The Role of Remittances on Human Development: Evidence from Developing Countries

Muhammad Zahid Naeem
Department of Economics, University of the Punjab, Lahore, Pakistan.

Shama Arzu
COMSATS Institute of Information Technology Vehari –Pakistan.

Abstract
Remittances are the part of migrant workers and essentially cash exchanges earned abroad and sent to their families. Worker remittances are an important part of international capital flows. The volume of remittances increments in developing countries day by day and season through season. Remittances are the backbone for the developing economies. We have used annual cross section data from the period of 2014 of 100 developing countries including Afghanistan, Pakistan, Turkey, Bangladesh, Iraq and China. Results show that there is a positive and insignificant relationship between remittances and human development in each of the selected developing country.

Keywords: remittances, human development, developing countries
JEL Codes: F24, J24

I. Introduction

Remittances are the part of migrant workers and essentially cash exchanges earned abroad and sent to their families. The critical meaning of remittances is financial support for generations. Worker remittances are an important part of international capital flows. In developing countries, Remittances are the second largest external source of funding after Foreign Direct Investment (FDI) (Ebeke, 2012). General aggregate for worldwide remittances are $583 billion. European countries, for illustration, Spain, Italy and Ireland were reliant on remittances amid the nineteenth and twentieth hundreds of years. The flow of remittances expanded a decade ago in the 20th century. In 1946, the amount of remittances in Spain was 21% of all its current account. 150 million expats sent more than US $300billion to their families in developing countries during 2006.

Because of the striking increment in remittances in the past few years, the research interest in remittances has increased a lot. It is estimated by the World Bank that developing countries received $167 billion remittances in 2005 (World Bank, 2006). Registered remittances sent back to developing countries increased from $31 billion in 1990 to $83 billion in 2000, to no under $338 billion in 2008. Formally, recorded remittances to developing countries were estimated to reach $406 billion in 2012, up by 6.5% from $381 million in 2011 (World Bank, 2012). While remittances to developing countries surged, official aid streams seen a declining pattern. Despite the fact that this flow slightly reflects the surfacing of past informal remittances, enhanced recording of remittances and declining devaluation of the United States (US) dollar, there is little uncertainty that at any rate a portion of this increment has been genuine. We cannot quantify the flow of remittances because people who work abroad send their money through formal and informal methods. For the most part, remittances sent through an informal method which is not in the knowledge of government.

There are different specific components of remittances flow by different countries and even by international organizations (e.g. IMF Balance of payments statistics and the World Bank's Global Development Finance Report). Remittances play an essential role to build the job or the national income. Remittances satisfy the requirements of sustenance and 80% of remittances are used for purchasing land, repaying the debt, consumption purposes, more expensive instruction for kids, and social capacity like marriage and other events. 20% of remittances are utilized for a beneficial reason like interest in the industry, small businesses, and farming business. Generally, remittances appear to create negative impact on the economy. For example, remittances used for the unproductive purposes and migrants impact the currency appreciation etc. (Pant, 2008).

It is easy to understand that how and why remittances affect the country recipients in previous research. Because increasing the flow of remittances is very important, which has been targeted and widely explored in additional studies. Many studies support the view that remittances have decreased the poverty and have caused positive impact on economic growth (Chimhowu, Piesse, and Pinder, 2005) while many contrasting studies with negative effects on the countries which receive the remittances. Countries that receive the remittances, the chances of corruption and corruption influence on the economic growth is manifolds (Berdiev, 2013). The remittances had kept greater importance in developing countries and play very important role to grow up the economy and human development. The present study aims to check the impact of remittances on human development in developing countries. In this study, we follow the cross section for estimation procedure and data selected is of developing countries. Migration is an important factor which affect the currency appreciation and inflation and plays both negative and positive roles. People who move to occupation countries and send cash back to their countries of origin which may aid to enhance education, sustenance, and setting up new businesses and improvement in the way of life and so on.

II. Literature review

Ångman and Larsson (2014) analyzed remittances and development using annual panel data of 99 developing countries. This relationship was estimated with the help of ordinary least square (OLS), fixed effect model and random effect model. The data consisted of the yearly panel between 2005 to 2012. Results indicate a positive relationship between remittances and level of human development in developing countries. Ustubici and Irdam (2012) examined the impact of remittances on human development using quantitative analysis. This relationship was estimated with the help of ordinary least square (OLS). The data consisted of 1990 to 2005.They said that remittance have a positive impact on changes in human development and they are more important for human development than other foreign inflows such as FDI, ODI and exports.

Alishani and Nushi (2012) analyzed the effect of remittances on education and health of family members behind. The data was consisted of yearly observations between 1989 to 1999. According to Kosovo Remittances Study by UNDP (2010), it is suggested that remittances not only affect positively the level of income but also the ability to access healthcare and education.Brown (2008) examined the remittances and development in the Pacific and to check the effect on human development in Fiji and Tonga. The cross-sectional data was taken

from 2006 and instrumental variable techniques used to examine the impact of migration and remittances on human development in two countries. When remittances increase the household income, it helps to decrease the poverty level. There is a positive and significant impact of remittances on human development such as health and education but the effect on inequality is uncertain because of the possibility of rise in inequality. Another study that included penal data analysis of the growth effect of remittances was done by Rao and Hassan (2011).The data consisted of the yearly observations for 1960 to 2007.To check the direct growth effect, conventional specification and panel data estimation, modified specification and the system GMM method were used. Results show that remittances have no effect in the direct long run growth but it may influence short-run growth.

According to Fayissa and Nsiah (2010), remittances may spur economic growth and development. They used annual panel data from Latin American Countries (LACs). In this study data was used from 1980 to 2005 and estimation methods based on simple fixed effects and random effects models were applied. The main purpose of this study was to check the impact of remittances relative to other external sources of capital such as FDI and foreign aid. This study tells us that remittances cause positive impact on economic growth and development of Latin American Countries. In another study, De Haas (2010) examined remittances, migration and development and policies in developing countries. The purpose of the social policies to redistribute the wealth, provide the basic public facilities and access to enhance the economic policies of non-elite groups to insurance and credit markets. They concluded that there is a positive impact of remittances on social development, particularly in education, health, and infrastructure.

Orrenius et al., (2010) explored that whether remittances improve economic development? Data from 2003 to 2007 was used using a two-stage least square method. Study explained the impact on economics development as a measure of employment, unemployment, school enrollment and wages. The result indicated that remittances have a positive impact on economic development. In another study Salas (2014) analyzed that international remittances and human capital. This study was based on human capital theory and investment on education that linked to remittances and panel data used from 2007 to 2010. The result showed that families who receive the remittances mostly send their children to private schools for better education. This study determined that a positive impact and significant impact of remittances on human capital can not only provide individual benefits but also affect the growth and development of the country.

Kroeger and Anderson (2014) explained about remittances and human capital of children in Kyrgyzstan during the revolution and financial crisis. The data consisted panel dataset of children from 2005 to 2009 and boys aged 14-18 who live in remittances receiving household than others. They try to check the improvement in school enrollment among young children. They worked on unbalance panel and used fixed effect estimation and fixed effects and instrumental variables estimation. The role of remittances with nutritional outcomes of younger girl if this girl is at home where any person of the family lives abroad and in absence of this situation, then parent force on remaining members of the household. Kyrgyzstan is a male dominant economy where boys are interested to leave school to start working abroad.

In the study, Ilahi and Jafarey (1999) explored about guest worker migration, remittances, and the extended family in Pakistan. In this study, cross-sectional data used ILO-ARTEP in 1986. The purpose of this study was to check the effect of loans on refugee's savings and family. The results show that in Pakistan negative relationship between loan requirements and remittances to the extended family. In another study Koska, Saygin, Çağatay, and Artal-Tur (2013) analyzed international migration, remittances, and the human capital formation of Egyptian children. In this study, panel data used between 1998 to 2006. This relationship was estimated through standard OLS techniques, OLS with regional, fixed effects and instrumental variable approach. The results showed that the remittances have positive impact on school enrollment and negative on labor force participation.

