Committee on Payments and Market Infrastructures | BIS

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Migration and Cross-Border Payments:

Analyzing Remittance Dynamics in Sub-Saharan Africa

BIS & SARB Theme: Advancing Cross-Border Payments: Identifying Opportunities and Challenges for Sub-Saharan Africa

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INTRODUCTION AND BACKGROUND

- Cross-border payments are crucial to fostering financial inclusion, trade, and economic integration in Sub-Saharan Africa (SSA).
- Expansion of regional mobility, intra-African migration and digital financial infrastructure has reshaped dynamics of cross-border payments (CBP) in SSA
- Migration has become a significant driver of cross-border financial transactions, particularly remittances.
- These transactions play a critical role in supporting household incomes, sustaining informal businesses, and financing basic services across borders (Yendaw, 2022; He, 2021).
- In Africa, remittances represent an important tool for sustainable economic growth where some countries such as Lesotho, Gambia, Somalia and Cabo Verde have remittances contributing over 20% of GDP (Alidu et al., 2023)
- However, a significant gap exists in understanding how migration patterns influence cross-border financial behaviour
- This research therefore investigates the impact of migration patterns on cross-border payment behaviours in SSA using a quantitative panel data approach.
- It identifies both the barriers and drivers of efficient digital cross-border transactions with particular attention to regulatory quality, mobile money penetration, and remittance costs.

PROBLEM STATEMENT

- Despite progress in mobile money and digital banking, CBP systems in SSA are often fragmented, costly, and inefficient resulting in creased use of informal channels such as hand-carry methods, unregistered money transfer agents, and informal traders who facilitate cross-border currency exchange outside formal financial systems (Domingo et al., 2023).

- These informal mechanisms pose serious challenges as distorting national remittance data, undermining the accuracy of macroeconomic indicators and financial inclusion metrics as they complicate monetary policy and financial surveillance, particularly in developing SSA countries with high dependence on remittance inflows (Boyomo et al., 2024).

- Informal traders may engage in foreign currency externalisation or money laundering, using remittance flows to clean dirty money or circumvent capital controls

- Consequently, lack of reliable data on informal remittance flows limits the ability of policymakers to design effective interventions, such as cost-reduction strategies, diaspora engagement platforms, and inclusive financial products.

- These challenges in remittances across the SSA create opportunities for regulators and policymakers such as Central Banks to come up with integrated financial inclusion remittance platforms or interventions

- Besides, few studies have systematically analysed how evolving migration patterns influence CBP behaviours at macro-regional level leaving policymakers with limited evidence to guide targeted reforms (Bamidele Oso et al., 2025).

AIM, OBJECTIVES & HYPOTHESIS

The focus of the research is to analyse remittance dynamics in SSA by investigating the extent to which migration patterns affect CBP towards identifying opportunities and challenges for SSA.

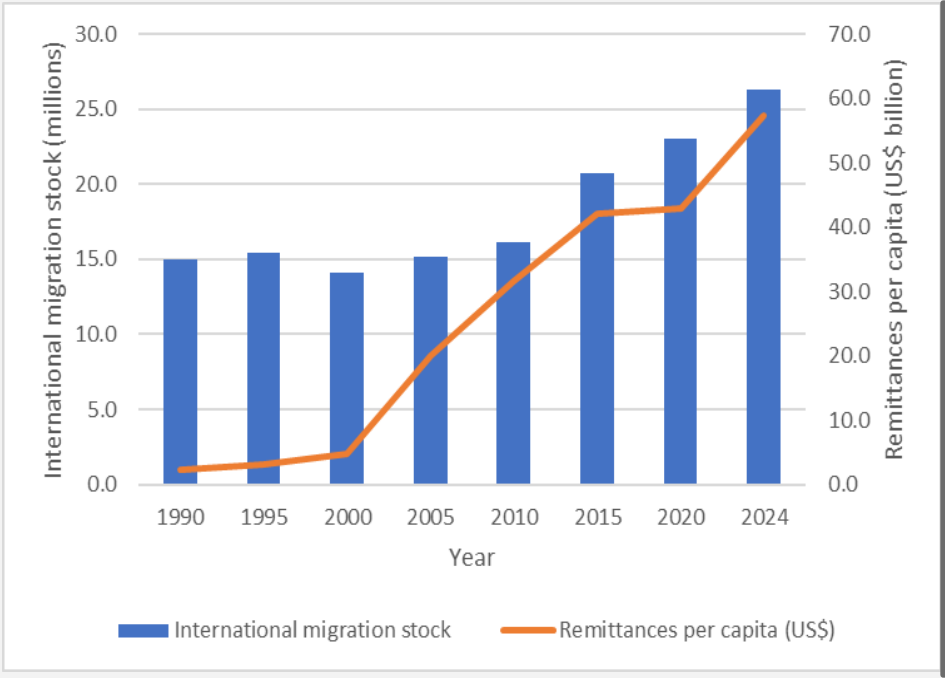
In line with the aim, the specific objectives are as follows:

