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Economic and governance drivers of global remittances: a comparative study of the UK, US, and UAE to India

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Abstract

Purpose – The paper aims to analyse the impact of economic and governance factors on remittance inflows to India from the UK, USA and UAE. India is globally recognised as the largest recipient of remittances.

Design/methodology/approach – Using a comprehensive time series data set spanning 1996 to 2022, the authors use an innovative non-linear autoregressive distributed lag model approach to examine the influence of economic growth, corruption control and employer availability in the three source countries on remittance inflows to India.

Findings – The results indicate that in the UAE, changes in economic growth and corruption control directly affect remittance outflows. However, the presence of employers in the UAE has minimal impact on remittance outflows to India. Regarding the UK, fluctuations in economic growth primarily drive remittance outflows to India. The effect of corruption control and employment opportunities on remittance outflows is marginal. In the USA, economic growth does not notably impact remittance outflows, whereas corruption control and employment opportunities significantly influence the outflows to India.

Originality/value – These findings have important implications for policymakers. Analysing macroeconomic factors from key remittance-sending nations offers valuable insights for Indian policymakers and their international counterparts to enhance remittance inflows. The study focuses on three countries that collectively contribute to about 50% of India's remittances, providing a unique contribution compared to the usual country-specific or regional focus in existing literature. Finally, leveraging these findings, NITI Aayog, an organisation dedicated to achieving India's sustainable development goals, can effectively monitor macroeconomic indicators related to significant remittance-sending countries.

Keywords Remittance, India, Economic growth, Corruption, Employers, Sustainability, SDG

Paper type Research paper

1. Introduction

Over time, it has become widely recognised on a global scale that maintaining one's existence as an isolated entity is exceedingly challenging. The attainment of success by a

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solitary nation is contingent upon its interactions with other nations, as it is both influenced by and exerts influence upon them. This has highlighted the fact that economies are very well connected with each other (Shang *et al.*, 2021). Therefore, it is imperative that economies prioritise not only their own success but also the success of other nations. More importantly it is also imperative that the economies should create a world that is sustainable for their future generations (Rodriguez-Anton *et al.*, 2019).

While the aforementioned statements may appear appealing, it is important to acknowledge that in actuality, the task is not simpler in any way. There are various factors that impede nations from engaging in collaboration. For instance, it has been observed that developed nations often exhibit reluctance to cooperate with developing nations, primarily due to concerns related to sharing advanced technologies and granting them trade advantages (Huynh and Nguyen, 2019). On the contrary, developing nations often exhibit limited enthusiasm towards regulating their carbon emissions, citing the significance of economic advancement as a justification (Wawrzyniak and Doryń, 2020). These examples serve as clear indications that the stance taken by a nation fosters an atmosphere of distrust, lack of cooperation and hostility, ultimately impeding the overall sustainability of the global community.

By recognising the gravity of this matter, The United Nations, has undertaken a measure by adopting a resolution in 2015 and unveiling 17 sustainability objectives that encompass various dimensions of human existence and economies (United Nations, 2015b). It has been assumed that if these SDG goals will be achieved then the world would become a better place to live for the current and future generations. All 193 member countries of the United Nations have collectively committed to working towards the attainment of the Sustainable Development Goals (SDGs) by the year 2030 (United Nations, 2015a). Although the achievement of SDG goals is of paramount importance for all the participating nations, its achievement is particularly difficult for developing nations concerning their limited resources and vast economic issues.

One such developing country is India, that is also a member of United Nations and is currently striving to achieve SDG goals. In relation to the significance of SDGs, the Indian Government has established an entity known as NITI Aayog, which is actively engaged in endeavours aimed at attaining the SDGs (NITI Aayog, 2023). India's initial progress towards achieving the SDGs was on a positive trajectory. However, the COVID-19 pandemic has significantly impeded India's advancement in this regard. According to a recent report by Subramanian *et al.* (2023) from Harvard University, there is a significant probability that India will fail to achieve the majority of its SDGs unless prompt and decisive action is taken. One of the reasons for this non-achievement of SDG is attributed to limited availability of budgeted funds that can be channelised into the required sectors to revive the progress towards achieving SDG. Therefore, the following inquiries emerge:

Q1. What could potentially serve as a viable funding source to assist India in attaining the SDGs while addressing the constraint of limited financial resources?

In this context, as per the recent report of United Nations, remittances are one such source of fund that influences all 17 SDG goals (United Nations, 2023). Therefore, if economies can effectively strategise the inflow of remittances, it can serve as a crucial determinant in attaining the SDGs. This argument holds validity, particularly when considering the context of India, a nation characterised by its ongoing development and its status as the recipient of the highest inflows of remittances in comparison to any other country globally. According to the World Bank (2023b), India witnessed a significant increase in remittances, reaching a total of $111bn by the conclusion of the year 2022. This figure reflects a year-on-year growth

rate of 24%. Moreover, it is worth noting that India's contribution to the global remittance market stands at approximately 12%, as reported by the World Economic Forum (2023). Additionally, this figure represents 3.3% of India's gross domestic product, as stated by the World Bank (2023a). The aforementioned statistical data provides clear evidence that remittance inflows have the potential to contribute significantly towards India's achievement of the SDGs when effectively used. However, it leads to the emergence of another question that, remittances are foreign source of fund that are highly uncontrollable in nature and have very high impact of foreign forces, then how can India determine its remittance inflows?

The answer to this question is straightforward, as India receives remittances from over 100 countries, making it challenging to effectively monitor the economic performance of each individual remittance-sending nation. Therefore, it is reasonable to prioritise attention on countries that make the greatest contribution to the overall inflow of remittances. According to statistical data, three countries, namely, the UK (6.8%), the USA (23.4%) and the UAE (18%), collectively account for approximately 50% of India's remittance inflows (Press Information Bureau, 2023). Therefore, if Indian policymakers are able to identify the key indicators in these countries that contribute to increased outflows of remittances, it could assist India in formulating policies and predicting future remittance flows. However, the question resurfaces:

Q2. What are the indicators that determine the remittance outflows of major sending countries?

In addressing this inquiry, the primary indicator that arises is the economic growth of the leading countries in terms of remittance outflows, namely, the UK, the USA and the UAE. Previous research has demonstrated that an escalation in a nation's economic growth results in augmented income and greater disposable income for migrants, thereby exerting a favourable impact on remittance outflows to their country of origin (Alsamara, 2022; Barkat *et al.*, 2023; Khan, 2023b; Lee *et al.*, 2022; Topuz, 2022). Additionally, the level of control exerted over corruption in countries that send remittances is another significant factor to consider. A lack of effective measures to combat corruption within a nation engenders an atmosphere of distrust towards institutions, leading individuals to exhibit apprehension in entrusting their funds to financial establishments and displaying reluctance in making investments within said country. This negative sentiment leads to enhancement of remittance outflow (Yamada and Hiwatari, 2023). Moreover, the presence of employers in these countries with high remittance outflows can also have an impact on the remittance inflows to India. Studies have confirmed that when the total number of employers increases in an economy then it promotes an environment of competition that has an ultimate positive effect on wages of employees. These higher wages have a positive effect on remittance outflows (Okeke, 2021).

