FINANCIAL DEVELOPMENT, TRADE, REMITTANCES, AND ECONOMIC GROWTH: THE GOVERNANCE PERSPECTIVE

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Abstract

This study examines the governance perspective of Zimbabwe's financial development, trade, remittances, and economic growth. The study utilises time-series data from the World Bank Worldwide Development Indicators (WDI) database from 1980 to 2022. Vector autoregression (VAR) models were estimated to analyse "short-run" relationships among the four variables. The results obtained showed the non-existence of cointegration equations in the series. The significant findings are the positive "short-run" causal effects of first lag gross domestic product (GDP) regressor on GDP at 0.05%, first lag remittances regressor on GDP, first lag financial development regressor on financial development, and first lag trade and remittances regressors on remittances, at 0.01% level of significance. Moreover, the Granger causality test showed that the remittances Granger causes GDP and trade Granger causes remittances in the "short-run", while the opposite is true for other variables. This study is essential for governance, regulation, researchers, and policymakers. The government should develop strategies that encourage the increase of remittances, trade, and financial progress to facilitate substantial economic advancement.

Keywords: Financial Development, Trade, Foreign Remittances, Diaspora Remittances, Economic Growth, GDP, Zimbabwe

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1. INTRODUCTION

Zimbabwe's economy has experienced booms and busts since its independence from Great Britain in 1980. The country has faced macroeconomic challenges due to colonialism and the long battle for independence. The history of Zimbabwe's economy can be categorised into four distinct time frames: 1980 to 1999, 2000 to 2008, 2009 to 2017, and 2018 to the present. The first phase began in 1980, following independence. Zimbabwe's economic history is characterised by ups and downs, with each period having its macroeconomic challenges. Zimbabwe's subsequent period was marked by the government's redistribution of land, imposition of monetary fines, rapid inflation, and the imminent collapse of the financial sector, and this period witnessed the closure of several banks. 2009–2017 saw the economy's dollarisation and the Mugabe regime's end. In 2017, President Mnangagwa led a new administration with Vision 2030, which aimed to achieve an upper-middle-income economy. Zimbabwe's economy has experienced fluctuations from 1980 to 2022, with gross domestic product

(GDP) per capita trends indicating these fluctuations (see Figure 1). Economic factors include financial development, trade, and remittances (see Figures 2 and 3). Financial development is a critical factor in economic growth (Bayraktar et al., 2023; Singh et al., 2023), as are remittance inflows (Adekunle et al., 2020; Yadeta & Hunegnaw, 2022; Golder et al., 2023), which are closely associated with financial development (Akçay, 2020; Bindu et al., 2022). Trade significantly contributes to Zimbabwe's economic growth, with studies indicating a strong correlation between trade and global economic growth, with previous research supporting this positive relationship (Maune, 2018; Sghaier, 2021; Takongmo & Touré, 2023). However, research has also shown the importance of governance and regulation in sustainable economic growth and development (Maune et al., 2023; Maune & Mundonde, 2024).

This study analysed the correlation between financial development, trade, remittances, and economic growth in Zimbabwe from 1980 to 2022 using vector autoregression (VAR) model estimations in Stata v. 14.2. The goal is to determine the significance of these factors and how they affect the nation's economic development. The study is being done under the backdrop of economic sanctions and financial challenges in the country as witnessed by an unstable currency. The nation is encountering an unsteady economic situation due to several factors. This study is significant to policy formulation as it narrows the focus areas. It is also critical for governance and regulation in financial development, trade, and remittance flow. A conducive governance and regulation environment is critical for sustainable growth. Critical economic growth and development variables, including financial development, trade, and remittances, are being examined and their impact on economic growth. Several studies have been carried out without combining all these variables and in other jurisdictions. This study will be significant to Zimbabwean policymakers and academia as it adds to the body of knowledge.

This study provides a unique approach to the governance perspective by examining the relationship between financial development, trade, remittances and economic growth using Zimbabwe as a case in point. The primary aim was to establish short-run and long-run relationships between the variables. This study is relevant to governance and regulation. Researchers and policymakers will find the study significant as it provides a unique approach to examining the relationship between variables from a governance perspective. These variables have proven to be critical in economic growth. The VAR models were estimated using Stata v. 14.2 (special edition) to analyse "short-run" relationships among the four variables. We used time-series data from the World Bank Worldwide Development Indicators (WDI) database from 1980 to 2022 to examine the relationship. We found the non-existence of cointegration equations in the series. We also found positive "short-run" causal effects of first lag GDP regressor on GDP at 0.05%, first lag remittances regressor on GDP, first lag financial development regressor on financial development, and first lag trade and remittances regressors on remittances, at 0.01% level of significance. This study also contributes to the body of knowledge regarding economic growth factors.

The structure of this paper is as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology used to conduct empirical research on the governance perspective of financial development, trade, remittances and economic growth. Section 4 analyses and discusses the findings of the study in comparison to prior research. Section 5 concludes the paper.

