

Moderating Role of Institutional Quality in the Relationship Between Human Capital Flight, Remittances and Economic Growth: Evidence from SAARC Countries

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Abstract

This study examines how institutional quality moderates the relationship between human capital flight, remittances, and economic growth in SAARC countries over the period 2000 to 2021, using System GMM estimation. The findings indicate that the human capital flight exerts a persistent adverse effect on economic growth, whereas remittances have a significant positive correlation with GDP growth. The analysis shows that while private credit and physical capital accumulation are robust drivers of economic growth, Foreign Direct Investment (FDI) and trade openness demonstrate statistically insignificant effects. The analysis further reveals that institutional quality has either a negative or an insignificant impact on growth, suggesting underlying governance inefficiencies or institutional misalignment. The study concludes that SAARC nations require context-specific policy interventions to retain skilled labour, strengthen institutions, and deepen financial markets, as conventional growth strategies may be ineffective without reforms that address the region's distinct socioeconomic barriers.

Keywords: Human Capital Flight, Remittances, Institutional Quality, Economic Growth, System GMM, SAARC Countries.

Introduction

Economic growth remains a key priority for policymakers globally, reflecting national development and prosperity. For SAARC nations Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, achieving sustained growth is particularly challenging due to high poverty rates, income inequality, underdeveloped industries, and agrarian dependence (Thirupath, 2023). Although some member states have made progress in GDP growth and poverty alleviation, structural barriers such as inadequate infrastructure, labour market inefficiencies, and political volatility impede long-term growth (SAARC Secretariat, 2020). Analysing these growth determinants is crucial for formulating targeted policies to enhance regional economic resilience.

Human capital flight, or brain drain, significantly impacts economic growth in SAARC nations. While traditional views suggest it depletes skilled labour and hinders development (Docquier & Rapoport, 2012), recent studies highlight potential brain-gain effects, in which migration incentives boost education, diaspora networks, and knowledge transfer. For instance, the existing literature on developing countries shows that emigration prospects increase educational investments in high-demand fields like medicine and engineering, thereby expanding the domestic skill pool (Docquier et al., 2008). In SAARC countries, where education spending is growing but labour markets remain weak, these effects are particularly relevant. However, institutional quality plays a crucial role, as poor governance can diminish the benefits of diaspora engagement (Siddique et al., 2026).

Remittances, which are generally defined as funds sent by migrants to their home countries, serve as a critical economic support for SAARC nations, often exceeding foreign direct investment (FDI) in importance (Timsal & Safdar, 2024). These inflows significantly reduce poverty, boost household consumption, and enhance macroeconomic stability, particularly in remittance-reliant countries like Nepal, Bangladesh, and Pakistan (World Bank, 2023). However, their long-term impact on growth is debated. While some studies emphasise their role in stabilising household incomes (Verma et al., 2025), others argue that their limited use in productive investments hinders economic transformation (Sapkota, 2013). The impact of remittances on growth depends on institutional quality: they foster development in strong

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regulatory environments but can have adverse effects in settings of weak governance (Delessa et al., 2024; Akanbi et al., 2024). Thus, improving institutional frameworks is essential to maximise remittance benefits. The broader institutional environment, encompassing governance quality, regulatory efficiency, and political stability, is increasingly recognised as a key factor shaping the ultimate economic impact of migration and remittances. For example, strong institutions bolster investor confidence, ensure policy consistency, and optimise resource allocation, enhancing remittance benefits while reducing brain drain risks (Robinson & Acemoglu, 2012). Research shows that remittances negatively affect growth in weak institutional environments but have neutral or positive effects in effective governance environments (Mohammed et al., 2023). Financial development further moderates this relationship, as robust banking systems direct remittances toward productive investments (Kratou & Gazdar, 2018). Moreover, political stability matters, as skilled migration often reflects institutional dissatisfaction, suggesting that governance reforms could mitigate brain drain (Vega et al., 2025). However, exceptions exist, such as Nepal, where remittances drive growth despite weak institutions (Panthi & Devkota, 2023), underscoring the importance of context-specific analysis.

This study examines the moderating effect of institutional quality on the interplay among human capital flight, remittances, and economic growth in SAARC countries. This study employs panel data to determine how institutional quality shapes the relationship between migration and remittance flows. The findings will help formulate policies that maximise the benefits of remittances, foster diaspora engagement, and address the root causes of brain drain. Given SAARC's unique socioeconomic challenges, this study contributes to a deeper understanding of how institutions can either catalyse or constrain development in migration-dependent economies.

