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Governance, Financial Inclusion and Foreign Remittances in Zimbabwe: A VECM Approach

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Abstract: This study examines the impact of governance and financial inclusion on remittances in Zimbabwe using time series data collected from the World Bank database for the period 2009 to 2021. A vector error correction model was conducted using Stata/SE 14.2 to analyse the short- and long-run relationships between the variables. The results demonstrate the existence of cointegration in the model. The Johansen normalization long-run output showed a negative impact of governance on remittances, as well as a positive impact of financial inclusion on remittances. Both coefficients are statistically significant at the 1% level. Furthermore, the results show that governance and financial inclusion in Zimbabwe have asymmetric effects on remittances in the long run, on average, ceteris paribus. This study is important in policy formulation and implementation. The government should create a conducive environment for remittances through improved governance and financial inclusion policies.

Keywords: Governance; Financial Inclusion; Foreign Remittances; Diaspora Remittances; Zimbabwe.

JEL Classification: D73; F24; F35; G23; O16

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1. Introduction

The United Nations (UN) 2030 Agenda for Sustainable Development recognizes the positive contribution of diaspora communities in achieving sustainable development objectives. Diaspora remittances contribute to reaching Sustainable Development Goals (SDGs) at various levels of society: household, community, and national (UN, 2023). According to the Common Market for Eastern and Southern Africa [COMESA], 2019), remittances have a multiplier effect on the economy through savings, investments, and fiscal and debt sustainability. Qamruzzaman (2023) further stated that in low- and middle-income countries, remittance transfers are fundamental to poverty alleviation by augmenting food consumption, financing education, and healthcare. Evidence is provided by Ssabayev, Saydaliev, and Chin (2020) that approximately 70% of diaspora receipts are channelled towards satisfying basic household needs. Currently, the role of diaspora remittances in supporting national development and sustaining local livelihoods is as evident as in Africa, where there are 546 million people, more than half of the population still lives in poverty (United Nations Economic Commission for Africa [UNECA, 2023). Innovative development financing that includes and is not limited to novel engagement from the diaspora should remain at the forefront of the development policy discourse if governments, international development organizations, and other development partners are to realize their sustainable development targets (Rodima-Taylor, 2015; COMESA, 2019). The government of Zimbabwe recognizes this, hence the specific mention of diaspora remittances as an important stream of foreign currency inflow (Ministry of Finance, 2022; Reserve Bank of Zimbabwe [RBZ] 2021). Characterized as a major labor exporting country in Southern Africa (Mugumisi, 2014), with a migrant stock of over 3 million (International Organization for Migration [IOM], annually, an estimated US$1 billion is intermediated through formal banking channels from the diaspora in Zimbabwe (United Nations Common Country Analysis [UNCCA], 2021). The figure could be much higher if receipts through informal channels are factored in (UNCCA, 2021). Despite COVID-19 pandemic induced limitation to labour mobility across international frontiers, between January and September 2020, formal remittances increased by 45%, amounting to US$1.7 billion as of December 2020 (RBZ, 2021). Table 1 confirms the observation in Omon (2021) that in light of diminishing aid flows from the Organization for Economic Cooperation and Development (OECD) and other International Development Institutions [IDI], diaspora remittances rank high relative to other sources of foreign currency inflows. In Zimbabwe, this stream of transfers, the second largest forex earner, outperforms Foreign Direct Investment (FDI), which, as a result of economic sanctions averages 40.06 million annually (RBZ, 2023).

As of June 30, 2023, overseas remittances reached USD 1,433 million, an increase of 4% from 2022 (Table 1). Diaspora remittances accounted for USD 919 million,

an increase of 15% from 2022. NGOs received international remittances of USD 514 million, an 11% decrease from 2022 (Table 1). Foreign currency revenues in the first half of 2023 increased by 3.5% to USD 5.595 billion, primarily driven by exports (55%) and remittances from the diaspora (16%) (Table 1).

Table 1. Total Foreign Currency Receipts as at 30 June 2022 & 2023

Type of Receipt		**2023**		**2022**		**% change**
		Amount (US$ Millions)	**% Contribution**	**Amount (US$ Millions)**	**% Contribution**	
Export Proceeds		3,055	55%	3,420	63%	-10.7%
International Remittances	Diaspora Remittances	919	16%	797	15%	15.3%
	NGOs	514	9%	575	11%	-10.5%
Loan Proceeds		919	16%	428	8%	114.6%
Income receipts		63	1%	82	2%	-23.7%
Foreign Investment		127	2%	104	2%	22.1%
Total		**5,596**	**100%**	**5,406**	**100%**	**3.5%**

Source: RBZ 2023 Mid-Term Monetary Policy Statement.

