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THE ROLE OF EMIGRANT'S REMITTANCES AND EXTERNAL DEBT IN ECONOMIC GROWTH OF TOP SEVEN REMITTANCE'S RECIPIENT COUNTRIES

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Abstract

The heterogeneous impacts of remittances and external debt on economic growth in various context especially in top remittance's recipient countries is vexatious enigma for researchers and practitioners. Thus, the basic purpose of this study is to investigate the effects of remittances and external debt on economic performance of top remittance's recipient countries. For this purpose, the panel data from 1991-2022 for these countries obtained from world development indicator (WDI) is analyzed by using fixed effect and Panel corrected standard error (PCSE) model. PCSE model rectifies the auto, serial correlation, heteroscedasticity and cross sectional dependence problems in the estimation. The results demonstrate that remittances, gross capital formation, foreign direct investment and labor force participation rate positively and significantly affect the economic performance of selected countries. However, the external debt and volume of trade have negative and significant influence on the economic growth of these countries. On the basis of findings, it is recommended that these countries should strive for cost effective and efficient transmission of remittances through formal channel of banking and money transfer companies and initiate the crack down against the informal and illegal businesses of *hawala and hundi*; as approximately half of remittances still are being remitted through these informal channels. Moreover, the remittances should be utilized in human and physical capital formation along with amortization of external debt burden by considering remittances as a substitute of foreign borrowing rather than to regard them as a collateral for extra foreign loans.

Keywords: Remittances, external debt, economic growth, fixed effect, PCSE .
JEL Classification: B 22, B 27F 24, F 29, F 43

1 Introduction

In recent years, remittances, the money sent by expatriate communities residing abroad, have emerged as a significant resource that could potentially alleviate the external debt burdens, build up foreign reserves, stimulate economic growth and mitigate financial and economic crises encountered by low and middle-income countries, including developing

and less developed nations. These funds often exceed foreign direct investment and nearly compete export earnings in their contribution to national economies (Ali and Ismail, 2024, Gupta et al., 2007, KNOMAD, 2022, Mijiyawa, 2022, Mijiyawa and Oloufade, 2022).These remittances have demonstrated considerable advantages by strengthening foreign reserves, mitigating the negative impacts of current and capital account deficits, encouraging steady consumption and investment patterns, alleviating poverty, nurturing the growth of human and physical capital, reducing reliance on external borrowing, and ultimately fostering the economic growth and development of the recipient countries (Acosta et al., 2009, IOM, 2022, Iqbal and Sattar, 2010, Mol, 2023, Rashid and Samad, 2022, Sahu, 2015, Sutradhar, 2020).

Apart from their potential benefits, remittances may create specific challenges for recipient countries. These include the emigration of skilled workers, commonly known as brain drain, which can deprive the countries of valuable human capital. Additionally, remittances might contribute to rising inflation and exacerbate the Dutch disease[1] phenomenon by strengthening the real exchange rate. There's also the possibility of moral hazards within immigrant families and a shift in the economy away from productive tradable sectors toward less efficient non-tradable sectors. These challenges could result in increased foreign debt, diminished foreign reserves, and heightened volatility in GDP growth rates (Chami et al., 2005, Mijiyawa and Oloufade, 2022).

The remittances inflows have shown a considerable growth in recent years. They have remained higher than the foreign direct investment and official development assistance while being very close to export earnings in most of the developing countries. During 2021 and 2022, the remittances to low and middle income countries grew by nine percent per year. However, they have witnessed slower growth rate of 3.8 percent during 2023 by reaching to USD 669 billions, exceeding the expectations made in *Migration and Development Brief 38* (published in June 2023). The Latin American and Caribbean region witnessed the highest growth of 8 percent, followed by South Asia with 7.2 percent, East Asia pacific with 3 percent and Sub Sahara Africa with 1.9 percentage. However, Central Asia and Middle east and North Africa regions suffered from the decline in remittances by 1.4 and 5.3 percent respectively due to Ukraine war and differences in exchange rate between official and market rates; leading to the creation of gray and black market of currency remittances. Subsequently, remittances inflows in these regions showed a substantial decrease (KNOWMAD, 2024).