2. LITERATURE REVIEW

2.1. Financial development and economic growth

The relationship between economic growth and financial development can be explained using supply-leading and demand-following approaches. Growth in financial markets and institutions increases the availability of financial services and savings, leading to economic expansion (Bayraktar et al., 2023). A solid financial system promotes economic progress by reallocating capital from less efficient to more efficient areas (Singh et al., 2023). Encouraging economic growth involves increasing access to credit and promoting more significant savings and investments, as evidenced by studies conducted in emerging markets. However, standard models may need to capture the complexity of this interaction. The demand-following strategy suggests that economic expansion leads to financial development, increasing commercial transactions and money flows. However, this growth is negatively impacted by increased bank loan usage (Ho & Saadaoui, 2022), leading to financial crises and hindering economic progress. The literature suggests that there needs to be a consensus on the exact results, leaving the situation to be clarified at the centre stage of this relationship in governance and regulation. A conducive governance and regulatory environment is essential to achieve a positive nexus between the two (Maune & Mundonde, 2024). Figure 2 shows financial development as a percentage of GDP trend from 1980–2022, with the highest in 2002 (84%).

Figure 1. GDP per capita in Zimbabwe, 1980 to 2022

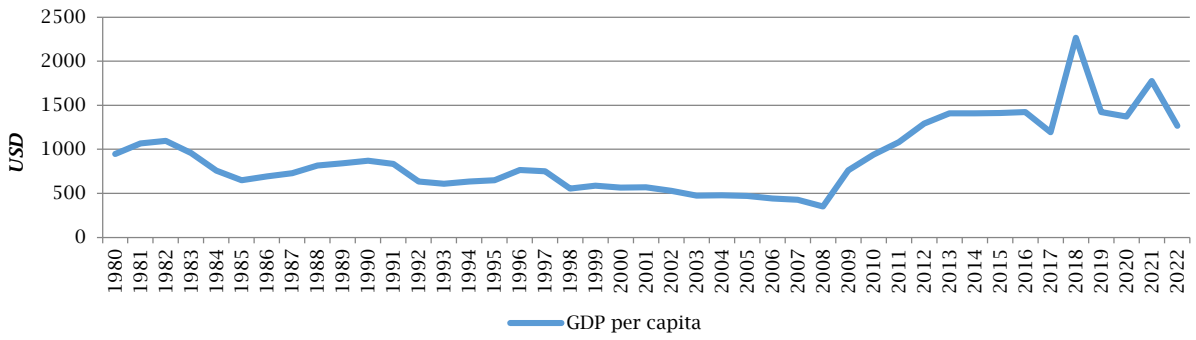
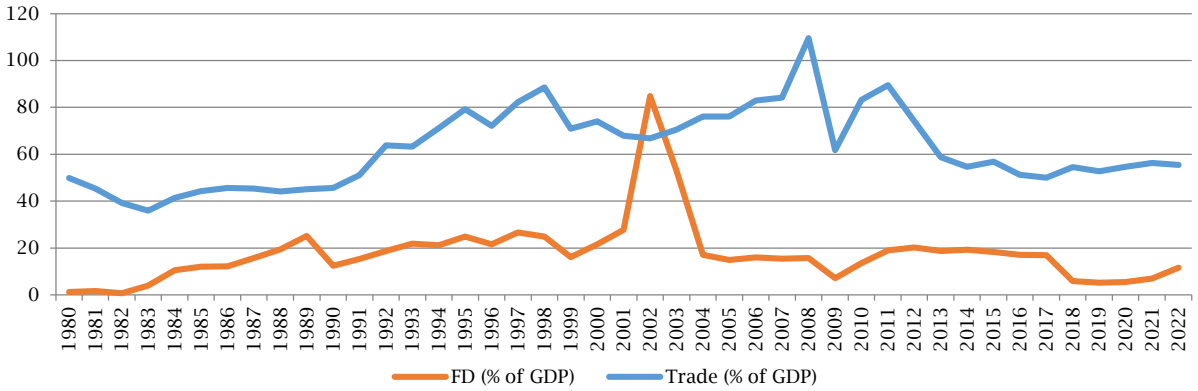