Despite the importance of diaspora remittances to the foreign currency-constrained Zimbabwean economy from an academic standpoint, very little work has been done to understand the determinants of remittance inflows into Zimbabwe. Mugumisi (2014) attempted to fill this gap in the literature by surveying Zimbabweans living in Botswana and South Africa. However, the study only analyzed sociodemographic variables such as age, gender, marital status, length of stay in a foreign country, and level of education, among others. A critical agenda of this study is to extend the understanding of the drivers of remittance inflows by examining the influence of institutional quality and financial inclusion variables on diaspora remittances. The question, "what drives remittances?'' is of paramount importance in remittance literature (Havolli, 2009). Providing answers to this question is critical, given the potential of the diaspora economy to improve production capabilities and boost economic diversification (Department of Economic and Social Affairs, 2018). Countries such as India, China, Israel, and Mexico have designed policies to target

their diaspora communities for trade and investment, and have reaped huge rewards. It is the researchers' view that the findings from this study are instrumental in facilitating evidence-based policy design and implementation in Zimbabwe.

The remaining portions of the article are divided into the following sections: section 2, "Research methodology," section 3, "Data analysis and interpretation," and section 4, "Conclusion and recommendations."

2. Research Methodology

The base line model for this article was expressed as:

$$Remit_t = f(FI, G)_t \quad (1)$$

Where:

Remit = Remittances received.

FI = Financial Inclusion variables.

G = Governance variables.

The impact of financial inclusion and governance on foreign remittances is based on the following equation.

$$Remit_t = \alpha + \beta_1 FI_t + \beta_2 G_t + \varepsilon_t \quad (2)$$

Where:

$Remit_t$, is a proxy for personal remittances received in the country at year t, FI_t denotes level of financial inclusivity in the country at year *t*, G_t represents governance in year *t* and $\mathcal{E}_t$ represents an error term. Table 1 shows the variables, descriptions and their sources. Remit are personal remittances received as a %age of GDP. The FI variables included access and usage to/of financial services (Anzoategui et al., 2014; Naceur, Chami and Trabelsi, 2020). Thus FI includes ATMs (number of ATMs per 100,000 adults) and borrowers (number of borrowers at commercial banks per 1,000 adults) (Naceur, Chami and Trabelsi, 2020). The governance variables were adapted and adopted from Kaufmann, Kraay, and Mastruzzi (2010) six dimensions of governance.

All the dimensions and indicators of remittances, financial inclusion, and governance were collected from World Bank Worldwide Development Indicators database as of September 2023 for the period 2009-2021. Table 2 shows the variable description and their source. The data were also tested for outliers and their impact on the results. The study period was selected based on data availability.

Table 2. Variables, Description and Sources

Variable	Description	Sources
Remittances ***(Remit)***	Personal remittances received (% of GDP). These comprise personal transfers and compensation of employees.	World Development Indicators, World Bank (2023)
Financial Inclusion (FI)		
ATMs	Automated teller machines (ATMs) (per 100, 000 adults). These are computerized telecommunications devices that provide clients of a financial institution with access to financial transactions in a public place.	World Development Indicators, World Bank (2023)
Borrowers	Borrowers from commercial banks (per 1,000 adults).	World Development Indicators, World Bank (2023)
Governance (G)		
Rule of Law ***(RL)***	Captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	World Development & Worldwide Governance Indicators World Bank (2023)
Regulatory Quality ***(RQ)***	Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	World Development & Worldwide Governance Indicators World Bank (2023)
Government Effectiveness ***(GE)***	Captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	World Development & Worldwide Governance Indicators World Bank (2023)

N.B. *Percentile rank indicates the country's rank among all countries covered by the aggregate indicator, with 0 corresponding to the lowest rank and 100 to the highest rank.*

3. Data Presentation, Analysis and Interpretation

Unit-Root Tests: We first conducted the test for unit root at level to see whether the series were stationary at level using the Dickey-Fuller and Phillips-Perron tests. All series were nonstationary at level. We had to generate the 1st difference variables thereafter and test for the unit root at 1st difference. All the series were found to be stationary at 1st difference using both the Dickey-Fuller and Phillips-Perron tests for unit roots. The results are presented in Tables 3 and 4.