Ponce et al., (2011) analyzed the role of international remittances in health outcomes in Ecuador by using an instrumental variable approach. Ecuador is actually a low middle-income country. In this study cross-sectional data is used and taken from the living standard measurement survey of 2006. The results show that the remittances has positive and significant impact on health knowledge because remittances are used for emergencies and medicine expenditure when people are sick. Stojanov and Strielkowski (2013) explored that the role of remittances as a more efficient tool of development aid in developing countries. The data consisted yearly panel data between 1970 to 2009. The empirical model was based on two-stage least squares estimation and a standard OLS estimation. The results show that remittances are more important for economic growth and development than ODA, appeared as the annual growth of GDP per capita in developing countries. Official

development system may play a crucial role such as the United Nations or the World Bank in distributing international aid between needy people in developing countries.

Madani et al., (2013) explored the effect of remittances on the living standards of Albanians and on country's GDP. The data consisted between 1992 to 2012. The result shows that Albanian families use their remittances on basic needs such as food and health services but when there is a reduction in remittances then the quality of life becomes worse and both situations also influence the percentage of GDP. Sawyer (2014) examined the effect of remittances on youth educational attainment, participation, and aspirations in Southern Mexico. This relationship was estimated with the help of OLS and Logistic regression analysis. The cross-sectional data between 2007 to 2008 from Mexican Migration Field Research and Training Project (MMFRRP) was used. Remittances are not enough for education, there are so many other factors, which must be taken into consideration, to the expansion of universities, financial support and improvement in educational standards and public awareness programs must be conducted for parents and youngsters to motivate them.

In another study, Bredl (2011) analyzed migration and the effect of remittances on educational outcomes in Haiti. In this study, data consisted three communities; 1st community consisted of the Jacmel in the country's Southwest department, the 2nd community found in Southwest of Haiti and 3rd community consisted the Atlantic coast in the country's North-Western department. Results show that remittances play an important role for poor households and cause positive impact on education but migration has a negative impact on household children and education. Migration increases the duties for children and loss of the parental role models which influence the educational outcomes.

Koc and Onan (2004) analyzed about international migrants' remittances and welfare status of the left-behind families in Turkey. In this study, data taken from the 1996 Turkish International Migration survey (TIMS-96) which consisted between 1964 to 2000. The results show that 12% families use migration saving for basic consumption needs and 80% families use remittances on their standard of living. Remittances and migration have a positive impact on the income of migration families than non-remitting families. Remittances mostly use on education, health and nutritional purposes.

Afaha (2013) explored that migration, remittances, and development in origin countries as evident in Nigeria. The data consisted between 2000 and 2010. This relationship was estimated with the help of linear regression OLS test, stationary test (ADF) test, (PP) unit root test, cointegration test. Results show that remittances are the positive and significant impact on economic growth as a GDP in origin countries. Workers' remittances send in the form of cash and goods to their origin places who use it for purchasing food, healthcare, education, and business, rebuilding of the house and purchasing land. International remittances should be used for productive activities such as agriculture, livestock, fishing and non-agricultural economic activities such as woodwork. Barguellil, Zaiem, and Zmami (2013) analyzed about remittances effect on education and economic growth. This study was based on panel data analysis of two group of countries between 1990 to 2006. 1st group consisted of the largest remittances recipients' in GDP percentage and 2nd group of countries consisted of large recipient amount. Results show that in 1st group of countries, remittances have direct and indirect impact on education and economic growth and positive correlation but not significant, between education and economic growth and 2nd group of countries these effects vanish.

Kock and Sun (2011) analyzed about why the remittances in Pakistan surge and plunge down? This estimation was based on panel data with flows of remittances in Pakistan and data used from 1997 to 2008. This study was estimated with the help of Bayesian approach and OLS approach. Results show that remittances have a big source of inflows for Pakistan, skill labor migrant in host countries and their investment return in Pakistan, inspire the exchange rate and migrants' worker help to increase the remittances.

Ponce et al., (2008) explored the impact of remittances on human development in Ecuador. This data was taken according to INEC data in 2006 and in this study remittance distributed among quantile. This study was estimated with the help of OLS estimation and two stages estimation. Results show that remittances have insignificant impact on human development outcome variables in the long terms such as education and health expenditure because people who are receiving the remittances transfer their children from public to private schools. In the short term, remittances have a positive and significant impact on reducing poverty but in long term it is not expanding people's capabilities.

Deb and Seck (2009) explored about internal migration, selection bias and human development evident from Indonesia and Mexico. This case was estimated with the help of standard two stage least square method (2SLS). Study used panel data from Indonesia (FLS) 1994 to 2000 and Mexico (FLS) 2003 to 2005.The results show

that migration develop the socio-economic position through an increase in consumption or income and it determines the health status of people and increase migrant' standard of living and to support their families.

Gounder (2014) analyzed about the impact remittances on finance welfare development in Fiji. In this study data of the household income and expenditure was used from survey 2002 to 2003 a dataset of 5,245 households. The results show that remittances are used on housing and human capital expenditures in urban Indo-Fijian households and rural Fijian households use remittances on durable and non-durable goods and human capital. The impact of remittances is significant overall and positive on the education of children. On the basis of gender support, Fijian households use remittances for the higher education of boys and girls but Indo-Fijians remittances impact is negative for girls in rural areas.

Hatemi and Shamsuddin (2016) examined that the causal interaction relationship between financial development and human development in Bangladesh. This study was estimated with the help of bootstrap causality test and used macro level data between 1980 to 2011. The results show that the government of Bangladesh focuses on promoting the education level among citizens and human capital can be used for increasing productivity who lead to higher economic growth and resource mobilization in the private sector who lead to the financial development and economic growth. After analyzing these studies, mostly studies show the positive impact of remittances on human development while some studies show the negative impact of it but these studies did not explain the relationship between human development and remittances clearly. So, the main objective of this paper is to check the true role of remittances on human development index.

III. Methodology

This part presents the model specification and variable description. Wide range of studies analyzed about the role of remittances on human development. Different researchers used different methodologies to check the role of remittances on human development. The analysis based on cross-sectional tools to examine the role of remittances on human development. For this exploration purpose, we have taken human development index as a dependent variable and independent variables are personal remittances, gender inequality index, and trade, world governance indicators (rule of law, government effectiveness, and regulatory quality).

Our model can be specified which denote that human development is affecting by some explanatory variable who have been including our sample test.

$$HDI = F(PREMB, GIINDEX, TGDP, IUSERS, RLAW, RQUALITY, GEFFECT)$$

This equation shows the human development index is the function of remittances, gender inequality index, and trade as a percentage of GDP, internet users, and rule of law, regulatory quality and government effectiveness.

Where,
HDI = Human Development Index
PREMB = Personal Remittances current dollars (Billion)
GIINDEX = Gender Inequality Index
TGDP = Trade as a GDP percentage
IUSER = Internet Users (per 100 people)
RLAW = Rule of Law
RQUALITY = Regulatory Quality
GEFFECT= Government Effectiveness

The regression equation develops on above equation from cross-sectional data.

$$HDI = \beta_O + \beta_1 PREMB + \beta_2 GIINDEX + \beta_3 TGDP + \beta_4 IUSERS + \beta_5 RLAW + \beta_6 RQUALITY + \beta_7 GEFFECT + \mu$$

In this equation, human development index is dependent variable and β_O is used as an intercept. Other variables used as independent variables are remittances which has a positive relationship with human development, gender inequality index and trade as a GDP has a negative relationship with human development. Internet users and institutional measurements (rule of law, regulatory quality, and government effectiveness) have a positive relationship with human development and μ is error term.

