Foreign Remittances and Human Resource Development in Developing Countries

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Abstract

Human resources are the vital instrument for the attainment of sustainable development. Health and education are amongst the main concerns of Sustainable Development Goals (SDGs) and the remittances have been understood as a recommended catalyst in obtaining human resource development in developing countries. The present study attempts to provide a deep understanding of the relationship between remittances and HRD by using a panel dataset spanning from 1990 to 2016 and covering 151 developing economies. The data was obtained from the World Bank's World Development Indicators. Infant mortality rate (for health) and secondary school enrollment (for education) are taken as proxies to measure HRD. The results of the Generalized Method of Moments (GMM) technique show that role of remittances helps promote HRD. Disaggregate analyses based on the per capita GNI of economies show that remittances have more impact in reducing infant mortality in high-income countries and in increasing school enrollment in low-income countries. Disaggregate analyses based on the regional classification of economies show that remittances have an impact in reducing infant mortality in all regions but the highest influence was found in South Asia and the lowest impact in Latin America. Likewise, remittances were found to have an impact in increasing school enrollment, but comparatively more influence of remittances was found in Latin America and less in Sub-Saharan Africa. The study signifies the role of remittances in HRD for developing economies and suggests developing strategies persuading the labor migration and networks for remittances to be remitted for the home economies.

Keywords: Remittances, Child health, Education

1   Introduction

The migrant remittances have become a catalyst to have the supply of basic needs including health and education for developing countries (Amakom & Iheoma, 2014). Remittances enable households to escape themselves from the poverty trap and improve their education and health realizations (Mara *et al*., 2012). Although migration provides remittances yet causes the loss of human capital (brain drain) in the home country (Rahman, 2010). Remittances consider the second major capital inflow to developing economies after the role of foreign direct investment.

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Recent years have seen an increasing trend in remittances. According to World Bank estimates remittances are observed at $613 billion in 2016 (World Bank, 2018). Remittances are more even external sources for developing countries. Few developing countries receive more than a quarter of GDP as Nepal receives $6.6 billion (31.3 percent of GDP), Kyrgyzstan receives $2 billion (30.4 percent of GDP), and Tajikistan $1.9 billion (26.9 percent of GDP). Similarly, Haiti and Liberia receive equal to 15 percent and 25 percent of Gross Domestic Product respectively (Pew Research Center, 2018). All regions have experienced high remittances but the higher flow of remittances is observed in Egypt, India, China, the Philippines, Mexico, Nigeria, and China ranging from $20 billion to $69 billion.

East Asia and the Pacific has experienced $130 billion in remittances in 2017 and it is projected to raise $135 billion in 2018. Remittances flow has increased up to $48 billion in Europe and Central Asia in 2017 after a declining trend in three sequential years. In the case of Latin America and the Caribbean, remittances have observed almost $80 billion. In 2017, the Middle East and North Africa have experienced $53 billion. South Asia has experienced $117 billion in remittances in 2017. Sub-Saharan Africa has experienced a $38 billion amount of remittances in 2017 (World Bank, 2018).

The literature evidenced an optimistic influence of remittances on poor economies in attaining a better standard of living. Remittances remove budget constraints by providing means of income to consume, save, and invest in getting better-quality life. The impact of remittances can be seen at micro and macro levels. At the micro-level, remittances proliferate household income and consumption patterns. In addition, remittances are helpful in dropping poverty status, rising financial development, and economic growth (Aggarwal *et al.*, 2006). It is observed that 59 percent of the remittance amount is spending on consumption purposes, health, and education (Cuadros-Menaca & Gaduh, 2017). The impact of remittances on economic growth is not always promising. Remittances may raise growth if households invest in acquiring education, opening a business, or sponsoring new technologies rather than focusing only on consumption (Woodruff, 2007; Mendola, 2008).

Health is 3rd priority in Sustainable Development Goals (SDGs). In the health category children are more susceptible. Although the infant mortality rate has declined from 31 per 1000 live births to 19 deaths per 1000 live births from 2000 to 2015. Yet central Asia, South Asia, and Sub- Saharan Africa have an infant mortality rate of 29 per 1000 live births in 2015. Similarly, education is the 4th main concern of SDGs. It is noticed that 61 million children out of 263 million children of primary level age are absent from schools. Furthermore, 70 percent of the world out of school population belong to South Asia and Sub- Saharan Africa Sustainable Development (2017).