Table 3. Test for Unit Root at Level

Variable	Dickey-Fuller			Phillips-Perron test		
	T-Statistic	MacKinnon p-value	Critical value	T-Statistic	MacKinnon p-value	Critical value
Remit	-1.722	0.4201	-3.750*** -3.000** -2.630*	-1.586	0.4906	-3.750*** -3.000** -2.630*
Rq	-0.093	0.9502	-3.750*** -3.000** -2.630*	0.346	0.9793	-3.750*** -3.000** -2.630*
Rl	-0.627	0.8647	-3.750*** -3.000** -2.630*	-0.563	0.8790	-3.750*** -3.000** -2.630*
Ge	-1.890	0.3370	-3.750*** -3.000** -2.630*	-2.308	0.1694	-3.750*** -3.000** -2.630*
borrowers	-2.229	0.1959	-3.750*** -3.000** -2.630*	-2.125	0.2345	-3.750*** -3.000** -2.630*
Atms	-2.382	0.1469	-3.750*** -3.000** -2.630*	-2.588	0.0955	-3.750*** -3.000** -2.630*

Notes: *, **, and * denotes critical values at 10%, 5%, and 1%.**

Source: Authors` computation

Table 4. Test for Unit Root at 1st Difference

Variable	Dickey-Fuller			Phillips-Perron test		
	T-Statistic	MacKinnon p-value	Critical value	T-Statistic	MacKinnon p-value	Critical value
Dremit	-3.948	0.0017	-3.750*** -3.000** -2.630*	-4.595	0.001	-3.750*** -3.000** -2.630*
Drq	-3.641	0.0050	-3.750*** -3.000** -2.630*	-3.693	0.0042	-3.750*** -3.000** -2.630*

Drl	-3.108	0.0260	-3.750*** -3.000** -2.630*	-3.115	0.0255	-3.750*** -3.000** -2.630*
Dge	-3.285	0.0156	-3.750*** -3.000** -2.630*	-3.375	0.0118	-3.750*** -3.000** -2.630*
dborrowers	-3.831	0.0026	-3.750*** -3.000** -2.630*	-5.096	0.0000	-3.750*** -3.000** -2.630*
Datms	-3.728	0.0037	-3.750*** -3.000** -2.630*	-3.740	0.0036	-3.750*** -3.000** -2.630*

Notes: *, **, and * denotes critical values at 10%, 5%, and 1%.**

Source: Authors` computation

3.1. Collinearity Tests

Variance inflation factors (VIF) was used to test for multicollinearity among the variables. The following variables (rl, ge, and atms) were excluded because of collinearity: The VIF and tolerance (1/VIF) values for these variables are worrisome. Their very high VIF values indicated that these variables were possibly redundant. This could be because too many variables measured the same thing.

3.2. Optimum Lag Selection

After conducting the test for unit root and establishing the series stationarity at 1st difference, we had to determine the optimum lag of the variables because we assumed that the time-series data of the present year were to some extent influenced by their previous data. This was done before conducting the cointegration test. The optimum lag for the model was two (2), using AIC and HQIC, as shown in Table 5.

Table 5. Selection-Order Criteria

Sample: 2011 - 2021				Number of obs	=	11		
lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-91.8276				6181.14	17.2414	17.173	17.3499
1	-74.7393	34.177	9	0.000	1574.59*	15.7708	15.4972	16.2048*
2	-64.5909	20.297*	9	0.016	2303.98	15.562*	15.0831*	16.3216

Endogenous: remit rq borrowers

Exogenous: _cons

3.3. Johansen Cointegration Test

After establishing the optimum lag, we conducted a cointegration test to determine whether there was a long-run relationship among the variables. Since all variables were cointegrated at 1st difference, we conducted the Johansen cointegration test. A cointegration test was performed on the level form of the variables, not on their first differences. The following results were obtained:

Table 6. Johansen Tests for Cointegration

Trend: constant				Number of obs	=	11
Sample: 2011 - 2021				Lags	=	2
maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value	
0	12	-81.776332	.	34.371	29.68	
1	17	-70.751619	0.86527	12.3215*	15.41	
2	20	-65.195219	0.63587	1.2087	3.76	
3	21	-64.590855	0.10406			
maximum rank	parms	LL	eigenvalue	max statistic	5% critical value	
0	12	-81.776332	.	22.0494	20.97	
1	17	-70.751619	0.86527	11.1128	14.07	
2	20	-65.195219	0.63587	1.2087	3.76	
3	21	-64.590855	0.10406			

At maximum rank zero (0), the trace statistic was greater than the 5% critical value; hence, we reject the null hypothesis that there is no cointegration (Table 6). In maximum rank one (1), the trace statistic was less than the 5% critical value, showing the existence of cointegration in the model (Table 6). Looking at the second null hypothesis of the cointegration equation at maximum rank two (2), there was a maximum of two cointegration equations in the model (Table 6). The maximum statistic results also support the existence of cointegration in the model, in line with the trace statistic. The existence of cointegration showed that the variables had a long-term casualty, and in the long run, the variables might converge towards the equilibrium value. Cointegration indicates a long-term association between nonstationary variables. Because cointegration was present, we applied a Vector Error Correction Model (VECM) (Table 7).

3.4. Vector Error Correction Model

After determining the existence of cointegration using Johansen's Test of Cointegration, we specify the VECM model with (p-1) lags. The VECM was used to estimate the hypothesis that there is a significant causal relationship between remittances, FI, and governance. The following VECM models were specified:

VECM models specification:

$$\Delta R_t = \sigma + \sum_{i=1}^{\boldsymbol{k-1}} \boldsymbol{\beta_i}\, \Delta \boldsymbol{R_{t-i}} + \sum_{j=1}^{k-1} \emptyset_j\, \Delta FI_{t-j} + \sum_{m=1}^{k-1} \varphi_m\, \Delta G_{t-m} + \boldsymbol{\lambda_1} ECT_{t-1} + \mu_{1t} \quad (3)$$

$$\Delta FI_t = \sigma + \sum_{i=1}^{k-1} \beta_i\, \Delta R_{t-i} + \sum_{\boldsymbol{j=1}}^{\boldsymbol{k-1}} \emptyset_{\boldsymbol{j}}\, \Delta \boldsymbol{FI_{t-j}} + \sum_{m=1}^{k-1} \varphi_m\, \Delta G_{t-m} + \boldsymbol{\lambda_2} ECT_{t-1} + \mu_{2t} \quad (4)$$

$$\Delta G_t = \sigma + \sum_{i=1}^{k-1} \beta_i\, \Delta R_{t-i} + \sum_{j=1}^{k-1} \emptyset_j\, \Delta FI_{t-j} + \sum_{\boldsymbol{m=1}}^{\boldsymbol{k-1}} \boldsymbol{\varphi_m}\, \Delta \boldsymbol{G_{t-m}} + \boldsymbol{\lambda_3} ECT_{t-1} + \mu_{3t} \quad (5)$$

Where:

- **k-1** (the lag length is reduced by 1)
- $\boldsymbol{\beta_i}, \emptyset_j, \varphi_m$ (short-run dynamic coefficients of the model`s adjustment long-run equilibrium).
- $\boldsymbol{\lambda_i}$ **(**speed of adjustment parameter with negative sign).
- $\boldsymbol{ECT_{t-1}}$ (The error correction term is the lagged value of the residuals obtained from the cointegrating regression of the dependent variable on the regressors. Contains long-run information derived from the long-run cointegrating relationship).
- $\boldsymbol{\mu_{it}}$ (residuals (stochastic error terms, often called impulses, innovations, or shocks)).

Table 7. Vector Error-Correction Model

Sample: 2011 – 2021			Number of obs	=	11
			AIC	=	15.95484
Log likelihood	-70.75162		HQIC	=	15.56721
Det (Sigma_ml)	77.50167		SBIC	=	16.56977

Equation	Parms	RMSE	R-sq	chi2	p>chi2
D_remit	5	2.57242	0.2817	2.3529	0.7985
D_RQ	5	0.650906	0.7504	18.043	0.0029