- **To examine the impacts of migration patterns on cross-border payments in SSA countries**
- **To identify challenges and opportunities for efficient digital cross-border transactions in SSA**
- **To suggest actionable policy implications for enhancing efficiency of cross-border payment systems in SSA**

To achieve the aim and objectives, the study hypothesise that:

- **Migration significantly influence cross-border payments in Sub-Sahara Africa**

CROSS-BORDER PAYMENTS AND MIGRATION DYNAMICS IN SSA (1990-2024)



- Figure 1 shows the dynamics of migration and remittances for SSA from 1990-2024 (Source: World Bank)
- Steady growth in migration stock around 15 million (1990-2010)
- Gradual and consistent growth in SSA's migration stock from 2010 reaching over 25 million by 2024.
- Whilst remittance flows were significantly low (below US$10 million (1990-2000), they increased sharply between 2000 and 2015 and maintained steady growth between 2015 and 2020
- Sharp increase in remittances from 2020 to 2024 reaching over US$50 billion in 2024

THEORETICAL LITERATURE REVIEW SUMMARY

a) New Economics of Labour Migration (NELM) theory

- Migration decisions are household strategies to diversify risk and secure remittance inflows, which function as both an economic necessity and a resilience tool for households

b) Transaction Cost Theory (TCT)

- In the context of migration and CBPs, TCT suggests that migrant preferences for payment channels are based on cost minimisation and efficiency maximisation

c) Network Theory

- Informal migrant networks facilitate the circulation of remittances through both formal and informal channels, with cultural and social ties shaping financial behaviours

d) Digital financial inclusion frameworks

- Incorporate the roles of regulatory environments, technological infrastructure, and financial literacy in shaping access to cross-border financial services.

EMPIRICAL LITERATURE REVIEW

- A 1% decrease in the cost of remitting USD 200 leads to about a 1.6% increase in remittances **(Ahmed et al., 2021)**
- Transaction costs have significant negative impacts on remittances **(Kakhkharov et al., 2017)**
- Migrant stock has insignificant impacts on remittances **(Tabit and Moussir, 2016)**
- Mobile money adoption positively impacts remittances **(Tembo and Okoro, 2021)**
- Remittances depend on stages and motives of migration **(Bondarenko, 2023)**
- Reverse causality between financial inclusion and remittances **(Anarfo et al., 2021)**
- Reduction in sending costs stimulates remittances **(Kpodar & Imam, 2024)**
- Migration and digitisation positively impacts global remittance volumes **(Shah, 2024)**
- Migration is highly correlated with cross-border financial flows **(Marjit, Mishra & Mitra, 2017)**

METHODOLOGY

- The study adopted a quantitative panel data approach
- Panel annual data (2004-2024) across six selected SSA countries (Kenya, Ghana, Nigeria, South Africa, Zimbabwe and Egypt) based on data availability
- Data was obtained from World Bank, IMF Financial Access Survey, GSMA Mobile Money Metrics and World Governance Indicators.
- To detect multicollinearity among the independent variables, the **VIF method** was employed
- The **Wooldridge test** was used to check for serial correlation within panel the model
- The **Modified Wald test for groupwise heteroskedasticity** was undertaken
- Cross-sectional dependence (CD) was assessed using the **Pesaran CD test**.
- **Cross-sectional augmented dickey-fuller (CADF)** was used to test for stationarity
- **Skewness/Kurtosis tests for normality or Jarque–Bera test** was applied to examine normality
- Linearity was examined using **augmented component-plus-residual (ACPR) plots**