Figure 2. Financial development and trade in Zimbabwe, 1980 to 2022

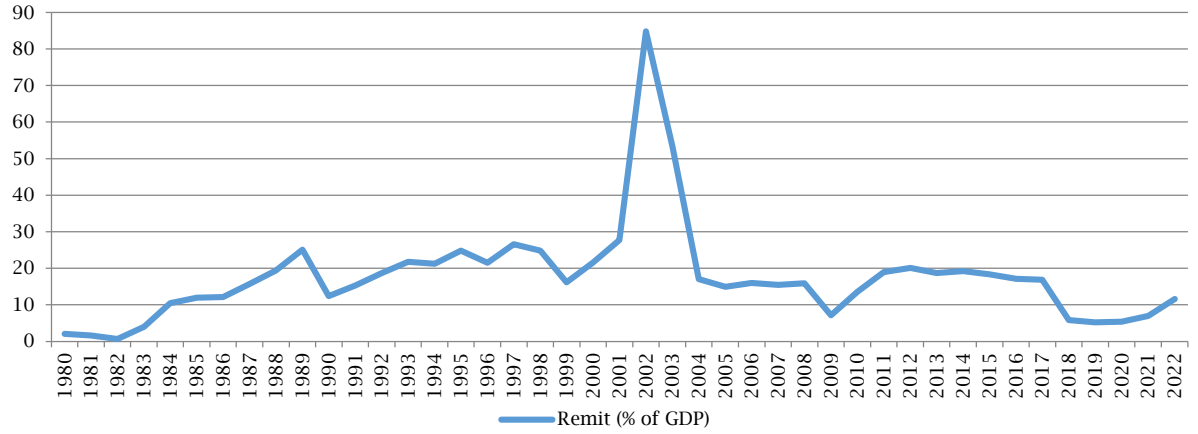


Note: FD — financial development.

2.2. Remittances and economic growth

Altruistic ideas suggest that individuals travel overseas to work to stimulate economic growth back home (Adekunle et al., 2020). Remittance inflows stabilise the exchange rate and guarantee economic progress (Golder et al., 2023). The Harrod-Domar two gaps concept suggests developing nations need remittances to advance their economies due to a lack of investment funds (Boianovsky, 2018). However, there needs to be more evidence about the relationship between remittances and economic growth, with sustained remittance flows not directed towards the productive sector (Olayungbo et al., 2020). No causal association was found in Tanzania, highlighting the need for further research (Musakwa & Odhiambo, 2022). Remittances significantly contribute to economic growth, with consistent inflows increasing real GDP (Yadeta & Hunegnaw, 2022). To add to the debate, Maune and Mundonde (2024) found convergence to long-run equilibrium insignificant at all levels with a p-value of 0.681. The two further argue that governance and regulation also play an essential role in the impact of remittances on economic growth. The two also found no causal effect in the short run because the coefficients are statistically insignificant. Remittances, however, foster financial development, contributing to long-term economic progress. The banking industry acts as a conduit for remittances (Bindu et al., 2022), and the complementary theory suggests that a significant portion of remittances through financial institutions encourage savings, thereby improving financial growth (Akçay, 2020). Figure 3 shows Zimbabwe's remittance inflows from 1980–2022.

Figure 3. Personal remittances inflows in Zimbabwe, 1980 to 2022



2.3. Trade and economic growth

Trade measures a nation's position in the global economy relative to GDP (Usman, 2023). International commerce theory suggests that trade connections can lead to industrial specialisation through comparative advantages (Takongmo & Touré, 2023). Trade promotes efficient resource allocation and economic growth. The Marshal-Leiner theory suggests that domestic economies strategically devalue their currency to increase trade balance over time (Usman, 2023). Figure 2 shows trade as a percentage of GDP from 1980–2022, peaking in 2008.

3. RESEARCH METHODOLOGY

3.1. Study variables

The World Bank WDI database was utilised to collect secondary time-series data from 1980–2022, a time frame chosen due to data availability and Zimbabwe's political independence in 1980. The chosen variables are displayed in Table 1, together with their explanations. The variables were chosen in line with previous studies that examined the relationships across different jurisdictions.

Table 1. Variables, description, and sources

Variable	*Indicator name*	*Description*	*Source*
Remittances (*rt*)	Personal remittances received (% of GDP)	Personal remittances comprise personal transfers and compensation of employees. Personal transfers consist of all current transfers in cash or in kind made or received by resident households to or from nonresident households.	World Bank WDI
Trade (*trade*)	Trade (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	
GDP per capita (*lngdp*)	GDP per capita (current USD)	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	
Financial development (*fd*)	Domestic credit to private sector (% of GDP)	Refers to financial resources provided to the private sector by financial corporations, such as loans, purchases of non-equity securities, trade credits, and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises. The financial corporations include monetary authorities, deposit money banks, and other financial corporations where data are available. Other financial corporations include finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies.	

3.2. VAR models specification

A VAR is a model in which k variables are specified as linear functions of p of their own lags, p lags of the other k - 1 variables, and possibly additional exogenous variables. The VAR model conducts a multivariate time-series regression where each dependent variable is regressed on its own lags and the other dependent variables' lags. The Granger causality test examined the nexus between financial development (*fd*), *trade*, remittances (*rt*), and economic growth (*lngdp*). A VAR model was estimated to analyse the short-run relationship between financial development, trade, remittances and economic growth. The four VAR models were specified as follows:

$$lngdp_t = \sigma + \sum_{i=1}^{k} \beta_i \, lngdp_{t-i} + \sum_{j=1}^{k} \emptyset_j \, fd_{t-j} + \sum_{m=1}^{k} \varphi_m \, trade_{t-m} + \sum_{m=1}^{k} \theta_n \, rt_{t-n} + \mu_{1t} \quad (1)$$

$$fd_t = \alpha + \sum_{i=1}^{k} \beta_i \, lngdp_{t-i} + \sum_{j=1}^{k} \emptyset_j \, fd_{t-j} + \sum_{m=1}^{k} \varphi_m \, trade_{t-m} + \sum_{m=1}^{k} \theta_n \, rt_{t-n} + \mu_{2t} \quad (2)$$