Top seven remittance's recipient countries in the World are India with USD 125 billions, followed by Mexico with with USD 67 billions, China with USD 50 billions, Philippines with USD 40 billions, Pakistan with USD 24 billion, Egypt with USD 24 billion and Bangladesh with USD 23 billions during 2023 as shown in Figure 1

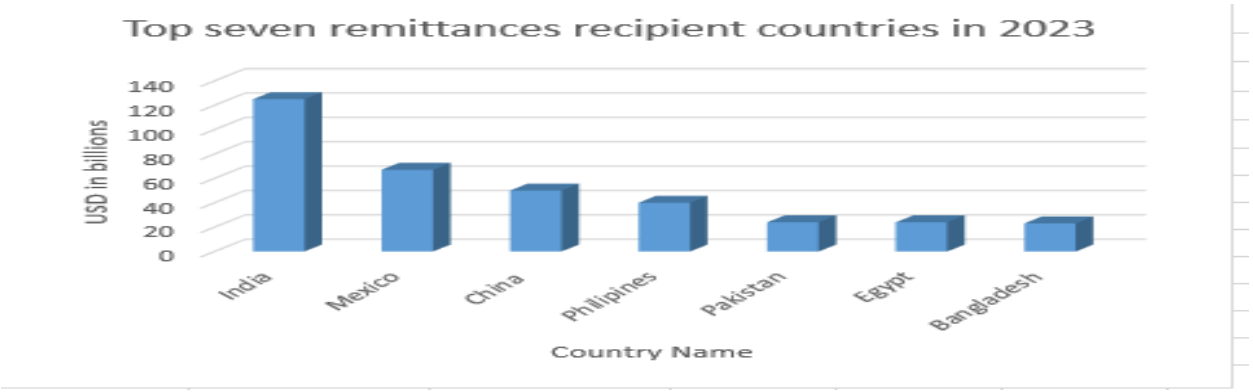

Figure 1: Top seven remittances recipient countries, 2023

When managed effectively and efficiently, remittances hold the potential to enhance domestic savings, alleviate foreign exchange constraints, tackle Balance of Payment crises, and allocate funds toward development-oriented budgets, thereby fostering higher economic growth. It's essential to channel these valuable resources through formal avenues such as banks and registered money transfer companies to maximize their potential impact. Discouraging the use of illegal informal methods like "***hawala and hundi***" is crucial, especially considering that approximately half of remittances still utilize such unofficial channels (Ozaki, 2012).

Interestingly, certain countries such as India, China, Mexico, the Philippines, Vietnam, and Bangladesh have adeptly addressed their financial and economic hurdles by effectively managing significant inflows of remittances. They have sustained steady and enduring economic growth by leveraging remittances as an alternative to external debt, enhancing foreign exchange reserves, covering trade deficits, fulfilling external debt obligations and eventually stimulating the economic growth. On the contrary, nations like Pakistan and Egypt are still struggling with the substantial load of external debt and its associated servicing, dwindling foreign exchange reserves, volatile and fragile GDP growth, currency devaluation, escalating unemployment and inflation, leading to recurring financial and economic crises (Bank, 2022, Hassani et al., 2021). Traditionally, Neo-classical theory posits that emigrants tend to migrate from the South/East to the North/West countries. However, recent trends indicate a growing occurrence of migration from south to south (Kurekova, 2011, Ratha and Mohapatra, 2007).
Remittances have the potential to reduce poverty and stimulate economic development, especially when unskilled, unemployed workers migrate and they send their remittances through formal channels for self-interest or investment purposes. However, if highly skilled and educated individuals migrate abroad and send their remittances through informal channels like hawala and hundi for altruistic reasons, it may have negative effects on the economy (Carrasco et al., 2018, Sutradhar, 2020, Topxhiu and Krasniqi, 2017).

Although employment and earning in abroad is not substitute of the employment and contributing in home country, but it is better to stay employed and productive anywhere in the world than to be unemployed, wasted and useless in home country due to lack of job opportunities (Ali and Ismail, 2024).

Given the mixed findings of research studies about the impacts of remittances on economic growth in different context by using various econometric techniques and dearth of any concrete empirical evidence in context of top seven remittances recipient countries, there is a drastic need to delve the contributions of remittances in economic growth; especially in top remittance's recipient countries. To the best our knowledge there is no any such type of the study to be conducted in this context. Thus, this paper intends to fill this gap by ascertaining the contribution of remittances on economic growth in top seven remittance's recipient countries. For this purpose, panel data from 1991 to 2022 derived from World Development Indicator (WDI) of the World Bank, is analyzed by applying Panel corrected standard error (PCSE) model that can rectify the problems of serial and auto correlation, heteroscedasticity and cross sectional dependence. The findings demonstrate the positive and significant impacts of remittances, foreign direct investment, gross capital formation and labor force participation rate on economic growth of the selected countries. However, external debt and volume of trade exert the negative impacts on economic performance of these countries.

Thus, this article contributes in the existing domain in various ways by being the first ever study to be conducted in the given context, secondly, it has applied relatively more appropriate methodology and research design to ensure the validity, robustness and unbiasness of estimated results. Additionally, this research has included the most relevant variables in the model on the basis on theoretical foundations and available empirical literature in order to be readily available for guidance to set the informed strategies for economic growth and development and avoid or over come the financial and economic crisis, emanating from mismanagement mis-allocation and wrong economic policies.