This paper is structured into distinct sections to address the research objectives systematically. The following section provides a literature review examining the moderating role of institutions in the relationship between human capital flight, remittances, and economic growth, with a focus on SAARC countries. Subsequently, the third section outlines the model specification, data sources, and methodological framework employed in the study. The fourth section presents the empirical findings derived from various estimations, along with a detailed interpretation of the results. Finally, the concluding section summarises key insights and offers policy recommendations based on the study's outcomes.

Literature Review

The relationship between remittances, human capital flight, and economic growth has garnered significant attention in development economics, with researchers emphasising the complex interplay between migration-driven financial inflows and domestic economic performance. While remittances are often viewed as a vital source of external financing that can stimulate consumption, investment, and poverty reduction, the emigration of skilled labour, commonly referred to as brain drain, poses a potential threat to long-term productivity and innovation. However, the net effect of these factors on economic growth is far from uniform, as institutional quality emerges as a crucial moderating variable. Strong institutions can enhance the positive impact of remittances by ensuring efficient financial intermediation, policy stability, and good governance, also mitigating the adverse consequences of human capital flight. This literature review synthesises existing research on this nexus, highlighting the divergent findings and methodological approaches that shape current understanding.

A comparative analysis of empirical studies reveals significant variation in the remittance-growth relationship, largely contingent on institutional context. Catrinescu et al. (2009) caution against conflating direct and indirect growth effects due to endogeneity concerns. Rao and Hassan (2012) address this by employing system GMM to disentangle transmission channels, offering a more nuanced understanding of how remittances operate through different institutional and financial pathways. Imad (2017) finds no direct growth effect of remittances in South Mediterranean countries, but underscores their indirect contribution when complemented by strong institutions. Zghidi et al. (2018) highlight the positive influence of remittances in North Africa under conditions of high economic freedom. Kratou and Gazdra (2018) demonstrate that remittances contribute to growth primarily in economies with well-developed financial systems. Adetou and Fiodendji (2019) further illustrate this point by showing the importance of financial systems. Ajilore and Ikhida (2013) further illustrate the heterogeneity in remittance impacts across Sub-Saharan Africa, where outcomes range from significantly positive to negative, depending on institutional efficiency and policy frameworks. Adekunle et al. (2020) observe that remittances in African nations yield short-term growth benefits, but their long-term impact turns negative unless reinforced by robust

regulatory frameworks. Islam and Alhamad (2022) explore the asymmetric effects of remittance shocks, revealing that institutional strength and financial depth shape whether remittances act as a stabiliser or a volatility amplifier. Panthi and Devkota (2023) present a counterintuitive case in Nepal, where remittances sustain growth despite weak institutional capacity, suggesting that the institutional threshold for remittance efficacy may vary across economic structures and levels of dependency. Habib's (2024) examination of MENA countries demonstrates that remittances alone negatively affect economic growth, primarily because they are predominantly used for consumption rather than productive investment. However, this adverse effect is mitigated when governance—particularly control of corruption—is factored in, suggesting that institutional quality plays a decisive role in shaping remittance outcomes. Kouame (2025) reports a negative growth impact in Sub-Saharan Africa, albeit one that weakens with stronger governance. These findings collectively suggest that institutions act as a critical filter, determining whether remittances translate into sustainable development or merely transient consumption boosts.

Regional disparities in remittance efficacy further complicate the debate. Such discrepancies underscore the importance of contextual factors, including financial development and policy environments, in mediating remittance effects. Political stability and governance further influence this dynamic, as evidenced by Ryazantsev and Bragin (2023) and Rehman et al. (2023), who link migration outcomes to political freedoms and infrastructure quality. Helms (2024) introduces a novel perspective by framing emigration as an individual response to systemic corruption, particularly among the highly educated, thereby shifting the discourse from electoral Accountability to exit strategies. This aligns with broader findings that migration patterns are shaped not only by economic incentives but also by institutional dissatisfaction and trust deficits.

In conclusion, the literature presents a nuanced and often contradictory picture of the remittance-human capital flight-growth nexus, with institutional quality, financial development, and political stability serving as pivotal moderators. While remittances have the potential to drive growth, their impact is highly context-dependent, shaped by the strength of governance structures, financial systems, and policy environments. The divergent findings across regions and methodologies underscore the need for tailored policy interventions that account for institutional heterogeneity and financial thresholds. Future research should further explore the asymmetric effects of remittances and the long-term political implications of brain drain, particularly in corruption-prone economies where emigration may erode civic engagement. Ultimately, maximising the developmental benefits of remittances requires not only sound institutions but also a deeper understanding of the interplay between migration, governance, and economic resilience.

Conceptual Framework

The conceptual framework for this study is built upon the extended neoclassical growth model, which integrates the core variables of human capital flight, remittances, and institutional quality. This framework visually and narratively outlines the hypothesised relationships tested in this research, providing a clear blueprint for the empirical analysis.

