Do Institutional Quality Matters for International Migration in Developing Countries. A Gravity Model Approach

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CERTIFICATE

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Acknowledgment

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Abstract

The integral aim of this research work is to investigate the role of institutional quality in bilateral migration for developing countries. For this purpose, we estimate the gravity equation for 60 home and host countries (OECD and NON-OECD) for the time period 2010-2017. All the estimation techniques developed over time, suffered from weakness due to the presence of missing values and unobservable heterogeneity. However, the study employed Pseudo-Poisson Maximum Likelihood (PPML) with FE to overcome the problem of missing data, endogenity and heteroscedasticity.

Moreover, this study has taken a novel perspective on the previous literature of examining the determinants of migration. The study utilized the estimated coefficients of gravity equation to investigate the relationship between home and host countries institutional variables and their impact on bilateral migration. The findings reveal that institutional quality is acts as push factor in migration from home to host countries. The study suggests that institutional quality is a good proxy for the factors that trigger migration. We argue that the migration decision depends on the expectations about future income levels, for which institutions serve as meaningful proxies. Additionally, the results confirms that GDP per capita is not played significant role and geographical distance has negative impact on bilateral migration.

Key words: bilateral migration; institutional quality; international migration; developing countries.

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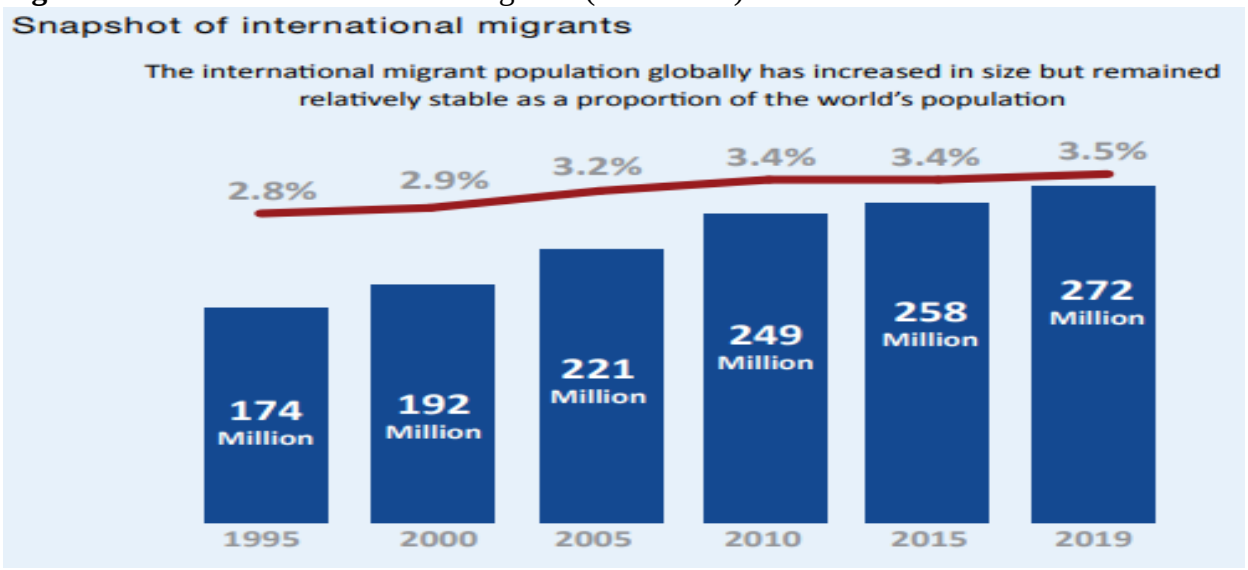
Chapter 1

Background

1.1 Background

International migration is a widely accepted process in the modern era, but a bilateral migration is a contentious matter among developing countries, to ensure the sustainable and inclusive economic development in both the origin and destination countries. Recently, the estimated figures from the United Nation Department of Economic and Social Affair (UNDESA) shows, that number of international migrants worldwide reached to 272 million, in which 44 per cent are hosted by developing countries. But this figure remains a very small percentage of the world's population (at 3.5%), meaning that the vast majority of people globally (96.5%) are estimated to be residing in the country in which they were born as given below in table 1 (UNDESA 2019).

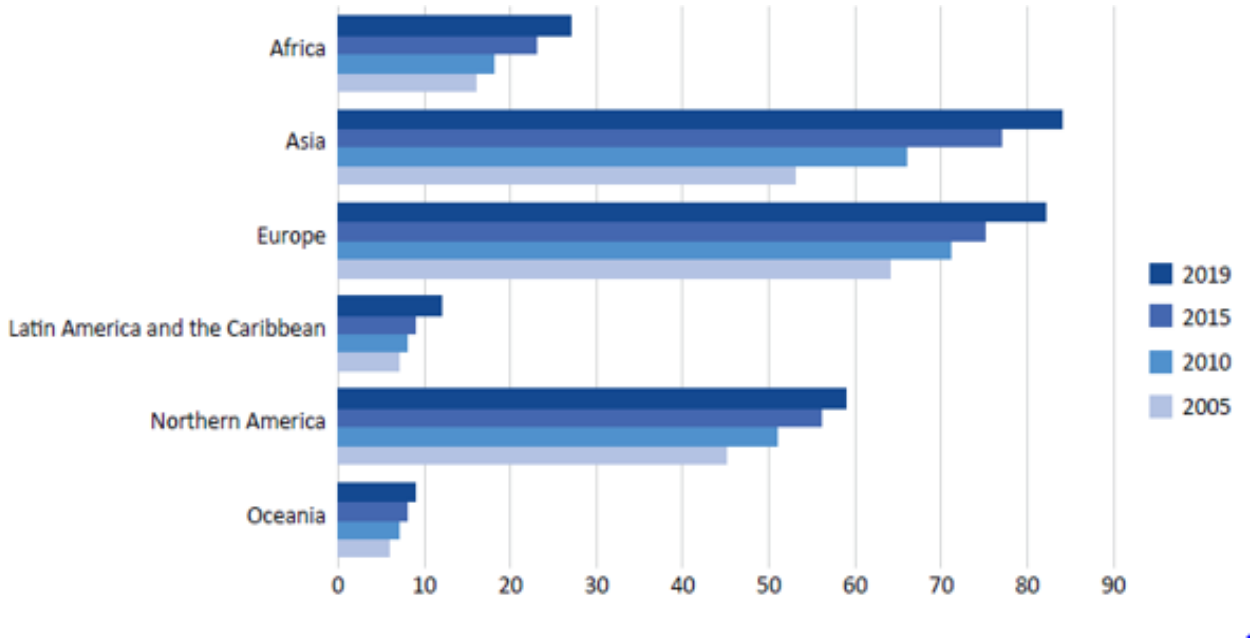
Figure 1: Total no. of international migrants (in millions)



Source: UNDESA 2019 report

The major corridors of international migration are being traced from larger economies such as those of the United States, France, the Russian Federation, the United Arab Emirates and Saudi Arabia. In 2019, Europe and Asia each hosted around 82 million and 84 million international migrants (see figure 2). The given statistics comprised 61 per cent of the total global international migrant stock when combined (UNDESA 2019).