$$trade_t = \partial + \sum_{i=1}^{k} \beta_i \, lngdp_{t-i} + \sum_{j=1}^{k} \emptyset_j \, fd_{t-j} + \sum_{m=1}^{k} \varphi_m \, trade_{t-m} + \sum_{m=1}^{k} \theta_n \, rt_{t-n} + \mu_{3t} \quad (3)$$

$$rt_t = \rho + \sum_{i=1}^{k} \beta_i \, lngdp_{t-i} + \sum_{j=1}^{k} \emptyset_j \, fd_{t-j} + \sum_{m=1}^{k} \varphi_m \, trade_{t-m} + \sum_{m=1}^{k} \theta_n \, rt_{t-n} + \mu_{4t} \quad (4)$$

where,

- k = the optimal lag length;
- β_i, $\emptyset_j$, φ_m, θ_n = short-run dynamic coefficients of the model's adjustment long-run equilibrium;
- σ, α, ∂, ρ = intercepts;
- μ_{it} = residuals in the equations (stochastic error terms or shocks).

4. RESEARCH RESULTS AND DISCUSSION

4.1. Descriptive statistics

Table 2 displays summary statistics for this study's series of numeric variables.

Table 2. Descriptive statistics

Statistic	*fd*	*trade*	*lngdp*	*rt*
N	43	43	43	43
Mean	17.60942	62.43786	6.71151	3.43508
Median	16.16158	58.65649	6.64009	0.26144
IQR	9.59419	24.27212	0.71129	8.86641
SD	13.87312	16.47712	0.43024	4.97451
Skewness	2.94941	0.56742	0.21508	1.01964
Kurtosis	14.72248	2.84088	2.34739	2.35040
Range	84.12108	73.60478	1.86399	14.91536
CV	0.78782	0.26389	0.06411	1.44815
SE(mean)	2.11563	2.51274	0.06561	0.75860

Note: IQR — interquartile range, SD — standard deviation, CV — coefficient of variation (SD / mean), SE(mean) — standard error of the mean (SD / sqrt(n)).

4.2. Regression analysis

The study utilised spurious regression and data diagnostic tests before recommending VAR models, with the regression results displayed in Table 3. Diagnostic tests included skewness and kurtosis, Shapiro-Wilk, and Shapiro-Francia normality tests.

Table 3. Regression *lngdp, fd, trade*, and *rt* output

Panel A: Analysis of variance (ANOVA) table						
Source	***S.S.***		***df***		***M.S.***	
Model	5.62654798		3		1.87551599	
Residual	2.14801111		39		0.055077208	
Total	7.77455909		42		0.18510855	
No. of obs. = 43 F (3, 39) = 34.05 Prob > F = 0.0000 R-squared = 0.7237 Adj R-squared = 0.7025 RMSE = 0.23469						
Panel B: Parameter estimation						
lngdp	***Coef.***	***Std. error***	***t***	***p > |t|***	***[95% conf. interval]***	
fd	-0.0041182	0.0027970	-1.47	0.149	-0.0097758	0.0015394
trade	-0.0127445	0.0023190	-5.50	0.000	-0.017435	-0.0080539
rt	0.0553729	0.0074172	7.47	0.000	0.0403702	0.0703756
_cons	7.389556	-0.1437887	51.39	0.000	7.098715	7.680396

Note: RMSE — root mean square error, df — degrees of freedom, S.S. — sum of squares, M.S. — mean of sum of squares.

The sum squares add to 7.7746, with the model explaining 5.6265 and leaving 2.1480 unaccounted. Additionally, Table 3 shows that there are 42 total degrees of freedom (calculated by subtracting 1 from the mean removal from 43 data observations), of which the model consumes 3 and 39 remain for the residual. The percentage of variation explained by the predictors is indicated by the R-squared (R^2) in Table 3. Regression's R^2 is 0.7237; R^2 corrected for degrees of freedom is 0.7025; 0.2347 is the root mean squared error or RMSE. Table 3 shows that R^2 is still a reliable goodness-of-fit (GFI) statistic test. Except for *rt*, which has a positive effect, all the variables — aside from *fd* — have a substantial impact on GDP overall. *Trade* and *fd* have a negative impact (see Table 3). Next, we tested the series' stationarity using the unit root test.

4.3. Unit root test

After performing the regression analysis, we used Stata's Dickey-Fuller and Phillips-Perron tests to check the series for stationarity. At this level, all variables were nonstationary. Following that, we ran the tests at the first difference, and as Table 4 illustrates, we discovered that every series was stationary at the first difference. Every series remained stable and trending at the same time. We then carried out the optimal lag length.