Rest of the study is followed by section 2 that consists on theoretical and empirical review, section 3 encompasses the methodology, data sources and econometric models and their relevant diagnostic and robustness checks. However, the results discussion and policy implication/recommendation are discussed in section 4 and section 5 respectively.

2 Literature Review

2.1 Theoretical Review/ Framework

Various theories and models have emerged to explain the impact of remittances on economic growth. These theories gained prominence after World War II when institutions like the International Monetary Fund and the World Bank were established under the Breton Woods system, following the United Nations' creation in 1944-1945. This was in response to the League of Nations' inability to maintain global peace and prosperity during the tumultuous early decades of the twentieth century, marked by two World Wars and the Great Depression of the 1930s. Among those theories, two prominent theories of economic growth and development better explain the role of emigrants and their remittances in enhancement of economic growth of their home countries. Firstly, the Neo classical exogenous growth models given by Solow and Swan (1956) and Harrod-Domar (1945). They recognize the pivotal role played by saving and investment in the economic growth and development of countries. While the endogenous growth theory emphasized on the indispensable role of modern technology, innovation, new knowledge and experience in the economic growth and development. Emigrants and their remittances help to augment the savings, investments, human and physical capital formation, new knowledge and experience in the form of brain gain from abroad and apply the same for economic growth and development in their home countries as shown in Figure 2.

Furthermore, remittances represent foreign currency inflows that can be employed for the import of advanced technology, ultimately contributing to higher output growth rates. However, Sometimes economic growth might be diminished as a result of a decline in the domestic labor supply and labor force participation rate, which could occur due to an increase in emigration to foreign countries and potential moral hazards among the family members of emigrants. Consequently, the overall impact on economic growth will be contingent on the net effects of both of these possibilities.

Emigrants and the remittances they send, contribute to economic growth through three distinct avenues. First, when remittance-receiving households allocate these funds to the education, healthcare, and skill development of their children, they create a more skilled and productive labor force, which positively impacts the economy. Second, if these funds are invested in research and development, they lead to innovation and the adoption of modern technology, ultimately boosting the productivity of available resources such as land, labor, capital, and entrepreneurship. Third, remittances can generate spill-over effects and brain gain when emigrants return to their home country, leveraging the modern

skills and management techniques they acquired abroad to initiate and grow businesses. This, in turn, contributes to the economic growth of the home country. overseas workers residing abroad not only bolster the economy through remittance transfers but also stimulate trade and foreign investment, establish businesses and facilitate the transfer of skills, knowledge and modern technology as depicted in Figure 2 (IOM, 2022).

