Research Article

Human Development Remittances and Economic Growth: An Evidence from Selected Developing Countries

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Abstract

This study aims to explore the influence of human development and remittances on the economic growth of eight developing nations spanning from 2000 to 2020. The primary findings of this research reveal a significant and positive relationship between human development and the economic advancement of these developing countries. Descriptive statistics were employed to elucidate the characteristics of the data variables, providing insights into the various factors related to human development, remittances, and economic growth. The results underscored the noteworthy and positive impact of remittances on the GDP of these nations. However, Govt. expenditure on education has an insignificant and negative effect on GDP. Similarly, GDP is negatively affected by inflation. However, foreign direct investment (FDI) significantly and positively affected the GDP whereas the exchange rate shows a negative and significant effect on GDP. Like, the population has a positive and extremely significant impact on GDP. Primary and secondary school enrolment has a positive and significant impact on GDP. Similarly, tertiary school enrolment has also high impact on GDP. Brazil has higher economic growth from selected developing countries followed by Thailand whereas Egypt and Pakistan receive the maximum amount of remittance among selected developing countries. Similarly, Brazil has a maximum expenditure on education (>6% of GDP) whereas Pakistan has a minimum amount on education (about 2.5% of GDP). Nepal has the maximum primary enrolment (> 140% gross), Thailand has the maximum secondary enrolment and Brazil has the maximum tertiary enrolment while Pakistan has the lowest primary and secondary enrolment.

Keywords: Human development, Remittances, Economic growth, Developing countries.

Introduction

The subject of economic development is one of the important areas of interest in economics. Development of countries regardless of their level, their primary goal is to ensure steady growth. Higher-income means freedom from poverty and a higher standard of living. Remittance represents the transfer of funds from the countries where immigrants do work to their home countries. This is totally different from other external fund inflows such as foreign aid, loans, and FDI (foreign direct investment). It is the major foreign exchange income source for developing countries. In several developing countries, remittance inflows have increased significantly over the last two decades. They are exporting labor to generate remittances. Foreign remittances decrease poverty; and improve education and medical care. Remittances also enhance consumption and investment in recipient countries. An improvement in consumption and investment are the signs of economic development. In this way, remittances contribute directly to poverty reduction. Even if it is completely consumed, it is good for human welfare and has a positive effect. Remittances can make more contributions However, it can be dangerous if remittances are used for consumption rather than investment, as is the nature

of developing countries. They cannot generate enough savings for economic growth. Remittances occur naturally as a basic income for migrants and as compensation for migrant countries that have lost some of their workforce (Nikas & Blouchoutzi, 2014). This has been considered a quick and economical way to send money throughout the world. In 2010, there more than 200 million international migrants transferred $ 331.7 billion to their home countries throughout the world and remittances increased to $ 416.6 billion in 2013, $ 429.9 billion in 2014, and $ 432 billion in 2015 (World Bank, 2014).

Motelle (2011) and Cooray (2012) showed that remittances have long-term beneficial effects on economic development. They reported that migrant remittances improved the efficiency and size of the economic sector in developing countries. Yaseen (2012) reported after analyzing the panel data of Egypt, Algeria, Libya, Jordan, Oman, Morocco, Lebanon, Syria, and Tunisia from 2000 to 2010 that remittances improved the financial institutions and played a significant role in the development of these countries. In case of instability of capital inflows, remittances also play a key role in boosting economic growth. Remittances also play a vital role in the reduction of poverty and improvement in health reduction conditions of recipient families. Cooray (2012) shared the results after analyzing the panel data from 1970-2008 in Asian countries to investigate the influence of immigrant remittances on the financial growth of recipients. He depicted those remittances showed a positive effect and increased the economic growth of recipients. The findings indicate that increased openness can facilitate greater transfers to remittance recipient countries and encourage the utilization of formal sectors for remittances. Akonji and Wakili (2013) explored the impact of remittances on the financial growth of developing countries between 1980 and 2010, reporting a significant correlation between remittances and economic expansion. Similarly, Koay and Choong (2013) examined the relationship between remittances and economic growth in Malaysia from 1975 to 2009, revealing that both financial development and remittances play statistically significant roles in influencing Malaysia's economic growth over the short and long term. Kratou and Gazdar (2018) investigated the effects of remittances on the financial progress of 24 African nations from 1998 to 2011, finding that growth rates tended to rise alongside increases in remittance inflows. Sobiech (2015) conducted a study using panel data from 1970 to 2010 to assess the significance of remittances in the economic growth of 54 developing countries, highlighting a positive relationship between remittances and economic expansion across the sampled nations.