In summary, it can be inferred that effective monitoring of economic growth, corruption control, and the presence of employers in major remittance sending countries to India would enable Indian policymakers to strategically anticipate remittance inflows and allocate them to the necessary sectors, thereby facilitating the attainment of SDGs. However, the existing literature presents a variety of findings regarding the relationship between economic growth, corruption control, employer assistance and remittance outflows. Some studies, such as Haruna and Abu Bakar (2020), Khan *et al.* (2019) and Snudden (2019), support the notion that economic growth, control on corruption and availability of employer's help contribute to an increase in remittance outflows. Contrary to the aforementioned assertion, a

separate body of research conducted by Ajide and Olayiwola (2020) as well as Alharbi (2022) challenges this claims. Hence, few questions arise:

Q3. What will be the impact of positive and negative shock on these factors on India's remittance inflow?

Q4. Will these factors behave consistently in both short and long run for remittance inflows to India?

Both are critical questions and the answers to these questions can help India strategise the inflow of its almost equal to 50% of remittance inflows, that can have a major impact on India achievement of SDG goals.

Furthermore, the findings of the study will contribute to the existing literature in at least three different aspects. Firstly, the study will contribute to the extremely limited literature available on influence of top remitting countries macroeconomic factors on India's remittance inflows. Secondly, the study will provide separate results for each country, which will help policymakers to devise the distinct policy for each country for managing its remittance inflows. Thirdly, NITI Aayog, India's organisation that is working towards SDG goal achievement can also use the finding of the study and devise the remittance funds-oriented policies to the achievement of SDGs.

The overall structure of this study is as follow: The theoretical background and literature review will be described in Section 2. Data and methodology will be covered in Section 3. Results and discussions will be explained in Section 4. Conclusion and policy recommendations will be elucidated in Section 5. Section 6 provides the limitations.

2. Theoretical background

In recent years, economists and researchers worldwide have shown significant interest in the phenomenon of remittance inflows. However, previous research has predominantly concentrated on examining the internal factors within a nation that impact the inflow of remittances. Conversely, there has been a relatively diminished focus on the external variables that impact the inflow of remittances (Jijin *et al.*, 2022). The existence of this gap has led to a limited comprehension of the variables that influence the outflow of remittances from a given nation.

In the context of this framework, an analysis of the economy involved in sending remittances reveals a prevalent notion that corruption has a negative influence on the quality of institutions and acts as a barrier to the advancement of economic growth. According to Williamson (1998), the prevalence of corruption gives rise to inefficiencies, increases transaction costs, and reduces foreign investment. The phenomenon in question has also been recognised by economists in the field of New Institutional Economics (NIE), such as Coase, Williamson and North. According to scholarly sources such as North (1986), Williamson (1998) and Coase (1984), it has been proposed that countries with effective corruption control mechanisms often possess strong institutional structures and improved abilities to enforce contracts. These factors contribute to economic growth and the attraction of foreign investments. Furthermore, proponents of the NIE theory assert that, alongside corruption mechanisms, there exists a correlation between a prosperous economy and the existence of efficient institutions. These institutions, in turn, serve as a magnet for investments and facilitate job creation within the domestic realm. Therefore, it is crucial for regulatory bodies to prioritise efforts aimed at bolstering the economy, as this can lead to increased financial inflows (Coase, 1984). Finally, according to NIE theory, the existence of employers and the availability of job prospects are crucial elements in facilitating economic

development and progress. A robust labour market, characterised by a plentiful supply of job opportunities, acts as a motivating factor for individuals to remain within their national boundaries, thereby reducing the need to pursue employment overseas.

In summary, by establishing a connection between the principles of NIE theory and the determinants of remittance outflows in sending countries, it can be inferred that an economy's focus on fostering economic growth can attract foreign capital and incentivise investment, thereby indirectly influencing the volume of remittance outflows. Furthermore, the failure of an economy to implement effective measures to mitigate corruption can give rise to an atmosphere of instability, thereby potentially impacting the outflow of remittances from a nation. Moreover, the implementation of policies aimed at improving domestic employment prospects within an economy can lead to a decrease in reliance on foreign labour, resulting in a reduction in the outflow of remittances by the citizens of a nation. Nevertheless, this conclusion gives rise to an additional inquiry: do the theoretical insights and determinants influencing the outflow of remittances from major remittance-sending nations have any impact on the inflow of remittances to India?

2.1 Literature review

Although the theoretical background aligns with the factors that can affect remittance inflow to India. It has been noticed in the recent past that the accessibility of data and technological progress have contributed to the increased transparency of government operations, allowing for the evaluation of its efficiency. This transparency, in turn, has implications for the outflow of remittances. In light of the aforementioned argument, a comprehensive examination of 32 nations in sub-Saharan Africa revealed that a decline in institutional quality instils apprehension among individuals, leading to a subsequent rise in the outflow of remittances from the country (Osei-Assibey *et al.*, 2018). Ayuba (2023) conducted a study in Nigeria that yielded comparable findings, indicating the imperative for the Economic and Financial Crimes Commission of Nigeria to address corruption within the nation, particularly with regard to bribery, given its role in facilitating illicit forms of remittance outflows. Furthermore, a scholarly investigation conducted by Orkoh *et al.* (2017) used a panel data set encompassing countries in the Sub-Saharan Africa region. The study's findings underscore the significance of corruption and political transparency as influential determinants of financial outflows. Consequently, the authors recommend that governments implement policies aimed at mitigating corruption to address this issue effectively. Furthermore, a scholarly investigation into the macroeconomic factors influencing the flow of remittances between developed and developing nations discovered that the instability in an economy resulting from inadequate institutional performance amplifies the outflow of remittances (Cooray and Mallick, 2013).

Furthermore, within the Italian context, Ferriani and Oddo's (2019) investigation uncovered a positive correlation between the distance separating the home country and the host country and the volume of remittance outflows. Their study also identified the impact of the illicit market on remittances, finding that its presence influences the outflow of remittances. Corroborating these findings, a report disseminated by the Defence Technical Information Centre in the USA (Guiterman, 2016) verified that pervasive corruption in host countries correlates with an increase in remittance outflows, while also cautioning that such corruption may facilitate terrorist financing. Nevertheless, diverging from these observations, a comprehensive analysis using panel data encompassing 104 countries contradicts the notion that corruption levels have a discernible effect on the outflow of remittances. This study posits that in situations where corruption is rampant and a substantial portion of income is derived from illegal sources, individuals may perceive

greater security in retaining their funds in the host country rather than remitting them to their home country (Kellam *et al.*, 2009).