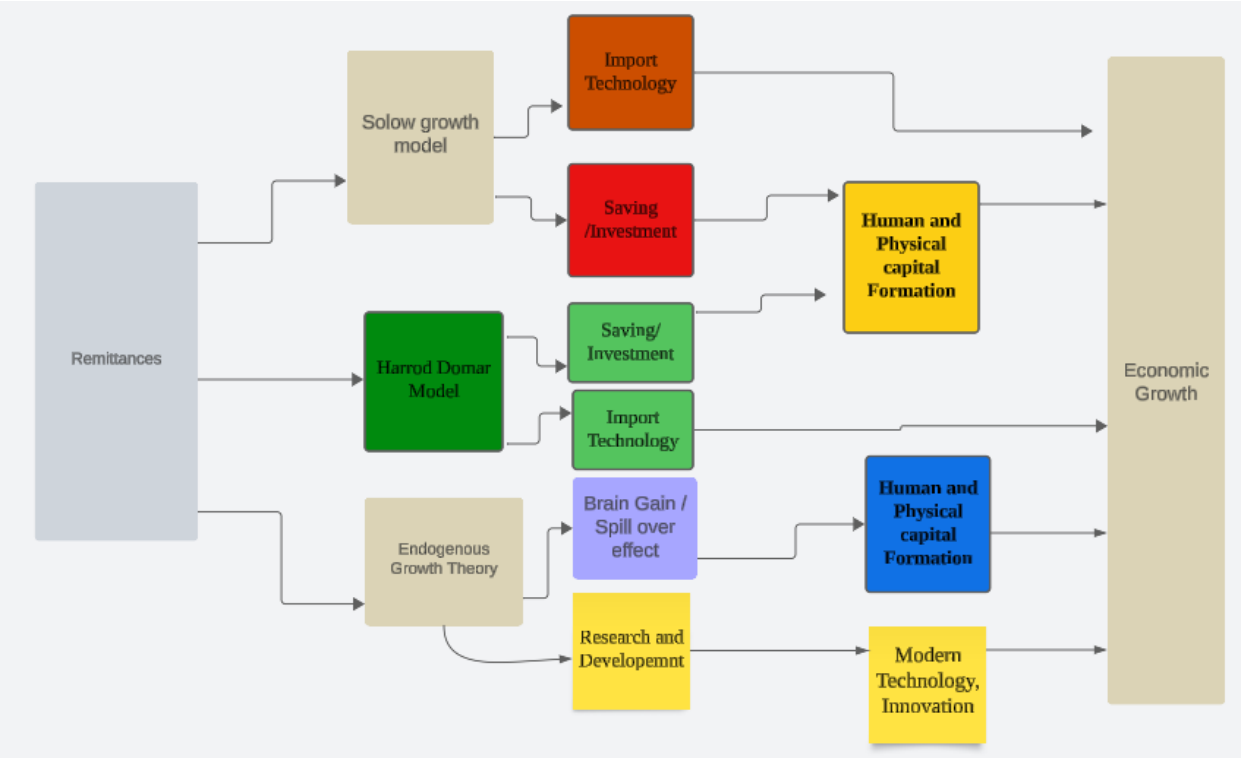

Figure 2: Theoretical Framework

2.2 Empirical Review

The literature emphasizes the significant impact of workers' remittances on economic growth and development in developing and emerging economies, particularly in supporting their external accounts. According to Hassan and Holmes (2016), workers' remittances not only help balance the current account in countries with ongoing imbalances but also stimulate domestic savings, which can be directed towards productive and socially beneficial investments. This injection of funds has the potential to foster economic growth and development. Their findings challenge previous literature that raised concerns about the "Dutch Disease" phenomenon linked to substantial remittance inflows. Additionally, they argue that the availability of significant workers' remittances increases the likelihood of strong co-integration between a country's exports and imports.

In a similar vein, Islam (2022) conducted a study encompassing four prominent South Asian countries - India, Pakistan, Bangladesh, and Sri Lanka - that are recipients of remittances. Their research aimed to explore the influence of remittances on economic growth, while controlling for factors such as trade openness and foreign direct investment. Employing the GLS panel model, FMOLS model, and Dumitrescu–Hurlin (D–H) approach on balanced panel data covering the period from 1986 to 2019, and after ensuring data suitability through tests for cross-sectional dependency, unit roots, and endogeneity, their findings revealed a significant and positive correlation between remittances and economic growth. Conversely, foreign direct investment exhibited a negative and significant

impact on economic growth, whereas trade openness showed a positive and significant contribution to the economic growth of the selected South Asian nations.

Additionally, Chowdhury et al. (2023) examined the effects of remittances on economic advancement in three South Asian nations: Bangladesh, Vietnam, and Sri Lanka. They employed pooled OLS, fixed effects, and random effects models for grouped data, along with VECM and Granger causality for country-specific data analysis covering the period from 1990 to 2019. Their findings suggested that remittances had a negative and significant impact on economic growth in the panel system. However, in country-specific scenarios, remittances did not exhibit a negative relationship with economic growth in either the short or long term. In Vietnam, remittances only influenced economic growth in the short term, while in Sri Lanka, there was bidirectional causality between remittances and economic growth in the short term. The adverse effects of remittances on economic growth in these countries were attributed to the allocation of received remittances towards unproductive consumption and investment.

Similarly, Sutradhar (2020) delved panel data from four Asian nations—India, Pakistan, Bangladesh, and Sri Lanka—covering the period from 1977 to 2016. Their study, utilizing pooled OLS, fixed effects, and random effects models, indicated that remittances had a notably adverse effect on economic growth in the aggregate analysis However, in the context of India, the impact was positive and significant when analyzed on a country-specific basis.

Likewise, Hassan and Shakur (2017), Karagöz (2009), Tolcha and Rao (2016) also found negative impacts of remittances on economic growth in long run in various context by employing various time periods data and various methodologies.

Furthermore, Roy (2023) recently identified the adverse effects of external debt and remittances, alongside the positive impacts of oil prices on India's economic growth. They employed various econometric techniques, including ADF, PP, and KPSS for unit root analysis, as well as ARDL and DARDL for assessing long-run and short-run effects. Additionally, they used the Toda-Yamamoto causality test to analyze causation using time series data spanning from 1990 to 2020. Following estimation, they conducted reliability, validity, and robustness tests, affirming the absence of abnormalities, auto- and serial correlation, heteroskedasticity, and model mis-specification in the data and error term.

In contrast, Shaikh et al. (2016) discovered that personal remittances do not exert a significant impact on Pakistan's economic growth. However, they observed substantial contributions to economic growth from foreign direct investment, gross capital formation, and foreign aid. They employed Johnson co-integration and VECM techniques to analyze data spanning from 1980 to 2014, given that all series were stationary at first difference.