Chowdhury (2016) used a variety of financial development indicators from 1979 to 2011 to observe the impact of remittances and financial development on the economic growth of the top 33 developing countries that receive remittances. After examining the stationary process of data, the researcher indicated that remittances considerably boosted the economic growth of the countries included in the sample. Finally, the relationship between remittances and growth has a significant impact on financial development.

Human development is a highly accepted and well-known indicator of well-being because human development promotes sustainable growth by improving the capabilities of individuals and increasing their productivity. Human development is the development of the whole society and its institutions. In order to achieve this development, only economic and social conditions need to be improved. Income level is one that measures quality of life (Anand & Sen, 1998; Fergany, 2003). Provision of resources is important for the improvements in economic growth and human development while improvements in workforce quality contribute to the economic growth process (Stewart, 1997). Human development revealed that education, health, and nutrition have a positive effect on the economic growth process. Gupta et al. (1998) reported that spending on public health and education has a positive effect on capital and economic growth, and this will reduce poverty. Education contributes to the growth process by increasing human development and productivity. Romer (1990) expressed that a healthy workforce or human development accelerates technological development and economic growth.

Ramirez et al. (1997) analyzed the panel data from 1970-1992 to study the association between financial growth and human development (HD) and reported that positive and optimistic association between financial growth and HD. Public spending on education and health represents an important correlation between HD and economic growth. Also, Ranis et al. (2000) analyzed panel data from 76 developing countries from 1960-1992

and reported that there is a bidirectional affiliation between HD and economic growth. Bundala (2012) examined the data of 40 countries, 10 countries from very high, 10 high, 10 medium and 10 low development countries. He reported a multidimensional association between financial growth and HD. Grubaugh (2015) used panel data from 1980-2010 from 83 developing countries and showed that there is a positive relationship between human development and the economic growth of the country. Uçan and Koçak (2018) used panel data from 1990-2015 and reported the strong affiliation between economic growth (EG) and HD. Erdem and Çelik (2019) used panel data from 33 African countries from 1995-2014 to explore the link between HD and EG. They found that there is a progressive and substantial link between HD and EG. Similarly, in African countries, Appiah et al. (2019) used panel data from 1990-2015 to examine the effect of HD on EG. They found that it had a constructive and momentous impact on HD on EG. The study conducted by Balcı and Özcan (2019) used panel data from 2005-2017 for 54 countries and reported that there was a liaison between EG and HD. Bhowmik (2018) used panel data for the period 1990-2016 to analyze the EG and HD, association between unemployment, GDP and per capita income. He reported that economic growth had a 1% increase in development, 1.41% in annual growth, 5.86% in GDP, and per capita income a decrease of 0.5028% in the unemployment rate. Özturk and Suluk (2020) found a connection between development and EG by analyzing the data from 1990-2017. When the findings obtained in the empirical studies in the literature are examined, economic growth and human development can affect each other.

Acemoglu et al. (2016) explained how additional income from remittance inflows has an impact on the consumption of households and how these alterations in a comprehensive manner affect the overall demand and/or spread throughout the economy. According to World Bank survey data, uses of remittance vary from country to country. These remittances can be used for different applications such as food consumption, home construction, and education. Because production sectors are interrelated to varying degrees, different uses of consumption have a significant impact on economic fluctuations. The change in one sector's demand due to remittances can have a significant impact on other sectors linked to it via the input-output table (Leontief matrix). Thus, this collaboration can intensify the economy's comparatively minor improvement in the production of one sector. For example, the influx of remittances can enhance consumption in some particular sectors like retail, food, and education, and can be strongly dependent on other sectors like manufacturing, agriculture and financial intermediation. Consequently, comparatively slight initial changes in consumption can spread rapidly throughout the economy. The existing literature is also very diverse regarding an increase in remittances and its effects on poverty reduction, financial deepening, higher immigration and impact on institutional development. Empirical evidence indicates that remittances contribute to economic growth by creating positive effects on savings, consumption and investment. However, small negative effects are also linked to remittances as they may decrease the incentives for labor and thereby decreasing supply of labor or labor force participation in recipient countries. This can lead to higher real exchange rates in host countries, which can lead to the reallocation of resources from the trading sector to the non-trading sector, or can adversely affect long-term growth due to Dutch disease (Ratha, 2013; Perez-Saiz et al. 2019).