Child health is a good indicator to measure all services provided to the health sector. Infant mortality is a global health issue. It is widely accepted that remittances propagate health outcomes in developing countries (Mishra and Newhouse, 2007). Moreover, for achieving better health outcomes, remittances stand as a key source of external financing (Edward & Uretas, 2003, Chauvet *et al.*, 2008, Amuedo–Dorantes *et al.*, 2008). Remittances are helpful in covering medical facilities which improve health

status (Amuedo-Dorantes & Pozo, 2008) and reduce infant mortality (Duryea *et al*., 2005).

Although vast research has been found on the impact of remittances on human resource development, but the panel analysis of developing countries for the impact of remittances on health and education and the outcomes of remittances according to income level and regional level is a matter of discussion. The current study will address this issue by aggregate analysis of developing countries and disaggregate analysis according to income and regional disaggregation. Furthermore, the same dataset is used for both health and educational analysis. In this way, the current study is an addition to the literature.

The main objectives of the current study are to examine the impact of remittances on human resource development in developing countries and to estimate the impact of remittances on human resource development in the developing countries disaggregated by income and region as well.

2   Literature Review
A variety of literature exists on the impact of remittances on health, child welfare, and child schooling. We have divided the review into two sections that are the impact of remittances on health and education.

2.1   Literature on Remittances and Health
Kanaiaupuni & Donato (1999) concluded that in the short run remittances have a disruptive impact on households and child health. But in long run, it raises the living standard of households and reduces infant mortality. Chauvet *et al*. (2008) found that health aid and remittances had a direct impact on child and infant mortality rates which also improved human development in developing countries.

Franckel & Lalou (2009) found the impact of remittances on the health behavior of the child in Sub-Saharan Africa. The study concluded that collective decisions affect strongly the care process and health of children. Drabo and Ebeke (2010) showed that remittances and foreign aid had a positive impact on access to health care services in 56 developing countries.

De & Ratha (2012) found that remittance is a main source of income mobility in Sri Lanka. In addition, remittance has no significant influence on human capital. Nguyen *et al*. (2013) showed that remittances had a positive and direct impact on children's welfare and remittances strongly correlated with health as well as education of children. Adhikari *et al*. (2014) revealed that the mental health of children was badly affected in the case of mother's and father's migration.

2.2   Literature on Remittances and Education
Edwards and Ureta (2003) revealed that remittances had a positive impact on school enrollment. Andersen *et al*. (2007) found that remittances have a very important role to attain a better life for many families of Nicaragua. Remittances increase the purchasing power of households to get a better education and health facilities in urban

areas but not promising results were found for rural areas. Correspondingly, remittances don't allow them to upsurge their consumption and investment pattern.

Nasir *et al*. (2011) found that how foreign remittances, received by households affect the performance of school-going children. The results indicated that remittances negatively affect educational performance. At the micro-level, Chaaban & Mansour (2012) found the impact of remittances on school enrollment in Syria, Jordan, and Lebanon. Results showed that remittances increase school enrollment.

Cuadros-Menaca and Gaduh (2017) investigated the impact of remittances, as an additional source of income on the choice between child labor and children schooling in Columbia. The results indicated that the likelihood of school attendance improves with a one-unit increase in remittances. Similarly, an inverse situation prevails in the case of child labor.

The current study will find the impact of remittances on both indicators of human resource development, i.e. health and education in developing countries, income groups of developing countries, and regional groups.

3   Methodology

To see the impact of remittances on human resource development captured by health and education, we have constructed two theoretical models. The health outcome is measured by infant mortality rate and education is measured by secondary school enrollment. The data for 151 developing economies have been obtained from World Development Indicators (WDI).

3.1   Model for Health

The first time, Grossman (1972) presents health production function. Individual efforts consider as input that contributes towards health. According to Grossman, health is stock which an individual utilizes all over his life. This stock depreciates with the passage of time and finally death takes place with minimized stock. Health production function depends on individual input variables.