METHODOLOGY (PANEL REGRESSION JUSTIFICATION)

- Country-level data from selected SSA countries over the period (2004-2024), hence panel regression analysis was employed
- The **Driscoll–Kraay standard errors estimator** was employed due presence of cross-sectional dependence and heteroskedasticity in panel data
- The **Hausman test** confirmed suitability of the FE-Driscoll-Kraay model
- Precisely, the FE-Driscoll-Kraay robust standard errors estimator is capable of addressing cross-sectional dependence, heteroscedasticity and serial correlation in panel data **(Driscoll and Kraay, 1998).**
- Panel regression particularly FE model controls for unobserved, time-invariant differences, minimizes omitted variable bias and enhances reliability of results.

METHODOLOGY (VARIABLES AND EXPECTATIONS)

VARIABLE	NOTATION	EXPECTED SIGN	SOURCE
Dependent Variable			
Cross-border payments (remittance per capita)	CBP		World Bank Bilateral Remittance Matrix
Independent Variable(s)			
Migration stock (% of population)	MS	-/+	Global Finance Development Database.
Financial access	FA	+	IMF Financial Access Survey.
Mobile penetration rate	MPT	+	GSMA Mobile Money Metrics.
Cost to send (% of amount sent)	CTS	-	World Bank Bilateral Remittance Matrix.
Regulatory Quality	RQ	+	WGI
Macroeconomic Variable (s)			
Inflation	INFL	-/+	WDI
Gross Domestic Product per Capita	GDP pc	+	WDI
Exchange rate volatility	REER	+	WDI

METHODOLOGY (MODEL SPECIFICATION)

$$y_{it} = \alpha + \beta_{1-5}x_{it} + \beta_{6-8}z_{it} + \epsilon_{it}$$

Where; y represents Cross-border payments (remittance per capita) at time t and country i; x denotes Migration stock (MS) as percentage of population, Regulatory quality (RQ) index, Financial access (FA) index, Mobile penetration rate (MPT) and Cost to send (CTS) as a percentage (%) of amount sent; and z represent GDP per capita (GDPC), Exchange rate volatility (REER) and Inflation rate (INFL).

$$CBP_{it} = \alpha + \beta_1 MS_{it} + \beta_2 RQ_{it} + \beta_3 MPT_{it} + \beta_4 CTS_{it} + \beta_5 FA_{it} + \beta_6 GDPC_{it} + \beta_7 REER_{it} + \beta_8 INFL_{it} + \epsilon_{it}$$

- The choice between the FE and RE models was guided by the Hausman test
- The Hausman test [$Chi^2(8) = 19.03$, $Prob > chi^2 = 0.0147 < 0.05$] suggest that the FE-Driscoll–Kraay standard errors estimator as the most appropriate model.

SUMMARY OF DESCRIPTIVES

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
Cross-border payments	7.02	8.75	0.00	31.49	1.15	2.80
Migration stock	1.96	1.44	0.25	5.77	1.02	3.65
Financial access index	0.25	0.21	0.01	0.82	1.50	4.18
Mobile penetration rate	57.94	52.63	0.00	226.00	1.26	4.36
Cost to send	7.22	3.28	1.42	15.02	0.82	2.83
Regulatory quality	0.83	10.95	-2.20	90.4	7.72	61.08
Inflation	47.68	234.24	-72.73	2,156.03	7.58	62.81
GDP per capita	2,641.55	1,970.14	340.74	8,646.06	1.32	3.77
Real exchange rate	5.34e+07	5.99e+08	0.90	6.72e+09	11.09	124.01