Different sources were used to collect data for this study. The basic source for collecting data is World Development Indicators (World Bank, 2015). Data for HDI and Gender Inequality Index collected from Human

Development Reports (UNDP, 2015). Data about trade as a percentage of GDP, personal remittances, and internet users collected from World Development Indicators and institutional variables conducted from World Governance Indicators (World Bank, 2015). We have used annual data from the period of 2014 of the cross section of 100 developing countries. According to World Bank, a country is developing if it is low income or middle-income country where income is measured by GNI (World Bank, 2015).

IV. Estimation Results

This sample period used for analysis, is taken from World Development Indicators (World Bank, 2014). We start our analysis by observing the descriptive statistic of each variable.

Table 1

Descriptive statistics	HDI	GIINDEX	PREMB	IUSER	RLAW	RQUALITY	GEFFECT	TGDP
Mean	0.620270	0.456256	4.707736	28.51410	-0.51620	-0.520300	-0.485700	78.92738
Median	0.666000	0.467500	1.207468	25.22000	-0.55000	-0.510000	-0.500000	73.71040
Maximum	0.898000	0.713000	70.38864	74.70000	0.980000	1.000000	1.180000	197.5766
Minimum	0.348000	0.125000	0.000837	0.000000	-1.73000	-2.200000	-2.030000	19.11879
Std. Dev.	0.133512	0.144664	10.49614	19.98651	0.553267	0.691956	0.636281	33.47194
Jarque-Bera	7.748953	2.651888	1562.212	7.136363	2.474626	0.391814	0.123896	15.78464
Probability	0.020765	0.265552	0.000000	0.028207	0.290163	0.822089	0.939932	0.000374
Observations	100	86	66	100	100	100	100	86

Level of significance (α =0.05)

In table 1, the results show that in developing countries the average of human development index is 0.620270, average of trade as a percentage of GDP (per 100 people) is 78.92738, average of internet users is 28.51410, average of personal remittances is 4.707736 billion dollar and average of gender inequality index is 0.456256. Similarly, in developing countries the average of government effectiveness is -0.485700 and the average of rule of law are -0.516200 and the average of regulatory quality is -0.520300.

In developing countries, the median of human development index in El-Salvador and Vietnam is 0.666000; the median of gender inequality index is 0.463 in Suriname and 0.472 in Paraguay. In developing countries, the median of personal remittances is 1.2313 billion dollars in Belarus and 1.183636$ in Bolivia and the median of internet users is 24.64 in Sudan and 25.8 in Sir-Lanka. Similarly, the median of rule of law in -0.5500 in Benin, Kazakhstan, and Peru and the median of regulatory quality is -0.5100 in Belize and Benin. The median of government effectiveness is -0.5000 in Belarus, Benin, and Ecuador. The median of trade as a GDP percentage is 73.71040 in Senegal.

The range of human development index found between 0 to1. In the year of 2014 in developing countries maximum human development index is 0.8980 in the Korea Republic of which shows that this country gets more developed because it's close to one and minimum human development index is 0.3480 in Niger which shows that this country gets less development in this year because it's close to 0.

In developing countries, the highest gender inequality index is 0.7130 in Niger of which shows that in this country there is more gender inequality and human development is less, minimum gender inequality index is 0.1250 in Korea Republic of which shows that in this country found less gender inequality and more human development. In developing countries, the maximum personal remittances are 70.388 billion dollar in India and lowest personal remittances in Mauritius which is 0.000837 billion dollars. The maximum internet users found in Lebanon, which is 74.70000, and minimum internet users found in the Korea Republic.

In developing countries, (2014) maximum rule of law follows in the Korea Republic and the minimum rule of law follow in the Central African Republic. Maximum regulatory quality follows in Mauritius and minimum regulatory quality follows in the Korea Republic. Similarly, Government effectiveness follows in the Korea Republic and minimum government effectiveness follow in Haiti. Maximum trade as a GDP percentage in Maldives, which is 197.5766, and minimum trade as a GDP percentage in Sudan, which is 19.11879.

In developing countries average variations in the human development index are 0.133512, average variations in gender inequality is 0.1446, average variations in personal remittances are 10.49614 billion dollars, average variations in internet users (per 100 people) is 19.98651. Average variations in rule of law are 0.553267, average variation in regulatory quality is 0.6919, average variations in government effectiveness is 0.636, and average variations in trade as a GDP percentage is 33.471. Jarque-Bera test use to check the normality in variables and normality criteria is if p-value greater than α, (α =0.05) which shows that data is normally distributed. The probability of JB for human development index (0.020765) shows that this variable is not normally distributed. The probability of gender inequality index (0.265552) shows that this variable is normally distributed because p-value is greater than α. The probability of personal remittances (0.000) and the probability of internet users (0.0282) which shows that this variable is not normally distributed. The probability of rule of law (0.2901), the probability of regulatory quality (0.8220) and the probability of government effectiveness (0.9399) which shows that these variables are normally distributed. The probability of trade as a GDP percentage (0.000374) which shows that this variable is not normally distributed.

Table 2 Covariance analysis: Ordinary

Correlation T-Statistics Probability	HDI	GIINDEX	PREMB	IUSER	RLAW	RQUALITY	GEFFECT	TGDP
HDI	1.000000	-0.812883	0.027918	0.708763	0.525462	0.403275	0.691944	0.225006
	- - - - - -	-10.16074	0.203325	7.314329	4.496168	3.208343	6.977517	1.681177
	- - - - - -	0.0000	0.8397	0.0000	0.0000	0.0023	0.0000	0.0986

Level of significance (α =0.05)

In table 2, we see correlation positive and negative between dependent and independent variables because in developing countries some variables keep positive correlation and some negative correlation. In developing countries, the coefficient of gender inequality index (-0.8128) which shows that there is a negative correlation between human development index and gender inequality index, and the p-value (0.0000) shows that there is significant impact. The coefficient of personal remittances is 0.0279 billion dollars, which shows that there is a positive correlation between personal remittances and human development index, and the p-value (0.8397) shows that there is insignificant impact. The coefficient of internet users (0.708763) shows that there is a positive correlation between internet users and human development index, and the p-value (0.0000) shows that there is significant impact.

The coefficient of the rule of law (0.525462) shows that there is a positive correlation between rule of law and human development index, and the p-value (0.0000) shows that it is significant. The coefficient of regulatory quality (0.403275) and coefficient of government effectiveness (0.691944) shows that there is a positive correlation between developing countries HDI and regulatory quality, HDI, and government effectiveness and the p-value of regulatory quality (0.0023) and the p-value of government effectiveness (0.0000) shows that there is significant impact. The coefficient of trade as a GDP percentage (0.225006) shows that there is positive correlation between trade as a GDP percentage and HDI and the p-value (0.0986) shows that there is insignificant impact.

Table 3 shows that in developing countries there is a positive relationship between dependent variable human development index and independent variables (personal remittances, internet users) and negative relationship between dependent variable human development index and independent variables (gender inequality index, trade as a GDP percentage). The coefficient of gender inequality index is -0.5263 shows that if gender inequality index increase by 1 unit then human development index decreases by 0.5263 units. The Economic theory behind suggests that when the literacy rate of male and a literacy rate of female become unequal then the overall literacy rate in a country become less. The ratio of uneducated people will increase on one hand if the female literacy rate becomes low then they cannot educate the future generation and also cannot participate in the economic activity. On the other hand, if the male literacy rate become low then the skilled employed will decrease and they will not be able to use the new technology by which the production sectors cannot produce at full employment level by which the wage rate will reduce, per capita income will reduce, human wellbeing will also go down. Therefore, we can conclude that gender inequality has a negative impact on human development and it is also supported by economic theory. The coefficient of personal remittances is 0.0008 billion dollar shows that if personal remittances increase by 1billion dollar then human development index increase by 0.0086 units. The Economic theory behind this when remittances will increase then income will increase and purchasing power also increase. On the other hand, consumption will increase and living standard will be better

who grow up the human development. Ponce (2011) has also found same conclusion that remittances has positive impact on human development and it is also supported by economic theory and previous studies.