However, most of studies showed that there was a optimistic link between EG and remittances. The panel data of 15 countries taken from North Africa and Middle East from 1980 to 2009 expressed optimistic influence of remittances on EG, consumption and investment (Mim & Ali, 2012). Remittances to the accrual of human capital successfully affect the financial growth of recipient countries. In addition, econometric parameters based on internal or endogenous growth model have found compelling outcomes. For example, Cooray (2012) reported that there was positive impact of remittances on the development and economic growth of financial sector and education in South Asian countries from 1970-2008. Rao and Hassan (2012) found that increased remittances not only have a direct positive effect on economic activities, but also have an indirect positive effect on investment, exchange rates and development of the financial sector. Khatoon et al. (2021) demonstrated that human capital has a positive and significant impact on economic growth. Gillani et al. (2023) emphasized that increased remittances contribute to improved living standards and human development in the respective Asian economies.

Remittances may enhance investment by reducing credit problems or restrictions in developing countries and have a positive impact on financial growth. It is suggested that influences of remittances through this channel will be greater for countries with comparatively underdeveloped ceconomic systems. Remittances can increase investments by decreasing consumption instability and contribute to a more stable macroeconomic environment that facilitates investment activity. Barajas et al. (2009) showed that the more integrated economy of countries particularly in developing countries make the improvements in country's internal financial system because remittance inflows will reduce credit barriers and stimulate investment. Remittances can reduce inflationary pressures and income volatility in recipient countries (Singh et al. 2010). Ratha (2013) stated that remittances performance as macroeconomic agents to neutralize or reduce the bad influence of economic disasters or crisis and therefore tend to act counter intermittently, whereas flows reduce or even near to finish in financial crises. Therefore, remittances confirm and certify constant expenditure and output against variations in price instability.

Agarwal (2006) reported that both education and training improve people's skills and abilities and make them central to the economic development of country. In recent years, countries focused on building human capital have seen higher GDP growth, showing per capita income (UNESCO, 2002). Financial growth, an important assurance to HD, can be coordinated. Therefore, customary policy measures that argue that better HD should be maintained until EG accelerate appear to be false. Ramirez et al. (1997) investigated the relationship between EG and HD, recognizing two aspects from EG to HD, and from HD to EG, positive relationships in directions, and society, expenditure on services and education. An important organization that breaks the link between EG and HD, on the other hand, the relationship between investment levels and income diffusion is extremely important in breaking the relationship between HD and EG. It can be emphasized that HD can be considered as a process of expanding community opportunities. Daniela-Mihaela and Oana-Georgiana (2015) showed that HD can be seen as a process of increasing the original chances enjoyed by the general public.

The present study is planned to explore the impact of human development, remittances on economic growth of selected developing countries with following objectives and to suggest policy measures.

Methodology

Materials and methods include data collection and analysis tools and techniques; it is applied primarily to test hypotheses. Methodology is defined as the logic of scientific procedures. Appropriate methodology is essential for the successful completion of research studies. The research methodology covers all stages from data collection to policy advice. It involves selecting variables, gathering their data from valid sources, specifying correct models and applying appropriate analytical techniques to the data to obtain results.

The objective was to analyze the major factors affecting the GDP of selected developing countries. Effects of different variable on GDP of selected developing countries were assessed by employing various methods. Various sources of data collection and estimation techniques were used and described in this research section to make the research clearer and more scientific.

Panel Data Models

Panel data is a blend of cross-sectional and time series data, obtained by collecting information on the same unit over multiple time periods. This approach offers two primary advantages. Firstly, it enhances the reliability of model parameter estimates. This is attributable to several factors. Panel data enables the control of unobserved factors that may vary across units but remain constant over time, as well as factors that change over time but not across units, thereby mitigating potential biases in assessments. Additionally, panel data sets tend to be more diverse compared to either cross-sectional or time series data alone, leading to more precise estimates, particularly when explanatory variables exhibit greater variability. Moreover, the use of panel data often results in less reliance on linearity for explanatory variables, as compared to solely employing time series or cross-sectional data, thus contributing to more accurate parameter estimation.

Data Collection and Sources

To analysis the effect of different indicators on the GDP, panel data of eight selected developing countries were collected from the year 2001 to 2020. The major sources of data were world development indicators WDI, World Bank and human development report, United Nations development program.