Figure 2: Combined total no. of international migrant stock (in millions)



Source: UNDESA report 2019

Surprisingly, the recent trend of international migration is not only relied on increasing globalization, but geography is also one of the most significant factor shaping patterns of migration and displacement as many people migrate across borders within their immediate regions, to countries

that are close by, countries to which they easily travel or more familiar, and from which they are returned with less cost to their home countries.

Additionally, the considerable income disparity in the sub region is another factor underpinning the strong trend of people to migrate from lower-income countries to higher-income countries within (and beyond) the sub region.

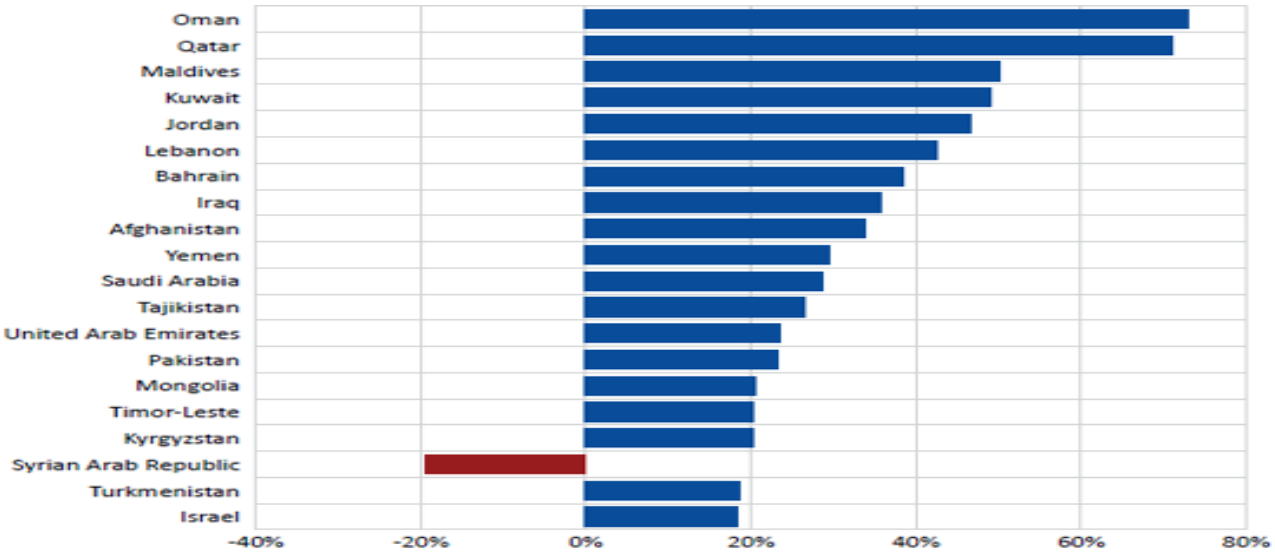
This prospects of higher wages and accessible employment opportunities have resulted in a significant increase in the number of people leaving the sub region in recent years. For developing countries migration, regions including Europe, Northern America, Oceania and Asia are among the most preferred destinations due to socioeconomic and insecurity factors in countries of origin, in simple words better wages and employment opportunities in destination countries, are among the factors associated with regular or irregular migration. Irregular migration flows such as those from Cambodia and the Lao People's Democratic Republic to destinations including Thailand and Malaysia are often facilitated by smugglers. Because Cambodia and Lao's are very closed in terms of physical distances (UNDESA 2019).

Consequently, the increasing trend of regular or irregular international migration in those regions over time had created an impact on population change. For example, Europe has traditionally been one of the major destination regions for international migrants, it has had the slowest rate of proportional population change, at slightly over 1 per cent. However, the rate

would arguably be much lower without international migrants who have mitigated decreasing populations in some European countries in the form of declining birth rates.

By comparison, Africa underwent to the most significant change, with its population growing by nearly 30 per cent over this period, due to high fertility rates as given above in table 2. Contrary, in Asia increasing trend of international migration or specifically gulf have undergone substantial changes in the size of their populations in recent years except Syrian Arab Republic (SAR). These changes are shown in figure 5, which lucidly shows largest proportional population change (increased population) of Gulf countries from 2009 to 2019 (UNDESA 2019). So, this change was facilitated by a number of factors such as common culture, language, demography among origin and host country, as a result those factors encouraged labor market to migrate from one country to another country (Beine et al. 2009). Consequently, those countries have experienced rapid changes in their migration patterns or they are shifting from net immigration to net emigration regions over from the past few decades.

Figure 3: A list of large proportional population change of developing countries.



Source: International Organization of Migration (IOM) 2019 report

At the given moment, international migration demands revisit of institutions contribution to migration decision. For this purpose, if we looked into developing countries, institutions role midst international migration, they are operated with fragile policy discourses, which can transform at several stages in the labor migration process as irregularities in recruitment, transport, entry to the destination, residence in the country, employment there and return to the home country.

One common example among them, is official labor migration programs, are being bypassed by labor migrants, because of increased transaction costs, which have to be borne by institutions complexity and the large profits are being enjoyed by recruiters and other middlemen. It has been estimated in developing countries, that the 'brokerage fees' being charged by intermediaries amounts between 46 and 87 percent of the total cost of moving (Atlantic council 2020). Interestingly, this puzzle of migration costs are also indicated by World Economic Forum (WEF) in 2019 report. The report revealed that institution complications in international migration process has hindering mobility from developing to developed countries from the last two decades (WEF 2019).These flawed practices are further identified by (Battistella & Asis 2003) in their work.

The revision point out that violations are more often committed against migrants in developing countries (by the migration industry, employers or even the state) rather than by migrants. The same view is elaborated in the sense of remedial measure by (Hatton & Williamson 2000) said, that stable institutions are reinforced or ensured international migration among two countries through capacity building approach for potential migrants.

Generally, the contribution of institution to international migration has risen steadily since from the empirical work of Borjas (1995) shows the economic benefits of migration. Furthermore, the pecuniary benefits from migration was clearly expressed by J. R. Hicks in their statement: differences in net economic advantages, chiefly differences in wages, are the main causes of migration Hicks (1932). This traditional view is further reflected in the empirical literature as the "human capital" framework, which predicts that a person rationality is controlled by operationalization of institutions, and migrants are uphold their decisions on the basis of discounted future when migration benefits exceed the costs of migration. In few words, institutional operability are basically offset the individual's migration path. More importantly, the study bonded quality of institutions with migrant's rationality. From a theoretical perspective it is also clear, that quality of a country's institutions will be an element of attraction due to pecuniary and non-pecuniary costs and benefits associated with them. Therefore, it also clarify that a favorable democratic environment can improve the quality of the migrant's life with a higher degree of equality (Sjaastad 1962).