In conclusion, the outcomes of this concise literature review highlight two primary dimensions pertaining to corruption in the context of remittance outflows. The majority of studies substantiate the positive correlation between corruption levels in the host country and the magnitude of remittance outflows. Furthermore, it is important to note that there exists a significant dearth of scholarly research in relation to this field of inquiry, particularly with regards to the outflow of remittances from countries in the Middle East. Moreover, the question arises:

Q5. Do the corruption levels in the top remittance countries have any effect on India's remittance inflow?

Transitioning to an examination of the subsequent variable of interest, we turn our attention to the impact of the economic expansion of host nations on the outflow of remittances. In a study investigating the Gulf Cooperation Council (GCC) nations, it was discerned that an upsurge in economic growth positively influences the outflow of remittances from the respective country. This revelation implies the necessity for policymakers to devise strategies fostering the participation of citizens in the labour market, thereby mitigating dependence on foreign workers (Khan *et al.*, 2019; Khan, 2023b). Nevertheless, an alternate study within the GCC nations posits a counterargument to the aforementioned findings. This study indicates a negative correlation between a nation's economic growth, the sender of remittances, and the magnitude of remittance outflows. Consequently, it suggests the advantages of promoting the involvement of foreign workers in the economic advancement of a nation (Al-Malki *et al.*, 2022). Furthermore, an investigation into Saudi Arabia has led to the conclusion that economic growth only exerts a positive impact on remittance outflows in the short run, with negligible effects in the long run. The study advocates for governmental policies that encourage local investments to mitigate remittance outflows (Alkhathlan, 2013). However, this perspective has been contested by a recent study in Saudi Arabia, which contends that in the long run, remittance outflows should be restrained, as any positive effect on economic growth results in an escalation of remittance levels exiting the country (Islam and Alhamad, 2023). A recent study conducted by Banerji and Chandrawanshi (2021) delves into the influence of macroeconomic factors in both the USA and GCC countries on remittance outflows to India. The study's findings indicate a positive relationship between the economic growth of these countries and the volume of remittance outflows.

In conclusion, it can be inferred that the existing literature presents a range of findings with varying outcomes. Several studies have provided evidence supporting the notion that the economic growth of the host country has a positive impact on remittance outflows. However, there are also studies that contradict this assertion. Furthermore, the majority of previous research has focused on countries in the Gulf region, with a limited number of studies available for the USA and other European nations. The literature review's findings prompt an intriguing inquiry:

Q6. Does the economic growth experienced by the primary remittance countries bear any influence on the outflow of remittances to India?

Building upon the literature review pertaining to our last variable of interest, namely the presence of employers in recipient countries and their impact on the outflow of remittances. In their study on the UAE, Khan and Akhtar (2021) have identified unemployment within

individuals' home countries as a significant factor driving migration to the UAE. The study additionally posited that the availability of numerous employment opportunities in the host nations has a favourable impact on individuals' income and exhibits a direct relationship with the outflow of remittances from the country. In a comparable manner, a study conducted in Italy regarding migrants originating from Bangladesh revealed that the employment status of said migrants exerts a noteworthy influence on the outflow of remittances from the country. According to Mannan and Farhana (2014), the research findings indicate a positive correlation between the quantity of job opportunities and the presence of employers in Italy, and the magnitude of remittance outflows. In their study on Switzerland, Arapovic *et al.* (2009) discovered a significant correlation between the presence of job opportunities and employers and the outflow of remittances from the country. Notably, the study revealed that the majority of these remittances are directed towards developed nations, and these outflows do not impact the Swiss economy. In their study, Soava *et al.* (2020) examined the nations within the European Union (EU) and identified a positive relationship between employment opportunities and economic growth in EU countries. The authors also observed that a decrease in employment opportunities is a contributing factor to poor economic advancement. The study additionally proposed the necessity of generating a greater number of employment prospects. Finally, the study has additionally corroborated the notion that while increased employment exerts a positive influence on economic growth, it concurrently leads to an escalation in the outflow of remittances from EU nations.

In conclusion, as the majority of past studies confirm that the availability of employers or employment opportunities in the host nations has a positive effect on remittance outflows, the question arises:

Q7. Do these past findings hold true for Indian remittance inflows?

3. Research design

This research study uses a time series dataset spanning from 1996 to 2022 to investigate the asymmetric effects of economic growth, control on corruption and number of employers in three top remitting countries namely, the UK, USA and the UAE on remittance inflows of India. The analysis was performed using R software, with all selected variables expressed in percentages. The data pertaining to these variables is sourced from the World Bank's World Development Indicator Database (World Bank, 2022).

The non-linear autoregressive distributed lag (NARDL) model, used in this research, is an expansion of the ARDL model introduced by Shin *et al.* (2014). The conventional autoregressive distributed lag (ARDL) model was found to have a limitation in effectively capturing the asymmetric behaviour of variables. Nevertheless, the NARDL model successfully addresses this constraint and adeptly captures the asymmetries existing among the variables. Additionally, the NARDL model provides flexibility by allowing for the inclusion of stationary variables at either the level or first difference, as discussed by Shin *et al.* (2014). Furthermore, to facilitate the comprehension of the findings, the methodology offers a cumulative dynamic multiplier graph, which enables the examination of the adjustment pattern of the independent variable in response to positive and negative shocks (Shin *et al.*, 2014). One additional benefit of the NARDL model is its capacity to address both non-linearity and non-stationarity issues concurrently within the framework of an unrestricted error correction model (Khan, 2023a). Lastly, the NARDL model well when the sample size is comparatively small (Romilly *et al.*, 2001).

The NARDL model incorporates the past values of the independent variable and partitions them into positive and negative segments to capture the impacts of positive and negative shocks. Furthermore, the formulation of the model incorporates historical values of the dependent variable as well as an error term. To obtain the result, the dependent variable is regressed upon all these values. The linear equation is as follows:

$$\mathrm{RE_T} = \alpha_0 + \alpha_1 \mathrm{GD} + \alpha_2 \mathrm{EM} + \alpha_3 \mathrm{CO} + \varepsilon_T \tag{1}$$

As per equation (1), remittance inflow is represented by RE, economic growth is represented by GD, employers' availability is represented by EM and control on corruption is represented by CO. While α_1, α_2 and α_3 is the coefficient, ε_T represents the error term and the constant is represented by α_0. The asymmetric effects are considered in this research study. As a result, the independent variables are required to be partitioned into positive and negative components. The asymmetric equation can be written as follows:

$$\mathrm{RE_T} = \alpha_0 + \alpha_1 \mathrm{GD}^+ + \alpha_2 \mathrm{GD}^- + \alpha_3 \mathrm{EM}^+ + \alpha_4 \mathrm{EM}^- + \alpha_5 \mathrm{CO}^+ + \alpha_6 \mathrm{CO}^- + \varepsilon_T \tag{2}$$