Health =f (X)

$$(1)$$

Here X vector denotes input variables. In the micro term, inputs variables can be income, education and employment, and the environmental lifestyle of the individual. Similarly, in the macro term, the per capita inputs categorized into economic, social, and environmental factors (Fayissa & Gutema, 2008) determine the health. Under this model, the functional form for the current analysis is given below where health is measured by infant mortality rate.

$$INFANTM = f(REM, GDPC, PHYSICIAN, WATER, HEXP, URBAN)$$

$$(2)$$

In panel form, equation 2 can be written as:

$$INFANTM_{it} = \alpha_{1it} + \alpha_2 REM_{it} + \alpha_3 GDPC_{it} + \alpha_4 PHYSICIAN_{it} + \alpha_5 WATER_{it}$$
$$+ \alpha_6 HEXP_{it} + \alpha_7 URBAN_{it} + \mu_{it}$$

(3)

α_1 = intercept, α_2 to α_7 coefficients indicate a change in infant mortality due to change in remittances, GDP per capita, physicians, improved water, health expenditures, and urbanization respectively. μ indicates error term.

3.2   Model for Education

Education is the main indicator of human resource development (Schultz, 1960). Households behave like production units (Becker, 1965; Becker & Tomes, 1976) and make decisions of allocating available supply of economic resources depending on the nature of resources and distribution of time. Holmes (1999) provides a reduced form of household demand equation for education as:

Education =f (X)

(4)

Here "X" vector consists of wages of households, market, and non-market input prices as well as individual and family characteristics.

The education is measured by secondary school enrollment. In the light of the above discussion, the functional form of current analysis can be written as:

$$ENROL = f(REM, GDPC, PTRATIO, EDUEXP, URBAN, DEM)$$

(5)

In panel form, equation 5 can be written as

$$ENROL_{it} = \beta_{1it} + \beta_2 REM_{it} + \beta_3 GDPC_{it} + \beta_4 PTRATIO_{it} + \beta_5 EDUEXP_{it}$$
$$+\beta_6 URBAN_{it} + \beta_7 DEM_{it} + \mu_{it}$$

(6)

β_1 = intercept, β_2 to β_7 coefficients indicate a change in school enrollment due to change in remittances, GDP per capita, pupil-teacher ratio, educational expenditures, urbanization and democracy respectively. μ indicates error term.

4   Results and Discussion

Table 1 shows the results of pre-estimation tests and OLS for health and education. According to estimated results, remittances have a negative impact on infant mortality rate as well as positive impact on school enrollment. The issue of heteroscedasticity and endogeneity prevails in our model.

Table 1
OLS Results of Health and Education Outcomes of Remittances

Dependent Variable: Infant Mortality		Dependent Variable: School Enrollment	
VARIABLES	*OLS*	*VARIABLES*	*OLS*
Log. Remittances	-0.892***	Log. Remittances	0.963***
	(0.187)		(0.235)
	[0.000]		[0.000]
Log. Gdp per capita	-9.444***	Log. Gdp per capita	5.236***
	(0.586)		(0.912)
	[0.000]		[0.000]
Urbanization	0.159***	Urbanization	0.239***
	(0.0306)		(0.0430)
	[0.000]		[0.000]
Improved Water	-0.698***	Pupil Teacher Ratio	-0.941***
	(0.0395)		(0.0547)
	[0.000]		[0.000]
Health Expenditures	-0.518***	Education Expenditures	1.004***
	(0.191)		(0.278)
	[0.000]		[0.000]
Physicians	-3.376***	Democracy	0.897***
	(0.411)		(0.237)
	[0.000]		[0.000]
Constant	185.1***	Constant	11.13
	(4.669)		(8.163)
	[0.000]		[0.000]
Observations	1,117	Observations	854
R-squared	0.732	R-squared	0.706
Link Test	0.056	Link Test	0.210
Multicolinearity	1.95	Multicolinearity	2.10
Heteroscedasticity	0.0000	Heteroscedasticity	0.0017

Note: 1st value that is coefficient, 2nd value represents the standard error and 3rd represents P-value
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4.1 Empirical Results of Generalized Method of Moments

Simultaneous linkages exist in household choice on remittances and schooling. Similarly, health and remittances, and migration also cause and affect one another. In such circumstances, remittances may not be considered as an exogenous shock. GMM technique is considered to be efficient to establish a causality relationship. Table 2 shows the GMM results obtained after dealing with the issue of heteroscedasticity and endogeneity issue.