We argue that “exit has [been] shown drive to development of countries” and “transparency is likely to play important role in institutions only on condition that exit is ruled out” in developing countries. In this framework, when migrants “exit,” they usually continue to contribute to the household, village, or country from where they are migrated Hirschman (1970). For example, if we traced back the historic move, the opening of the west in the late nineteenth century, the “Qing Empire” sent their citizens to the United State of America (USA) to learn about western ideas and innovation. So, in return they played a pivotal role in reshaping china’s economy, diplomacy, and government (Leibovitz & Mille 2011). And a century later, the reemergence of Chinese science has been attributed to the return of overseas scholars: 81% of the members of the Chinese Academy of Sciences (CAS) had returned human capital Zhou & Leydesdorff (2006). For instance, the return of potential migrants was also validated by (Kapur & McHale 2012), said on the basis of their findings that institutions promote migration as a result which change demographic, cultural, social, economic, and political features of the home and host countries. In particular, (Acemoglu 2006) define institutions are the combined form of social choice of international migrants through which those choice are determined and implemented in the form of social equality. Other studies have also acknowledged that favorable economic institutions and sound political institutions are essential for building and sustaining human resources for impressive economic growth and development (Borjas 2003).

For this purpose, a well-defined recognition is given that institutions facilitation (United Nations 2002) are essential for the successful management of migration flows. As for the development of institutions, this recognition also point out the acceleration of institutional cooperation in migration process as a positive element in development and integration to migration policy, which provides greater access to resources, including remittances, skill transfer through returns, and networks. This recognition had further acknowledged through a promising development (Asia Migration News 2003), in the form of a ministerial level meeting of ten labor exporting nations, organized jointly by the government of Sri Lanka and the International Organization of Migration (IOM).

Subsequently for achieving the same purpose, the United Nation Department of Economic and Social Affair (UNDESA 2019) continues to convene annual coordination meetings on international migration from many decades. The agenda of meetings are only, to unveil the secret role of migration governance during the determination of public social choice. Fortunately, the gatherings had accomplished a big development, and enabled the researchers, academicians and think tanks for further investigation through provision of timely and updated database on international migration stock.

In the meantime, hence it is the need of the moment to investigate Migration Governance Indicators (MGI) for both origin and destination countries to yield a useful policy lesson for international migration or to assess the comprehensiveness of existing migration policies, to identify potential gaps in institutional outcomes or to impart a good practices for well-managed migration policies.

1.3 Research gap

A rapidly growing body of research examines the relationship between migration and institutions. But few studies are became successful up to some reasonable extent. Such as some studies focused on the role of foreign institutions in the decision of migration (Thierry & Ismael 2017). Others were interested in distinguishing the impact of migration on institutional reforms in migrant's countries of origin (Una & Anna 2008).

Hence, the contribution of this study is two-fold, this research departs from the study of Ana Mayda (2010) conducted their study on institution quality in context of bilateral migration but they solely rely on supply side of migration means migration to origin countries while neglected demand side (migration to destination countries) which might be not enough until we take migration determinants of origin countries as we discussed in the literature.

Now we are interested in both supply and demand side of international migration. Therefore, this type of population is hugely mobile and the data is not frequently updated. This poses significant trade-offs between having the most limited updated data and the cost of getting it. So, we employed migration panel data for 60 OECD and non-OECD countries for the period of 2010- 2017 due to availability of limited or missing data for estimation (Cameron Michael 2017).

Furthermore, we employed gravity model in context of migration. The employment of gravity model in bilateral migration subject is important for developing countries rather for a country like Pakistan as well in the following manners. First, bilateral migration are also take into account institutional indicators as explaining the income level (measured in term of GDP PPP)

in the recipient and sending countries. Beside the income level, one of the principal factors that encourage migration across national boundaries is the difference in expected real earnings adjusted (inflation) of migration cost (Borjas 1991). Because, Pakistan is a capital deficient of 180 million with highly sluggish economic growth performance, which squeezed income and results to undermine migration decision as highlighted by Pakistan Economic Survey report 2019. Secondly, another distinguish feature is, that gravity model assess the effects of dyadic variables on migration flow. Such as geographical/cultural proximity and ethnic networks or other traditional factors among host and home countries. So, the important geo-strategic location of Pakistan in neighbor countries (lieven Anatol 2008) it can be helpful to identify the institutions role amid process of migration. As the study of (shujaat & abbas 2016) has showed negative impact of distance on migration in developing countries.

Additionally, one more interesting thing prove the superiority of traditional gravity model over other in the following manners. As Gravity Model (GM) within the context of international migration has shed light on how different exogenous (external) factors affect migration flows. Some of these factors are related to characteristics of the origin or destination country (Mayda 2010). In particular, the objective of one study was to investigate the impact of natural disasters and climatic variations on bilateral migration flows (Andreas & Backhaus 2015).

Lastly, this study carefully reviews and proposes solutions to various econometric issues that arise in the estimation, such as endogenity and reverse causality. Once, I deal with them (for example, by controlling for destination and origin countries' fixed effects and for year effects) it will be make more robust our results

and become more consistent with international migration model. For this, the study will utilize panel data techniques, static and dynamic panel, as well as to capture the countries with zero migration (Santos Silva & Tenreyro 2006).

1.3 Objectives of study

The overall objectives of this study to oversee the migration trend in developing countries. But some of the particular objective is following:

- To investigate the role of economic and non-economic factors which motivate decision to migrate from origin to destination country.

1.4 Research Question

- Do economic, geographical, demographic and cultural variables in both sending and recipient matter for international migration decision?

1.5 Significance of the study

We can say that institutions are crucial determinant of migration that should be taken into account. However, the mechanisms are very heterogeneous and the effects are diverse. We identified three main channels from major literature. First, institutions are likely to have a direct effect on utility, both in origin and destination countries. Good institutions in origin tend to reduce migration while institutions in destination increase it. Second, institutions may have an indirect effect on income or the expected income. Third, weak institutions may increase migration costs. In that case, an improvement of the institutional framework may increase migration. So, the effect of institutions on migration largely differs and it is necessary to study more in depth the specific impact of each institution bytaking their corresponding proxies.

Overall, it appears that taking into account both origin and destination institutional quality indicators are important to carry out the factors which involve in migration decision.

1.6 Thesis Organization

- Chapter 1: Introduction- gives a brief background, rationale, purpose, aim and objectives of the study.
- Chapter 2: Literature review- First of all, we discuss institutions paradigms and then further comprehensively reviews the existing literature and explains the concept of institutions in cultural domain, and identifies migration causes.
- Chapter 3: Theoretical/Empirical framework- It explains the construction of model as well explains the Philosophy of research design, likely shows the various sources of data collection and estimation technique.
- Chapter 4: Results and discussion- It explained and interpret the estimation of coefficients step by step and also discussed a way forward certain policies in the policy implications section.