Remittances, when directed towards investment, tend to follow the economic cycle similar to other investment expenditures, particularly in economically disadvantaged developing nations. For instance, studies by Sayan (2006) revealed that remittances exhibit counter-cyclical behavior in India and Bangladesh, but are pro-cyclical in Jordan and Morocco. Similarly, Ratha and Mohapatra (2007) observed that remittances in Turkey and the Philippines were more volatile and pro-cyclical in the 1990s compared to the 1980s. Gupta et al. (2007) found that worker's remittances displayed greater stability in Sub-Saharan Africa when contrasted with official development aid and foreign direct investment.

Ratha and Mohapatra (2007) argue that worker's remittances have a pro-poor impact, as they lead to a proportional increase in income for recipient households. These financial inflows significantly contribute to poverty reduction and enhance the welfare of families in the home country through macroeconomic multiplier effects. Unlike official development assistance, external debt, and foreign direct investment inflows, remittance flows are not plagued by governance issues. Research indicates that remittance inflows have led to an 11 percentage

point reduction in poverty in Uganda, 6 percentage points in Bangladesh, and 5 percentage points in Ghana. Moreover, studies show that the dropout rates among children from households receiving remittances are lower in Sri Lanka and El Salvador. Additionally, children from remittance recipient families exhibit better birth weights and other health indicators in Sri Lanka, Nicaragua, Mexico, and Guatemala.

Conversely, (Chami et al., 2005) cautioned that substantial and continuous inflows of remittances could lead to an appreciation of the recipient country's currency, potentially harming its export competitiveness in the global market. As a result, sectors that are sensitive to costs, such as cash crops and manufacturing, may become less profitable, leading to declines in production and exports within these sectors. This phenomenon mirrors the concept of the "Dutch Disease," which indicates a country's economic challenges due to such circumstances. While Gupta et al. (2007) believes that empirical evidence regarding the adverse effects of remittance inflows on exchange rates, terms of trade, and growth is limited. However, it remains a significant concern, particularly for small economies that receive substantial remittance inflows. Countries like Moldova, El Salvador, and Kenya express apprehension about the potential impacts of significant remittance inflows on their currency values.

Anyway, Amuedo-Dorantes and Pozo (2004) examined the impact of remittances on the real exchange rate of Latin American and Caribbean countries. They observed that a one percent increase in remittance inflows led to a 0.2% appreciation of the real exchange rate in these nations. Consequently, policymakers and researchers should exercise caution regarding the potential adverse effects of remittance inflows resembling the "Dutch Disease" phenomenon.

Similarly, Singh (2014) investigated the effects of remittances in Nepal. He discovered that approximately 79% of remittances in Nepal were spent on the consumption of goods and services, including imported products, While 3% allocated to capital formation, and the remainder used for external debt financing and education. Singh also highlighted a strong correlation between remittances and the trade deficit in Nepal, indicating the presence of the Dutch Disease phenomenon. For instance, in 2013, remittances to Nepal amounted to RS. 360 billion, while the trade deficit increased to RS. 390 billion.

In contrast, Kireyev (2006) conducted a working paper at the IMF focusing on Tajikistan, where he outlined the positive and advantageous impacts of remittance inflows on the economy. He suggested that worker remittances could have assisted in alleviating the impact of a significant trade deficit on the exchange rate, potentially leading to depreciation. Additionally, due to the availability of inexpensive labor and other inputs in Tajikistan compared to its trading partners, the adverse effects of remittance inflows on competitiveness in the international market via the real exchange rate may have been effectively offset.

The literature also emphasizes that substantial worker remittances not only stimulate domestic consumption and investment but also facilitate reverse flows such as external debt servicing, capital flight, and the accumulation of foreign exchange reserves. Das et al. (2021) conducted research in Jamaica, a significant recipient of remittances in the Caribbean region, by estimating a net export equation using an auto regressive distributive lag model and incorporating time series data from 1976 to 2017. They discovered that USD 0.24 of each remittance dollar is utilized to finance reverse flows, while the remaining USD 0.76 is directed towards domestic consumption and investment.

Additionally, Lartey (2017) conducted research on the effects of remittances on current account dynamics under various monetary policy and exchange rate regimes. He observed that the current account dynamics influenced by remittances are contingent upon the nature of the remittance and the choice of policy regime. Altruistic

remittances lead to a current account surplus if a flexible exchange rate system, such as the Tyler type rule [2], is adopted in monetary policy. Conversely, a fixed exchange rate system would result in a current account deficit.

However, self-interest remittances contribute to capital accumulation and the production of tradable sectors if a monetary policy similar to the Tyler type rule is implemented to manage exchange rate volatility. This policy leads to a reduction in inflation of non-tradable products, real exchange rate depreciation, and a current account surplus. Conversely, applying a standard Tyler rule targeting inflation of non-tradable products results in a current account deficit due to increased consumption of non-tradable products, potentially leading to growth in that sector and a decline in the tradable products sector. The dynamics of the current account change when the objective of monetary policy is to reduce the consumption of non-tradable products, stabilize inflation of non-tradable products, and achieve a current account surplus through real depreciation.