The central premise of the framework is that economic growth, the ultimate dependent variable, is influenced not only by traditional factors such as physical capital and labour but also by the interplay between migration-related flows (human capital flight and remittances) and the domestic institutional environment. The framework posits that institutional quality acts as a critical moderating variable, altering the strength and direction of the relationship between migration factors and economic growth.

The pathways depicted in the framework and the underlying hypotheses are as follows:

Direct Effects

1. *Human Capital Flight → Economic Growth*: A direct negative relationship is hypothesised. The emigration of skilled labour (HCF) is expected to deplete the domestic stock of human capital, hindering innovation, productivity, and long-term economic growth.
2. *Remittances → Economic Growth*: A direct positive relationship is hypothesised. Remittance inflows are expected to stimulate growth by augmenting household incomes, easing credit constraints, financing investment, and boosting aggregate consumption.
3. *Institutional Quality → Economic Growth*: A direct positive relationship is theoretically expected. However, the literature review and context of SAARC countries suggest the possibility of an insignificant or even negative relationship due to governance inefficiencies, corruption, or institutional misalignment, which this study will test.

The Moderating Role of Institutional Quality

Institutional Quality as a Moderator of the HCF and Growth Link: The framework hypothesises that high-quality institutions can mitigate the adverse effect of brain drain on growth. This is theorised to occur through mechanisms such as creating a more attractive domestic environment for skilled professionals, ensuring efficient use of remaining human capital, and fostering effective diaspora engagement programs that channel external knowledge back into the economy. Thus, the negative impact of HCF on growth is expected to be weaker in countries with stronger institutions.

Institutional Quality as a Moderator of the Remittance and Growth Link: The framework hypothesises that high-quality institutions enhance the positive effect of remittances on growth. Strong institutions, characterised by low corruption and stable property rights, are expected to create an environment in which remittances are more likely to be channelled into productive investments rather than solely into consumption. Therefore, the positive impact of remittances on growth is expected to be stronger in countries with better institutional frameworks.

This conceptual framework synthesises the theoretical expectations from the extended Solow model and the empirical ambiguities identified in the literature. It provides a structured basis for testing the specific moderating role of institutional quality in the unique context of SAARC nations, thereby addressing the core research objective.

Theoretical Background and Research Methodology

This study is anchored in the neoclassical Solow growth model, which posits that economic growth is driven by capital accumulation, labour force expansion, and exogenous technological progress. The baseline model is extended to formally incorporate the key variables of interest: human capital flight (brain drain), remittances, and institutional quality. To empirically investigate the moderating role of institutional quality in the relationship between human capital flight, remittances, and economic growth, the study employs the System Generalised Method of Moments (System GMM) estimator for dynamic panel data analysis. This methodology is particularly suitable as it effectively controls for country-specific unobserved heterogeneity, mitigates potential endogeneity concerns among the explanatory variables, and accounts for the persistence of economic growth over time. The use of System GMM provides consistent and efficient estimates, thereby offering a robust framework for testing the hypothesised moderating effect within the SAARC region.

Theoretical Background

The Solow growth model, a foundational neoclassical framework, explains long-run economic growth by focusing on capital accumulation, labour force growth, and technological progress. In this model, output is produced using capital and labour, with a key assumption of diminishing returns to capital. This implies that while investment in new capital increases output, each additional unit of capital contributes less than the previous one, leading the economy towards a steady state. In this steady state, the economy grows at a constant rate determined solely by exogenous technological progress, as per-capita capital and output remain constant in the absence of it. Consequently, the model highlights that sustained per-capita income growth is ultimately driven by technological innovation, not just the accumulation of physical capital.

Lets start from basic Solow model (Solow, 1957) that is

$$Y(t) = K(t)^\alpha [A(t) \cdot L(t)]^{1-\alpha} \quad (1)$$

$$\frac{dK(t)}{dt} = sY(t) - \delta K(t) \quad (2)$$

$$\frac{dL}{dt} = nL \quad \frac{dA}{dt} = gA \quad (3)$$

$$k = \frac{K}{AL} \quad y = \frac{Y}{AL} \quad (4)$$

By transforming the production function we will get the following production function (Cobb & Douglas 1928)

$$y = k^\alpha \quad (5)$$

$$\frac{dk}{dt} = sk^\alpha - (n + g + \delta)k \quad (6)$$

Steady state stock of capital is

$$\frac{dk}{dt} = 0$$

$$\text{So } sk^\alpha = (n + g + \delta)k$$

Long Run Equilibrium of the model is

$$y^* = \left(\frac{s}{n+g+\delta}\right)^{\alpha/1-\alpha} A(t) \quad (7)$$

Role of Human Capital

While the foundational Solow growth model provides a powerful framework for understanding economic growth through physical capital accumulation and technological progress, its initial formulation did not explicitly account for the qualitative aspects of the labor force. Recognizing this, subsequent extensions of the model integrated human capital as a distinct and critical factor of production. In this enhanced view, human capital—the stock of skills, knowledge, and experience embodied in the workforce acts as a catalyst that augments labor efficiency. A more skilled and educated population is not only more productive itself but also enhances the productivity of physical capital and accelerates the adoption and creation of new technologies. Therefore, by incorporating human capital, the model more accurately reflects the engines of modern economic growth, where investments in education and health are as vital as investments in machinery and infrastructure.