As per equation (2), all the variables are divided into positive and negative components. The positive component denotes the positive shock impact of independent variables on remittance inflows of India, while the negative component denotes the negative shock impact of independent variables on remittance inflows to India. The next step is to formulate the NARDL model equation which is based on the concept given by Shin *et al.* (2014). It is as follows:

$$\mathrm{RE_T} = \beta_0 + \sum_{\mathrm{i}=1}^{\mathrm{p}} \beta_1 \mathrm{RE}_{t-\mathrm{i}} + \sum_{\mathrm{i}=0}^{\mathrm{p1}} \beta_2^* \mathrm{GD}^*_{\mathrm{T-i}} + \sum_{\mathrm{i}=0}^{\mathrm{p2}} \beta_3^* \mathrm{EM}^*_{\mathrm{T-i}}$$

$$+ \sum_{\mathrm{i}=0}^{\mathrm{p3}} \beta_4^* \mathrm{CO}^*_{\mathrm{T-i}} + \beta_5 \mathrm{RE_{T-1}} + \beta_6^* \mathrm{GD}^*_{\mathrm{T-i}} + \beta_7^* \mathrm{EM}^*_{\mathrm{T-i}} + \beta_8^* \mathrm{CO}^*_{\mathrm{T-i}} + \varepsilon_T \tag{3}$$

As per equation (3), β_0 denotes the value of constant, likewise β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8 denotes the values of coefficients, while p, p1, p2 and p3 depict lag orders, T represents the time and, lastly, ε_T is denotes the error term. Equations (5), (7) and (9) explain the short-term positive and negative partial sums, while equations (4), (6) and (8) explain the long-term positive and negative partial sums to capture the asymmetric effects of GDP growth, availability of employers and control over corruption respectively on remittance inflows to India. These are as follows:

$$\sum_{\mathrm{i}=0}^{\mathrm{p1}} \beta_2^* \mathrm{GD}^*_{\mathrm{T-i}} = \sum_{\mathrm{i}=0}^{\mathrm{p1}} \left(\beta_2^+ \mathrm{GD}^+_{\mathrm{T-i}} + \mathrm{GD}^-_{\mathrm{T-i}} \right) \tag{4}$$

$$\beta_6^* \mathrm{GD}^*_{\mathrm{T-1}} = \beta_6^+ \mathrm{GD}^+_{\mathrm{T-1}} + \beta_6^- \mathrm{GD}^-_{\mathrm{T-1}} \tag{5}$$

$$\sum_{i=0}^{p2} \beta_3^* EM_{T-i}^* = \sum_{i=0}^{p2} (\beta_3^+ EM_{T-i}^+ + EM_{T-i}^-) \quad (6)$$

$$\beta_7^* EM_{T-1}^* = \beta_7^+ EM_{T-1}^+ + \beta_7^- EM_{T-1}^- \quad (7)$$

$$\sum_{i=0}^{p3} \beta_4^* CO_{T-i}^* = \sum_{i=0}^{p3} (\beta_4^+ CO_{T-i}^+ + CO_{T-i}^-) \quad (8)$$

$$\beta_8^* CO_{T-1}^* = \beta_8^+ CO_{T-1}^+ + \beta_8^- REM_{T-1}^- \quad (9)$$

The initial stage of the NARDL model analysis involves an assessment of the stationarity of the selected variables. To achieve this objective, the augmented Dickey–Fuller test, as proposed by Dickey and Fuller (1981), has been used. Within the NARDL analysis framework, it is imperative that the variables exhibit stationarity, either in their original form or after first differencing, as underscored by Pesaran *et al.* (2001). Additionally, the Zivot and Andrews unit root test structure has been used to identify structural breaks in empirical data analysis, attributable to specific events in the time series (Zivot and Andrews, 1992).

Following the confirmation of stationarity, the subsequent step involves the determination of an appropriate lag length, using information criteria such as AIC, SIC or HQ. Furthermore, the *F*-statistic value has been used to execute a bound test, aimed at establishing the presence of cointegration among the variables. Cointegration is affirmed when the *F*-statistic value surpasses the critical value threshold. Conversely, a value below the lower bound critical value in the *F*-statistics bounds test signifies the absence of cointegration. Additionally, if the *F*-statistics bound test value falls within the range of the upper and lower bound critical values, the outcome is considered inconclusive, following the framework outlined by Pesaran *et al.* (2001).

After the confirmation of cointegration, the subsequent step entails conducting a test to determine the existence of an asymmetric effect. The WALD test is used to conduct this examination. The presence of an asymmetric effect is indicated when there is a deviation between the positive partial sum and the negative partial sum. The equations that represent the asymmetric effect in both the short-term and long-term can be expressed as follows:

$\sum_{i=0}^{p1} \beta_2^+ \neq \sum_{i=0}^{p1} \beta_2^{*-}$ (short run asymmetric effect of economic growth)

$\beta_6^+ \neq \beta_6^-$ (long run asymmetric effect of economic growth)

$\sum_{i=0}^{p2} \beta_3^+ \neq \sum_{i=0}^{p2} \beta_3^{*-}$ (short run asymmetric effect of availability of employers)

$\beta_7^+ \neq \beta_7^-$ (long run asymmetric effect of availability of employers)

$\sum_{i=0}^{p3} \beta_4^+ \neq \sum_{i=0}^{p3} \beta_4^{*-}$ (short run asymmetric effect of control on corruption)

$\beta_8^+ \neq \beta_8^-$ (long run asymmetric effect of control on corruption)

The NARDL equations, both in the short term and long term, are designed to validate the existence of cointegration and incorporate asymmetric effects. The equation for the short-run NARDL model is provided as follows:

$$\mathrm{RE_T} = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \mathrm{RE_{t-i}} + \sum_{i=0}^{p1} \left(\alpha_2^{+} \quad \mathrm{GD_{T-i}^{+}} + \alpha_2^{-} \quad \mathrm{GD_{T-i}^{-}}\right)$$

$$+ \sum_{i=0}^{p2} \left(\alpha_3^{+} \quad \mathrm{EM_{T-i}^{+}} + \alpha_3^{-} \quad \mathrm{EM_{T-i}^{-}}\right) + \sum_{i=0}^{p3} \left(\alpha_4^{+} \quad \mathrm{CO_{T-i}^{+}} + \alpha_4^{-} \quad \mathrm{CO_{T-i}^{-}}\right) + \mathrm{k_1 ECT_{T-1}} + \varepsilon_T \tag{10}$$

Equation (10) denotes the coefficients denoted as α_1, α_2, α_3 and α_4. The error term is represented as ε_T, while the constant is denoted as α_0. The variable k_1 represents the rate at which adjustments occur, and the coefficients $\alpha_2^{+}, \alpha_3^{+}, \alpha_4^{+}$ represent short-term positive shocks, whereas $\alpha_2^{-}, \alpha_3^{-}, \alpha_4^{-}$ represent short-term negative shocks.