Table 4. Test for unit root at first difference

Variable	***Dickey-Fuller***			***Phillips-Perron test***		
	t-statistic	***MacKinnon p-value***	***Critical value***	***t-statistic***	***MacKinnon p-value***	***Critical value***
Dlngdp	-3.041	0.0312	-3.655*** -2.961** -2.613*	-7.208	0.0000	-3.641*** -2.955** -2.611*
Dfd	-5.304	0.0000	-3.655*** -2.961** -2.613*	-6.877	0.0000	-3.641*** -2.955** -2.611*
Dtrade	-4.000	0.0014	-3.655*** -2.961** -2.613*	-9.647	0.0000	-3.641*** -2.955** -2.611*
Drt	-3.010	0.0340	-3.655*** -2.961** -2.613*	-6.529	0.0000	-3.641*** -2.955** -2.611*

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

4.4. Optimal lag length

The optimum lag length for the series was determined through an optimum lag length study using the following information criteria: Akaike information criterion (AIC), Hannan and Quinn information criterion (HQIC), and Schwarz's Bayesian information criterion (SBIC) (see Table 5). The model with one lag was chosen through likelihood-ratio tests, indicating the ideal lag duration.

Table 5. Selection-order criteria

lag	***L.L.***	***L.R.***	***df***	***p***	***FPE***	***AIC***	***HQIC***	***SBIC***
0	-433.649				65648.1	22.4435	22.5047	22.6141
1	-353.593	160.11	16	0.000	2472.05*	19.1586*	19.4647*	20.0117*
2	-342.139	22.908	16	0.116	3210.3	19.3918	19.9427	20.9274
3	-336.062	12.155	16	0.733	5738.93	19.9006	20.6964	22.1187
4	-318.918	34.287*	16	0.005	6251.17	19.842	20.8827	22.7425

Note: Sample: 1980–2022. No. of obs. = 39. Endogenous: lngdp, fd, trade, rt. Exogenous: _cons. L.L. — log likelihood, L.R. — likelihood rate test statistics, FPE — final prediction-error criteria.

After the optimal lag length was determined, the Johansen (1995) cointegration test in Stata was conducted to verify cointegration within the series.

4.5. Johansen cointegration test

The Johansen cointegration test results indicate no cointegration in the series (see Table 6), with $r = 0$ as the estimated number of cointegrating equations. The VAR models were estimated, revealing no cointegration equations between the four variables (Johansen, 1995). The trace and max statistics showed no long-term relationships in the series, with all less than 5% critical value. However, short-term relationships were observed among variables. The VAR models were specified at levels.

Table 6. Johansen tests for cointegration

Maximum rank	*Parms*	*L.L.*	*Eigenvalue*	*Trace statistic*	*5% critical value*
Test 1					
0	20	-378.64104		39.4322*	47.21
1	27	-369.39136	0.36314	20.9328	29.68
2	32	-363.01502	0.26732	8.1801	15.41
3	35	-359.4701	0.15880	1.0903	3.76
4	36	-358.92494	0.02624		
Test 2					
0	20	-378.64104		18.4994	27.07
1	27	-369.39136	0.36314	12.7527	20.97
2	32	-363.01502	0.26732	7.0898	14.07
3	35	-359.4701	0.15880	1.0903	3.76
4	36	-358.92494	0.02624		

*Note: Trend: Constant. Sample: 1982–2022. No. of obs. = 41, lags = 2. * shows the value of r.*

4.6. VAR models estimation

After the Johansen cointegration test results showed no cointegration in the series, we then estimated the VAR models in Stata v. 14.2 and the output in Table A.2 (see Appendix) was obtained. The output has a header and the standard Stata output table for the coefficients, standard errors, and confidence intervals. The header contains summary statistics for each equation in the VAR and statistics used to select the lag order of the VAR.

The VAR models employed the t-statistics of the regressors in Table A.2 to deduce "short-run" causation. According to the *lngdp* equation, the first lag of *lngdp* has a causal influence on *lngdp* in the "short-run" since it is significant at 5% and the second lag is insignificant. The *fd* variable's lag regressors are insignificant, which contradicts Olayungbo and Quadri's (2019) findings. In the "short-run", neither has any causal influence on *lngdp*. Since they are both insignificant, there is no causal relationship between the two trade variable lag regressors and *lngdp*. This is in line with research by Nwosu and Metu (2015) and Alajekwu et al. (2013), who discovered an insignificant "short-run" link between *lngdp* and *trade*. The first lag of *rt* is significant at 1%, while the second lag of *rt* is insignificant. Therefore, the first lag of *rt* has a causal effect on *lngdp*, which is consistent with the findings of several previous studies (Nyamongo et al., 2012; Adarkwa, 2015; Karikari et al., 2016; Olayungbo & Quadri, 2019).

Since *lngdp*'s lags in the *fd* equation are insignificant, *lngdp* has no causal relationship with *fd*. The lagged *fd* regressors on *fd* are significant at 1% and 5%, indicating that *fd* is causally related to lagged *fd*. Trade's lag regressors are insignificant and have no causal impact on foreign direct investment (FDI). The same is true for the lag regressors of *rt*, which support Olayungbo and Quadri's (2019) findings but contradict those of Fromentin (2017) and Kim (2021), who discovered a substantial positive "short-run" association between remittances and financial growth.

Only the first lag regressor of *trade* in the *trade* equation is significant at 1%, suggesting a causal influence on *trade*; the other lag variable regressors are insignificant and do not suggest a causal effect on trade.