Variables of the Model

in this research variables were included GDP, remittances, Government expenditure on education, Inflation, Foreign direct investment, exchange rate, Population, Gross capital formation, Unemployment, School enrollment, primary, School enrollment, secondary, School enrollment, tertiary, Exports of goods and services. To analyze the effect of these variables on GDP, GDP take as a dependent variable.

For the analysis time series data were used for the human development, remittances and economic growth estimation. Variables included were GDP, remittances, Government expenditure on education, Inflation, Foreign direct investment, exchange rate, Population, Gross capital formation, Unemployment, School enrollment, primary, School enrollment, secondary, School enrollment, tertiary, Exports of goods and services .To determine the impacts of different variables on Human Development, Remittances and Economic Growth GDP was used as a dependent variable in the model. For any country GDP is play a main role variables taken in this study can play a main role in their GDP of any country. Panel data of variables was taken for the time period of 2000-2020.

Data of GDP, remittances, Government expenditure on education, Inflation, Foreign direct investment, exchange rate, Population, Gross capital formation, Unemployment, School enrollment primary, School enrollment secondary, School enrollment tertiary, Exports of goods and services, were taken from world bank indicators WDI. And data of human development index HDI were taken from human development report, united nations development program.

Selected Developing countries: Data Of eight selected developing countries e.g Egypt, Malaysia, Nepal, Oman, Pakistan, Thailand, Tajikistan and Brazil.

Testing for Panel Unit Root

When analyzing time series data, econometric issues can impact parameter estimates when using Ordinary Least Squares (OLS). All econometric techniques rely on the assumption of data stationarity in time series analysis. Various tests are employed to ascertain whether panel data exhibits unit root characteristics. These tests include the IPS, Shin's W-stat, Levin, Lin & Chu (LLC), PP-Fisher Chi-square, and ADF-Fisher Chi-square tests. If the null hypothesis of unit root presence is not rejected, subsequent tests involve assessing first differences for unit root presence, continuing until the null hypothesis is rejected. Government spending on education and population exhibit a stationary level and intercept. Variables such as GDP, remittances, government expenditure on education, inflation, foreign direct investment, exchange rate, population, gross capital formation, unemployment, primary school enrollment, secondary school enrollment, tertiary school enrollment, and exports of goods and services demonstrate stationarity at the first difference level with intercept.

GMM Model

Panel models employing traditional random or fixed effects techniques typically focus on panels with small T (time periods) and large N (cross-sectional units), assuming homogeneity of slope coefficients, which may not always be appropriate. As the time dimension of dynamic panel data increases, concerns about non-standard issues escalate. Traditional methods often overlook integration problems in dynamic models, as highlighted by Pesaran et al. (1997, 1999), Woodridge (2002), and Im et al. (2003).

One of the fundamental assumptions in Ordinary Least Squares (OLS) is the orthogonality between explanatory variables and error terms. However, this assumption is relatively restrictive, and the primary rationale for employing panel data is to address the issue of omitted variables. Random and fixed effects models explicitly incorporate unobserved effects to ensure orthogonality between regressors and error terms.

Nevertheless, in dynamic panel data models, the orthogonality condition may not hold. Even after removing unobserved effects through differencing or fixed effects estimation, a correlation may persist between future dependent variables and error terms, as the error term encompasses all past values of the dependent variable according to assumptions.

This problem can be mitigated through the use of instrumental variable estimation techniques. The Generalized Method of Moments (GMM), introduced by Arellano and Bond (1991), is commonly employed to address endogeneity issues in dynamic panel models. The description of variables is given in Table 1.

$$LGDP = \beta_0 + \beta_1(LREMITT) + \beta_2(LGEE) + \beta_3(INF) + \beta_4(FDI) + \beta_5(LEXCH) + \beta_6(LPOP) + \beta_7(LGCF) + \beta_8(LUNEMP) + \beta_9(LPRI) + \beta_{10}(LSEC) + \beta_{11}(LTER) + \beta_{12}(LEGS) + \beta_{13}(LHDI) + U_t \qquad (1)$$

Were,

GDP   = Gross Domestic Product

REMITT = Remittances

GEE   = Government Expenditure on education

INF   = Inflation Rate

FDI   = Foreign Direct Investment

EXCH   = Exchange Rate

POP   = Population

GCF   = Gross Capital Formation

UNEMP = Unemployment

PRI   = Primary School Enrolment

SEC   = Secondary School Enrolment

TER   = Tertiary School Enrolment

EGS   = Exports of Goods and Services

HDI   = Human Development Index

U = error term; t = time period, βs = parameters.