Table 2
GMM Results of Health and Education Outcomes of Remittances

Dependent Variable: Infant Mortality		Dependent Variable: School Enrollment	
VARIABLES	*GMM*	*VARIABLES*	*GMM*
Log. Remittances	-0.759***	*Log. Remittances*	0.862***
	(0.209)		(0.283)
	0.000		*0.002*
Log. GDP per capita	-9.381***	*Log. GDP per capita*	5.365***
	(0.629)		(1.243)
	0.000		*0.001*
Urbanization	0.159***	*Urbanization*	0.198***
	(0.0289)		(0.0593)
	0.000		*0.000*
Improved Water	-0.691***	*Pupil Teacher Ratio*	-1.043***
	(0.0551)		(0.0787)
	0.000		*0.000*
Health Expenditures	-0.480**	*Education Expenditures*	1.086***
	(0.202)		(0.392)
	0.017		*0.000*
Physicians	-3.571***	*Democracy*	0.720**
	(0.355)		(0.307)
	0.000		*0.019*
Constant	181.5***	*Constant*	18.82*
	(5.041)		(10.98)
	0.000		*0.087*
Observations	1,088	*Observations*	674
R-squared	0.729	*R-squared*	0.706
Estat endogenous	(p = 0.0957)	*Estat endogenous*	(p = 0.0531)
Estat overid	(p = 0.9627)	*Estat overid*	(p = 0.4930)

Note: 1st value that is coefficient, 2nd value represents the standard error and 3rd represents P value
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4.2   Discussion

We have two models for estimation. The first one is the child's health model which is measure through infant mortality rate and the second one is school enrollment, both models are discussed one by one in detail.

4.2.1   Child's Health

We have included the remittances in our analysis as a principal variable. For numerous developing countries, remittances play a vital role in attaining better progress. The estimated coefficient of remittances reveals its negative impact on the infant mortality rate. One percent increase in remittances causes 0.759 decreases in infant mortality rate.

Results of the current study indicate that a one percent increase in GDP per capita reduces the infant mortality rate by 9.381. The possible explanation of the negative

impact of GDP per capita on infant mortality may be that per capita income increases the purchasing power and make the household enough capable to attain better health facilities which reduce the chances of infant mortality rate.

The GMM estimator of the current analysis has shown that urbanization positively affects the relationship with infant mortality. One percentage increase in the urban population increases the infant mortality rate by 0.159. The estimated result is consistent with Rogers & Wofford (1989) and Fink & Hill (2013).

One percent increase in access to improved water results in reducing infant mortality by 0.691. The results have shown that one percent increases in health expenditures cause the infant mortality rate to reduce by 0.480 percent. The justification is that health expenditures reduce infant mortality directly by providing better medicine and vaccination and indirectly through providing awareness. An increase in one unit availability of physicians results in 3.571 units decreases in infant mortality rate.

4.2.2 Education
Estimated results of school enrollment are presented in Table 2. The coefficient of remittances indicates that a one percent increase in remittances improves school enrollment by 0.862 percent. Urbanization seems to be positively related to school enrollment. One percent increase in the urban population causes a 0.198 percent increase in school enrollment. This phenomenon is explained as urbanization provides better educational facilities through the creation of jobs and availability of basic needs including education.

The high student-teacher ratio discourages both students and teachers, results in low school enrollment and poor educational performance. One percent increase in pupil-teacher ratio reduces school enrollment by 1.043 percent. One percent increases in education expenditure cause 1.086 percent increase in education enrollment. The possible explanation is that educational expenditures provide basic inputs including school, infrastructures that motivate education. The role of democracy is responsive to the demand of attaining better education facilities. One unit increase in democracy results in 0.720 percent increase in school enrollment.

