	11821519	1804.199	73994	2310.87	11369592	877.34	2536087
2016-2018	2544.63	15063960	319.442	14882	295.406	3671358	352.908	2094484
	Qatar		Malaysia		Bahrain		Kuwait	
Period	Exports	Emigrants	Exports	Emigrants	Exports	Emigrants	Exports	Emigrants
1980-85	56.59	44731	58.63	1747	74.51	228852	33.37	28865
1986-1990	87.545	188270	98.325	1889	83.1	238761	148.85	174458
1991-1995	88.47	179909	150.064	3571	112.15	263706	179.75	297740
1996-2000	177.567	212481	193.45	3612	189.93	308025	182.7	472587
2001-2005	192.122	246689	342.74	10566	213.32	339996	342.67	592584
2006-2010	656.81	319199	245.58	20098	336.669	390436	478.66	845464
2011-2015	357.87	462134	1101.147	153859	391.34	575405	467.87	912077
2016-2018	103.16	143323	431.1148	237259	159.59	455144	96.67	184402

Source: IMF's Foreign Trade Figures, expressed in US dollars, data of BEOE used to calculate stock of Emigrants