Now we will introduce the variable of human capital into the equation (1) followed by Lucas (1988)

$$Y(t) = A(t) \cdot K(t)^\alpha \cdot H(t)^\beta \cdot L(t)^{1-\alpha-\beta} \quad (8)$$

Human capital accumulation is

$$\dot{H}(t) = \phi H(t) - \delta_H H(t) \quad (9)$$

Where

ϕ = Rate of Human capital accumulation

δ_H = Depreciation rate of Human capital like aging diseases etc

Now by dividing the Human capital according to skill level ((Lucas, 1988), the production function (equ 8) will be the following:

$$Y(t) = A(t) \cdot K(t)^\alpha \cdot H_s(t)^{\beta_s} \cdot H_{ss}(t)^{\beta_{ss}} \cdot H_u(t)^{\beta_u} \cdot L(t)^{1-\alpha-\beta_s-\beta_{ss}-\beta_u} \quad (10)$$

Dynamics of Human Capital flight (equ 9) will be:

$$\dot{H}_s(t) = \phi_s H_s(t) - \delta_{H_s} H_s(t) - \mu_s H_s(t) \quad (11A)$$

$$\dot{H}_{ss}(t) = \phi_{ss} H_{ss}(t) - \delta_{H_{ss}} H_{ss}(t) - \mu_{ss} H_{ss}(t) \quad (11B)$$

$$\dot{H}_u(t) = \phi_u H_u(t) - \delta_{H_u} H_u(t) - \mu_u H_u(t) \quad (11C)$$

Where μ is the rate of emigration. Bhagwati and Hamada (1974) was one of the first formal economic models to show that the emigration of skilled labor can worsen unemployment and lower the welfare of those left behind. Dynamic equations (11A-C) are a direct mathematical representation of this drain.

Effective labor force after introducing the human capital by skill levels will be

$$L^{eff} = (1 - \phi_s) L_s + (1 - \phi_{ss}) L_{ss} + (1 - \phi_u) L_u \quad (12)$$

This equation will capture loss in labor supply due to human capital flight or emigration.

Now the production function (equ 10) will be the following:

$$Y(t) = AK^\alpha [(1 - \phi_s) L_s + (1 - \phi_{ss}) L_{ss} + (1 - \phi_u) L_u]^{1-\alpha} \quad (13)$$

Dynamic of Capital per unit of effective labor will be:

$$\dot{k} = sY - \delta \quad \text{Where } k = \frac{K}{L^{eff}}$$

$$\dot{k} = sAk^\alpha - (n_{eff} + g + \delta)k$$

Extended production function will be:

$$Y = AK^\alpha \cdot H^\beta \cdot L^{1-\alpha-\beta} \quad (14)$$

Where $H = (1 - \phi_s) h_s L_s + (1 - \phi_{ss}) h_{ss} L_{ss} + (1 - \phi_u) h_u L_u$

This equation adjusted quantity and quality of human capital flight.

Now after leaving the country human capital send back momentary remittances (Giuliano & Ruiz 2009) and social remittances (Rapoport, 2016) back to the home economy. Now at this point of analysis we will incorporate remittances into the model. In Basic Solow model capital accumulation depends on savings, now remittances supplements savings. By incorporating remittances into the model

$$\dot{k} = sY - \delta$$

Will be

$$\dot{k} = (s + \theta R_m)Y - \delta k \quad (15)$$

θ = Proportion of remittances used for investment

R_m = Monetary Remittances

Monetary remittances will effect growth by increasing total investment in the economy. On the other hand social remittances will raise the growth by increasing the productivity. (Giuliano & Ruiz ,2009 ; Rapoport , 2016).

$$A(t) = A_0 \cdot e^{g(R_s, \text{Inst})} \quad (16)$$

Where $A = A_0 + \lambda_1 R_s + \lambda_2 \text{Inst}$

The rational of using institutional quality in this model is , institutional quality will improve the way resources are used. Production function of (equ 14) will be

$$y = [A_0 + \lambda_1 R_s + \lambda_2 \text{Inst}] \cdot K^\alpha \cdot L^{1-\alpha-\beta} \quad (17)$$

$$Y = AK^\alpha \cdot H^\beta \cdot L^{1-\alpha-\beta} \quad (18)$$

Where $H = h_0 + \mu R_m - \gamma \text{HCF}$

γ Capture the loss in human capital due to emigration or human capital flight.