Table 3
Dependent Variable: HDI
Method: Least Squares
Sample: 1 100: Included observations: 55
HAC standard errors and covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GIINDEX	-0.526373	0.144255	-3.648893	0.0006
PREMB	0.000860	0.000486	1.767276	0.0833
IUSER	0.001986	0.000906	2.192694	0.0330
TGDP	-0.000138	0.000285	-0.483218	0.6311
C	0.818496	0.098839	8.281079	0.0000
R-squared	0.740113	Mean dependent var		0.663145
Adjusted R-squared	0.719322	S.D. dependent var		0.115072
S.E. of regression	0.060964	Akaike info criterion		-2.670558
Sum squared resid	0.185831	Schwarz criterion		-2.488073
Log likelihood	78.44034	Hannan-Quinn criter.		-2.599990
F-statistic	35.59790	Durbin-Watson stat		2.218646
Prob(F-statistic)	0.000000	Wald F-statistic		55.63867
Prob(Wald F-statistic)	0.000000			

Level of significance 5%

The coefficient of internet users is 0.0019 shows that if internet user (per 100 people) increase by 1unit then human development increase by 0.0019 units. Economic theory behind this is if internet users will more educated investor get more ideas and produce more innovative products then export will increase then revenue will be higher and human development will increase. So we can conclude that internet user has a positive impact on human development and it is also supported by economic theory.

The coefficient of trade as a GDP percentage is -0.000138 shows that if trade as a GDP increase by 1% then human development decrease by 0.000138 units. The Economic theory behind this is when developing countries import exceed than export and balance of payment will be in deficit. On the other hand, for the reduction of balance of payment deficit, government will increase the taxes on imported goods then the import will decrease and human development will increase. Fayissa (2010) has found the same conclusion that trade as a GDP has a negative impact on human development in developing countries and it is also supported by economic theory and previous literature.

T-statistic of gender inequality index (-3.6488) which is greater than 2 and sign doesn't matter shows that our model is significant and t-statistic of personal remittances in billion dollars (1.767276) which is less than 2 shows that our model is insignificant. T-statistic of internet users (per 100 people) (2.192694) shows that our model is significant and t-statistic of trade as a GDP percentage (-0.4832) shows that our model is insignificant. The p-value of gender inequality is 0.0006 and p-value of internet users is 0.0330, which is less than 5% level of significance shows that the results are significant. The p-value of personal remittances is 0.0833 and p-value of trade as a GDP percentage is 0.6311 which shows that result is insignificant.

R-square is 0.7401 which shows that 74% variations in human development index due to gender inequality index, personal remittances, internet users (per 100 people) and trade as a GDP percentage and remaining unexplained. The p-value of F-statistic (0.000000) shows that our model is overall significant.

Table 1: Plot of histogram to check the normality

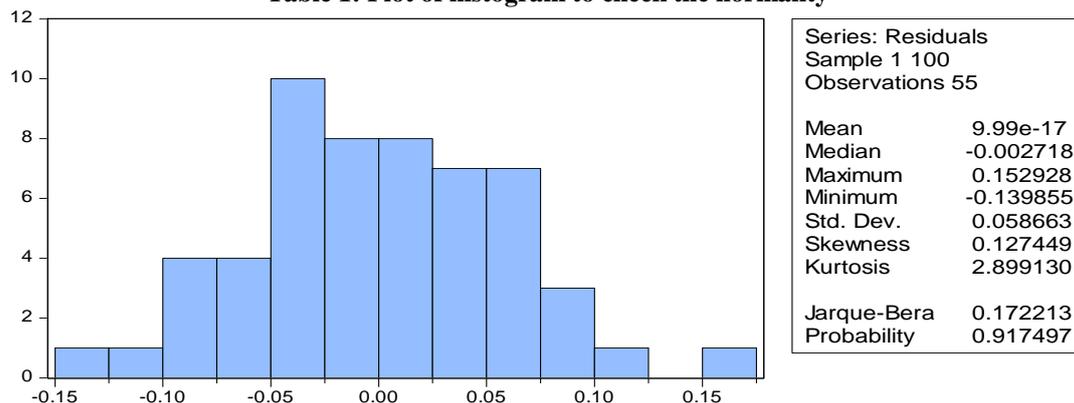| Series: Residuals	
Sample 1 100	
Observations 55	
Mean	9.99e-17
Median	-0.002718
Maximum	0.152928
Minimum	-0.139855
Std. Dev.	0.058663
Skewness	0.127449
Kurtosis	2.899130
Jarque-Bera	0.172213
Probability	0.917497

Table 1 results interpret through the plotting of histogram. This figure shows that average variations are 0.0586. Jarque-Bera test is used to check the normality and the probability (0.9174) is greater than 5% level of significance which shows that our model is normally distributed.

Table 4

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.548178	Prob. F(2,48)	0.2231
Obs*R-squared	3.332910	Prob. Chi-Square(2)	0.1889

Level of significance 5%

In table 4 Breusch-Godfrey Serial Correlation LM test estimate that the p-value of F-statistic is 0.2231 which is greater than 5% level of significance then we will accept the null hypothesis and we can say that there is no serial correlation.

Table 5

Heteroskedasticity Test: ARCH

F-statistic	0.069954	Prob. F(1,31)	0.7932
Obs*R-squared	0.074300	Prob. Chi-Square(1)	0.7852

Level of significance 5%

Table 5 results interpret the results of ARCH test of Heteroskedasticity. According to this test, the p-value of F-statistic is 0.7932, which is greater than 5% level of significance and shows that there is no Heteroskedasticity.
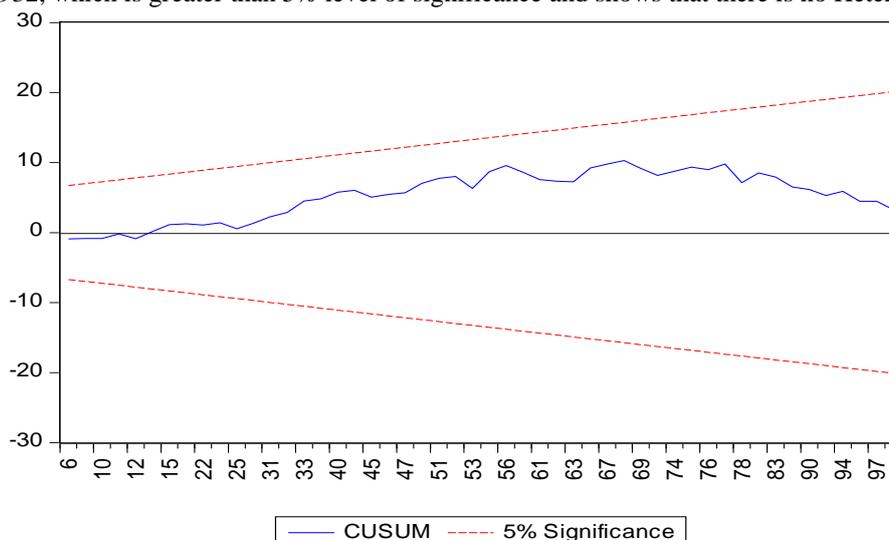

Table 1: Plot of Cumulative Sum of Recursive Residual

Table 1 results interpret by using stability test. Stability test uses to check the stability of the model. We use the cumulative sum of recursive residual (CUSUM) to check the stability of the model. In this figure the straight

lines represent the critical boundaries at 5% level of significance and horizontal line show the observations. Zigzag line lies between critical boundaries shows that our model is stable.