The NARDL equation for the long term is as follows:

$$\mathrm{RE}_T = \beta_0 + \sum \beta_1 \mathrm{RE_{T-1}} + \sum \left(\beta_2^{+} \quad \mathrm{GD_T^{+}} + \beta_2^{-} \quad \mathrm{GD_T^{-}}\right)$$

$$+ \sum \left(\beta_3^{+} \quad \mathrm{EM_T^{+}} + \beta_3^{-} \quad \mathrm{EM_T^{-}}\right) + \sum \left(\beta_4^{+} \quad \mathrm{CO_T^{+}} + \beta_4^{-} \quad \mathrm{CO_T^{-}}\right) + \varepsilon_T \tag{11}$$

Equation (11) illustrates the coefficients denoted as β_1, β_2, β_3, β_4; The error term is denoted as ε_T; while the constant is represented by β_0. Furthermore, the variables $\beta_2^{+}, \beta_3^{+}, \beta_4^{+}$ represent long-term positive shocks, whereas $\beta_2^{-}, \beta_3^{-}, \beta_4^{-}$ represent long-term negative shocks.

4. Empirical findings

Table 1 provides the details of descriptive statistics; it can be observed that the UAE demonstrates notable distinctions when compared to the UK and the USA. The UAE exhibits a control of corruption score of 76.68%, which is comparatively lower than the UK's score of 94.08% and the USA's score of 89.14%. This discrepancy suggests a heightened susceptibility to corruption within the UAE. Moreover, it is worth noting that the UAE exhibits a marginally lower employer rate of 2.35% in comparison to the rates observed in the UK (2.69%) and the USA (2.61%). This difference may potentially be attributed to factors such as a relatively youthful demographic or a higher prevalence of unemployment within the UAE. In contrast, the UAE exhibits a comparatively higher GDP growth rate of 4.09%, surpassing the UK's 1.84% and the USA's 2.39%. This suggests a more accelerated pace of economic expansion in the UAE. These outcomes may be ascribed to various factors, including advantageous oil prices, augmented foreign investment or economic reforms initiated by the government. Moreover, upon examining the dispersion, skewness and kurtosis of the control of corruption scores, the data reveals that the scores pertaining to the UAE exhibit a higher degree of variability and a negative skewness. This implies a potentially less stable corruption scenario in comparison to the UK and the USA.

4.1 Unit root test

Table 2 presents the results of the augmented Dickey–Fuller Unit Root Test for three countries, namely, UAE, UK and USA, to determine stationarity or non-stationarity of variables in the model (Dickey and Fuller, 1981). The NARDL model requires mixed-order stationarity. For UAE, all variables were non-stationary at level except GDP growth, but

Unit of variables	India Remittance inflow (In %)	Control of corruption (In %)	UAE Employers (In %)	GDP growth (In %)	Control of corruption (In %)	UK Employers (In %)	GDP growth (In %)	Control of corruption (In %)	USA Employers (In %)	GDP growth (In %)
Mean	11.19	76.68	2.35	4.09	94.08	2.69	1.84	89.14	2.61	2.39
Median	10.25	82.04	2.66	4.17	94.23	2.78	2.34	90.38	2.58	2.29
Maximum	34.29	87.20	3.54	10.85	97.39	3.23	7.60	92.61	3.30	5.95
Minimum	−10.71	53.87	1.38	−5.24	91.87	1.97	−11.03	82.69	2.11	−2.77
SD	12.57	10.43	0.80	3.98	1.41	0.41	3.23	3.14	0.35	1.93
Skewness	0.12	−1.25	−0.07	−0.51	0.47	−0.37	−2.51	−0.74	0.30	−1.02
Kurtosis	2.32	2.90	1.46	3.18	2.56	1.89	11.17	2.09	1.91	4.61

Source: Author's calculation via R software

Table 1.
Descriptive statistics

	Augmented Dickey–Fuller unit root test			
	At level		At 1st difference	
	t-statistic	*p*-value	*t*-statistic	*p*-value
		UAE		
RE	4.25	0.9999	−2.96	0.0048
GD	−2.40	0.0186	−5.00	0.0000
EM	0.21	0.7375	−2.50	0.0146
CO	0.92	0.9000	−5.90	0.0000
		UK		
RE	4.25	0.9999	−2.96	0.0048
GD	−4.79	0.0000	−5.47	0.0000
EM	−2.68	0.0099	−1.04	0.2583
CO	−0.59	0.4512	−6.05	0.0000
		USA		
RE	4.25	0.9999	−2.96	0.0048
GD	−3.42	0.0014	−8.79	0.0000
EM	−0.86	0.3332	−2.14	0.0334
CO	−0.71	0.3988	−5.53	0.0000

Source: Author's calculation via R software

Table 2.
Unit root test

after differencing, they achieved mixed-order stationarity. In the UK, GDP growth and employers' availability were stationary at level, while others were non-stationary, but after differencing, all variables attained mixed order of stationarity. Similarly, for the USA, only GDP growth was stationary at level, but after differencing, all variables became stationary. The results confirm the fulfilment of NARDL model requirements for each country.

4.2 Structural break unit root test

Table 3 highlights the details of Zivot and Andrews's structural break unit root test, that is used to check the stationarity of a variable. Traditional unit root tests may not effectively capture certain events that could impact a time series, especially when considering data over an extended period (Zivot and Andrews, 1992). This limitation leads to ambiguous results. The significance of identifying structural breaks becomes more critical in developing countries as these economies experience various shifts while progressing towards developed status (Erumban *et al.*, 2019).

In the case of the UAE, several structural breaks occurred in different variables. For instance, remittance inflows experienced a structural break in 2006, possibly because of the global financial crisis (Vinodkumar, 2021). The UAE's GDP growth also underwent a structural break in 2011, possibly due to the Arab Spring (Issaev *et al.*, 2022). The availability of employers experienced a structural break in 2006, potentially due to the establishment of the Dubai Knowledge Village (Knight, 2011). Lastly, control over corruption showed a structural break in 2002, which can be linked to the establishment of the UAE Anti-Corruption Commission (Nobanee *et al.*, 2020).

Similarly, in the UK, specific events triggered structural breaks in various variables. For instance, the 2006 Indian Ocean tsunami caused a structural break in remittance inflow to India (Chakrabarti, 2018). The UK's GDP growth experienced a structural break in 2013,

	Structure break year	At level *t*-statistic	*p*-value	Structure break year	At 1st difference *t*-statistic	*p*-value
			UAE			
RE	2006	−2.97	0.0049	2009	−5.27	0.0270
GD	2011	−3.63	0.0250	2010	−5.57	0.0396
EM	2006	−4.47	0.0103	2009	−3.94	0.0050
CO	2002	−7.42	0.0000	2005	−3.96	0.0046
			UK			
RE	2006	−2.97	0.0049	2009	−5.27	0.0270
GD	2013	−5.88	0.2964	2010	−5.40	0.1906
EM	2004	−5.43	0.0566	2013	−4.30	0.0625
CO	2006	−3.27	0.0192	2010	−7.77	0.0086
			USA			
RE	2006	−2.97	0.004937	2009	−5.27	0.0270
GD	2001	−5.67	0.284189	2010	−5.43	0.0893
EM	2018	0.37	0.049782	2007	−3.89	0.0404
CO	2009	−5.28	0.009251	2011	−6.70	0.0155

Source: Author's calculation via R software

Table 3. Structural break unit root test

likely due to the 2008 financial crisis (Pearson and Elson, 2015). The availability of employers had a structural break in 2004, potentially as a consequence of the introduction of the Working Tax Credit (Wills and Linneker, 2014). The control of corruption underwent a structural break in 2006, which was due to the establishment of the Serious Fraud Office (Harvey, 2021).