$$Y = AK^\alpha (h_0 + \mu R_m - \gamma \text{HCF})^\beta \cdot L^{1-\alpha-\beta} \quad (19)$$

Dynamic Equation:

$$\tilde{k} = \frac{K}{AL}$$

Deferential equation become

$$\dot{\tilde{k}} = (s + \theta R_m) \tilde{k}^\alpha - (n + g + \delta) \tilde{k} \quad (20)$$

In this equation g is the growth rate of A . In this model A is endogenous Via R_s and Inst .

$$g = g_0 + \eta_1 R_1 + \eta_2 \text{Inst}$$

Extended Production Function (equ 18) will be:

$$Y = [A_0 + \lambda_1 R_s + \lambda_2 \text{Inst}] \cdot K^\alpha \cdot (h_0 + \mu R_m - \gamma \text{HCF})^\beta \cdot L^{1-\alpha-\beta} \quad (21)$$

Equation of Capital accumulation will be:

$$\dot{k} = (s + \theta R_m) Y - \delta k \quad (a)$$

Growth rate of technology is

$$A = A_0 + \lambda_1 R_s + \lambda_2 \text{Inst} \quad (b)$$

Human capital formation is:

$$H = h_0 + \mu R_m - \gamma \text{HCF} \quad (c)$$

Capital per unit of Effective labor will be:

$$\tilde{k} = \frac{K}{AL} \quad \dot{\tilde{k}} = (s + \theta R_m) \tilde{k}^\alpha - (n + g + \delta) \tilde{k} \quad (d)$$

Now we will add Institutional quality in our model as moderator:

Institutional Quality and Human Capital Flight

$$A = A_0 e^{-\gamma \phi + \lambda_1 \text{Inst}} \quad (e)$$

Human capital flight reduce the productivity, but good institutional quality mitigate that reduction in productivity.

Institutional Quality and Remittances

Good institutional quality increases the efficiency of the utilization of the remittances. As θ capture the effect of the remittances:

$$\theta = \theta_0 + \lambda \text{Inst} \quad (f)$$

By adding (f) into equ 15

The equation of the capital accumulation will be

$$\dot{\tilde{k}} = (s + (\theta_0 + \lambda \text{Inst}) R_m) Y - \delta k \quad (22)$$

Better institutional quality will lead to more productive use of remittances (Catrinescu at el.,2009). Now the production function of (equ 1)will be modified as follows:

$$Y = A_0 e^{-\gamma \phi + \lambda_1 \text{Inst}} \cdot K^\alpha \cdot L^{1-\alpha} \quad (23)$$

$$Y(t) = K(t)^\alpha \cdot H(t)^\beta \cdot \theta(t)^\gamma \cdot R(t)^\delta \cdot [A(t) \cdot L(t)]^{1-\alpha-\beta-\delta-\gamma} \quad (24)$$

$$\ln Y_{it} = \alpha + \beta_1 \ln K_{it} + \beta_2 \ln H_{it} + \beta_3 \ln R_{it} + \beta_6 \theta_{it} + e_{it} \quad (25)$$

Model Specification

In this model, Y represents GDP growth, H denotes human capital flight, R stands for remittances, and θ signifies institutional quality. We will adapt this framework by incorporating our variable of interest to align with the objectives of this study.

$$\ln Y_{it} = \alpha_0 + \alpha_1 \ln Y_{it-1} + \alpha_2 \ln \text{HCF}_{it} + \alpha_3 X_{it} + e_{it} \quad (1)$$

$$\ln Y_{it} = \alpha_0 + \alpha_1 \ln Y_{it-1} + \alpha_2 \ln Q_{it} + \alpha_3 X_{it} + e_{it} \quad (2)$$

$$\ln Y_{it} = \alpha_0 + \alpha_1 \ln Y_{it-1} + \alpha_2 \ln HCF_{it} + \alpha_3 \ln Q_{it} + \alpha_4 X_{it} + e_{it} \quad (3)$$

$$\ln Y_{it} = \alpha_0 + \alpha_1 \ln Y_{it-1} + \alpha_2 \ln HCF_{it} + \alpha_3 \ln Q_{it} + \alpha_4 \ln Q * HCF + \alpha_5 X_{it} + e_{it} \quad (4)$$

$$\ln Y_{it} = \alpha_0 + \alpha_1 \ln Y_{it-1} + \alpha_2 \ln Rem_{it} + \alpha_3 X_{it} + e_{it} \quad (5)$$

$$\ln Y_{it} = \alpha_0 + \alpha_1 \ln Y_{it-1} + \alpha_2 \ln Rem_{it} + \alpha_3 \ln Q_{it} + \alpha_4 X_{it} + e_{it} \quad (6)$$

$$\ln Y_{it} = \alpha_0 + \alpha_1 \ln Y_{it-1} + \alpha_2 \ln Rem_{it} + \alpha_3 \ln Q_{it} + \alpha_4 \ln Q * Rem + \alpha_5 X_{it} + e_{it} \quad (7)$$