Research on the role of worker's remittances in the economic development of recipient countries is gaining momentum among researchers, academics, development economists, and policymakers in the diaspora. The aim is to formulate effective policies for channeling these received funds into productive and high-return investment avenues. Worker's remittances have not only had significant impacts on the economic growth of recipient countries by reducing current account deficits and bolstering foreign exchange reserves but have also helped in reducing the country's need for foreign debt. Additionally, they have played a crucial role in mitigating the adverse effects of oil price shocks, reducing unemployment rates, and improving the living standards of recipient households in these countries (Sattar, 2005).

2.3 Research gap, contribution and significance of the study

The above discussed literature demonstrates three types of gaps; contextual, empirical and methodological gap. Contextual and empirical gap means that the impact of remittances and external debt on economic growth in top remittance's recipient countries has rarely been explored. Methodological gap means no any such type of study has been conducted that has used the appropriate methodology like panel corrected standard error (PCSE) model after checking various relevant pre and post estimation econometric tests. Thus, this study intends to fill these gaps by analyzing the panel data obtained from WDI data bank of the World Bank first by evaluating the Pooled OLS vs random vs fixed effect model on the basis of Breusch-Pagan LM and Hausman test after checking stationary properties through Lavin Lin unit root test. Subsequently, selecting and estimating fixed effect model, the auto and serial correlation, heteroscedasticity and cross sectional dependence were diagnosed. Due to presence of auto and serial correlation, cross sectional dependence and heteroscedasticity, the PCSE model is applied to estimate the coefficients; as it rectifies these statistical and econometric issues. Hence, this study becomes the first ever and unique one study that has been conducted in the selected context with the application of most appropriate modern methodology.

3 Empirical Analysis

3.1 Empirical Model, Variable Description and data source

The panel data for top seven remittance's recipient countries from 1991 to 2022 is downloaded from World Development Indicators data base of the World Bank. In order to ascertain the impacts of remittances,external debt and other control variables on economic growth of top remittances recipient countries, the following Equation 1 and Equation 2 are estimated.

$$GDPpc_{it} = \alpha + \beta WR_{it} + \theta' Z_{it} + u_{it} \qquad Eq....(1)$$

$$GDPpc_{it} = \alpha + U_i + \Theta_t + \beta WR_{it} + \theta' Z_{it} + e_{it} \qquad Eq.....(2)$$

The Equation 1 is pooled OLS model for our analysis and Equation 2 is time and country fixed effect model. In Equation 1 and Equation 2 (GDPpc) gross domestic product per capita is the dependent variable proxy for economic growth, (WR) worker's remittances as a percentage of GDP is the main variable of interest as an independent variable, Z is the vector of control variables such as (GCF) gross capital formation as percentage of GDP; a proxy for investment, (FDI) is foreign direct investment to GDP ratio, (TED) is total external debt to GDP ratio, (LFR) is a labor force participation rate aged from 15-65 years, (TRD) is total volume of trade to GDP ratio. The data of all these variables is obtained from the World development indicator of the World Bank data base. The subscript i and t are i for country and t for years, α is the intercept, β is the coefficient of variable of interest which is worker's remittances in our case, θ' the vector of coefficients of control variables, u_i the country fixed component, Θ_t is time fixed component of Fixed effect Model, u and e are the error terms in pooled OLS model and time fixed/entity fixed panel data models respectively with zero mean, constant variance and constant co variance (i.i.d). The data of all variables is already in ratio form, thus log of the data is not taken.

In above Equation 1 and Equation 2 The worker's remittances are expected to have either positive or negative impacts on economic growth. Its coefficient will be positive if the remittances are sent with self-interest motive for the use in high return investment projects; meaning that there is no any Ditch disease effect. However, if they are sent with altruism motive and are spent on luxurious and wasteful consumption, its impacts on economic growth might be negative indicating the prevalence of the Dutch disease in these countries. The gross capital formation (GCF), Labor force participation rate (LFR) are expected to have positive impacts on Economic growth. While the (TED) total external debt to GDP ratio is expected to have either positive or negative nexus with economic growth. It will have negative impacts on economic growth, if it is used in luxurious product and non development side or in payment of previous loans. However, if it is used in productive, high return projects, infrastructure and development side, it will have positive impacts on economic growth. Similarly, (TRD) trade volume to GDP ratio is also expected to have either negative or positive impacts on economic growth. It will have negative impacts, if the countries are involved in imports of luxury and expensive consumer or defence products and their imports exceed their exports. Whereas it may have positive impacts on economic growth, if countries import raw material, modern machinery, equipment, tools and advance technology. Besides, their imports remain less than their exports.