Table 1. List of variables used in GMM model.

Variable	Description
GDP	GDP (Million US$)
Remitt	Personal Remittances, Received (Million US$)
GEE	Government Expenditure on Education, total (% of GDP)
INF	Consumer Prices (annual %)
FDI	Foreign Direct Investment, net inflows (Million US$)
EXCH	Exchange Rate (LCU per US$)
POP	Population (Million)
GCF	Gross capital formation (% of GDP)
UNEMP	Unemployment, total (% of total labor force)
PRI	School enrollment, primary (% gross)
SEC	School enrollment, secondary (% gross)
TER	School enrollment, tertiary (% gross)
EGS	Exports of goods and services (current US$)
HDI	Human Development Index

Results and Discussion

Several tests including the Levin, Lin & Chu (LLC), IPS, Shin's W-stat, ADF-Fisher Chi-square, and PP-Fisher Chi-square tests are used. If the null hypothesis of a unit root is not rejected, subsequent tests involve examining first differences for unit root presence, continuing until the null hypothesis is rejected. Government expenditure on education and population exhibit stationarity at both the level and intercept.

As shown in Table 2, the variables such as GDP, remittances, government expenditure on education, inflation, foreign direct investment, exchange rate, population, gross capital formation, unemployment, primary school enrollment, secondary school enrollment, tertiary school enrollment, and exports of goods and services all demonstrate stationarity at the first difference and intercept.

Test statistics for the aforementioned variables at the level form are not significant, indicating non-stationarity at the level form. However, upon transforming the data into the first differences, the test statistics from all four methods become significant, signifying stationarity.

For government expenditure on education and population, the test statistics at the level form are significant, indicating stationarity. Similarly, the test statistics for POPi and POPj at the level form are significant, indicating stationarity.

Table 2. Results (Panel unit methods).

Variables	Type of data	Test Stat/ Prob.	Levin, Lin & Chu t*	Im, Pesaran & Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square
GDP	Level data	Test Stat.	-1.14	1.68	6.45	6.8
		Prob.	0.12	0.95	0.95	0.97
	1st Diff.	Test Stat.	-6.56	-5.27	55.52	51.43
		Prob.	0.000	0.000	0.000	0.000
REMIT	Level data	Test Stat.	0.37	1.73	14.05	11.31
		Prob.	0.64	0.95	0.44	0.66
	1st Diff.	Test Stat.	-6.02	-5.78	57.66	57.96
		Prob.	0.000	0.000	0.000	0.000
GEE	Level data	Test Stat.	-2.05	-0.553	15.90	14.21
		Prob.	0.020	0.289	0.459	0.582
	1st Diff.	Test Stat.	-9.895	-9.147	96.38	111.03
		Prob.	0.000	0.000	0.000	0.000
IFL	Level data	Test Stat.	-5.730	-5.078	54.68	54.31
		Prob.	0.000	0.000	0.000	0.000
FDI	Level data	Test Stat.	-3.552	-4.747	53.39	35.38
		Prob.	0.000	0.002	0.00	0.003
EXCH	Level data	Test Stat.	4.209	4.862	3.323	3.977
		Prob.	1.000	1.000	0.998	0.995
	1st Diff.	Test Stat.	-5.364	-3.675	36.94	32.61
		Prob.	0.000	0.000	0.000	0.003
POP	Level data	Test Stat.	-5.286	-1.922	80.73	329.05
		Prob.	0.000	0.027	0.000	0.000

GCF	Level data	Test Stat.	-1.357	-1.340	21.98	20.84
		Prob.	0.087	0.090	0.143	0.184
	1st Diff.	Test Stat.	-8.068	-7.589	80.33	87.700
		Prob.	0.000	0.000	0.000	0.000
UNEM	Level data	Test Stat.	-1.692	-0.518	33.24	19.63
		Prob.	0.045	0.302	0.006	0.237
	1st Diff.	Test Stat.	-2.892	-3.753	48.85	46.11
		Prob.	0.001	0.000	0.000	0.000
PRI	Level data	Test Stat.	-1.565	-0.194	15.50	18.91
		Prob.	0.058	0.423	0.488	0.272
	1st Diff.	Test Stat.	-9.440	-8.112	86.208	101.78
		Prob.	0.000	0.000	0.000	0.000
SEC	Level data	Test Stat.	-2.101	0.473	16.48	17.26
		Prob.	0.017	0.682	0.419	0.368
	1st Diff.	Test Stat.	-7.956	-6.921	73.50	78.57
		Prob.	0.000	0.000	0.000	0.000
TER	Level data	Test Stat.	-2.262	0.944	11.12	11.81
		Prob.	0.011	0.827	0.801	0.756
	1st Diff.	Test Stat.	-7.616	-7.45	78.68	74.27
		Prob.	0.000	0.000	0.000	0.000
EGS	Level data	Test Stat.	-2.894	-0.99	17.60	22.04
		Prob.	0.001	0.159	0.347	0.141
	1st Diff.	Test Stat.	-6.372	-5.701	60.24	53.86
		Prob.	0.000	0.000	0.000	0.000
HDI	Level data	Test Stat.	-3.610	0.062	14.93	18.39
		Prob.	0.000	0.524	0.529	0.301
	1st Difference	Test Stat.	-8.916	-7.223	75.92	75.8
		Prob.	0.000	0.000	0.000	0.000