Data

Economic Growth (GDP) is measured by Gross Domestic Product (GDP) at purchase prices, which aggregates the gross value added by all resident producers, including product taxes but excluding subsidies not embedded in product values. Human capital is proxied by the labor force participation rate (Mankiw et al., 1992), reflecting the proportion of the population aged 15 and older engaged in economic activity. However, human capital flight which is defined as, the emigration of skilled individuals from developing countries to OECD nations can deplete this labor force, undermining domestic productivity. Foreign Direct Investment (FDI) captures direct equity inflows, including equity capital, reinvested earnings, and other capital, where a 10 percent ownership stake signifies managerial influence. Physical Capital Formation, measured by gross fixed capital formation, tracks net acquisitions of fixed assets in current U.S. dollars. Institutional quality is assessed using world governance indicators, such as government effectiveness, rule of law, and control of corruption. Meanwhile, trade, the sum of exports and imports as a percentage of GDP, reflects economic integration. Inflation, derived from the annual percentage change in the Consumer Price Index (CPI), captures shifts in consumer goods costs. Private Credit, representing domestic credit to the private sector as a share of GDP. Remittances, comprising personal transfers and cross-border worker compensation, and Savings, calculated as GDP minus total consumption, both influence economic stability. Data on human capital flight is picked from OECD.stat while for all other variables we utilized the world bank data set.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std.Dev	Min	Max
lnHCF	90	10.5608	1.4148	5.6869	12.8927
lnQ	90	-0.3784	2.2106	-4.3482	4.0876
lnCredit	90	3.2891	0.8856	1.1303	4.4823
lnFDI	87	19.9783	2.8033	13.8106	24.8877
lnPCF	90	24.4037	2.4199	19.9361	27.5395
lnTrade	90	3.9153	0.4094	3.2068	4.6835
lnRem	87	18.4110	2.1517	14.5086	22.7423
lnINF	88	1.8581	0.5295	-0.4681	3.2740
lnHC	90	3.9515	0.1603	3.6742	4.2442

This table presents the descriptive statistics for nine variables used in the analysis, detailing the number of observations (Obs), average values (Mean), variability (Std. Dev.), and the range (Min and Max) for each. The data, comprising 87 to 90 observations, show that all logged variables (e.g., lnHCF, lnCredit) exhibit positive mean values, with lnQ displaying a negative average. The standard deviations, such as the higher value for lnQ, indicate varying degrees of dispersion around the mean across the different series, confirming the dataset's heterogeneity.

Research Methodology

The system Generalized Method of Moments (GMM) is used to estimate Equation (1). Unlike conventional econometric approaches such as Ordinary Least Squares (OLS), the system GMM methodology accounts for unobserved heterogeneity, including individual-specific effects and time-specific effects while also addressing potential endogeneity bias, particularly in the case of remittance variables.

This endogeneity arises because countries with lower economic growth rates tend to receive higher levels of remittances. These financial inflows play a crucial role in alleviating poverty for families in migrants' home countries (Ogunniyi et al., 2020; Ahoure, 2008). Furthermore, the estimation process controls for potential endogeneity between remittances and institutional quality.

Beyond traditional explanations, remittance endogeneity may also stem from the fact that weak institutional quality encourage migration. Countries with unstable governance structures often become primary recipients of remittance flows, creating a bidirectional causal relationship.

Empirical Results and Economic Interpretations

Table 2: Human Capital Flight, Institutional Quality and Economic Growth

Dependent Variable: Growth				
Variable Name	(1) Growth (GMM)	(2) Growth (GMM)	(3) Growth (GMM)	(4) Growth (GMM)
L.lnY	0.9906*** (0.0037)	1.0063*** (0.0081)	1.0085*** (0.0087)	1.0035*** (0.0082)
lnHCF	-0.0131** (0.0051)		-0.0095* (0.0054)	-0.0134** (0.0059)
INQ		-0.0170** (0.0068)	-0.0179** (0.0073)	-0.0398* (0.0220)
HCF*INQ				0.0027 (0.0021)
lnCredit	0.0155*** (0.0057)	0.0326*** (0.0093)	0.0334*** (0.0096)	0.0237** (0.0112)
lnPCF	0.0091*** (0.0035)	0.0039 (0.0030)	0.0062* (0.0037)	0.0063* (0.0038)
lnFDI	0.0064* (0.0035)	0.0002 (0.0040)	0.0014 (0.0042)	0.0021 (0.0041)
lnTO	0.0023 (0.0127)	0.0323** (0.0137)	0.0237 (0.0158)	0.0139 (0.0159)
Cons	0.0100 (0.0889)	-0.4632** (0.2106)	-0.4661** (0.2298)	-0.2374 (0.2385)
No of Observations	82	82	82	82
AR(1)	0.003	0.004	0.004	0.009
AR(2)	0.227	0.320	0.243	0.247
Sargan Test	0.131	0.107	0.207	0.156