4.3   Disaggregate Analysis
Developing countries belong to different income groups and different regions of the world. In addition, many social, economic, political factors and regional factors have their influence in these economies. Keeping in view this concern, the impact of remittances on health and education is captured according to income and regionally disaggregated data.

4.3.1   Child Health in Different Income Groups of the Countries
It is a fact that the health care system is not much efficient in low-income countries, that is why 95 percent of child deaths occur in only 75 low-income countries (Mills, 2014). Lack of monetary shield to protect health pushed 100, 000,000 people below the poverty line per year (WHO, 2010).

Table 3 shows the results of developing countries having a low income. The estimated coefficient of remittances reveals its negative impact on the infant mortality rate. One percent increases in remittances cause 0.871 decreases in infant mortality rate. The estimated results are consistent with (Hildebrandt *et al*., 2005; Prabal & Ratha, 2012). The basic challenge of low-income countries is low purchasing power. Remittance is an anti-poverty power (Ratha, 2013) that provides access to basic needs including health. Individual income is the key determinant of child health (Wood and Carvalho, 1988).

Estimated results indicate that a one percent increase in GDP per capita reduces the infant mortality rate by 14.13. GDP per capita reduces the infant mortality rate in high-income countries by 4.11. A negative impact of GDP per capita was found for both income groups however the impact is strong in low-income countries.

Urbanization has positive and insignificant relationship with infant mortality; one percentage increase in urban population increases infant mortality rate by 0.109 in the case of low-income countries. The impact of remittances on the infant mortality rate is positive in high-income countries. One percentage increase in the urban population increases the infant mortality rate by 0.075. High urbanization causes economic and social deprivation which results in poor child health.

In low-income developing countries, an increase in one percent access to improved water cause in reducing the infant mortality rate by 0.333. In low-income developing countries, an increase in one percent access to improved water cause in reducing the infant mortality rate by 1.146.

In low-income countries, an increase in one percent health expenditures cause in reducing the infant mortality rate by 2.26. A negative and Insignificant impact of health expenditures on infant mortality rate is found in the case of high-income countries. Increase in one percent in health expenditures causes in reducing the infant mortality rate by 0.304.

In the case of low-income developing countries, an increase in one unit availability of physicians results in the reduction of infant mortality rate by 5.902. Similarly, negative and significant impact is found in the case of high-income countries. An increase in one unit availability of physicians results in the reduction of infant mortality rate by 1.334.

Table 3
Child Health in Different Income Groups of the Countries

VARIABLES	(1)	(2)	VARIABLES	(1)	(2)
	Dependent Variable: Infant Mortality			*Dependent Variable: School Enrollment*	
	Low income	*Upper income*		*Low income*	*Upper income*
Log. Remittances	-0.871**	-0.988***	Log. Remittances	2.028***	0.808*
	(0.405)	(0.253)		(0.385)	(0.434)
	[0.032]	[0.000]		[0.000]	[0.063]
Log. GDP per capita	-14.13***	-4.113***	Log. GDP per Capita	5.462***	-0.101
	(2.191)	(0.532)		(1.999)	(1.526)
	[0.000]	[0.006]		[0.006]	[0.947]
Urbanization	0.109	0.0751***	Urbanization	0.202**	0.0423
	(0.0824)	(0.0278)		(0.0804)	(0.0925)
	[0.188]	[0.012]		[0.012]	[0.648]
Improved Water	-0.333***	-1.146***	Pupil Teacher Ratio	-1.129***	-0.559***
	(0.0833)	(0.133)		(0.111)	(0.141)
	[0.000]	[0.000]		[0.000]	[0.000]
Health Expenditures	-2.569***	0.304	Education Expenditures	0.665	0.982
	(0.444)	(0.202)		(0.411)	(0.708)
	[0.000]	[0.106]		[0.106]	[0.166]
Physicians	-5.902***	-1.334***	Democracy	-0.413	2.131***
	(0.698)	(0.452)		(0.390)	(0.413)
	[0.000]	[0.290]		[0.290]	[0.000]
Constant	204.8***	178.5***	Constant	6.033	59.33***
	(11.48)	(12.52)		(15.29)	(13.25)
	[0.000]	[0.693]		[0.693]	[0.000]
Observations	317	408	Observations	363	208
R-squared	0.645	0.561	R-squared	0.674	0.298
Estat endogenous	(p = 0.3808)	(p = 0.4351)	Estat endogenous	(p = 0.0790)	(p = 0.2461)
Estat overid	(p = 0.3346)	(p = 0.0683)	Estat overid	(p = 0.5535)	(p = 0.4604)