Source: Author's calculations

Summary Statistics of Variables

The summary statistics provided in Table 3 offer insights into various key variables. Gross Domestic Product (GDP) shows considerable variability, with a mean of $332995.6 and a standard deviation of $555391.2, indicating diverse economic outputs across the observed cases. Remittances, with a mean of $4998.452 and a standard deviation of $6399.984, demonstrate significant variations in the amounts received. Exchange rates exhibit wide fluctuations, ranging from a minimum of 0.3845 to a maximum of 161.8385, with a mean of 28.94686 and a standard deviation of 37.79726. These statistics provide valuable insights into the distribution and variability of each variable, essential for understanding their impact and dynamics within the dataset.

Table 3. Summary statistics.

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Observation
GDP	332995.6	147907.4	2616201	1080.769	555391.2	160
REMITT	4998.452	2733.464	29602.9	39.0117	6399.984	160
EXCH	28.94686	5.6843	161.8385	0.3845	37.79726	160
EGS	8.96E+10	3.93E+10	3.29E+11	4.83E+08	1.00E+11	160
FDI	1.00E+10	2.86E+09	1.02E+11	-2.17E+09	2.02E+10	160
GCF	22.45445	22.3032	44.68945	9.13672	6.426371	160
GEE	4.160904	4.01239	7.65793	1.76759	1.178246	160
HDI	0.668231	0.693	0.819	0.454	0.101277	160
INFLA	5.884379	5.024187	38.59189	-1.1387	5.353994	160
POP	74.5276	47.95259	220.8923	2.294959	71.97521	160
PRI	105.4371	101.246	150.7856	70.79137	16.80774	160
SEC	78.53177	82.4309	120.6512	22.51146	22.99981	160
TER	28.082	28.69979	55.1363	2.70068	14.54772	160
UNEMP	5.3015	3.58	14.55	0.21	4.122612	160

Linearity, or multicollinearity, represents an undesirable condition characterized by strong correlations among independent variables. Tolerance serves as a metric for assessing the degree of linear relationships among independent variables, with the variability inflation factor (VIF) being inversely related to tolerance. As VIF increases, so does the variance of the regression coefficient, rendering it an unreliable estimate. A high VIF value indicates multicollinearity, typically considered problematic if surpassing 10. In our examination, all VIF values below 10 signify the absence of multicollinearity within the dataset (Table 4).

Table 4. Multicollinearity.

Variables	Centered VIF
REMITT	3.004542
GEE	2.838081
INFLA	1.939482
FDI	4.537898
EXCH	7.051362
POP	4.417051
GCF	2.696487
UNEMP	5.330980
PRI	2.118841
SEC	7.120030
TER	6.251103
EGS	5.336318
HDI	9.685284

As shown in Table 4, There are no issues of multicollinearity among the variables in the Generalized Method of Moments (GMM) model, as all variance inflation factor (VIF) values were below ten.

Estimation of Results

Results of the GMM model are shown in the Table 5. Different independent variables have different impact on dependent variable Gross Domestic Product (GDP). Impact of Remittances is significant and positive on the GDP. Government expenditure on education (GEE) have insignificant and negative impact on GDP. Inflation (INF) have significant and negative impact on GDP. The impact of foreign direct investment (FDI) is highly significant and positive on GDP. Exchange rate (EXCH) have significant and negative impact on GDP. Population (POP) have highly significant and positive impact on GDP. Gross capital formation (GCF) has significant and positive impact on GDP. Unemployment has positive and insignificant impact on GDP. Primary school enrolment has significant and positive impact on GDP. Secondary school enrolment has significant and positive impact on GDP. Tertiary school enrolment has highly significant and negative impact on GDP. Export of goods and services EGS have positive and highly significant impact on GDP. Human development index HDI has a highly significant and positive impact on GDP.