Chapter 2
Thematic literature

2.1 Literature review

I. Introduction

Starting from the very beginning, this chapter highlighted the basics of institution concept and also discussed different meanings of the institution concept in various domains. Further, after a diverse discussion on institutions prompt us, to review the relevant literature or present a critical discussion on the role of institutional proxies in context of bilateral migration.

II. Institutions paradigms

The migration decision is inherently run by institutions, which have decisive impact on economic growth, on the environment, on service level of quality, and on overall efficiency of the home and host countries. If we recall the rationalist conception, they emphasized that institutional norms or rules and the sanctions attached to them establish incentives and constraints in process of migration. Undoubtedly, the rationalist version of conception is in question, Ostrom (1986) said that institutions are made up of norms or rules, but individual migration cannot perceive institutional norms or rules in the way.

The concept of institution is further extended by two conceptions which are mainly evolved in the new institutional economics: one of them is that institutions are the sets or systems of rules that determine and constrain social behavior and interaction; the other "institutions-as-rules" conception, the most commonly cited definition of North (1990):

"Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction".

In this sense, institutions are made rules (such as moral norms or customs). However, "Herbert spencer" suggests the use of this conception would also utilize in the sense of sociological approach. He further said, institutions are defined as the rules, combined with their enforcement mechanisms that constrain the social choices of actors. In my view, the institution is basically a process through which not only power, but ability, control and other related things are bestowed as a means to an end or purpose (Carrington et.al. 2002).

III. International migration in context of Institutional proxies

This multi-disciplinary nature of term "institution" is the primary reason due to which a single definition cannot shed light on the role of institutions during international migration. The major contribution of our study to existed literature is, to review the term "Culture" from various dimensions in the sense of migration or to find out that do institutional quality (proxies) matters for international migration decision in sending and recipient countries. So, the importance of cultural links is the major crux of recent study. The main idea is that the presence of a national community in the country of destination could increase attractiveness of migration from origin countries (Carrington et al. 1996).

For instance, they could provide information about the local customs and values etc. Considering flows to specific migration destinations, scholars have shown that the culture of the origin country leaves a genuine "footprint" on immigrants (Bodgan, 2014).

A number of empirical studies find-supporting evidence for the existence of network effects (Mayda 2010, Hatton & Williamson 2006). The supported studies revealed that a network is extended to the physical distance between the place of origin and the place of destination could encourage migration for two reasons: it is a psychic cost (direct migration cost) and it increases the quality of information about the destination. This physical distance between countries can create a sense of international migration assistance, when further away the country, the less likely people will be informed about job opportunity, like income differentials, etc. We could use the argument for migration costs: the further away the country of destination, the worse the information people have about costs they will need to incur when migrating (Sjaastad 1962). Culture proximity and distance between two countries seems a priori appealing to explain mobility patterns as differences in culture, language, values and norms translate into migration costs, which increase the attractiveness of migration. The role of cultural proximity has received some attention in the migration literature, particularly, because of the empirical observation of geographical clustering of immigrants. It is well- known that immigrants tend to locate in areas populated by people with similar ethnic backgrounds. This view is repeated in (Eden, et al 2003) that geographical clustering can to some extent helps immigrants settling in the country and enhances their economic success. We can extrapolate the argument at a higher level.

If there are benefits to living in a cultural environment that is close to one's own cultural background, one would expect to observe larger migration flows between countries, because the social institution, like family, played a role in culture assimilation.

For this purpose, Thierry and Alberto have proposed a model, where the transmission and inheritance of cultural traits are linked to a person's preferences and resources. Alesina & Giuliano (2010) shows that institution culture shaping economic behavior and attitudes. In certain time, low migratory responses to unemployment and wage differentials can explain why European migration was low, but they failed in discussing the role of institutions, while between other countries there was substantial flows in both directions (Michèle & Ederveen 2011).

Basically, the differences in labor productivity depend on differences in institutional quality of sending and recipient countries, Ariu et al. (2014) take a broader perspective by using the Worldwide Governance Indicators (WGI) dataset, or concluded that potential migrants are suffer more from bad governance, as a result they are seeking more incentives in international migration. Bad governance is also derived from lack of management and self-interest of institutions without prioritizing migrants' interest (Rowland 1999). For instance, Gupta et al (2002) find that high levels of corruption promote income inequality or spread poverty, people tend more toward migration. But we suggest that it also constrains social mobility of individuals, the prevalence of corruption culture is likely to worsen living conditions for the

majority of citizens in the home country while they are migrating to host countries. Another study (Barbieri and Carr 2005) showed that resulting imbalances, in terms of access to power and resources, could discourage individuals, especially of disadvantaged populations, to seek opportunities in the destination country. In addition, not all forms of corruption necessarily involve large conspiracies as well, but acts of petty corruption or routine corruption, increase the costs of migration and consequently make (regular) migration more expensive. The said concept refers to a situation in which, the low institutional responds to individual wants of migration Carling (2002).

Furthermore, Poprawe (2015) analyzed the effect of corruption in origin countries in context of bilateral migration flows. The study used a large data set containing 230 countries and, they found that corruption is a significant push factor consistent with the exit option. The main explanation provided by the author is that "countries with high levels of corruption provide a less secure environment of working conditions and encourage individuals to move to countries where less corruption exist". On the other hand, Beine & Sekkat (2013) evaluated the institutional quality effect on the emigration rate in home countries, measured by six indicators that are included in the World Governance Indicators (WGI) reported by the World Bank. The findings of governance indicators confirmed direct positive impacts on international migration rate except the regulatory structure of institutions.

Moreover, the importance of regulatory quality is highlighted by classical model of Harris and Todaro (1970). The model considered that individual's migration decisions are constrained by current and future wage differentials across OECD countries. This basic model seems to fit with the picture of the developed world, as we observed persistent and large economic differentials between countries, and massive migration between them. The existence of economic differentials suggests that there are economic incentives to migrate between countries, but people do not seem to exploit them.

Similarly, institutions directly restricted migration through administrative role or indirectly by bringing improvement in their institutional culture. For instance, a cross-sectional analysis examined in 1990, which showed that the emigration rate from 58 low and middle-income countries to a range of wealthier countries. The study employed the civil rights index, that originated by Freedom House (FH), to represent a wider concept of governance. The estimators suggested that governance indicators have a significant influence on international migration of the sending countries (Rowland 1999). But, one thing is considerable that differentials in expected income is not only relevant incentive in international migration. Hence, the quality of a country's political institutions can be an element of attraction, because of the pecuniary and non-pecuniary costs and benefits associated with democracy. A more democratic environment can improve the quality of the migrants' life per se, because it may be associated with a higher degree of equality, and because it may imply, through the franchise, control over the welfare state and the associated system of taxes and transfers.