D_borrowers	5	37.6481	0.4725	5.374	0.372	

	Coef.	Std. Err	Z	P>z	[95% Interval]	Conf.
D_remit _ce1						
L1.	-0.1834218	0.44644	-0.41	0.681	-1.058428	0.6915843
remit						
LD.	-0.6887221	1.037441	-0.66	0.507	-2.72207	1.344626
rq						
LD.	0.2580882	1.001928	0.26	0.797	-1.705645	2.221822
borrowers						
LD.	-0.0419719	0.042556	-0.99	0.324	-0.125381	0.0414367
_cons	-0.1934473	1.288279	-0.15	0.881	-2.718427	2.331532
D_rq _ce1						
L1.	-0.3221697	0.112964	-2.85	0.004	-0.543575	-0.100764
remit						
LD.	0.2142498	0.262507	0.82	0.414	-0.300254	0.7287538
rq						
LD.	-0.2560898	0.25352	-1.01	0.312	-0.752979	0.2407995
borrowers						

LD.	-0.0080678	0.010768	-0.75	0.454	-0.029173	0.0130373
_cons	1.108254	0.325977	3.4	0.001	0.4693514	1.747157
D_borrowers						
_ce1						
L1.	6.45458	6.533775	0.99	0.323	-6.351383	19.26054
remit						
LD.	8.093608	15.18325	0.53	0.594	-21.66501	37.85223
rq						
LD.	-5.703841	14.66343	-0.39	0.697	-34.44364	23.03596
borrowers						
LD.	0.4884541	0.622822	0.78	0.433	-0.732255	1.709163
_cons	0.0498192	18.85432	0.00	0.998	-36.90397	37.00361

Cointegrating Equations

Equation	Parms	chi2	P > chi2
_ce1	2	26.11654	0.000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	**Coef.**	**Std. Err.**	**Z**	**P > z**	**[95% Conf. Interval]**	
_ce1						
remit	1	.	.	.	.	.
rq	1.509536	0.298638	5.05	0.000	0.9242172	2.094856

borrowers	-0.0511851	0.01604	-3.19	0.001	-0.082622	-0.019748
_cons	-11.29853	.	.	.	.	.

Notes: L1 = Adjustment term; LD = Short-run variable; ce1 = error correction term.

The output of the VECM long-run equation, also known as Johansen normalization, shows that, in the long run, rq (Governance) has a negative impact on remit (Remittances), while borrowers (Financial Inclusion) have a positive impact on remit (Table 7). The positive and significant relationship between financial inclusion and remittances is consistent with several previous studies (Demirgüç-Kunt et al., 2011; Munyegera and Matsumoto, 2016; Ambroius and Cuecuecha, 2016; Misati and Kamau, 2018; Machasio, 2018; Mbilla, Ayimpoya and Amoah, 2018; Ajefu and Ogebe, 2019; Arthur, Musau and Wanjohi, 2020; Bangake and Eggoh, 2020). In other words, a percentage change in rq will result in a 1.51% decrease in remit, whereas a percentage change in borrowers will result in a 0.05% increase in remit. The coefficients are statistically significant at the 1% level (Table 7). Governance and financial inclusion in Zimbabwe have asymmetric effects on remittances in the long run, on average, ceteris paribus. The asymmetric effect indicates that rq and borrowers have opposite effects on the remit.

3.5. Remittances as the Target Variable:

$$\Delta \boldsymbol{R_t} = -0.1934 - 0.6887\Delta R_{t-1} - 0.04197\Delta FI_{t-1} + 0.2561\Delta G_{t-1} - 0.1834 ECT_{t-1} \quad (6)$$

We infer long-run causality from the error-correction term in the equation. The coefficient is negative, which shows convergence to long-run equilibrium, and a p-value of 0.681, which is insignificant at all levels. For the short-run causal effect, both rq and borrowers do not cause a remit in the short run because the coefficients are statistically insignificant. The findings are consistent with those by Ansoategui, Demirgüç-Kunt and Martínez Pería (2014) and Naceur, Chami and Trabelsi (2020) who discovered insignificant positive relationships among the variables. However, Orozco and Fedewa (2006), Nyamongo et al. (2012) and Chuc et al. (2021) found positive significant impact of financial inclusion on remittances.