In the USA, certain events are associated with structural breaks in different variables. For example, the 2006 terrorist attacks in Mumbai, India, increased remittance outflows to India (Nandy, 2020). The dot-com bubble burst in 2001, leading to a decline in the economic performance of the USA caused a structure break (Kisswani and Khan, 2023). The financial crisis of 2008–2009 had severe repercussions on the US economy, leading to significant efforts by US authorities to control corruption and combat financial crimes, which has caused a structure break in the series (Chantziaras *et al.*, 2020).

4.3 Non-linear autoregressive distributed lag bound test results

Table 4 incorporates the results of bound Test. The NARDL bounds test is a statistical method for determining whether or not asymmetric effects exist in the long-run relationship between variables. If the *F*-statistic value exceeds the critical bound value for either regime in any country, then the null hypothesis will be rejected, and we can conclude that the variables have an asymmetric long-run relationship in that country. If the *F*-statistic is less than the critical bound value for both regimes in all countries, then the null hypothesis will not be rejected, indicating that no country has an asymmetric long-run relationship. Taking this into account, the UAE's *F*-statistic is 8.06, the UK's *F*-statistic is 13.08, and the USA's *F*-statistic is 4.92. All these *F*-statistics values are greater than the 5% level of significance, indicating that the variables have a long-run relationship.

4.4 Short run and long run results

Table 5 includes the details of short run and long run results. Initiating with the short-run results of positive and negative shocks on Indian remittance inflows from the UAE, it has

been found that, In the short run, positive shocks to UAE economic growth have a significant positive impact on Indian remittance inflows, with a coefficient of 0.0097 and a *t*-statistic of 2.29, suggesting that a stronger UAE economy leads to increased remittances to India. This finding corresponds with the similar findings of Al-Malki *et al.* (2022). Conversely, negative shocks to UAE economic growth also have a significant positive impact on remittance inflows, with a coefficient of 0.0157 and a *t*-statistic of −3.05, indicating that a downturn in the UAE economy also results in increased remittances to India. Noushad *et al.* (2020), in their study of India, also confirmed that the decline in economic growth in the UAE can lead to an increase in remittances to India.

	UAE		UK		USA	
	F-statistics 8.06		*F*-statistics 13.08		*F*-statistics 4.92	
	Critical bound value		Critical bound value		Critical bound value	
Significance (%)	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
10	1.99	2.94	1.99	2.94	1.99	2.94
5	2.27	3.28	2.27	3.28	2.27	3.28
2.50	2.55	3.61	2.55	3.61	2.55	3.61
1	2.88	3.99	2.88	3.99	2.88	3.99

Table 4.
NARDL bounds test

Source: Author's calculation via R software

	Short run				Long run			
Variable	Coefficient	Std. error	*t*-statistic	*p*-value	Coefficient	Std. error	*t*-statistic	*p*-value
				UAE				
GD+	0.0097	0.00	2.29	0.04	0.0295	0.01	4.71	0.00
GD−	−0.0157	0.01	−3.05	0.01	−0.0634	0.02	−3.13	0.01
CO+	−0.0086	0.00	−2.73	0.02	−0.0139	0.01	−2.17	0.05
CO−	−0.0179	0.01	−2.64	0.02	0.0082	0.01	0.63	0.54
EM+	0.2387	0.09	2.65	0.02	−0.2002	0.20	−0.98	0.35
EM−	−0.0652	0.31	−0.21	0.84	1.5266	0.30	5.11	0.00
ECT	−0.6181	0.06	−10.11	0.00				
				UK				
GD+	0.0354	0.02	2.17	0.06	0.0600	0.02	3.44	0.01
GD−	−0.0008	0.01	−0.07	0.94	0.0498	0.02	2.33	0.05
CO+	0.0129	0.06	0.22	0.83	0.0239	0.05	0.46	0.66
CO−	−0.0897	0.03	−2.97	0.02	−0.3503	0.02	−18.56	0.00
EM+	−1.0155	0.39	−2.58	0.03	−2.3940	0.69	−3.45	0.01
EM−	−0.2425	0.24	−1.00	0.35	−0.2016	0.21	−0.94	0.38
ECT	−1.2027	0.09	−14.01	0.00				
				USA				
GD+	−0.0455	0.03	−1.78	0.10	−0.0657	0.05	−1.24	0.24
GD−	0.0544	0.03	1.92	0.08	−0.0296	0.07	−0.40	0.69
CO+	−0.0920	0.03	−3.32	0.01	−0.2855	0.09	−3.28	0.01
CO−	0.0405	0.02	2.58	0.02	0.0893	0.04	2.15	0.05
EM+	2.3280	0.82	2.82	0.01	5.1373	2.37	2.17	0.05
EM−	−1.4961	0.66	−2.26	0.04	−6.7142	1.74	−3.86	0.00
ECT	−0.4532	0.06	−7.78	0.00				

Table 5.
Short run and long run result

Source: Author's calculation via R software

Similarly, in the short run, positive shocks to corruption control index levels in the UAE have a negative impact on Indian remittance inflows, with a coefficient of −0.0086 and a *t*-statistic of −2.73, suggesting that higher control on corruption leads to decreased remittances. On the other hand, negative shocks to corruption control index levels in the UAE have a positive impact on remittance inflows, with a coefficient of 0.0179 and a *t*-statistic of −2.64, indicating that a reduction in corruption control performance may increase remittances. Jacob (2019) in their study of South Asia had confirmed this finding in the past, suggesting that control over corruption in the host country has a direct effect on remittance inflows to the home countries.

Furthermore, positive shocks to employers in the UAE have a positive impact on Indian remittance inflows, with a coefficient of 0.2387 and a *t*-statistic of 2.65, implying that higher employer activity may lead to increased remittances. Conversely, negative shocks to employers in the UAE have a negligible impact on remittance inflows, with a coefficient of 0.0652 and a *t*-statistic of −0.21, suggesting that this factor may not be significant in the short run. These results align with the study of Sahu (2021), in which author has highlighted the challenges of migrants in UAE and its effect on remittance outflows.