Tables reports system GMM results. Standard errors are reported in brackets. ***, **, * indicates significant at 1%, 5% and 10% respectively.

Based on the regression results, the analysis reveals several key relationships with economic growth. The L.lnY (lagged value of GDP) shows a coefficient very close to 1 and is statistically significant at the 1% level across all four models, indicating a strong positive path dependency in economic growth. This aligns with neoclassical growth theories which posit that an economy's future growth is heavily influenced by its current economic performance. A central finding is the negative and statistically significant impact of human capital flight (lnHCF) on growth. In models (1), (3), and (4), its coefficients are -0.0131, -0.0095, and -0.0134, significant at the 5%, 10%, and 5% levels respectively. This supports endogenous growth theories (Romer, 1990; Lucas, 1988), as the emigration of skilled labor deprives an economy of the human capital necessary for innovation and productivity gains, thereby hindering long-term growth.

Contrary to theoretical expectations, institutional quality (INQ) exhibits a negative and significant relationship with growth. This paradoxical result may be explained by inefficient bureaucracies, corruption, or regulatory burdens that stifle economic activity despite seemingly strong institutions. The interaction term between human capital flight and institutional quality (HCF*INQ) is positive but statistically insignificant, suggesting that the model does not provide strong evidence that institutional quality can mitigate the negative effects of brain drain.

Financial development, proxied by private credit (lnCredit), demonstrates a consistently positive and significant effect on growth confirming the financial development theories of King and Levine (1993), which argue that efficient financial systems facilitate investment and resource allocation. Similarly, physical capital formation (lnPCF) shows positive coefficients, which are significant in most models, reinforcing the foundational role of investment in physical assets as highlighted in the Solow model.

In contrast, foreign direct investment (lnFDI) and trade openness (lnTO) present mixed and often insignificant results. This lack of robust significance aligns with studies on absorptive capacity

(Borensztein et al., 1998), suggesting that without a sufficiently developed local infrastructure, skilled workforce, and supportive policies, the potential benefits of FDI and trade may not be fully realized.

In summary, these findings underscore that for the studied countries, retaining skilled human capital, deepening financial systems, and increasing domestic investment are crucial drivers of growth. The unexpected negative role of institutions and the weak impact of FDI and trade highlight the need for deeper structural reforms and improved local conditions to translate these factors into tangible economic benefits.

Table 3: Remittances, Institutional Quality and Economic Growth

Dependent Variable: Growth			
Variable Name	(1) Growth (GMM)	(2) Growth (GMM)	(3) Growth (GMM)
Ln.Y	0.9953*** (0.0023)	0.9977*** (0.0024)	0.9971*** (0.0025)
lnRem	0.0038** (0.0017)	0.0054*** (0.0018)	0.0048*** (0.0018)
lnCredit	0.0022 (0.0045)	0.0229*** (0.0078)	0.0203** (0.0081)
lnINF	0.0044 (0.0049)	0.0001 (0.0053)	-0.0002 (0.0053)
lnTO	-0.0279*** (0.0099)	-0.0079 (0.0119)	0.0006 (0.0138)
lnHC	0.0276 (0.0273)	0.0751** (0.0309)	0.0752** (0.0307)
INQ		-0.0126*** (0.0038)	-0.0504 (0.0315)
REM*INQ			0.0020 (0.0016)
Cons	0.0749 (0.0879)	-0.3460** (0.1520)	-0.3472** (0.1513)
No of Observations	133	128	128
AR(1)	0.000	0.001	0.001
AR (2)	0.548	0.563	0.544
Sargan Test	0.129	0.407	0.389

Tables reports system GMM results. Standard errors are reported in brackets. ***, **, * indicates significant at 1%, 5% and 10% respectively.

The analysis of economic growth in SAARC countries reveals several key insights. The coefficient for the initial income level (Ln.Y) is positive and highly significant at the 1% level across all models, indicating a strong convergence effect where economies with lower starting points tend to grow faster. A central finding is the positive and statistically significant impact of remittances (lnRem) on growth, significant at the 5% level in the first model and at the 1% level in the others. This suggests that remittances are a vital source of external finance, acting as a stable stream of income that boost economic growth. This result aligns with numerous studies, such as those by Giuliano and Ruiz-Arranz (2009), which found that remittances significantly promote growth in countries with less developed financial systems by alleviating credit constraints.