Table 6:
Dependent Variable: HDI
Method: Least Squares
Sample: 1 100
Included observations: 55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GIINDEX	-0.448551	0.082590	-5.431039	0.0000
PREMB	0.000705	0.000728	0.967817	0.3379
IUSER	0.002010	0.000514	3.909343	0.0003
TGDP	-0.000144	0.000261	-0.552540	0.5831
RLAW	0.041341	0.015974	2.588041	0.0127
C	0.803501	0.055315	14.52588	0.0000
R-squared	0.771366	Mean dependent var		0.663145
Adjusted R-squared	0.748036	S.D. dependent var		0.115072
S.E. of regression	0.057762	Akaike info criterion		-2.762317
Sum squared resid	0.163484	Schwarz criterion		-2.543336
Log likelihood	81.96373	Hannan-Quinn criter.		-2.677635
F-statistic	33.06328	Durbin-Watson stat		2.341808
Prob(F-statistic)	0.000000			

Level of significance 5%

Table 6 results interpret data about developing countries (2014) in which human development index is dependent variable and gender inequality index, personal remittances, internet users (per 100 people), trade as a GDP percentage and rule of law use as independent variables in which some keep the positive relationship and some negative relationship. The coefficient of gender inequality index is -0.4485 that highlight that there is a negative relationship and if 1unit increase by gender inequality index then human development index decrease by 0.448551. The coefficient of trade as a GDP percentage is -0.000144 shows that there is a negative relationship between human development and trade as a GDP percentage and if trade as a GDP increase by 1% then human development decreased by 0.000144 units. Coefficients of personal remittances are 0.000705, internet users are 0.002010, rule of law is 0.041341which shows that there is a positive relationship between human development index and personal remittances, human development index and internet users (per 100 people), and human development index and the rule of law. If personal remittances increase by 1 billion dollar then human development increase by 0.000705 units. If internet users (per 100 people) increase by 1 unit then human development increase by 0.002010 units. If rule of law increase by 1 unit then human development increase by 0.041341 units.

T-statistic of gender inequality index is -5.431039 which is greater than 2 highlighting that our model is significant which is also confirmed through p-value (0.0000) which is less than α . T-statistic of personal remittances is 0.967817, which is less than 2 confirming that our model is insignificant. T-statistic of internet users (3.909343), t-statistic of rule of law (2.588041) which is greater than 2 shows that our model is significant and the p-value of internet users (0.0003) and the p-value of rule law (0.0127) which is less than α shows that that it is significant. T-statistic of trade as a GDP percentage (-0.552540) which is less than 2 shows that our model is insignificant.

R-squared (0.771366) shows that 77% variations in human development index due to gender inequality index, personal remittances, internet users (per 100 people), trade as a GDP percentage and rule of law and remaining unexplained. The p-value of F-statistic (0.000000) shows that our model is overall significant.

Table 6: plot of histogram to check the normality

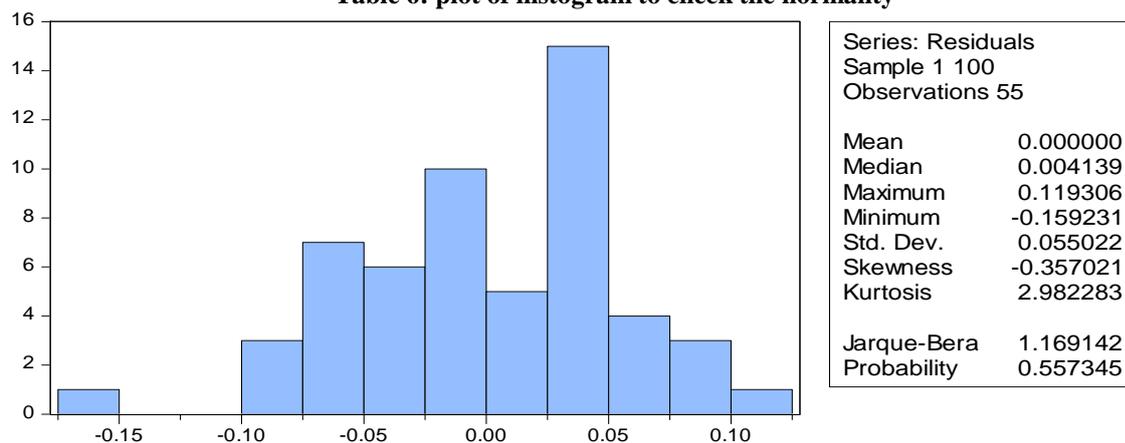| Series: Residuals	
Sample 1 100	
Observations 55	
Mean	0.000000
Median	0.004139
Maximum	0.119306
Minimum	-0.159231
Std. Dev.	0.055022
Skewness	-0.357021
Kurtosis	2.982283
Jarque-Bera	1.169142
Probability	0.557345

Table 3 interpret through plotting of histogram to check the stability. This figure shows that the mean value is 0.00000 and average variation is 0.055022 and through Jarque-Bera value (1.1691142) use to check the normality and p-value (0.557345) which is less than 5% level of significance, which shows that, our model is not normally distributed.

Table 7
Heteroskedasticity Test: ARCH

F-statistic	0.364763	Prob. F(1,31)	0.5503
Obs*R-squared	0.383781	Prob. Chi-Square(1)	0.5356

5% level of significance

Table 7 interpret the results of ARCH test of Heteroskedasticity. According to this test, the value of F-statistic, corresponding to the p-value is 0.5503, which is greater than 5% level of significance. Therefore, we conclude that there is no Heteroskedasticity.

Table 8
Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.514282	Prob. F(2,47)	0.2305
Obs*R-squared	3.329518	Prob. Chi-Square(2)	0.1892

Level of significance 5%

Table 8 interpret the results of Breusch-Godfrey Serial Correlation LM test. According to this test, the p-value of F-statistic is 0.2305, which shows that p-value is greater than 5% level of significance. This result shows that there is no correlation.
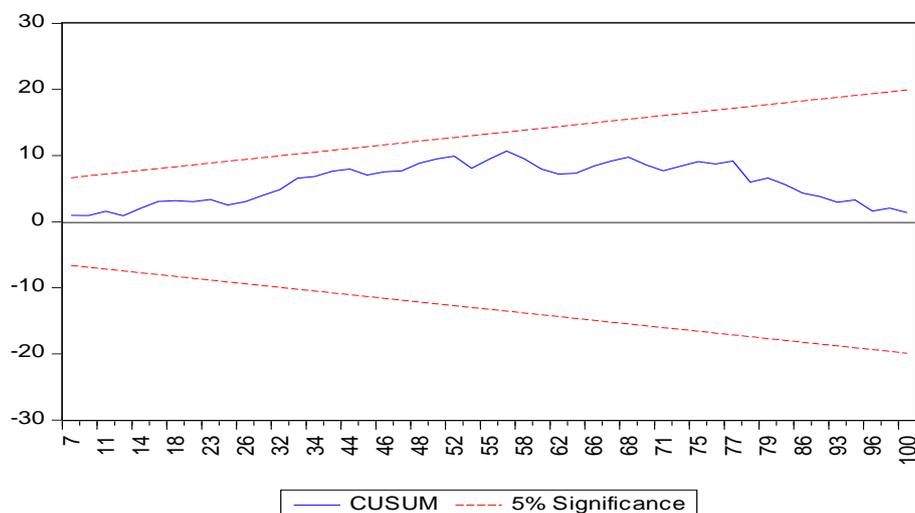

Table 6: Plot of Cumulative Sum of Recursive of Residual

Through table 6plot of cumulative sum of recursive of residual. Red straight lines represent the critical boundaries at 5% level of significance and horizontal line show the observations. In figure zigzag line lies between critical boundaries who show that, our model is stable.