4 Results Discussion

4.1 Unit root test

Unit root test has been conducted by applying Levin Lin test as it is considered better for balance panel data. The results are presented in the Table 1. It shows that all the variables are stationary at level means I(0). Since all the variables are stationary at level, applying panel data models are justified.

4.2 Selection of model among the pooled OLS vs random effect vs fixed effect

In order to choose between Pooled OLS and random effect model, Breusch Pagan LM

test is applied. Test results are significant at 5% level of significance, so we reject the null hypothesis that the pooled OLS model is appropriate. After this test, the Hausman test is applied to choose between the random effect and fixed effect model. Test results of Hausman test are also significant at 1% of level of significance indicating that random effect model is not an appropriate. Thus, our selected model is the fixed effect model. The fixed effects model is more suitable possibly because it can control time-invariant individual differences and better eliminating endogeneity issues, thereby improving the accuracy and explanatory power of the model. The results of fixed effect model are presented in Table 2.

Table 1: Levin Lin unit root test

Variable	Statistics	Probability	Order of Integration
GDPpc	-3.6064*	0	I(0)
REM	-1.8156*	0.03	I(0)
GCF	-2.1411*	0.016	I(0)
FDI	-3.2525*	0.0006	I(0)
TED	-1.8893*	0.0294	I(0)
LFR	-1.2838***	0.0996	I(0)
TRD	-1.3401***	0.0901	I(0)

*,** & *** show the significance level at 1%, 5% and 10% respectively.
Source: author's calculation.

The results show that the remittances have positive and significant impacts on economic growth of top seven remittance's recipient countries. It means these countries are not suffering from the Dutch disease. This result is aligned with the findings of Islam (2022), indicating that remittances, as a form of external resource injection, can directly increase individual income levels, enhance purchasing power, stimulate consumption, saving and investment, thereby driving economic growth. Additionally, inflows of remittances may stimulate the development of banking and financial markets, further promoting economic activity and employment, thereby enhancing the level of economic growth in the countries. It implies that if remittances to GDP ratio increase by one point percentage, the GDP per capita income will increase by 0.217 point percentages. Similarly, gross capital formation to GDP ratio positively and significantly contribute to economic growth. This is consistent with the findings of Sutradhar (2020). It means that if gross capital formation to GDP ratio augments by one point percentages, the GDP per capita incomes will also increase by 0.15 point percentages. Likewise, Foreign direct investment to GDP ratio has positive coefficient but statistically insignificant. Meanwhile, labor force participation rate is also directly and significantly related to economic growth. These results match with findings of Comes et al. (2018). It shows that if labor force participation rate rises by one point percentage, the GDP per capita income will augment by 0.194 point percentages. Besides, total trade to GDP ratio also positively and significantly affects the GDP per capita. This finding is in contrast with the findings of Akhter et al. (2022). This suggests that these countries are perusing the export led growth policies. It indicates that if trade to GDP ratio increase by one point percentage, the GDP per capita income will enhance by 0.062 point percentages. However, the external debt to GDP to ratio is negatively and significantly influencing the economic growth in these countries. The increase in external debt may lead to increased debt repayment pressure, crowding out government funds for investment and development, thus negatively affecting economic growth. This finding resembles with the findings of Roy

(2023). It demonstrates that if external debt to GDP ratio in these countries goes up by one point percentage, the GDP per capita incomes will plummet by 0.115 point percentages. Value of R square is 0.748 which shows good fit of the model indicating that approximately 75% variation in dependent variable is explained by independent variables. F value is 12.47 and statistically highly significant indicating that all the coefficients of model are jointly and significantly different from zero.

Table 2: Results of Fixed Effect Model

Variable	Coefficient	Probability
REM	0.217512	0.0148
GCF	0.150335	0.0014
TED	-0.115818	0
FDI	0.047676	0.7538
LFR	0.194782	0.0201
TRD	0.062194	0.0095
Constant	-12.45772	0
R square	0.748748	
Observations	224	
No. of countries	7	
Hausman Test	60.01	0
F statistics	12.47472	0

*,** & *** show the significance level at 1%, 5% and 10% respectively.

4.3 Diagnostic Test

Before drawing any conclusion and giving recommendation for policy implication, it is necessary to do some diagnostic test to check whether the residuals are normally distributed, they don't suffer from auto or serial correlation, cross sectional dependence and heteroscedasticity problems. It is discovered that the residual are not normally distributed as indicated by JB normal distribution test. Its probability value is less than 5%, so the null hypothesis that residuals are normally distributed is rejected. Moreover, the Pesaran cross sectional test for dependence is also significant, suggesting that there is cross sectional dependence problem. Additionally, BPG heteroscedasticity test is also significant indicating that the error terms are not homoscedastic. For details see Table 3.