4.3.2 Education in Different Income Groups of the Countries

The estimated results of school enrollment are presented in the second half of Table 3. GMM estimator of remittances obtained from low-income developing countries indicates that one percent increase in remittances improves school enrollment by 2.028 percent. In addition, the estimated coefficient of remittances in the high-income group reveals that one percent increase in remittances increases school enrollment by 0.808 percent. The distribution of well-being highly depends on per capita GDP. In the case of low income, positive and significant impact of GDP per capita is found on school enrollment. One percent increases in GDP per capita boost school enrollment by 5.365 percent. Whereas, the insignificant impact is found in the case of high-income countries.

Urbanization provides opportunities to achieve better education opportunities and employment opportunities for developing countries. One percent increase in the urban population causes 0.202 percent increase in school enrollment in low-income countries. Moreover, the positive and insignificant impact of urbanization on school enrollment is found in high-income countries.

The estimated results reveal that one percent increase in pupil-teacher ratio reduces school enrollment by 1.129 percent in low-income countries. In the case of high-income countries, negative and significant impact of pupil-teacher ratio on school enrollment is found. A one percent increase in pupil-teacher ratio reduces school enrollment by 0.559 percent.

Education expenditures improve school enrollment by providing scholarships or free basic education to children. For both income groups, the impact of education expenditures is positive but insignificant.

In the case of low-income countries, the negative and insignificant impact of democracy is found. Whereas, in the case of high-income countries, one unit increase in democracy causes 2.131 percent increase in school enrollment.

5   Conclusion

In the current analysis, the Panel dataset is used to find the impact of remittances on human resources development. Data for current analysis is taken from World Development Indicators (WDI). For numerous developing countries, remittances play a vital role in attaining better progress. Remittances empower households to improve their standard of living (Durand *et al*., 1996) and improve the local environment (Taylor & Wyatt, 1996). Control variables: GDP per capita, physicians, improved water, and health expenditures have negative impact on infant mortality. Moreover, the impact of urbanization is positive on infant mortality. Remittances increase school enrollment by reducing poverty (Acosta, 2006; Acosta *et al*., 2007), providing better employment opportunities (Rodriguez & Tiongson, 2001), reducing income inequality (Lipton, 1980; Stark *et al*., 1988; Adams, 1989). All control variables including remittances, GDP per capita, urbanization, education expenditures, and democracy have positive and significant impact on school enrollment while the pupil-teacher ratio has negative and significant impact on school enrollment.

In disaggregate analysis according to income level; remittances have more impact to reduce infant mortality in high-income countries and remittances have more influence to increase school enrollment in low-income countries. Remittances reduce infant mortality in all regions and more influence is found in South Asia and less impact in Latin America. The impact of remittances on school enrollment is positive for all regions. Comparatively more influence is found in Latin America and less in Sub-Saharan Africa.

To the best of my knowledge, this is the first attempt to find the impact of remittances on human resource development at disaggregate analysis according to income and regional level. For income level low and upper income developing countries data set is used for the analysis. Similarly, data set of six regions where developing economies lie are used for disaggregate analysis.

Current analysis has used two measures of human resource development. Further analysis can incorporate more indicator or index-based work. In this analysis, all developing countries have taken to find the overall impact of remittances on human resource development. Future analysis can take country-specific analysis to capture a more accurate picture. It is suggested for policymakers to develop a suitable incentive for migrants to remit, particularly the strategies persuading the costs and networks of remittances. Also, need to focus on strategies to uplift budget constraints by providing income-earning opportunities for poor households.