While the other lag variable regressors are insignificant, suggesting no causality on *rt*, the lag regressors of *trade* and the first lag regressor of *rt* are significant at 1% and 5% (see Table A.2 in Appendix) in the *rt* equation, suggesting a causal influence on *rt*.

4.7. VAR diagnostics and tests

Several diagnostic tests were performed, including Granger causality, Lagrange-multiplier, and stability condition tests, after the VAR models were estimated in Stata v. 14.2. In contrast to the t-statistics previously stated, which only show the "short-run" causal effect, the Granger causality test was performed to determine the direction of causation in the "short-run". Only *rt* Granger causes *lngdp* in the *lngdp* equation (see Table 7). This contradicts other research, which demonstrates that GDP is caused by financial development. When the variables are combined, they Granger cause lngdp. Even when combined, none of the variables in the *fd* equation granger causes *fd*. This also applies to the *trade* equation, wherein, even when all the variables are considered jointly, no Granger causes trade. Only *trade* Granger causes *rt* in the *rt* equation; *rt* is not Granger caused by the other two variables, *lngdp* and *fd*. The findings of research that demonstrated a causal link between financial development and remittances are at odds with the study results. Nevertheless, when the variables are combined, the Granger cause *rt*.

Table 7. Granger causality Wald tests

Equation	*Excluded*	*Chi²*	*df*	*Prob > Chi²*
lngdp	*fd*	1.01390	2	0.602
lngdp	*trade*	1.40140	2	0.496
lngdp	*rt*	16.34100	2	0.000
lngdp	ALL	22.13500	6	0.001
fd	*lngdp*	0.74161	2	0.690
fd	*trade*	2.23660	2	0.327
fd	*rt*	1.53000	2	0.465
fd	ALL	5.41790	6	0.491
trade	*lngdp*	1.79880	2	0.407
trade	*fd*	0.91089	2	0.634
trade	*rt*	0.96575	2	0.617
trade	ALL	5.91920	6	0.432
rt	*lngdp*	2.98070	2	0.225
rt	*fd*	1.58200	2	0.453
rt	*trade*	13.60600	2	0.001
rt	ALL	17.79800	6	0.007

Table 8. Lagrange-multiplier test

Lag	*Chi²*	*df*	*Prob > Chi²*
1	7.66500	16	0.95822
2	10.54540	16	0.83664

Note: H_0: No autocorrelation at lag order.

Since there is no evidence of model misspecification according to Table 8's Lagrange multiplier test, the null hypothesis (H_0) of no autocorrelation in the residuals cannot be rejected.

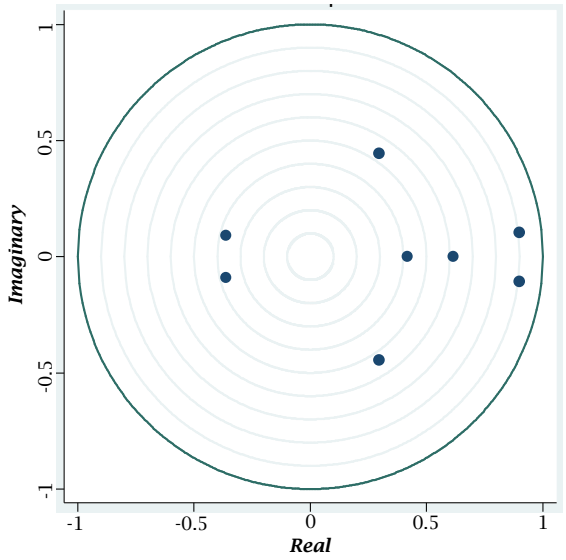
We used the eigenvalue stability requirement (see Table 9) to verify the stability of the VAR Models after we had estimated them in Stata. The modulus of each eigenvalue demonstrates the stability of the calculated VAR in the matrix being strictly smaller than one (Hamilton, 1994; Lütkepohl, 2005). The estimates meet the eigenvalue stability criteria since each eigenvalue modulus is smaller than one. We specified the graphic option, which plotted the eigenvalues of the companion matrix. The graphic representation (see Figure 4) of the eigenvalues shows that none of the remaining eigenvalues appears close to the unit circle. The eigenvalues are visible inside the unit circle in Figure 4's graphical depiction, indicating VAR stability.

Figure 4 shows that all the eigenvalues lie inside the unit circle, satisfying the VAR stability condition.

Table 9. Eigenvalue stability condition

Eigenvalue	*Modulus*
0.8979225 + 0.1055737i	0.904108
0.8979225 - 0.1055737i	0.904108
0.6140639	0.614064
0.2959498 + 0.4449001i	0.534343
0.2959498 - 0.4449001i	0.534343
0.4188461	0.418846
-0.3625724 + 0.0906231i	0.373726
-0.3625724 - 0.0906231i	0.373726

Figure 4. Eigenvalues of the companion matrix graph



5. CONCLUSION

The study examined the relationship between Zimbabwe's financial development, trade, remittances, and economic growth using the World Bank WDI database data from 1980 to 2022.