3.6. Financial inclusion as the Target Variable:

$$\Delta \boldsymbol{FI_t} = 0.0498 + 8.0936\Delta R_{t-1} + 0.4884\Delta FI_{t-1} - 5.7038\Delta G_{t-1} + 6.4546 ECT_{t-1} \quad (7)$$

The long-run causality inference from the error correction term shows no causal effect in the long run in this equation because the coefficient is positive, showing no

convergence to long-run equilibrium, and the p-value is insignificant at all levels, consistent with the findings of Naceur et al. (2020). There is also no causal effect in the short run, because both variables have insignificant coefficients at all levels. These results agree with the findings of Ambroius and Cuecuecha (2016), Inoue and Homori (2016), Misati and Kamau (2018), Arthur et al. (2020), and Maune and Matanda (2022). The results are also aligned to those by Ansoategui et al. (2014) which shows insignificant relationship between remittances and financial inclusion. Calderon, Fajnzylber and Lopez (2008), Brown, Carmignani and Fayad (2013), Uchenna et al. (2015), Gautam (2019) find that remittances has no influence on financial inclusion. Bracking and Sachikonye (2010), cited by Maune et al. (2020), argue that, "financial inclusion has enabled a smooth flow of remittances, which is a major source of income, liquidity, funding, and investment in the country". Ambrosius and Cuecuecha (2016) draw a controversial conclusion regarding the impact of remittances on financial inclusion. Therefore, there is no consensus among researchers on the exact impact of remittances on financial inclusion. This line of thought is consistent with the findings of this study.

3.7. Governance as the Target Variable:

$$\Delta \boldsymbol{G_t} = 1.1082 + 0.2142\Delta R_{t-1} - 0.0080\Delta FI_{t-1} - 0.2561\Delta G_{t-1} - 0.3225ECT_{t-1} \quad (8)$$

For the long-run causal effect, we infer long-run causality from the error correction term showing a negative coefficient, which denotes convergence to long-run equilibrium and a significant p-value at 1%. Hence, the governance equation has a long-run causal effect in the governance (rq) equation. These results are consistent with those of Maune, Matanda, and Chitombo (2023). For the short-run causal effect, neither variable has a significant effect on governance (rq). Therefore, there is no causal effect of remits and borrowers on rq in the short run.

3.9. The ECT Coefficient:

$$ECT_{t-1} = 1.000R_{t-1} - 0.05119FI_{t-1} + 1.5095G_{t-1} - 11.298 \quad (9)$$

The adjustment term, the ECT coefficient (-0.1834), is statistically insignificant at the 5% level, suggesting that the previous year's errors (or deviation from the long-run equilibrium) are corrected from within the current year at a convergence speed of 18.34%.

4. Diagnostic Tests

After conducting the VECM, we performed diagnostic tests for residual autocorrelation and normally distributed disturbances and checked the stability condition of the VECM estimates. The results are presented in Tables 8, 9, and 10. The Lagrange multiplier test shows that there is no autocorrelation at lag two with p > 0.05. Lagrange multiplier (LM) tests for autocorrelation in residuals of VECMs. Thus, this test finds no evidence of a model misspecification. Normality tests were performed using Jarque–Bera, Skewness, and Kurtosis tests. For all equations, we can see that the errors were normally distributed, and the errors were normally distributed for the tests. A stability condition test for the model was conducted using an eigenvalue test. This checks the eigenvalue stability condition in a vector error correction model (VECM) fit. The output indicates that the eigenvalues lie inside the unit circle, and the specified VECM imposes two (2) unit moduli (see Table 8 and Figure 1).

Table 8. Lagrange-Multiplier Test

Lag	Chi2	Df	Prob > chi2
1	36.2009	9	0.00004
2	6.2952	9	0.71004

H_0: no autocorrelation at lag order

Table 9. Normality Tests

Equation	Skewness/Kurtosis	Chi2	Df	Prob > chi2
Jarque –Bera Test				
D_remit		2.281	2	0.31959
D_rq		0.562	2	0.75514
D_borrowers		1.112	2	0.57338
ALL		3.956	6	0.68269
Skewness test				
D_remit	-1.0863	2.164	1	0.14132
D_rq	.11925	0.026	1	0.87172
D_borrowers	-.74589	1.020	1	0.31252
ALL		3.210	3	0.36043
Kurtosis Test				
D_remit	3.5073	0.118	1	0.73128
D_rq	1.9189	0.536	1	0.46424
D_borrowers	2.5509	0.092	1	0.76112
ALL		0.746	3	0.86233

Table 10. Eigenvalue Stability Condition Test

Eigenvalue	Modulus
1	1
1	1
.1013239 + .6364138i	.644429
.1013239 - .6364138i	.644429
-.4577807	.457781
-.201352	.201352

Although the information in Table 10 is the same as the graph in Figure 1, the graph shows visually how close the roots of the modulus are to the unit circle. The output shows roots below one, indicating that the predicted cointegrating equations are stationary.