Table 9
Dependent Variable: HDI
Method: Least Squares
Sample: 1 100
Included observations: 55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GIINDEX	-0.400506	0.084382	-4.746326	0.0000
PREMB	0.000478	0.000714	0.668670	0.5068
IUSER	0.001810	0.000502	3.608934	0.0007
TGDP	-0.000128	0.000253	-0.505862	0.6152
GEFFECT	0.048055	0.015047	3.193602	0.0025
C	0.788139	0.054199	14.54146	0.0000
R-squared	0.784888	Mean dependent var		0.663145
Adjusted R-squared	0.762938	S.D. dependent var		0.115072
S.E. of regression	0.056027	Akaike info criterion		-2.823280
Sum squared resid	0.153815	Schwarz criterion		-2.604298
Log likelihood	83.64020	Hannan-Quinn criter.		-2.738598
F-statistic	35.75763	Durbin-Watson stat		2.440510
Prob(F-statistic)	0.000000			

Level of significance 5%

Table 9 regression results interpret and in which use human development index as a dependent variable and gender inequality index, personal remittances, internet users (per 100 people), trade as a GDP percentage and government effectiveness. The coefficient of gender inequality index is -0.400506 shows that there is a negative relationship between gender inequality index and human development index; if gender inequality increases by 1 unit the human development decreases by 0.400506 units. The coefficient of trade as a GDP is -0.000128 highlighting that there is a negative relationship between trade as a GDP and human development index and if trade increases by 1 unit then human development decreases by 0.000128 units.

The coefficient of personal remittances is 0.000478 billion dollars, coefficient of internet users (per 100 people) is 0.001810 and coefficient of government effectiveness (0.048055) shows that there is a positive relationship between human development index and gender inequality index, personal remittances, internet users and government effectiveness. If personal remittances increase by 1 billion dollar then human development increase by 0.000478 units. If one internet user (per 100 people) increases, then human development increases by 0.001810 units. If government effectiveness increases by 1 unit then human development increases by 0.048055 units.

T-statistic of gender inequality index (-4.746326), t-statistic of internet users (3.608934), T-statistic of government effectiveness (3.193602) which is greater than 2 shows that our model is significant. T-statistic of personal remittances (0.668670), t-statistic of trade as a GDP percentage (-0.505862) which is less than 2 shows that our model is insignificant.

R-squared (0.784888) shows that 78% variation in human development index due to gender inequality index, personal remittance, internet users, trade as a GDP percentage, government effectiveness and remaining unexplained. The p-value of F-statistic is 0.000000, which is less than α shows that our model is overall significant.

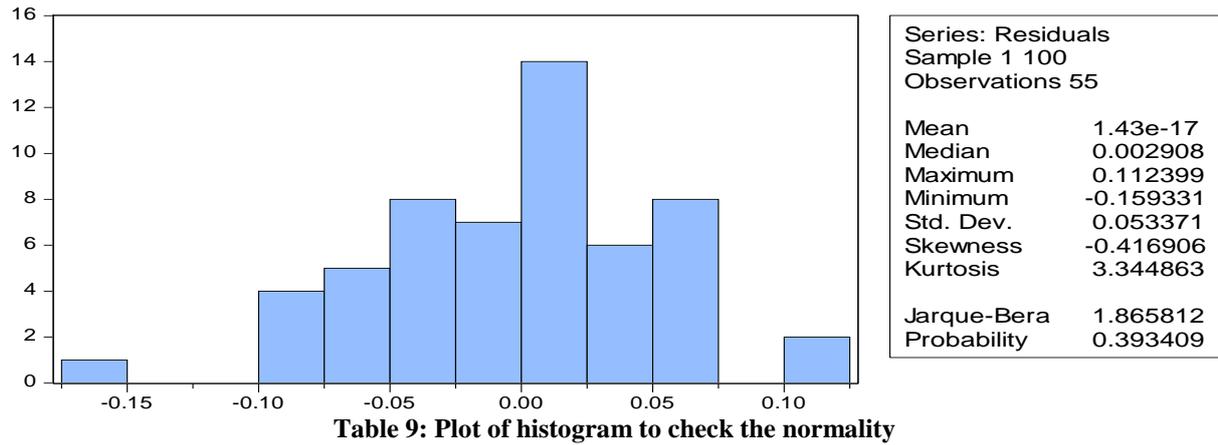| Series: Residuals	
Sample 1 100	
Observations 55	
Mean	1.43e-17
Median	0.002908
Maximum	0.112399
Minimum	-0.159331
Std. Dev.	0.053371
Skewness	-0.416906
Kurtosis	3.344863
Jarque-Bera	1.865812
Probability	0.393409

Table 9: Plot of histogram to check the normality

The plot of histogram through table 9 to check the normality and this figure shows that average variation is 0.053371 and p-value is0.393409. Jarque-Bera test tells us p-value is greater than α which shows that our model is normally distributed.

Table 10

Heteroskedasticity Test: ARCH

F-statistic	0.202432	Prob. F(1,31)	0.6559
Obs*R-squared	0.214094	Prob. Chi-Square(1)	0.6436

Level of significance 5%

Table10 interpret the results of ARCH test of Heteroskedasticity. According to this test, the p-value of F-statistic is 0.6559, which is greater than 5% level of significance. The result shows that there is no Heteroskedasticity.

Table 11

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.727587	Prob. F(2,47)	0.1888
Obs*R-squared	3.766405	Prob. Chi-Square(2)	0.1521

Level of significance 5%

Table 11 interpret the results of Breusch-Godfrey Correlation LM test. According to this test, the p-value of f-statistic is 0.1888, which is greater than 5% level of significance. Results show that there is no serial correlation.
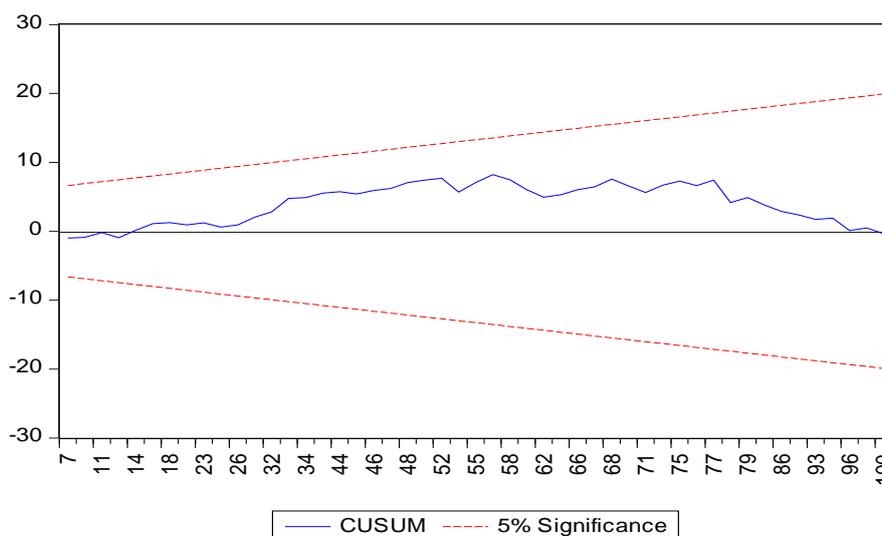

Table 9: Plot of Cumulative Sum of Recursive of Residual

86

This figure draws through table 9 which shows that red straight lines represent the critical boundaries at 5% level of significance and horizontal line show the observations. Zigzag line lies between critical boundaries which shows that our model is stable.