The aforementioned studies have some limitations and plausible arguments about the relationship between international migration and the home and host countries institution Governance. Those revisions are limited to selective variables or also, there is lack of a clear view that why the migration development activities are oriented toward the destination country.

Chapter 3

Model specification, data and methodology

3.1 Theoretical framework

In order to capture the thorough impact of institutional indicators on international migration. Gravity models are frequently applied in the studies of migration (for internal and external migration) or even in international trade. Because this model has powered features to distinguish the drivers of migration and how, in turn, migration is affected by other pair country. As the name suggests, gravity models are loosely derived from Newton's law of gravitational force and posit that the interaction between two geographic entities, through migration or trade, are subject to forces that are inversely proportional to the distance (countries).

Now, we estimated a gravity equation accordingly, where the bilateral migration flows are explained by the GDP's of both the home (i) and the host country (j), and by a set of institutional quality proxies including, in particular, the cultural and proximity (common_lang ij) and the geographical distance between a pair of countries (dist ij). The empirical justifications of the gravity equation for bilateral migration had also provided the micro foundations in the context of migration analysis (Grogger & Hanson 2011).

As (Santos-Silva & Tenreyro 2006; Martinez-Zarzoso 2013) highlighted, the most common practice in empirical applications, has been to transform the multiplicative gravity model by taking natural logarithms or estimated the obtained log linear model. Taking in account, the model is further modified for the role of institutions in international migration. More specifically, other studies had employed the same procedures for gravity models in context of international migration to investigate the relationships of climatic factors and corruption with other variables (Michel & Parsons 2012, Poprawe 2015).

3.2 Empirical framework

There is an extensive literature on the empirical determinants of international migration (Borjas 1999; Hatton & Williamson 2005).They classified the determinants of international migration into a few broad categories: economic incentives, demographic explanations and network effects. Now, we started by stipulating the standard form of gravity model. In same way bilateral migration between sending (i) and recipient (j) countries is directly proportional to the product of their economic size (GDP) and inversely related to the geographical distance between them (Dinçer & Muratoğlu 2014).

$$\text{Mig.stock ijt} = f\,[(GDPit).\,(\,GDPjt\,)\,/\,(Distij)] \quad \ldots\ldots\ldots \textbf{(1)}$$

If we transform the gravity model into log linear form by taking natural logarithms, we obtain Eq. (2).

$$ln\,(Mig.stockijt) = ln\,(GDPit) + ln\,(GDPjt) - ln\,(Distance\,ij) \quad \ldots\ldots\ldots\ldots \textbf{(2)}$$

Equation (2) is baseline model estimated for using the regression given in Eq. (3)

$$ln(Mig.stock_{ijt}) = \beta_0 + \beta_1 ln(GDP_{it}) + \beta_2 ln(GDP_{jt}) + \beta_3 ln(Distance_{ij}) + \sum Z_{ijt} + \mu_i + \varepsilon_{ijt} \ldots\ldots (3)$$

3.3 Econometric Model

Moreover, beside the most common practice in empirical analyses is, augmenting/enlarging the basic gravity model to control for demographic, geographic, social, historical, cultural, economic and political factors (Mayda 2010).

Our benchmark specification is a gravity model augmented with institutional quality proxies because Institutional quality is arguably a better proxy for the determinants thattrigger international migration (Robinson et al 2005). Furthermore, we have added the non-institutional control variables in the gravity model which are derived from neoclassical theory, namely economic, demographic, and geographic.

Model 1

By taking all this into account, our final model specification is given below in following form:

$$ln(Mig.stockijt)=\beta 0+\beta 1ln(GDPit)+\beta 2ln(GDPjt)+\beta 3ln(Distanceij)+\beta 4+ln(Institutions\ quality\ it)+ln(Institutions\ quality\ jt)+\Sigma\ Zijt+\mu i+\varepsilon ijt \quad \textbf{..... (4)}$$

The final model, equation (4) of our study shows extended general form or benchmark gravity model for international migration.

3.4 Explanation of variables

The description of variables, data sources or the list of home and host countries employed for the estimation of the study are given in the appendix section, but brief explanation of some variables are given below:

- **Bilateral migration stock**

The study utilized bilateral migration as dependent variable. The data of bilateral migration used in this study comes from two distinct sources. First, the bilateral migration stocks for host countries by major countries of origin retrieved from the United Nations Population Division (UNDESA). The calculations are based on the 2015 and 2017 bilateral migration matrix. Secondly, a collection of similar immigration data from the OECD Database on migration to obtain data on immigrant stocks from various developing countries living in OECD countries. Further, these two datasets are merged to generate a variable of migrant stocks for both OECD and non-OECD.

- **GDP per capita PPP (Current International US $)**

This variable is expressed by World Bank (WB), stated that per capita values for gross domestic product (GDP) expressed in current international dollars converted by purchasing power parity (PPP) conversion factor. On the base of previous study [Andreas. Irina & Nilsson (2015)], they incorporate GDP per capita PPP variable in their model to capture the pattern of migration between home and host country. The study revealed that if host countries GDP.PC found out significant,

individuals of home countries foresee the success in migration to host countries. So, I expect the coefficient of GDP.PC in host countries will be significant after estimation.

- **Distance**

Distance is largely cited in the gravity literature since it provides on line the exhaustive set of gravity variables such as cultural proximity, which is greatly affected the colonial links (Mayer & Zignago 2005).

The gravity model presumed a direct relationship between migration and the size of the destination and origin regions, as well as an inverse relationship between migration and distance Borjas (2000).

The distance parameter is explained by CEPII database in the following sense. CEPII stated, that distance between two countries is often measured by great circle formula (Head 2000), which also consider the latitude and longitude of the capital or economic hub. Greater distance not only indicate larger migration cost but also indicate larger culture differences. So, we incorporated distance variable to capture the effect of migration cost, as the distance between two countries increases, migration between them decreases by increasing of costs (Mayda 2009). Therefore, the coefficient should have a negative value.

- **Population growth (Annual %)**

Population growth rate is briefly defined by World Development Indicators (WDI) as, annual population growth rate for year (t) is the exponential rate of growth of mid-year population from year (t-1 to t), expressed as a percentage.

This study use population as an explanatory variable in order to discuss about the population role in international migration. As previous studies predicts the higher the population the higher is the potential stock of migrants Rotte & Vogler (1998). Similarly, larger the population in the destination country, larger the labor market for immigrants Lewer & Berg (2008). Hence, the coefficient is expected to have a negative sign.

- **Age dependency ratio (% of working-age population)**

We incorporated age dependency ratio variable, which is defined by World Development Indicators (WDI) in this manner, that it is the ratio of dependents--people younger than 15 or older than 64--to the working-age population--those ages 15-64. Data are shown as the proportion of dependents per 100 working-age population. As previous study of Hatton and Williamson (2005) found that countries with large population, especially the working age population see their amenities in stable institutions of country. So, I expect the positive sign.