In the long run, the effects of these shocks on Indian remittance inflows appear to be more substantial. Positive shocks to UAE economic growth have a coefficient of 0.0295 and a *t*-statistic of 4.71, while negative shocks have a coefficient of 0.0634 and a *t*-statistic of −3.13. This indicates that the long-run impact of UAE economic growth on remittances is more pronounced compared to the short run, but it highlights the fact that in all cases remittance inflows only follows an uptrend without being affected by the downtrend in UAE economy, as it has been highlighted by Khan *et al.* (2019). Similarly, the impact of control over corruption index on remittances in the long run is more significant than in the short run. The results indicated that positive shocks to corruption control index levels in the UAE have a coefficient of −0.0139 and a *t*-statistic of −2.17, while negative shocks have a coefficient of −0.0082 and a *t*-statistic of 0.63. These results corroborated with the study of migration effect and remittance inflows to the developing nations by Ullah and Haque (2020). However, the long-run impact of UAE employers on Indian remittance inflows appears to be less significant. Positive shocks have a coefficient of −0.2002 and a *t*-statistic of −0.98, while negative shocks have a coefficient of −1.5266 and a *t*-statistic of 5.11. These results imply that the effect of employers in the UAE on remittance inflows to India is not substantial in the long run.

In the case of the UK, a positive coefficient of 0.0354 indicates that, in the short run, a positive shock to UK economic growth is associated with a modest increase in Indian remittance inflows. However, this effect is not statistically significant at the conventional significance level ($p = 0.06$). On the other hand, a negative shock in UK economic growth has an almost negligible impact on Indian remittance inflows, with a coefficient of 0.0008, which is not statistically significant ($p = 0.94$), these results aligned with the results of Das and Sethi (2020) in their study of South Asian emerging nations. Similarly, positive shocks in the UK corruption control index level and negative shocks in UK employers do not show any significant short-run impact on Indian remittance inflows, as their coefficients are small and statistically insignificant. While a negative shock in the decline in control on the corruption index increases remittance outflows, but when employer availability hits a positive shock, remittance outflows decline, suggesting that people prefer to invest in the UK rather than sending the remittance to their home country.

In the long run, the picture changes. A positive shock in UK economic growth has a more substantial and statistically significant effect on Indian remittance inflows, with a coefficient of 0.0600 and a *t*-statistic of 3.44 ($p = 0.01$). This implies that, in the long run, a

booming UK economy can significantly increase the inflow of remittances into India. Conversely, a negative shock in UK economic growth has a surprising result. It shows a negative coefficient of −0.0498, indicating that a long-term slowdown in the UK economy could actually lead to an increase in Indian remittance inflows, which is statistically significant at $p = 0.05$. These results align with the findings of Ali (2020), in their study of pattern of remittance inflows from UK. Regarding other variables, in the long run, a negative shock in UK corruption control index level has a significant positive impact on Indian remittance inflows (coefficient of 0.3503, *t*-statistic of −18.56, *p* 0.01), suggesting that an increase in corruption levels in the UK can lead to higher remittances to India, aligning with the findings of Nyame-Asiamah *et al.* (2020) in their study of African migrants returning from UK. Lastly, the results indicate that a positive shock among UK employers has a substantial and statistically significant negative effect on Indian remittance inflows in the long run, with a coefficient of −2.3940 and a *t*-statistic of −3.45 ($p = 0.01$) while negative shocks have no significant impact in remittance outflows.

In the case of the USA, In the short run, a positive shock in USA economic growth leads to a slight decrease in Indian remittance inflows with a coefficient of −0.0455, although it is not statistically significant at the conventional level ($p = 0.10$). However, a negative shock in USA economic growth shows a similar but slightly more substantial impact, with a coefficient of −0.0544 and marginal significance ($p = 0.08$). This finding aligns with the result of Chowdhury *et al.* (2022) in which they have found that economic growth of USA has a minimal impact on its remittance outflows to low-income countries. Additionally, a positive shock in the USA corruption control index level significantly increases Indian remittance inflows in the short run with a coefficient of −0.0920 ($p = 0.01$), while a negative shock in the corruption control index level leads to a moderate decrease in remittance inflows. Catrinescu *et al.* (2009) in their study of developing countries confirmed similar results indicating that fair work of institutions in the USA has a direct effect on remittance outflows. Furthermore, it has also been found that both positive and negative shocks in employer availability have a positive effect on remittance outflows corroborating with the findings of (Pren and González-Araiza, 2019) in which it was found that availability of employment in USA and Canada affect the remittance outflows of the country.

In the long run, the effects of these shocks appear to be less pronounced. A positive and negative shock in USA economic growth shows a larger impact on Indian remittance inflows, but it is statistically insignificant. Similarly, a positive shock in the USA corruption control index level continues to significantly reduce Indian remittance inflows, with a larger coefficient of −0.2855 ($p = 0.01$) aligning with the finding of (Kausar *et al.*, 2019) in their study of SAARC nations on remittance inflows receiving from USA. On the other hand, the effects of negative shocks in corruption control index levels diminish remittance inflows in the long run, with coefficients of 0.0893 ($p = 0.05$). Moreover, shocks in USA employers also play a role in shaping Indian remittance inflows, any positive shock in employers leading to a significant increase in remittance inflows with a coefficient of 5.1373 ($p = 0.05$) and a negative shock in employers showing a significant increase with a coefficient of 6.7142 ($p = 0.00$). Ji *et al.* (2022) in their study of impact of migrants from top ten countries on US employment levels, also confirmed similar findings indicating that it has a high effect on remittance outflows from the country.

Overall, the results of the study indicate that the short run and long-run effects of these variables are distinct for each country on their remittance outflows to India. It indicates that the policymakers must treat each country and each variable as a separate case and design the policy accordingly.

4.5 Asymmetry and diagnostics test results

Table 6 presents the results of various statistical tests conducted on the NARDL model for three different countries: the UAE, the UK and the USA. Initiating with the Wald test that examines whether there is an asymmetric relationship between the variables in the NARDL model. For all three countries, the *F*-statistics are given as 11.0919, 6.3050 and 21.3681, with corresponding *p*-values of 0.0046, 0.0260 and 0.0005, respectively. As the *p*-values are less than the conventional significance level of 0.05, it indicates that there is a statistically significant asymmetric relationship between the variables in the model for all three countries.

Furthermore, the Lagrange Multiplier (LM) test is used to detect the presence of autocorrelation in the residuals of the NARDL model. For the UAE, UK and USA, the LM test statistics are provided as 2.9674, 3.0406 and 0.8893, with corresponding *p*-values of 0.0973, 0.1312 and 0.4385. As the *p*-values are greater than 0.05, it suggests that there is no statistically significant evidence of autocorrelation in the residuals for all three countries. The next diagnostic test is the Breusch–Pagan–Godfrey test, which checks for the presence of heteroskedasticity in the residuals of the NARDL model. The test results for the UAE, UK and USA are given as 0.9175, 0.3093 and 1.1258, with corresponding *p*-values of 0.5581, 0.9760 and 0.4141. As the *p*-values are all greater than 0.05, it suggests that there is no statistically significant evidence of heteroskedasticity in the residuals for all three countries. For checking the normality, the Jarque Bera test has been applied, which assesses whether the residuals of the NARDL model are normally distributed. For the UAE, UK and USA, the test statistics are provided as 1.5250, 0.1871 and 0.3984, with corresponding *p*-values of 0.4665, 0.9107 and 0.8194. As the *p*-values are all greater than 0.05, it suggests that there is no statistically significant evidence to reject the assumption of normality in the residuals for all three countries.