Table 12
Dependent Variable: HDI
Method: Least Squares
Sample: 1 100
Included observations: 55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GIINDEX	-0.535046	0.082192	-6.509725	0.0000
PREMB	0.000829	0.000770	1.076439	0.2870
IUSER	0.001705	0.000647	2.633676	0.0113
TGDP	-0.000139	0.000276	-0.502819	0.6173
RQUALITY	0.011924	0.014864	0.802194	0.4263
C	0.836145	0.062284	13.42464	0.0000
R-squared	0.743482	Mean dependent var		0.663145
Adjusted R-squared	0.717307	S.D. dependent var		0.115072
S.E. of regression	0.061183	Akaike info criterion		-2.647242
Sum squared resid	0.183422	Schwarz criterion		-2.428260
Log likelihood	78.79915	Hannan-Quinn criter.		-2.562560
F-statistic	28.40398	Durbin-Watson stat		2.307130
Prob(F-statistic)	0.000000			

Level of significance 5%

Table 12 regression results shows that developing countries human development index which is used as a dependent variable and independent variables (gender inequality index, personal remittances, internet users (per 100 people), trade as a GDP percentage and regulatory quality). Coefficient of gender inequality index is -0.535046, which shows that there is negative relationship between human development index and gender inequality index. If gender inequality index increases by 1 unit then human development index decreases by 0.535046 units. Coefficient of personal remittances is 0.000829 which shows that there is positive relationship between personal remittances and human development index, and if personal remittances increases by 1 billion dollar then human development index increases by 0.000829 units. Coefficient of internet users is 0.001705, which shows that there is positive relationship between internet users and human development index and if internet users (per 100 people) increases by 1 unit then human development increases by 0.001705 units. Coefficient of trade as a GDP percentage is -0.000139 which shows that there is negative relationship between human development index and trade as a GDP percentage and if trade as a GDP increases by 1% then human development index decreases by 0.000139. Coefficient of regulatory quality is 0.011924, which shows that there is positive relationship between regulatory quality and human development index and if regulatory quality increases by 1 unit then human development index increases by 0.011924.

T-statistic of gender inequality index is -6.509725 and t-statistic of internet users (per 100 people) is 2.633676, which is greater than 2 and shows that our model is significant. T-statistic of personal remittances is 1.076439, t-statistic of trade as a GDP percentage is -0.502819, t-statistic of regulatory quality is 0.802194, which is less than 2 and shows that our model is insignificant. R-squared is 0.743482 who shows that 74% variations occur in human development index due to gender inequality index, personal remittances, internet users, trade as a GDP percentage and regulatory quality and remaining unexplained. The p-value of f-statistic is 0.000000 which shows that our model is overall significant.
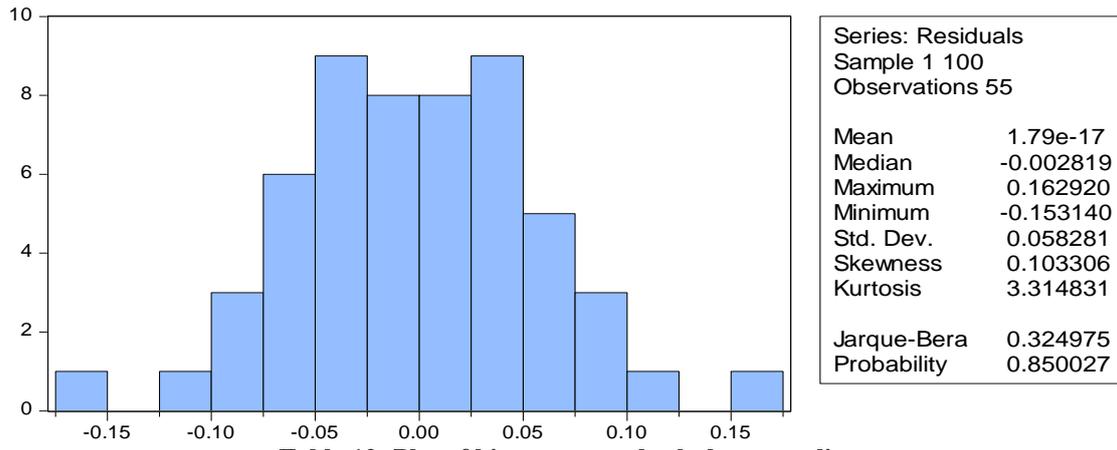
Series: Residuals	
Sample 1 100	
Observations 55	
Mean	1.79e-17
Median	-0.002819
Maximum	0.162920
Minimum	-0.153140
Std. Dev.	0.058281
Skewness	0.103306
Kurtosis	3.314831
Jarque-Bera	0.324975
Probability	0.850027

Table 12: Plot of histogram to check the normality

Plot of histogram through table 12 to check the normality and this figure shows that average variation is 0.058281 and p-value is 0.850027. Jarque-Bera test tells us p-value is greater than α which shows that our model is normally distributed.

Table 13
Heteroskedasticity Test: ARCH

| F-statistic	0.023675	Prob. F(1,31)	0.8787
Obs*R-squared	0.025184	Prob. Chi-Square(1)	0.8739

Level of significance 5%

Table 13 interpret the result of ARCH test of Heteroskedasticity. According to this test, the p-value of f-statistic is 0.8787, which is greater than 5% level of significance. The results show that there is no Heteroskedasticity.

Table 14
Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.355208	Prob. F(2,47)	0.2678
Obs*R-squared	2.998826	Prob. Chi-Square(2)	0.2233

Level of significance 5%

Table 14 interprets the result of Breusch-Godfrey Serial Correlation LM test. According to this test, the p-value of f-statistic is 0.2678, which is greater than 5% level of significance. The results show that there is no serial correlation.

88
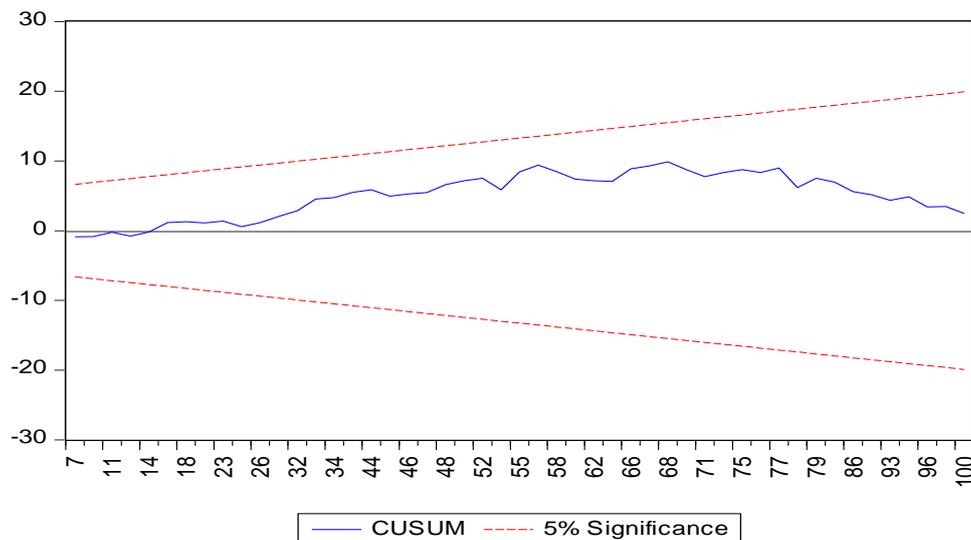
This figure' red lines represent the critical boundaries at 5% level of significance and horizontal line shows the observations. Zigzag line lies between critical boundaries which shows that our model is stable.

V. Conclusion and policy recommendations

This has been planned to investigate the role of remittances on human development in developing countries. Results show that gender inequality has negative significant effect and trade as a GDP has negative insignificant effect on human development. While remittances and regulatory quality have a positive insignificant effect, internet users (per 100 people), rule of law, government effectiveness have a positive significant effect on human development.

The role of remittances on human development has been the subject of broad research over the previous decade. This chapter summarizes the empirical results of the earlier chapters and provide the overall conclusions of the study. Some recommendations and policy suggestions are also presented in the light of our empirical results. The study was planned to investigate the role of remittances on human development in developing countries by using cross-sectional data. Data was taken from 100 developing countries including Afghanistan, Pakistan, Turkey, Bangladesh, Iraq and China from the annually period 2014. To find the role of remittances on human development cross sectional regression was applied. We revised the earlier studies and investigated the role of remittances on human development and found mix results. Different researcher has different point of view and the motive behind this research was to study remittances across the human development in developing countries. Results show that gender inequality index and trade as a GDP negative impact on human development. Remittances have a positive and insignificant impact on human development while in previous studies positive and significant impact on human development (Ångman and Larsson 2014). So we justify that remittances are one factor but there are many factors which increase the human development. For example, foreign direct investment, official development assistance and Foreign aids etc. These factors make a reason for the change in human development in developing countries and except remittances, other factors also affect the human development.