Table 3: Diagnostic Test

Statistic	JB- Statistic	Probability	F-Statistic	Probability
Test				
Normality JB	591.66	0.000		
Pesaran CD			8.678561	0.0000
Heteroscedasticity BPG			69.61383	0.000

4.4 PCSE Model results

Subsequently, the regression model is re-estimated by applying the Panel corrected standard error (PCSE) model as it rectifies the auto and serial correlation, heteroscedasticity and cross sectional dependence problem. While estimating, we opted to control for auto correlation and using single lag OLS residuals along with choosing panel-level heterscedastic and correlated across panel errors on the basis of getting relatively more significant results. The results of PCSE model are presented in Table 4. The results show that the remittances, gross capital formation, foreign direct investment and labor force participation rate affect the economic growth positively and significantly. These results are similar to that of the results of fixed effect model. Rather, the FDI has been statistically significant now. However, the external debt and volume of trade influence GDP per capita negatively and significantly. These results are slightly different from the results of fixed effect model. In fixed effect model, the effects of trade volume were positive, however in PCSE, its impacts are negative on economic growth of selected countries.

Table 4: Results of Panel corrected standard error (PCSE) Model

Variable	Coefficient	Probability
REM	0.2641811*	0.0000
GCF	0.1945643*	0.0000
TED	-0.0430661**	0.022
FDI	0.3992983*	0.004
LFR	0.0627282*	0.005
TRD	-.0420279**	0.025
Constant	-3.963027*	0.002
R square	0.4895	
Observations	224	
No. of countries	7	
Wald Chi2	315.70*	0.00

*,** & *** show the significance level at 1%, 5% and 10% respectively

5 Policy recommendation and conclusion

The basic purpose of our this study was to investigate the impacts of remittances and external debt on the economic growth of top seven remittance's recipient countries. To fulfil this objective, the panel data of these countries from 1991 -2022 was downloaded from the World development indicator data base of the World Bank. The obtained data was first checked for unit root properties by applying levin lin unit root test. Afterwards, on the basis of BG LM test and Hausman test, fixed effect model was chosen to estimate the panel regression. However, the results of fixed effect model suffered from the cross sectional dependence and heteroscedasticity problem indicated by Pesaran CD test and BPG heteroscedasticity test. Subsequently, PCSE model was applied to estimate the coefficients of the included variables.

The findings show that remittances, gross capital formation, foreign direct investment and labor force participation rate positively contribute in optimizing the economic growth of these countries. However, external debt burden and trade volume exert negative influence on the economic performance of these countries. These results ensure that these countries are not suffering from Dutch disease emanating from the negative implication of foreign currency inflows in the shape of remittances, foreign direct investment and foreign aid.

On the basis of findings, it is recommended that these countries should focus on maximizing the transmission of remittances through formal and legal channel of banking and registered money transfer companies; given that approximately, half of the remittances are still being transmitted through informal channels of *hawala and hundi*. In order to attract more remittances inflows through formal channel, the authorities should eliminate the differences in official exchange rate and market exchange rate along with initiation of the strict measures against the illegal money transfer agents involved in the business of *Hawala and Hundi*.

The branches of national banks should be established at key locations in destination countries and local money transfer companies should be integrated with money transfer companies in destination countries to ensure the cost effective and efficient transmission of these valuable funds through use of modern ICT and AI technologies. Moreover, the proper emigration policies focusing on training's, skill development, welfare, security, incentive packages and after all recognition of emigrants, not only be formulated and approved but also be implemented in letters and spirit.

Although employment and earning in abroad is not substitute of the employment and contributing in home country, but it is better to stay employed and productive anywhere in the world than to be unemployed, wasted and useless in home country due to lack of job opportunities. Additionally, these valuable foreign exchange should rightly be spent on high return productive investments, imports of modern and environment friendly technologies, stabilizing the foreign reserves, amortizing the external debt burden and fostering the human capital formation in domestic economies, instead of wasting and misusing them on luxuries, unnecessary spending and futile imports.

End Notes:

1. Fall in economic growth due to appreciation of real exchange rate thereby leading to fall in exports and augmentation of imports amid loosing competitiveness in international market.
2. let the currency to determine its value in the market on the basis of demand and supply forces.

Future research recommendation

Similar type of research can be conducted in other regions or top remittance's recipient countries one by one by using time series data or jointly by using panel data models.

Statement of no conflict of Interest

It is consciously stated that there is no any conflict of interests of author(s) in the conduction of this research. We are totally unbiased in doing this research and we haven't received any funding from any donor.

Statement of availability of data

It is stated that the included data or any material will be made available at any time on request.

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