In summary, the statistical tests indicate that there is a statistically significant asymmetric relationship between the variables in the NARDL model for all three countries. However, there is no evidence of autocorrelation, heteroskedasticity or normality in the residuals, which suggests that the NARDL model's assumptions are met for the analysed data from the UAE, UK and USA.

Figures 1, 2 and 3 represent the dynamic multiplier graph, which was given by (Shin *et al.*, 2014). The dynamic multiplier graphs for the UAE show that positive shocks to economic growth, control of corruption and the availability of employer's lead to an increase in remittance outflows to India in both the short and long run. The effects are more pronounced in the long run due to migrant workers adapting to changes in the UAE's economic environment. The dynamic multiplier graphs for the UK reveal that positive changes in economic growth, control of corruption and the availability of employers have a positive impact on remittance outflows to India. The effects are asymmetric, with different

Tests	UAE		UK		USA	
	F-statistics	*p*-value	*F*-statistics	*p*-value	*F*-statistics	*p*-value
Wald test for asymmetric relationship	11.0919	0.0046	6.3050	0.0260	21.3681	0.0005
LM test for autocorrelation	2.9674	0.0973	3.0406	0.1312	0.8893	0.4385
Brush–Pegan–Godfrey test for heteroskedasticity	0.9175	0.5581	0.3093	0.9760	1.1258	0.4141
Jarque–Bera test for normality	1.5250	0.4665	0.1871	0.9107	0.3984	0.8194

Source: Author's calculation via R software

Table 6. Asymmetry and diagnostic test result

peak periods and rates of decline. The dynamic multiplier graphs for the USA indicate that positive changes in economic growth, control of corruption and the availability of employers have a significant and positive impact on remittance outflows to India. These factors influence Indian workers' ability to find jobs and send money back home. Overall, the dynamic multiplier graphs from the NARDL model show that economic growth, control of corruption and the availability of employers in the UAE, the UK and the USA have distinct impacts on remittance outflows to India.

5. Conclusion and policy recommendation

In synopsis, this investigation delves into the influence of macroeconomic variables on remittance inflows from the primary three nations contributing to 50% of India's total remittances. Outcomes reveal that within the United Arab Emirates (UAE), modifications in

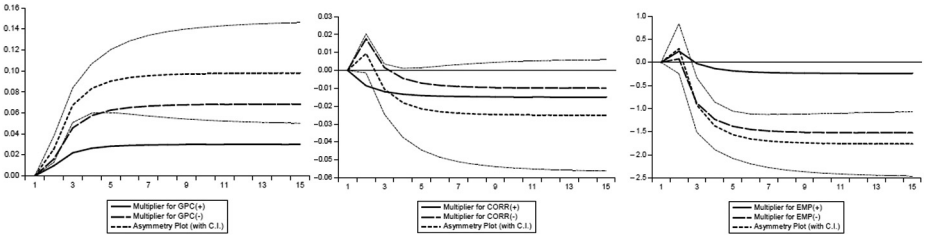

Figure 1.
Dynamic multiplier graph (UAE)

Source: Figure by author

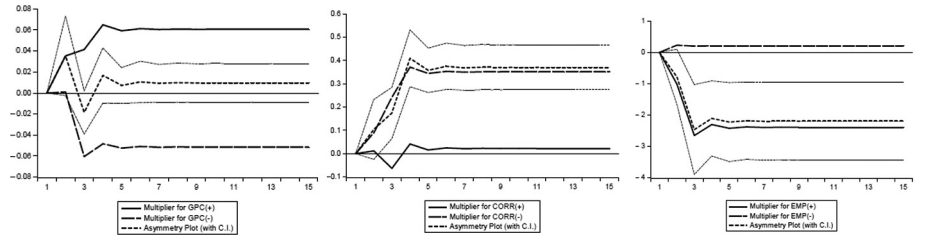

Figure 2.
Dynamic multiplier graph (UK)

Source: Figure by author

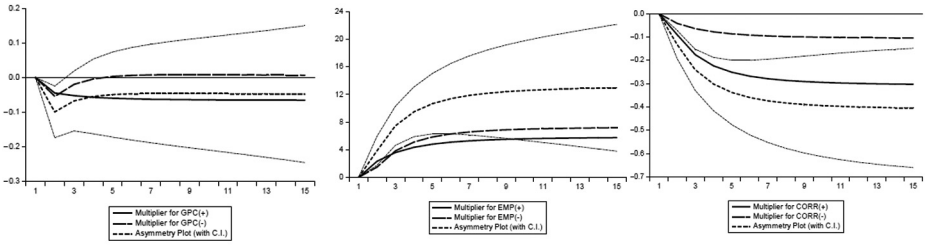

Figure 3.
Dynamic multiplier graph (USA)

Source: Figure by author

economic growth and corruption levels significantly affect the outflow of remittances to India. Conversely, the presence of employers exhibits marginal impact on remittance outflows. Within the UK, remittance outflows to India primarily hinge on enduring shifts in economic growth, with corruption control and employer availability demonstrating relatively inconsequential effects. In the US context, economic growth's impact on remittance outflows to India is minimal, while corruption control and employment opportunities notably shape remittance outflows.

These findings yield valuable insights for Indian policymakers and stakeholders, aiding in the formulation of strategies conducive to SDGs, aligning with the United Nations' recognition of remittance inflows' impact on all sustainability objectives. Accordingly, policy recommendations are proffered: prioritizing policy implementation to fortify relationships with major remittance-contributing nations, fostering ties through trade relations and employee exchange programs, vigilantly monitoring the economic performance of these nations and adopting a tailored, country-specific approach with distinct strategies for each macroeconomic factor.

6. Limitation and future scope of study

This study focuses on analysing the impact of economic growth, corruption control and employer availability in the top three countries on 50% of remittance inflows to India. The analysis did not consider additional variables that could potentially impact the inflow of remittances, including but not limited to exchange rates, investment prospects, social welfare benefits, and the probability of acquiring citizenship in the host nations. Furthermore, the research employs a dataset with a restricted time series, encompassing the period from 1996 to 2022. Although the provided timeframe allows for a comprehensive analysis, it is important to acknowledge potential limitations in data availability or reliability for specific variables or time periods. These limitations may impact the accuracy and applicability of the research findings. To enhance the scope of future research, it would be advantageous to incorporate additional countries that exhibit a comparatively larger proportion of remittance inflows directed towards India. Furthermore, the integration of macroeconomic and microeconomic variables in a study would offer a more efficient methodology for assessing the influence of these factors on the inflow of remittances.

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Further reading

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