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Appendix A

List of variables, Definitions, Units and Data sources

Variables	Definitions and Units of Analysis	Sources
Dependent Variables		
INFANTM (Infant mortality)	Infant mortality rate is dying of children within one year. "Mortality rate, infant (per 1,000 live births)".	WDI (2017)
ENROL (School Enrollment)	School enrollment in term of ratio irrespective of age. Secondary education consists lifelong learning offered by skilled and specialized instructors. "School enrollment, secondary (% gross)".	WDI (2017)
Independent Variable		
REM (Remittances)	Remittances are amount and personal transfers in terms of cash and other modern means received by resident household from foreign nonresident workers, mainly border, cyclical (seasonal) or short term workers. "Current U.S. dollars".	WDI (2017)
Control Variables		
GDPC (GDP per capita)	GDP per capita is measured without making discount for depreciations, sum of all annual production of country within a year and divided by population. "Constant 2010 U.S. dollars".	WDI (2017)
WATER (Improved Water)	Improved water sources include taps, tube wells, protected drug wells and collection of rainwater. "% of population with access of improved water".	WDI (2017)
PHYSICIAN (Physicians)	"Number of physicians Per thousand people".	WDI (2017)
HEXP (Health Expenditure)	Health expenditures include public and private health expenditures, nutrition and family planning activities. "Health expenditures in percentage of GDP"	WDI (2017)
URBAN (Urbanization)	People living in urban areas have more access in attaining better education. "Urban population in percentage of total population"	WDI (2017)
PTRATIO (Pupil Teacher Ratio)	Average number of pupil per teacher "ratio of average number of pupil per teacher"	WDI (2017)
EDUEXP (Educational Expenditures)	Sum of all government and private expenditures. "Education expenditures in percentage of GDP"	WDI (2017)
DEM (Democracy)	The presence of institutionalized restrictions on the power of the executive; and the assurance of civil liberties to all citizens (although not actually measured). "Index -10 (less democracy) to 10 (more democracy)"	Polity II

APPENDIX B

(List of Countries)

Afghanistan	Bolivia	Dominican Republic	Guatemala	Philippines	Madagascar
Angola	Brazil	Algeria	Guyana	Palau	Thailand
Albania	Barbados	Ecuador	Honduras	Papua New Guinea	Tajikistan
United Arab Emirates	Brunei Darussalam	Egypt, Arab Rep.	Croatia	Poland	Turkmenistan
Argentina	Bhutan	Eritrea	Haiti	Paraguay	TimorLeste
Armenia	Botswana	Ethiopia	Hungary	Qatar	Tonga
Antigua and Barbuda	Central African Republic	Fiji	Indonesia	Romania	Trinidad and Tobago
Azerbaijan	China	Micronesia, Fed. Sts.	India	Russian Federation	Tunisia
Burundi	Cameroon	Gabon	Iran, Islamic Rep.	Rwanda	Turkey
Benin	Congo, Dem. Rep.	Georgia	Iraq	Saudi Arabia	Tuvalu
Burkina Faso	Congo, Rep.	Ghana	Jamaica	Sudan	Tanzania
Bangladesh	Colombia	Gibraltar	Jordan	Senegal	Uganda
Bulgaria	Comoros	Guinea	Kazakhstan	Solomon Islands	Ukraine
Bahrain	Cabo Verde	Gambia, The	Kenya	Sierra Leone	Uruguay
Bahamas, The	Costa Rica	GuineaBissau	Kyrgyz Republic	El Salvador	Uzbekistan
Bosnia and Herzegovina	Djibouti	Equatorial Guinea	Cambodia	Somalia	Venezuela, RB
Belarus	Dominica	Grenada	Kiribati	Serbia	British Virgin Islands
Belize	Maldives	Mongolia	Kuwait	South Sudan	Vanuatu
Libya	Mexico	Mozambique	Lao PDR	Sao Tome and Principe	Samoa
Sri Lanka	Marshall Islands	Mauritania	Lebanon	Suriname	Kosovo
Lesotho	Macedonia, FYR	Mauritius	Liberia	Swaziland	Yemen, Rep.
Lebanon	Mali	Malawi	Niger	Seychelles	South Africa
Morocco	Myanmar	Malaysia	Nigeria	Syrian Arab Republic	Zambia
Moldova	Montenegro	Namibia	Nicaragua	Chad	Zimbabwe
Nauru	Panama	Pakistan	Nepal	Togo	Peru
Oman					