- **Inflation, consumer prices (annual %)**

We incorporated inflation rate as explanatory variable. Inflation rate is expressed by World Bank (WB) in the following words, that it is measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. But the previous studies had noted a meagre impact of inflation for short term international migration (Beaton, et al 2008).

- ## Unemployment rate (Labor Force)

We added another neo classical variable. It is defined by OECD as, the unemployed are people of working age who are without work, are available for work, and have taken specific steps to find work. The uniform application of this definition results in estimates of unemployment rates that are more internationally comparable than estimates based on national definitions of unemployment. This indicator is measured in numbers of unemployed people as a percentage of the labor force and it is seasonally adjusted. The labor force is defined as the total number of unemployed people plus those in employment. Data are based on labor force surveys (LFS).

- ## Institutional quality index

To analyze the impact of institutional quality, we rely on the Worldwide Governance Indicators [Kaufmann et al (2010)], describing following dimensions of institutions: control of corruption, regulatory quality, rule of law. The Worldwide Governance Indicators (WGI) fit well for our purposes both empirically and methodologically. First, they provide a great coverage of countries, estimating quality of governance in more than 190 countries every year since 1996. Second, they feature the scores for various dimensions of governance, while most of the other institutional quality assessments focus only on one or two dimensions, usually—on control of corruption or political stability. Third, they combine information from several independent sources, placing that information onto a unified scale. While country comparisons

are often impossible, if information concerning to the quality of their institutions comes from different sources and have different scales, the WGI extracts information from all those sources, but transforming their scales.

While we expect people to stay in or to be driven into countries with better institutional quality, we do not expect all types of institutions to have an effect of the same sign and magnitude. As previous study [Bergh et al (2014)] show, various dimensions of institutional quality are connected to the movement of people, economic flows, and ideas in different ways, and therefore may have different degrees of importance for one's decision to migrate.

3.5 Sample selection

The study utilized a panel of 60 countries. Panel data is generally preferred over the traditional time series and cross-sectional data (Hsiao 2003). Panel data consist of a large number of data points so it provides a sufficient number of degrees of freedom and reduce the possibility of multicollinearity among explanatory variables, thus it offers efficient parameter estimate (Hsiao 2003). Further the effect of unobservable and immeasurable factor could be controlled, each individual heterogeneity could be captured and the problem of omitted variable could be tackled. The study sample period is taken from 2010-2017, which include the major OECD and NON-OECD migration countries.

Chapter 4

Results & Discussion

4.1 Introduction

One cannot examine the importance of research study until they construct variables for their study or to investigate the relationship among variables empirically. So, empirical testing is an important need to check the validity of theory.

4.2 Estimation strategy

A number of estimation techniques are employed in the study. First of all, the model is estimated by using Fixed Effect Model (FEM) through hausman-taylor test, the result shows that the countries FEM are correlated with regressors (p-value=0.001). On the other hand a Random Effect Model (REM) would indicated biased results (Mayda 2009). The FEM is a consistent method to deal with unobservable country pair effects. But one drawback of FE estimator is that within transformation wipes out all time invariant independent variables, such as distance, colonial ties and common language. In this case, those variables not yield meaningful statistical inference. In order to overcome the problem we used the Correlated Random Effect Model (CREM) suggested by (Mundlak, 1978). Therefore, the CREM method is applied by augmented the REM with the mean of key gravity model variables that change over time. It can be shown that the coefficients of time invariant independent variables could be same to the FEM estimates (Wooldridge 2010).

Additionally, we employed panel data, a number of issues such as computational problems, biases, treatment of missing and zero observations arise. These issues consider a proper estimation strategy (Eichengreen & Irwin, 1998). So, our study incorporated a separate regression model for key gravity or institutional variable's to overcome biased results.

Another related problem with the analogy between Newtonian gravity and migration is that gravitational force can be very small, but never zero, whereas migration between several pairs of countries is literally zero. In many cases, these zeros occur simply because some pairs of countries peoples did not migrate in a given period. The existence of observations for which the dependent variable is zero creates an additional problem for the use of the log linear form of the gravity equation.

So, we estimated the augmented gravity equation in levels, by using the proposed Poisson-Pseudo Maximum Likelihood (PPML) estimator. Because it deals with the zero migration flows problem, provides unbiased estimates in the presence of heteroscedasticity, all observations are weighted equally and mean is always positive (Santos Silva & Tenreyro, 2006).

4.3 Empirical testing organization

First of all, we investigated the main determinants for the bilateral migration. The analysis begins through employed a novel technique Constant Random Effect Model (CREM) for the baseline regression model along with the key variables of gravity equation, namely, home and host countries GDP.PC's, distance's, common language's, colony's and contiguity's

as given below in section 4.4, furthermore the gravity equation would augmented with some macro-economic variables or estimated it by PPML regression with country and year fixed as given in section 4.5, and finally following the same procedure for the same equation, it is extended with institutional indicators given in section 4.6. Hence, the results and discussions are given below in the following sections:

Section 4.4
Comparison of fixed effect and correlated random effects (CRE)

From the very initial estimation, we adopted country pair fixed effects to control the unobservable heterogeneous effects for host countries in the 1st and 2nd columns of Table 1. So, the estimation done with fixed effect, but it had not given us meaningful outcome due to time invariant nature of gravity model key variables. Furthermore, we repeat by adding the same key variables of home and host countries in column 3rd and 4th, to investigate the effect of distance on international migration. But this time we bypassed over from traditional regression or the baseline regression model is estimated with correlated random effects (CRE). Turning from FE to CRE, the results strongly corresponds to the migration decision and yields the expected signs and significance. Our study found that distance variable is negatively affects international migration stocks, meaning that migrants opt for destination countries that are closer to their origin countries. The most highlighted benefit by the employment of CRE method is, that we are being able to yield the statistics for the time varying variables as given below in columns 3 & 4 (Table 1).

Therefore, the results clearly predicts that farther a country is, then less it would became attractive for prospective international migrants. These results are similar to (Mayda 2010; Ortega and Peri 2013).

The negative insignificant findings of home and host countries suggest that the distance, common language, colonial ties and contiguity are play a role in migration. (Mayda, 2010) had also find that greater geographic distance between the two countries implies higher travel costs. In addition, the further away the origin and destination economies are from one another, the more costly it is to acquire information about the foreign labor market.

Similarly, the research carried out by Rotte & Vogler (1998) find the Determinant of International Migration from closed Countries to Germany. So, they observed that among the other explanatory variables distance, common language and a contiguity increased the likelihood of migration, as does a shorter distance between the origin and destination country.