The study used spurious regression and data diagnostic tests before specifying VAR models. The analysis revealed a total sum square of 7.7746, with 5.6265 accounted for by the model and 2.1480 left unexplained. There were 42 total degrees of freedom, with 3 consumed by the model and 39 for the residual. The R^2, representing the per cent of variance explained by the predictors, was 0.7237 for the regression and 0.7025 adjusted for degrees of freedom. The RMSE is 0.2347, and R^2 is a valid GFI test. All variables except financial development have a significant influence on GDP, except for remittances, which have a positive influence, and financial development and trade have a negative influence (see Table 3).

The study tested data for stationarity using Dickey-Fuller and Phillips-Perron tests, revealing variables as stationary at the first difference. The Johansen cointegration test in Stata showed no cointegration equations in the series. Significant findings revealed positive short-run causal effects of first-lag economic growth, remittances, financial development, and trade and rt regressors at a 0.01% significance level (see Table 7).

The Granger causality test was used to examine the direction of causality in the short-run, unlike the t-statistics that only indicate the short-run causal effect. The results showed that only remittance granger causes GDP, contradicting the statement that financial development granger causes GDP.

All variables in the financial development equation do not guarantee financial development even when taken together. In the remittance equation, only trade granger causes remittance, while the other variables (GDP and financial development) do not. The study contradicts research on a causal relationship between financial development and remittances, but when combined, they significantly increase the cause of remittances.

Therefore, policymakers are advised to develop policies and create a conducive environment encouraging remittance inflows since the findings show that Granger causes GDP. It is also vital to have policy intervention regarding trade and financial development as they are also significant players in economic growth. More exports will generate inflows in the country that are critical for economic growth. Policies and incentives that encourage and promote exports must be implemented. Financial development is also directly linked to remittances and export inflows as it creates a platform for the smooth flow of funds. This is critical for economic growth. For Zimbabwe to achieve Vision 2030, policymakers need to be aware of the importance of these variables, as discussed in the sections above. Financial stability, trade and remittances are essential in this endeavour. There is also a need to appreciate the importance of governance and regulation, as previous studies found them critical for sustainable growth and development (Maune et al., 2023; Maune & Mundonde, 2024). Future studies need to consider governance and regulation to see their impact on economic growth and the variables in this study.

This study is critical for future research in the field as it provides the basis and foundation for further development in terms of methodology and data type. Though the study was limited to Zimbabwe, panel data can be used in future to include other countries in the region. This method can also be replicated using data from other countries in the region to ascertain the reliability of the findings. Other methods can be used in future studies, such as autoregressive distributed lag and generalized method of moments. Also, mixed methods can be used in future studies. Other variables, such as governance variables, can also be added in future studies.

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APPENDIX

Table A.1. Studies on remittances, financial development, and trade openness

Period	*Author*	*Title*	*Methodology*	*Findings*
2002–2019	Bayraktar et al. (2023)	The role of institutional quality in the relationship between financial development and economic growth: emerging markets and middle-income economies	Dumitrescu-Hurlin causality and semi-logarithmic model	Financial development has a positive effect on growth.
1991–2021	Singh et al. (2023)	Does financial development improve economic growth? The role of asymmetrical relationship	Vector error correction models and Granger causality test	Financial development has a negative impact on economic growth.
1995–2019	Chroufa and Chtourou (2023)	Financial development threshold effect on wealth inequality	Logarithmic transformation	Wealth inequality inhibits economic expansion regardless of the level of financial development.
1980–2020	Oroud et al. (2023)	Evidence from an emerging markets economy on the dynamic connection and economic growth	ARDL	Financial development is the driving force behind economic growth.
1980–2018	Al Khatib (2023)	The complex of financial development and economic growth nexus	Nonlinear autoregressive distributed lag (NARDL)	Nonlinear nexus between financial development and economic growth.
1988–2020	Golder et al. (2023)	Financial progress, inward remittances and economic growth in Bangladesh	NARDL	Positive and negative fluctuations in remittances boost economic growth.
1990–2020	Usman (2023)	The nexus between remittances, exchange rate and economic growth of E7 economies	Dumitrescan-Hurlin	Bivariate correlation of economic growth, trade openness and remittances.
1990–2020	Roy (2023)	Nexus between economic growth, external debt, oil price and remittances in India	Data-analyzing robot youth lifeform (DARYL)	Remittances negatively affect economic growth.
1991–2017	Takongmo and Touré (2023)	Trade openness and connectedness of national productions	VAR	An increase in trade openness increases exposure, which leads to economic growth.
1996–2012	Fetah-Vehapi et al. (2015)	Empirical analysis of the effects of trade openness on economic growth	System GMM	Trade openness on economic growth is conditioned by income per capita.
2000–2017	Rehman and Hysa (2021)	The effect of financial development and remittances on economic growth	System GMM	Financial development and remittances show a positive impact on economic growth.
1980–2019	Odugbesan et al. (2021)	Asymmetric effect of financial development and remittances on economic growth in MINT economics: An application of panel NARDL	ARDL	Both financial development and remittances trigger economic growth.
1998–2020	Batool et al. (2022)	Remittances and economic growth: Exploring the role of financial development	ARDL	Complementary role both on economic growth.
2000–2018	Sghaier (2021)	Remittances and economic growth in Mena countries: The role of financial development	System GMM	Complimentary role both on economic growth.
1991–2015	Sghaier (2021)	Trade openness, financial development and economic growth in North African countries	GMM	Trade openness complements financial development and fosters economic growth.
2000–2018	Ahmed et al. (2022)	Do institutional quality and financial development affect sustainable economic growth: Evidence from South Asian countries	Dynamic ordinary least squares (OLS)	Financial development promotes economic growth in the long run.
1970–2016	Maune (2018)	Trade in services and economic benefits in an emerging economy	Time series regression analysis	A correlation between trade and GDP was found in Zimbabwe.