Table 5. Estimated results of GMM model.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.571879	2.239070	0.702023	0.4838
LREMITT	0.147297	0.037939	3.882500	0.0002
LGEE	-0.237680	0.137986	-1.722490	0.0871
INFLA	-0.012805	0.005196	-2.464288	0.0149
FDI	1.06E-05	1.74E-06	6.094101	0.0000
LEXCH	-0.168058	0.042088	-3.992975	0.0001
LPOP	0.687154	0.082075	8.372272	0.0000
LGCF	0.285739	0.126570	2.257554	0.0255
LUNEMP	-0.066989	0.050801	-1.318673	0.1893
LPRI	0.914432	0.229727	3.980522	0.0001
LSEC	-0.532014	0.210571	-2.526527	0.0126
LTER	-0.684289	0.106013	-6.454771	0.0000
LEGS	0.369884	0.053658	6.893327	0.0000
LHDI	5.937778	0.909966	6.525275	0.0000

Conclusions

The present study showed the importance of remittance on the economic growth of eight developing countries from 2000-2020. Remittances showed a significant and positive impact on the GDP of developing countries. Foreign direct investment and population have an optimistic and important impact on the GDP of developing countries. The effect of primary and secondary school enrolment showed a significant and positive effect on GDP. The exchange rate showed an undesirable effect on the GDP of developing countries. Among developing countries, Pakistan and Egypt take higher amounts of remittance. However, Pakistan spends the minimum amount on education from all selected developing countries while Brazil spends the maximum on education. Nepal, Thailand, and Brazil have maximum primary, secondary, and tertiary enrolment while Pakistan has minimum primary and secondary enrolment. The outcomes of this study propose some useful policy recommendations that remittances have substantial potential benefits for poor people living in developing countries. On a long-term basis, remittance inflow will lead to welfare improvement and sustainable growth and upgradation of people particularly poor people in developing countries. Thus, the government should formulate a policy that increases the amount of remittances by

reducing the transaction cost of transferring the remittances through formal channels. The government should develop a durable economic governance system to boost human capital development through the inflow of personal remittances.

References

Acemoglu, D., Akcigit, U., & Kerr, W. (2016). Networks and the macroeconomy: An empirical exploration. NBER Macroeconomics Annual, 30(1), 273-335.

Agarwal, P. (2006). Higher education in India: The need for change. Working Paper No. 180. https://www.econstor.eu/bitstream/10419/176564/1/WP180-Higher-Education-in-India.pdf.

Akonji, D. R., & Wakili, A. M. (2013). The impact of net migrant remittance on economic growth: evidence from Nigeria. International Journal of Humanities and Social Science, 3(8), 303-315.

Anand, S., & Sen, A. (1998). Consumption and Human Development: Concepts and Issues (No. HDOCPA-1998-01). Human Development Report Office (HDRO), United Nations Development Programme (UNDP).

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The review of economic studies, 58(2), 277-297.

Barajas, A., Gapen, M. T., Chami, R., Montiel, P., & Fullenkamp, C. (2009). Do workers' remittances promote economic growth? (No. 2009-2153). International Monetary Fund. https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Do-Workers-Remittances-Promote-Economic-Growth-23108.

Bhowmik, D. (2018). Nexus between growth and human development index: Evidence from India and Indian States. Assumption University-eJournal of Interdisciplinary Research (AUeJIR), 3(2),96-118.

Bundala, N. (2012). Economic growth and human development; A link mechanism: An empirical approach. MPRA Paper No. 47648, University Library of Munich, Germany. https://mpra.ub.uni-muenchen.de/id/eprint/47648.

Chowdhury, M. B. (2016). Remittances flow and financial development in Bangladesh. Economic Modelling, 28(6), 2600–2608.

Cooray, A. (2012). The impact of migrant remittances on economic growth: Evidence from South Asia. Review of International Economics, 20(5), 985–998.

Daniela-Mihaela, N. E. A. M. Ţ. U., & Oana-Georgiana, C. (2015). Correlations between human development and economic growth. Annals of the „Constantin Brâncuşi" University of Târgu Jiu, Economy Series, 1, 118-122.