FINDINGS

❖ **Fixed Effects-Driscoll-Kraay panel regression model results and discussion**

Variable	Coefficient	Std. Error	t-Statistic	p-Value	95% Confidence Interval
Migration Stock	-3.472	0.754	-4.60	**0.000*** **	[-5.045, -1.898]
Financial access index	8.892	4.003	2.22	**0.038*** **	[0.542, 17.241]
Mobile penetration rate	0.076	0.010	7.60	**0.000*** **	[0.055, 0.097]
Cost to send	0.248	0.136	1.83	**0.083** **	[-0.035, 0.532]
Regulatory quality	-0.009	0.011	-0.82	0.420	[-0.031, 0.013]
Inflation	0.001	0.001	1.58	0.129	[-0.0004, 0.003]
GDP per capita	0.001	0.0004	2.40	**0.026*** **	[0.0001, 0.0019]
Real exchange rate	0.231	0.129	1.79	**0.088** **	[-0.038, 0.500]
Constant	1.775	1.599	1.11	0.280	[-1.561, 5.111]

R-squared = 0.63; F(8, 20) = 95.73; Prob > F = 0.000

Note: *** significant at the 5% level, ** significant at the 10% level

INTERPRETATION OF RESULTS

- R-squared mean that about 63% of the variations in remittances are explained within the model
- Overall panel model was statistically significant **(F=95.73; p=0.000).**
- Six (6) variables were found to have significant impacts at 5% and 10% levels of significant whilst regulatory quality and inflation were statistically insignificant.
- Increase in the migration stock by 1% can significantly reduce remittance inflows by approximately 3.47%
- 1% increase in population with financial access can significantly increase remittances inflows by about 8.9%
- Increase in mobile penetration rate by 1% can significantly lead to increase in remittances by about 0.08%.
- A percentage increase in cost of sending remittances by 1% can increase remittance flows by about 0.25%.
- A percentage growth in GDP per capita can significantly increase remittance flows by 0.001%.
- A percent increase in exchange rate volatility can significantly increase remittances per capita by about 0.0023%

CONCLUSION AND FURTHER STUDY

- The study confirmed the interplay between cross-border payments (remittances) and migration which offers developing economies in Africa a pathway for sustainable socio-economic development.
- The findings lead to the conclusion that **transaction costs are not only determinants for cross-border payments but also migration stock, financial access, macroeconomic instability particularly exchange rate volatility, income level (GDP per capita) and mobile money penetration**.
- In a nutshell, this empirical research not only contributes to the limited extant literature on migration and cross-border remittances in the context of African developing economies but also make significant contributions to policy and practice.
- The study's findings add to the existing scholarly debate regarding the nexus between remittances and migration.
- The findings may contribute to the development of new migration-remittance nexus theories or modification of existing theories such as NELM
- However, further studies may be undertaken employing a relatively larger sample of SSA countries to enhance validity and generalisability
- Further studies can employ modern estimation techniques such as machine learning models to predict future impacts of migration on cross-border payments

POLICY RECOMMENDATIONS

- Policymakers and regulatory authorities such as central banks must not only focus on regulating transaction fees as a way to attract and stimulate cross-border remittances but also implement initiatives and policies that **promote increased adoption of FinTechs** such as mobile money services and financial inclusion.

- The findings call for policy direction towards **removal or relaxing of barriers to cross-border remittances** such as work permits, travel documents and proof of residence as pre-requisites for remitting money from host to home countries.

- The study recommends national governments in partnership with financial sector institutions to increasingly **invest in digital infrastructure** to permit increased mobile money penetration and adoption of FinTechs by the majority. Investments in digital infrastructure can promote increased financial access through usage of FinTechs which in turn significantly reduce transaction costs and enhance convenience leading to increased remittances.

- Central banks in SSA to **develop a coordinated send and receive remittance platform** which enables migrants and residents of all countries to be able to send/receive remittance funds.

- The study recommends that in order to deal with informal remittances the recommended remittance platform should allow for lite **KYC onboarding** which allows for legal and illegal migrants to be onboard smoothly so that informal remittances can be converted into the formal channel.

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THE END

THANK YOU FOR YOUR ATTENTION!

Any Additions, Comments or Questions