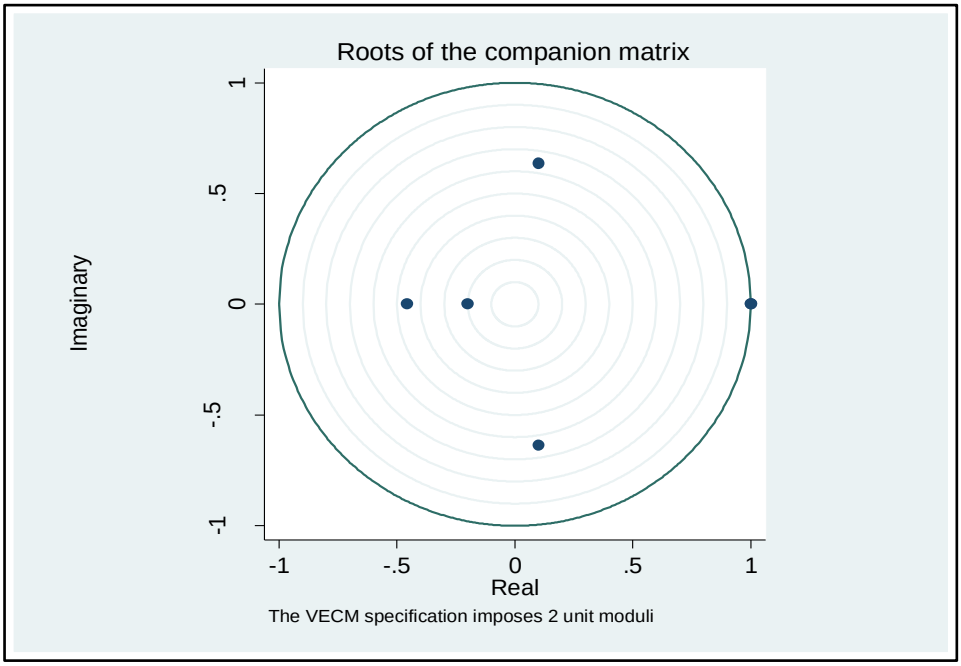

Figure 1. Eigenvalues of the Companion Matrix graph

5. Conclusion and Recommendations

This article examines the impact of governance and financial inclusion on remittances in Zimbabwe using the VECM approach. Data were collected from World Bank data indicators from 2009 to 2021. Data were tested for stationarity using the Dickey-Fuller and Phillips-Perron tests at the level and first difference. The variables were stationary at the first difference. The Johansen cointegration test was conducted to test for cointegration before the VECM was conducted using STATA.

The major findings show that in the long run, rq (Governance) has a negative impact on remits (Remittances), while borrowers (Financial Inclusion) have a positive impact on remits. In other words, a percentage change in rq will result in a 1.51% decrease in remit, whereas a percentage change in borrowers will result in a 0.05% increase in remit. The coefficients are statistically significant at the 1% level. The results also show a lack of short-run causal effects in both equations. The governance (rq) equation shows a long-run causal effect that is significant at the 1% level. It is recommended that the government create conducive policies through the central bank, where remittances thrive. There is a need for the government to improve its governance to attract more foreign remittances. Governance has proven to be critical in attracting foreign remittances, as shown by the results of this study, and in attracting foreign investments such as foreign direct investment. Policy intervention in financial inclusion is critical to attract foreign remittances to improve both the short- and long-run relationships between the two.

5.1. Disclosure of Interest

There are no relevant financial or non-financial competing interests to report.

5.2. Declaration of Funding

No funding was received.

6. Author Contribution Statement

Maune and Mundonde made substantial contributions to the conception and design of the article, as well as the acquisition, analysis and interpretation of data. The two were both involved in the drafting and reviewing of the article. Mundonde and Maune approved the publication of this version of the article. Maune and Mundonde are, therefore, accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

6.1. Data Availability Statement

The data that support the findings of this study are available from the corresponding author, [A.M.], upon reasonable request.

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