Table A.2. Vector autoregression model

Sample: 1982–2022 No. of obs. = 41 Log-likelihood = -358.9249 FPE = 2813.47 Det(Sigma_ml) = 472.022 AIC = 19.26463 HQIC = 19.81252 SBIC = 20.76923						
Panel A: Summary statistics						
Equation	***Parms***	***RMSE***	***R^2***	***Chi^2***	***$p > Chi^2$***	
lngdp	9	0.191145	0.8478	228.3924	0.0000	
fd	9	11.468	0.4413	32.37865	0.0001	
trade	9	10.4469	0.6805	87.3296	0.0000	
rt	9	2.23798	0.8427	219.6048	0.0000	
Panel B: Statistics for each lag						
Variable	***Coef.***	***Std. error***	***Z***	***p > Z***	***[95% conf. interval]***	
GDP per capita (lngdp)						
lngdp						
L1.	0.4429718	0.1955137	2.27	0.023	0.059772	0.8261715
L2.	0.1736855	0.1581022	1.10	0.272	0.1361892	0.4835601
fd						
L1.	-0.002201	0.0025036	-0.88	0.379	0.0071085	0.0027055
L2.	-4.54E-06	0.0024844	0.00	0.999	0.0048739	0.0048649
trade						
L1.	0.0022276	0.0036686	0.61	0.544	0.0049628	0.009418
L2.	-0.004153	0.003608	-1.15	0.250	0.0112253	0.0029177
rt						
L1.	0.0497224	0.0156733	3.17	0.002	0.0190033	0.0804416
L2.	-0.013364	0.0183194	-0.73	0.466	0.0492693	0.0225413
_cons	2.614454	1.19683	2.18	0.029	0.2687103	4.960197
Financial development (fd)						
lngdp						
L1.	-1.89374	11.73006	-0.16	0.872	24.88423	21.09675
L2.	-5.487574	9.485517	-0.58	0.563	24.07885	13.1037
fd						
L1.	0.6582174	0.1502067	4.38	0.000	0.3638176	0.9526172
L2.	-0.295051	0.1490566	-1.98	0.048	0.5871967	-0.002905
trade						
L1.	-0.251523	0.2201044	-1.14	0.253	0.6829199	0.1798734
L2.	0.322235	0.2164645	1.49	0.137	0.1020277	0.7464977
rt						
L1.	-1.15586	0.9403387	-1.23	0.219	-2.99889	0.6871699
L2.	1.115185	1.099091	1.01	0.310	1.038994	3.269363
_cons	57.0899	71.80513	0.80	0.427	83.64557	197.8254
Trade (trade)						
lngdp						
L1.	5.127841	10.68568	0.48	0.631	15.81571	26.07139
L2.	-11.13895	8.640981	-1.29	0.197	28.07497	5.797059
fd						
L1.	0.0505081	0.1368332	0.37	0.712	-0.21768	0.3186963
L2.	0.0801304	0.1357855	0.59	0.555	0.1860042	0.3462651
trade						
L1.	0.5803369	0.2005075	2.89	0.004	0.1873493	0.9733244
L2.	0.0937467	0.1971918	0.48	0.634	0.2927421	0.4802355
rt						
L1.	0.8244098	0.8566164	0.96	0.336	0.8545274	2.503347
L2.	-0.855246	1.001234	-0.85	0.393	-2.81763	1.107136
_cons	58.41093	65.41202	0.89	0.372	69.79427	186.6161
Remittances (rt)						
lngdp						
L1.	3.94531	2.28913	1.72	0.085	0.5413033	8.431923
L2.	-1.769687	1.851106	-0.96	0.339	5.397789	1.858414
fd						
L1.	-0.018129	0.029313	-0.62	0.536	0.0755813	0.0393234
L2.	-0.019113	0.0290885	-0.66	0.511	-0.076125	0.0378999
trade						
L1.	0.1554874	0.0429535	3.62	0.000	0.0713	0.2396748
L2.	-0.085418	0.0422432	-2.02	0.043	0.1682134	-0.002623
rt						
L1.	1.013984	0.1835079	5.53	0.000	0.6543151	1.373653
L2.	-0.233525	0.2144885	-1.09	0.276	0.6539142	0.1868652
_cons	-17.33176	14.01283	-1.24	0.216	-44.7964	10.13288