Table 1: CRE and FE estimates

Dependent:	(1)	(2)	(3)	(4)
lnmig_stk	FE	FE	CRE	CRE
lngdppcp_hos	0.050**	0.073**	0.050**	0.073**
	(0.005)	(0.50)	(0.005)	(0.50)
lngdppcp_hom	0.027	0.30	0.027	0.30
	(0.003)	(0.004)	(0.003)	(0.004)
lndist			-0.22	
			(0.18)	
popg_hos		0.013**		0.27**
		(0.005)		(0.005)
popg_hom		0.008		0.006
		(0.004)		(0.003)
comlang_off			-0.010	-0.08
			(0.22)	(0.18)
contig			-0.17	-0.16
			(0.54)	(0.38)
colony			-0.12	-0.14
			(0.26)	(0.16)
Obs.	4635	4544	4230	4234
R-squared	0.392	0.398	0.478	0.612
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

Note: Dependent variable: natural log of bilateral stocks of migrants. Model 1 and 2 shows two-way fixed effects estimates without and with population growth rate. Model 3 and 4 shows estimates of correlated random effects (CRE) by taking distance and GDP per capita as variables of interest. Standard errors are in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Section 4.5
Augmented Gravity model with macro-economic variables

In the previous section we estimated suitable specification of the model. From nowhere, we are going to estimate the augmented gravity equation with PPML technique by three step estimation method with controlling country and time FE's for pair countries. Beside the main variables of gravity equation, we included several other macro-economic variables to capture their effect on bilateral migration. The results of the models is given below in table 2:

Table 2: PPML Regression results with FE (macro-economic variables)

Dependent variable: lnmig_stk	(1)	(2)	(3)
log (GDP.PC) home	0.051	0.055	0.058
	(0.059)	(0.062)	(0.065)
log (GDP.PC) host	0.001	0.002	0.000
	(0.004)	(0.003)	(0.001)
Popn growth host	0.19*	0. 17*	0.19*
	(0.10)	(0.08)	(0.10)
Popn growth home	0. 19***	0. 34***	0. 36***
	(0. 028)	(0. 026)	(0.029)
Dpndncy ratio host	0.050**	0.032**	0.28**
	(0.42)	(0.027)	(0.25)
Dpndncy ratio home	0.07	0.10	0.27
	(0.05)	(0.08)	(0.18)
log(dist)	-0.183***	-0.118***	-0.108***
	(0.007)	(0.007)	(0.007)
Comlang_off	0.135***	0.124***	0.117***
	(0.010)	(0.012)	(0.012)
Contiguity	0.160***	0.214***	0.216***
	(0.036)	(0.036)	(0.037)
Colony	0.143***	0.136***	0.146***
	(0.014)	(0.016)	(0.016)
Unemp.rate_host		0.001	0.004
		(0.002)	(0.005)
Unemp.rate_home		0.017	0.018
		(0.012)	(0.015)
Inflation_host			0.001
			(0.003)
Inflation_home			0.002
			(0.005)
Constant	4.028***	3.442***	3.284***
	(0.732)	(1.110)	(1.106)
Country/Time FE	YES	YES	YES
Pseudo R	0.207	0.140	0.138

Note: Dependent variable: Natural log of bilateral stocks of migrants. The three step PPML estimation with fixed effect are obtained by using stata command ppmlreg3. Standard errors are in parenthesis *** p<0.01, ** p<0.05, * p<0.1

The above results are interesting in number of ways. The GDP.PC coefficients of the home countries found out to be highly insignificant stand at 0.065, but the GDP.PC host countries coefficients significant stand on 0.02. The estimation is validated by the study of Mayda (2009). He said in their study "on governance role in bilateral migration", that if the host countries per capita income variable is highly significant relatively to home countries, so, it means that home

countries individual migrants saw their opportunities in host countries. So, one would observed a large flow of migration from home to host countries. Borjas (2000) describes as workers move to the region that provides the best opportunities, they eliminate regional wage differentials.

The population coefficients of the host countries found out to be significant under 10% significance level. Unit increment of the population in the home countries increases the migration outflow by a rate of 0.19% to host countries. For example, the situation report on international migration in East and South-East Asia (2008) says that although the growth rate of the population of Malaysia remains relatively high, the country robust economy and urbanization have generated a demand for foreign workers that is met by large numbers of both regular and irregular migrants. This finding is further discuss about the population, that high population in one country means the high is the potential stock of migrants (Rotte & Vogler 1998). Similarly, larger the population in the home country, larger the labor market for immigrants (Lewer & Berg 2008).

Therefore, it is acceptable that migration increases as a result. Another, dependency ratio variable is, defined by the United Nations (2017) that this ratio relates to the number of children (0-14 years old) and older persons (65 years or over) to the working-age population (15-64 years old). Dependency ratios indicate the potential effects of changes in population age structures for social and economic development, pointing out broad trends in social support needs. From the statistical analysis we could find a positive relationship of home and host countries international migration. Dependency ratio of home countries is highly significant relatively to the host countries. Which means, host countries encourage more immigration opportunities than that of home countries. Consequently, which increased the population growth rate in host countries (Lainton 2011).

Turning to the remaining results of the estimated coefficients, the unemployment rate of home countries are insignificant and show a positive relationship with the migration. When population growth rate in host countries increases as a result it highly encouraged unemployment rate in host countries relatively to home countries. Because the number of employment opportunities in the host country are insufficient and people decide to, migrate to home countries for seeking job opportunities (Jennissen 2003).

We find that inflation has no influence on migration to developing countries. We consider that this variable not affected the migrants' decisions toward moving abroad in the short-term. Contrarily, we assume that longer periods of economic instability, with oscillating inflation rates year by year, could encourage migrants to seek residence elsewhere. We would then expect a larger impact of inflation on the dependent variable. When we analyze our estimations for the inflation variable, we note that the results in Column 3 are remarkably similar to previous findings (Beaton et al. 2017), when he investigated the role of inflation in migration to developing countries, So, he also yield a very small significant coefficients for this control.

Section 4.6
Augmented Gravity model with institutional variables

Table 3: PPML Regression results with FE (institutional quality indexes)

Dependent variable: lnmig_stk	**(1)**	**(2)**	**(3)**
Reg.quality_host	0.002**	0.003**	0.004**
	(0.003)	(0.004)	(0.005)
Reg.quality_home	0.0098	0.098	0.098
	(0.090)	(0.090)	(0.090)
Law and order_host		0.183	
		(0.261)	
Law and order_home		0.004**	
		(0.005)	
Corruption_host			0.182
			(0.233)
Corruption_home			0.002**
			(0.003)
Constant	4.116***	4.174***	4.223***
	(0.743)	(0.763)	(0.744)
Obs.	4633	4633	4633
Pseudo R^2	0.205	0.205	0.205
Country/Time FE	YES	YES	YES

Note: The models estimate a PPML with fixed effects (stata command ppmlhdfe) due to presence of large number of zero values. Model 1, 2, 3 regresses ln (mig_stock) on institutional variables. Standard errors are in parenthesis *** *p<0.01*, ** *p<0.05*, * *p<0.1*