Fergany, N. (2003). Social innovation for human development an Arab region perspective. FRIDE, Madrid.

Gillani, D. Q., Fouzia, M., Atif, M., Yasin, M., Javaid, H., & Javed, I. (2023). Role of Foreign Remittances, Foreign Aid and Financial Development in Determining Human Development of Selected Asian Countries. Journal of Education and Social Studies, 4(2), 366-372.

Grubaugh, S. G. (2015). Economic growth and growth in human development. Applied Econometrics and International Development, 15(2), 5-16.

Gupta, S., Clements, B., & Tiongson, E. (1998). Public spending on human development. Finance & Development, 35(3), 10-13.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. Journal of Econometrics, 115(1), 53-74.

Khatoon, R., Javed, I., & Hayat, M. M. (2021). Impact of human capital on economic growth: A case study of Pakistan. Journal of Social Sciences Advancement, 2(2), 64-69.

Koay, Y. Y., & Choong, C. K. (2013). The nexus between worker remittances and economic growth in

Malaysia. Prosiding Perkem, 8(1), 507-515.

Kratou, H., & Gazdar, K. (2018). Do institutions and financial development determine the remittances-growth nexus in Africa?. Mondes en Developpement, 3, 91-112.

Mim, S. B. and Ali, M. S. B. (2012). Through which channels can remittances spur economic growth in MENA countries? Economics-The Open-Access, Open-Assessment E-Journal, 6, 1–27.

Motelle, S. I. (2011). The role of remittances in financial development in Lesotho: Evidence from alternative measures of financial development. Journal of development and agricultural economics, 3(6), 241-251.

Nikas, C., & Blouchoutzi, A. (2014). Emigrants' remittances and the "Dutch Disease" in small transition economies: the case of Albania and Moldova. Revista Română de Statistică, 1(1), 45-65.

Özturk, S., & Suluk, S. (2020). The granger causality relationship between human development and economic growth. International Journal of Research in Business and Social Science (2147- 4478), 9(6), 143-153.

Perez-Saiz, H., Dridi, M. J., Gursoy, T., & Bari, M. (2019). The impact of remittances on economic activity: the importance of sectoral linkages. International Monetary Fund. https://www.mfw4a.org/sites/default/files/resources/the_impact_of_remittances_on_economic_activity.pdf.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1997). Pooled estimation of long-run relationships in dynamic heterogeneous panels. https://www.econ.cam.ac.uk/people-files/emeritus/mhp1/jasaold.pdf.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. Journal of the American Statistical Association, 94(446), 621-634.

Ramirez, A., Ranis, G., & Stewart, F. (1997). Economic growth and human development. Center Discussion Paper 787. New Haven: Yale University Economic Growth Center.

Ranis, G., Stewart, F., & Ramirez, A. (2000). Economic growth and human development. World Development, 28(2), 197-219.

Rao, B. B. and Hassan, G. M. (2012). Are the direct and indirect growth effects of remittances significant? The World Economy, 35 (3), 351–372.

Ratha, D. (2013). The impact of remittances on economic growth and poverty reduction. Policy Brief, 8(1), 1-13.

Romer, P. M. (1990). Human capital and growth: theory and evidence. Carnegie- Rochester Conference Series on Public Policy, 32, 251-285.

Singh, R. J., Haacker, M., Lee, K.-w. and Le Goff, M. (2010). Determinants and macroeconomic impact of remittances in Sub-Saharan Africa. Journal of African Economies, 20 (2), 312–340.

Sobiech, I. (2015). Remittances, finance and growth: does financial development foster remittances and their impact on economic growth?, FIW Working Paper Series, No 158

Stewart, T.A. (1997). Intellectual Capital: The New Wealth of Organizations. London: Doubleday. Currency, 261 p

Uçan, O., & Koçak, E. (2018). İnsani gelişme endeksi ile büyüme ilişkisi: Pedroni eşbütünleşme örneği. Journal of Politics, Economy and Management, 1(2), 55-61.

UNESCO. (2002). Financing Education-Investment and Returns: An Analysis of the World Education Indicators. www.oecd.org and www.unesco.org/publications.

Woodridge, J. M. (2002). Econometric analysis of cross-sectional data and panel data. Cambridge Press.

World Bank (2014) Migration and Development Brief Issue 22, Washington D.C.: World Bank

Yaseen, H. S. (2012). The positive and negative impact of remittances on economic growth in MENA countries. The Journal of International Management Studies, 7(1), 7-14.