Financial development (lnCredit) is initially insignificant but becomes positive and significant at the 1% and 5% levels in subsequent models. This implies that while a more developed banking sector that provides credit to the private sector is ultimately beneficial for growth, its effect may be contingent on other factors, a finding consistent with the work of King and Levine (1993) on finance-led growth. Conversely, the coefficient for trade openness (lnTO) is negative and significant in the first model, which contradicts classical trade theory. This could be economically justified by the region's dependence on primary goods and low-value exports, which may not generate sufficient positive spillovers, a phenomenon noted in some developing economies by researchers like Rodríguez and Rodrik (2000). Human capital (lnHC) shows a positive and significant effect at the 5% level in models 2 and 3, underscoring the role of education and skills in fostering productivity, a cornerstone of endogenous growth theories.

A particularly intriguing result is the negative and significant coefficient for institutional quality (INQ) in model 2. This counterintuitive finding may be economically justified by the presence of inefficient bureaucracies or corruption, where formal institutional improvements could initially create bottlenecks rather than facilitate growth. Furthermore, the interaction term between remittances and institutions (REM*INQ) is statistically insignificant, suggesting that the growth effect of remittances in these countries operates independently of the measured institutional framework, possibly flowing directly to households through informal channels. This challenges studies like those by Catrinescu et al., (2009), which argued that strong institutions enhance the growth impact of remittances, highlighting the unique, institution-neutral role remittances play in the SAARC context.

Conclusion

This study demonstrates that a complex interplay of region-specific factors drives economic growth in SAARC nations. The analysis confirms that while physical capital investment and private credit generally promote GDP growth, their effectiveness depends heavily on local economic structures.

A significant and consistent finding is that human capital flight, or "brain drain," acts as a significant obstacle to growth. This supports endogenous growth theory, which highlights the importance of retaining skilled, innovative workers for long-term productivity. In contrast, Foreign Direct Investment (FDI) and trade openness show surprisingly limited positive effects. This is likely due to underlying challenges, including limited capacity to absorb new technologies, policy inconsistencies, and infrastructure deficits. The quality of institutions, on the other hand, has a negligible or even negative relationship with growth. This can be attributed to governance deficiencies, corruption, or a disconnect between official institutions and informal, on-the-ground economic practices.

Conversely, remittances from abroad emerge as a vital growth driver. By directly increasing household incomes, they stimulate consumption and support the creation of small businesses, aligning with Keynesian and developmental economic theories.

Overall, the limited impact of human capital development and trade suggests persistent structural barriers, including low-value exports and underdeveloped financial systems. These findings highlight the critical need for tailored, context-sensitive policies. To foster sustainable growth, SAARC countries should prioritise strategies to retain skilled talent, improve institutional effectiveness, deepen financial markets, and create more favourable conditions for FDI and trade. This study concludes that integrating principles from neoclassical, endogenous, and institutional theories shows that, without targeted reforms, conventional growth models may continue to yield limited success in the region.

Policy Recommendations

Based on the empirical findings, a primary policy recommendation must be to implement targeted strategies to mitigate human capital flight. Given its consistent negative impact on growth, SAARC nations should focus on creating a domestic environment that retains skilled professionals. This involves not only expanding opportunities in high-skill sectors but also critically addressing the paradoxical negative role of institutional quality. Reforms should move beyond superficial measures to actively streamline bureaucracies, reduce regulatory burdens, and combat corruption, thereby transforming institutions from perceived impediments into genuine facilitators of economic activity. Concurrently, policy must leverage remittances' positive and stable contributions. This approach is vital, as the results indicate that remittances stimulate growth independently of institutional quality, offering a unique tool for development even amid broader governance challenges.

Furthermore, policymakers should prioritise deepening financial systems and accelerating physical capital formation, as both have a robust, positive influence on economic growth. Enhancing access to private credit is essential for fostering investment and entrepreneurship. To maximise the impact of these investments, a parallel focus on strengthening human capital through improved education and vocational training is necessary to build the domestic skills base. The mixed results for foreign direct investment and trade openness suggest that simply opening the economy is insufficient. Therefore, policies should aim to build local absorptive capacity, including infrastructure and a skilled workforce, to harness the potential benefits of global integration better. In essence, a synergistic strategy that directly tackles brain drain, strategically harnesses remittances, deepens financial markets, and couples investment in physical assets with genuine institutional and human capital reforms is imperative for fostering sustainable economic growth in the SAARC region.

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