In the last estimation, we consider the PPML regression with fixed effects which is more robust model and our preferred specification. But this time we employed some major institution indexes as explanatory variables to investigate their relation with bilateral migration stock, in short to predict the institutions quality influence on international migration. So, we estimated the PPML regression model 1 with fixed effects, shown in column 1(Table 3). When we regress the regulatory quality of both countries on migration stock, so the regulation of home countries had found out insignificant, further the host countries remains significant. Which imply that if the population

in home countries increased through migration, as a result it decline the regulatory quality, and peoples more migrate to host countries (Hatton & Williamson 2008). By following the same estimation steps for model 2 regression, the coefficients of law and order in home countries found out significant, which means when more international migration started among closed countries, so more peoples are tend to migrate to host countries, in turn they provide back up support to the entire network in the countries. Consequently, they turned the law and order situation favorable and provide more incentives to emigrate to host developing countries due to which the coefficient of host countries stand insignificant (Mayda 2009) in the above table 3 (column 2). Furthermore, by regressing model 3, as a result the coefficient of corruption in home countries are found out under 10% significance level. Which means that if corruption in home countries increases, so it will undermine the regulations or decisive role of home countries institutions, as a result the socioeconomic indicators response would inefficient and massive flow of migration is expected to host countries.

Due to high rate of migration to host developing countries, it would gradually lead to demographic change such as population and cultural links. Resultantly, the coefficient of corruption found out insignificant in host countries (Mayda 2009). This supports the hypothesis: when home countries with a higher corruption index (i.e., lower actual corruption) have a higher net inflows of migrants on average. That is, more people enter and/or fewer people leave a country with low corruption.

Overall, these results are also in line with (Dimant et al. 2013; Cooray & Schneider, 2014), although the magnitude of the coefficient of corruption is larger here. GDP per capita in the host

country is a pull factor, while corruption in the origin country is a push factor. High GDP in the destination country attracts larger inflows of people, while high corruption in the host country causes outflows.

These results confirm that income levels are poor proxies for push and pull factors to explain migration. Despite, institutional quality in a country of origin seems to played role and act as a strong push-factor, i.e., discontent with the current quality of institutions makes people willing to leave a country, and for most indicators the push-effect is stronger than the pull effect (lee 1996).

CHAPTER 5

Conclusion

The integral aim of this research work is to investigate the role of governance drivers in bilateral migration along with considering a benchmark of some macro-economic variables. For this purpose, we estimate the gravity equation for 60 home and host countries (OECD and NON-OECD) for the time period 2010-2017. All the estimation techniques developed over time, suffered from weakness due to the presence of missing values and unobservable heterogeneity. However, the study employed Pseudo-Poisson Maximum Likelihood (PPML) with FE to overcome the problem of missing data, endogenity and heteroscedasticity.

Moreover, this study has taken a novel perspective on the previous literature of examining the determinants of migration. The study utilized the estimated coefficients of gravity equation to investigate the relationship between home and host countries institutional variables and their impact on bilateral migration. The results confirms that GDP per capita is not played significant role and geographical distance has negative impact on bilateral migration (Mayda, 2010).

Additionally, the findings reveal that institutional quality is acts as push factor in migration from home to host countries (lee theory, 1966). The study suggests that institutional quality is a good proxy for the factors that trigger migration. We argue that the migration decision depends on the expectations about future income levels, for which institutions serve as meaningful proxies.

5.1 Policy implications and guidelines

"Institutional Governance" is policies, tools, processes that are primarily concerned with developing, implementing, administering, enforcing new rules/decisions, and reviewing/revising regulation over time (Lainton 2018). Ben S Bernanke, former chairman of the US Federal Reserve, shed light on the importance of regulatory quality in 2010 when he held regulatory failure responsible for the housing bubble which exacerbated into a full-blown crisis. An important aspect of regulatory quality is the inherent institutional capacity in the country. According to World Bank (WB) governance report the regulatory quality index benchmark for Pakistan is (-2.5 weak; 2.5 strong). But the recent value from 2018 is -0.64 points (WB 2020).

Our study too found the regulatory quality coefficient of the home countries insignificant. Which means the migration process from the home country decreases to the host countries, as a result of declining the regulatory quality in home countries (Hatton & Williamson 2008). According to transparency international report, Pakistan was placed 120 out of 180 countries. From the above discussion, one cannot neglect the role of institutions in migration. So, the Government of Pakistan (GOP) should revisit their policy for the improvement of the following things:

1) Independent regulatory institutions contribute to improved regulatory decision-making.

   The GOP should introduce a broad initiatives/programs with clear objectives and

   frameworks for implementation, for assessing impacts and review regulations

   systematically to ensure they are meeting their objectives in a changing economic and

social environment. Additionally, taking a steps to ensure that regulatory processes are transparent and non-discriminatory.

2) International migration should become an integral part of national, regional and global strategies for economic growth, in both the developing and developed world.

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Appendices section

Table A.1

List of Home and Host countries employed in the study

Home	Host	Home	Host
Afghanistan	Australia	Guatemala	Norway
Albania	Austria	Guyana	Slovak
Algeria	Denmark	India	Slovenia
Azerbaijan	Finland	Indonesia	South Africa
Botswana	France	Nigeria	Saudi Arabia
Brazil	Georgia	Pakistan	Sweden
China	Germany	Sri lanka	Turkey
Colombia	Greece	Sudan	Ukraine
Costa Rica	Hungary	Tajikistan	U.A.E
Cambodia	Iceland	Tanzania	U.S.A
Egypt	Ireland	Thailand	U.K
El- Salvador	Israel	Bangladesh	Argentina
Ethiopia	Italy	Belarus	Armenia
Georgia	Netherland	Tunisia	China
Ghana	New Zealand	Turkey	Japan

Table A.2

Brief descriptions of variables and sources of Datasets

Variables	Definitions	Sources
Bilateral migration stocks	The number of people living and working outside the countries of their birth	World bank, UN-DESA and OECD
GDP per capita PPP (Current USD)	GDP.PC is gross domestic product converted to international dollars by using purchasing power parity rates	WB
Population growth rate (Annual %)	The population growth rate expresses the change in population size as a factor of time.	WB
Age Dependency ratio	The percentage of working age population	WB
Distance	Geographical distance between capital cities of country i and j	CEPII
Colony	1 if the home and host countries have ever had a colonial ties, 0 otherwise	CEPII
Common language	1 if the home and host countries share a common official Language, 0 otherwise	CEPII
Contiguity	1 if the home and host countries share a common Contiguity, 0 otherwise	CEPII
Unemployment rate	The unemployment rate is defined as the percentage of unemployed workers in the total labor force.	OECD
Inflation rate (annual %)	Expressed as an annual percentage and indicates a decrease in the purchasing power of a nation's currency.	WB
Control of corruption, regulatory quality, rule of law	The Worldwide Governance Indicators (Kaufmann et al. 2005, 2010), based on the following key dimensions of governance, with a higher score indicating more stability. The values are normalized to the range 0-1.	WGI