While internet users and institutional variable have a positive impact on human development. This paper finds gender inequality has a negative impact on human development in developing countries. Low gender inequality increases the human development. Due to the lack of reliable data, the gender inequality index is available for one year and it is not possible to use it for time series analysis. Therefore, it is necessary to build time series analysis, in order to provide a dynamic dimension to these results, and to take into account country-specific effects.

When trade as a GDP increases then human development will decrease. Gender inequality has a negative correlation with human development. Finally results underlined that there is no serial correlation between remittances and human development and there is no Heteroskedasticity between remittances and human development.

V.II. Policy Recommendations

The results of this study have an extensive importance for policy makers. We can suggest to policy makers that how remittances can extend the human development, especially in developing countries. So for the purpose of human development government need to reduce the cost on money transfer of foreigners to their home country.

- Particularly for Pakistan, we can suggest the policy makers if government decrease the tax on money transfer then people will send their money through formal methods and through this method, all transfer payments will be recorded.
- If government reduces the difference between male and female literacy rate and provide equal rights then human development will increase.
- Trade as a GDP percentage has a negative impact of remittances on human development in developing countries. We can suggest policy makers if developing countries promote the exports and make the substitute of imported goods then we can increase the human development.
- Institutional measurement has a positive impact on human development in developing countries. We can suggest policy makers if in developing countries government will increase the strength of institutions then people will strictly follow the rules, investors will invest their capital and human development will increase and people send their cash through formal methods.

References

Afaha, J. S. (2013). Migration, remittance and development in origin countries: evidence from Nigeria. Etude de la Population Africaine, 27(1).

Alishani, A., and Nushi, A. (2012). Migration and development: the effects of remittances on education and health of family members left behind for the case of Kosovo. Analytical Journal, 5(1).

Ångman, J., and Larsson, P. (2014). Remittances and Development: Empirical evidence from 99 developing countries.

Barguellil, A., Zaiem, M. H., and Zmami, M. (2013). Remittances, Education and Economic Growth A Panel Data Analysis. Journal of Business Studies Quarterly, 4(3), 129.

Berdiev, A. N., Kim, Y., and Chang, C.-P. (2013). Remittances and corruption. Economics Letters, 118(1), 182-185.

Bredl, S. (2011). Migration, remittances and educational outcomes: The case of Haiti. International Journal of Educational Development, 31(2), 162-168.

Brown, R. P. (2008). Remittances and development in the Pacific: Effects on human development in Fiji and Tonga. Paper presented at the Bangkok, ESCAP, EGM Meeting on Migration and Development.

Chimhowu, A., Piesse, J., and Pinder, C. (2005). The socioeconomic impact of remittances on poverty reduction. Remittances: Development impact and future prospects, 84-102.

De Haas, H. (2010). Remittances, migration and development: Policy options and policy illusions South-South Migration (pp. 158-189): Springer.

Deb, P., and Seck, P. A. (2009). Internal migration, selection bias and human development: Evidence from Indonesia and Mexico.

Fayissa, B., and Nsiah, C. (2010). Can Remittances Spur Economic Growth and Development? Evidence from Latin American Countries (LACs). Department of Economics and Finance Working Paper Series.

Gounder, R. (2014). Does Remittances Finance Welfare Development?: Evidence from the South Pacific Island Nation of Fiji. Paper presented at the Proceedings of Economics and Finance Conferences.

Hatemi-J, A., and Shamsuddin, M. (2016). The causal interaction between financial development and human development in Bangladesh. Applied Economics Letters, 1-4.

Ilahi, N., and Jafarey, S. (1999). Guestworker migration, remittances and the extended family: evidence from Pakistan. Journal of Development Economics, 58(2), 485-512.

Koc, I., and Onan, I. (2004). International Migrants' Remittances and Welfare Status of the Left-Behind Families in Turkey. International Migration Review, 38(1), 78-112.

Kock, U., and Sun, Y. (2011). Remittances in Pakistan-Why have they gone up, and why aren't they coming down? IMF Working Papers, 1-26.

Koska, O. A., Saygin, P. Ö., Çağatay, S., and Artal-Tur, A. (2013). International migration, remittances, and the human capital formation of Egyptian children. International Review of Economics and Finance, 28, 38-50.

Kroeger, A., and Anderson, K. H. (2014). Remittances and the human capital of children: New evidence from Kyrgyzstan during revolution and financial crisis, 2005–2009. Journal of Comparative Economics, 42(3), 770-785.

Madani, F., Muharremi, O., and Pelari, E. (2013). The Effect Remittances Have on the Living Standards of Albanians and on Country's GDP. Mediterranean Journal of Social Sciences, 4(10), 415.

Orrenius, P. M., Zavodny, M., Canas, J., and Coronado, R. (2010). Do remittances boost economic development-evidence from Mexican states. Law and Bus. Rev. Am., 16, 803.

Ponce, J., Olivié Aldasoro, L., and Onofa, M. (2008). Remittances for Development?: A Case Study of the Impact of Remittances on Human Development in Ecuador. Elcano Newsletter(48), 33.

Ponce, J., Olivié, I., and Onofa, M. (2011). The Role of International Remittances in Health Outcomes in Ecuador: Prevention and Response to Shocks1. International Migration Review, 45(3), 727-745.

Rao, B. B., and Hassan, G. M. (2011). A panel data analysis of the growth effects of remittances. Economic modelling, 28(1), 701-709.

Salas, V. B. (2014). International remittances and human capital formation. World Development, 59, 224-237.

Sawyer, A. (2014). Is Money Enough?: The Effect of Migrant Remittances on Parental Aspirations and Youth Educational Attainment in Rural Mexico. International Migration Review.

Stojanov, R., and Strielkowski, W. (2013). The Role of Remittances as More Efficient Tool of Development Aid in Developing Countries. Prague Economic Papers, 22(4), 487-503.

Ustubici, A., and Irdam, D. (2012). The Impact of Remittances on Human Development: a Quantitative Analysis and Policy Implications. Economics and Sociology, 5(1), 74.

Naeem, M. Z. and Arzu, S. (2017). The Role of Remittances on Human Development: Evidence from Developing Countries. *Bulletin of Business and Economics, 6(2), 74-91.*

Appendix 1: Including developing countries (HDI 2014)

Afghanistan	Eritrea	Nepal
Albania	Ethiopia	Niger
Algeria	Fiji	Pakistan
Armenia	Gabon	Panama
Azerbaijan	Gambia	Papua New Guinea
Bangladesh	Georgia	Paraguay
Belarus	Grenada	Peru
Belize	Guinea	Philippines
Benin	Guinea-Bissau	Romania
Bhutan	Guyana	Rwanda
Bolivia (Plurinational State of)	Haiti	Samoa
Bosnia and Herzegovina	Honduras	Sao Tome and Principe
Botswana	India	Senegal
Brazil	Indonesia	Solomon Islands
Bulgaria	Iran (The Islamic Republic of)	South Africa
Burkina Faso	Iraq	Sri Lanka
Burundi	Jamaica	St. Lucia
Cambodia	Kazakhstan	Sudan
Cameroon	Kenya	Suriname
The Central African Republic	Kiribati	Swaziland
Chad	Korea (Republic of)	Tajikistan
China	Lebanon	Tanzania (The United Republic of)
Colombia	Lesotho	Togo
Comoros	Liberia	Tonga
Congo (The Democratic Republic of the)	Libya	Tunisia
Costa Rica	Madagascar	Turkey
Côte d'Ivoire	Malawi	Turkmenistan
Cuba	Malaysia	Uganda
Djibouti	Maldives	Ukraine
Dominica	Mali	Uzbekistan
Dominican Republic	Mauritania	Viet Nam
Ecuador	Mauritius	Zimbabwe
Egypt	Mexico	
El Salvador	Mongolia	