Original Paper

Diaspora Remittances-Stock Market Development: An Inclusive Framework for Zimbabwe

Shame Mukoka[1] & Tracy Nyamusa[2]

[1] Senior Lecturer Department of Economics and Development, University of Zimbabwe, Zimbabwe

[2] Student, University of Zimbabwe, Zimbabwe

Abstract

This study sought to determine an inclusive framework for diaspora remittances growth and stock market development. Stock market plays an important role in economic development and growth by creating liquidity and allocation of resources to deficit sectors of the economy. The study used the ARDL-ECM in the determination of the relationship between the two variables, using data for the period 1990 to 2020. Eviews Version 9.0 Statistical Package was used to run the regressions. This study found that Diaspora Remittances have an insignificant negative relationship with Stock Market Development for Zimbabwe. This may have been due to Diaspora Remittances flowing through informal channels and, therefore, may have not be tapped on for Stock Market Development. The study recommend an inclusive framework that allows the government to take measures to boost investor confidence, to encourage the diaspora population to invest more in Zimbabwe through elimination of corruption, having stable political environment, formulation of policies that ensures stability in the macroeconomic environment, and having the right governance systems. Encouraging campaigns which must be run by the government and nongovernmental organizations educating Zimbabweans in the diaspora of the benefits of investing home. Allowing the government to set up formal diaspora remitting channels which have minimal charges to encourage more remittances to flow through the channels. Government must also offer favourable interest rates on bond holders so as to lure those in the diaspora to invest in the stock market.

Keywords

Stock Market Development, Diaspora Remittances, ARDL

1. Introduction

This paper seeks to determine how stock market development responds to diaspora remittances in Zimbabwe. The Zimbabwean economic plan of vision 2030 targets the transformation of the economy into an upper middle-income economy that delivers high quality standards of living the country's residents. The stock market is one of the key drivers that the Vision 2030 economic plan is based upon. The economic plan outlines that the accomplishment of Vision 2030 can be made feasible through increasing the bond and equities markets. Theory has it that financial markets' depth in the bond and equity market can be leveraged through diaspora remittances (Adenuga, 2010). This study, therefore seeks to determine an inclusive framework that promotes contribution of diaspora remittances to the stock market.

1.1 Background of the Study

Up to 1989, there were five stock exchanges in SSA, the three largest African stock exchange markets that held 3-digit numbers of listings at that time included the Johannesburg Stock Exchange (JSE) having four hundred and ten counters, NSE with two hundred and seventeen counters, and the ESE having two hundred and three counters, whereas Zimbabwe Stock Exchange was still struggling with only 65 counters by the year 2006 (World bank, 2006). Through privatization procedures, financial service diversification, lasting wealth organisation, the providing of different savings opportunities, aid for the isolated sector, and by luring imported investment, the growth of stock markets in Africa has facilitated economic development. Since their formation, most African stock markets are stagnant fronting more than a few constrictions, these may include, macroeconomic uncertainty, small number of indigenous listed companies, low level of listings, market dominance by a few large firms, low market capitalization low liquidity levels, limited domestic investor base, under-developed trading systems and leisurely reimbursement and disbursement arrangements (World bank,2012). Table 1.1 below shows a snapshot of the trends in the four market performance indicators at the Zimbabwe Stock Exchange from the year 2015 to 2020.

1.1.1 Stock Market Improvement in Zimbabwe

Table 1. Key Stock Market Improvement Pointers (2015-2021)

Market Indicator	2015	2016	2017	2018	2019	2020
Market Capitalization (billions USD)	3.073	2.779	9.58	19.42	29.77	317
SE All Share Index (points)	114.85	145	333.02	146.24	230.08	236.34
Equity Turnover (million USD)	228.63	193.91	694.87	926.31	190	620
Listed Firms	60	58	63	65	63	60

Source: Zimbabwe Stock Exchange Reports (2020)

According to the ZSE Annual Report (2016), the ZSE's Industrial Index had a strong performance in the year 2016 gaining 30.15 points more than that of 2015. The ZSE believes growth was largely attributable to the introduction of the Bond notes when investors reacted to uncertainty arising in money markets and took refuge in equities. However, market capitalization fell from $3.073 billion United States dollars (USD) to $2.779 billion (USD) in the same period and market turnover fell sharply from $228.63 million dollars to $193 million dollars, the fell in performance might have been due to the market trying to adjust to the introduction of bond notes according to the minister RBZ annual report (2020).

In the course of the first half of 2017, the Zimbabwe Stock Exchange (ZSE) experienced steady growth with the industrial and mining indices rising from 144.53 points and 58.51 points at the end of December 2016 to 195.97 points and 69.79 points on the 30th of June 2017, respectively. The second half of 2017, however, recorded exponential growth in both industrial and mining indices, leading to new respective ZSE highs of 534.13 points and 138.12 points on 14th November 2017. The growth was largely attributed to speculative behaviour by investors who flocked to the stock market seeking a haven given the limited investment options in the country (RBZ Annual report, 2017). In the second half of 2018, an online and mobile platform, Capital Trade (C-Trade) was launched and operationalized. This modernised and improved trading activity on the ZSE markets using the C-Trade platform and its attendant online and mobile application, which is utilised by portable linkages, regardless of geographical location of investors (RBZ, 2017).

Furthermore, the lowest equity turnover was recorded in the year 2019 at $190 million USD compared to the previous year which recorded the highest equity turnover at $926.31, according to the ZSE Annual report of 2019. However, the equities market closed the 2019 trading year on a high note as the benchmark index, the All-Share Index gained 57.33% to close at 230.08 points, however it failed to surpass the 2017 all share index of 333.02. The increase was primarily attributed to inflationary pressures which caused high demand for shares as investors fled to safety (ZSE Annual Report, 2019). When compared to other emerging stock marketplaces, the size stock fair is still minimal, with the largest number of listed businesses being only 65 in 2018 and the lowest number being 57. Despite a recent increase, market capitalization remains much below the internationally advised benchmark of US$500 billion annually in market capitalization to attract major foreign involvement from global emerging market funds.

1.1.2 Diaspora Remittances in Zimbabwe

Table 2. Diaspora Remittances to Zimbabwe 2015-2020

Year	2015	2016	2017	2018	2019	2020
Remittance Inflows(USD) Millions	935	779	699	619.25	921.7	1209.7

Source: Reserve Bank of Zimbabwe's Annual Statements (2020)

According to the above Table 2, there has been a significant increase in remittance inflows to Zimbabwe from US$921.7 million in the year 2019 to USD$1209.7 million in the year 2020 despite the effects of the Covid-19 pandemic according to the Reserve Bank of Zimbabwe Annual Report of 2020. Major source countries being South Africa (33%), United Kingdom (23%), United States (10%), Australia (7%) and Botswana (4%). This increasing trend shows that diaspora remittances are resilient to external shocks and can be leveraged on to develop the country's capital markets whose development have been showing a stochastic trend as indicated by the statistics on Table 1.

2. Review of Related Literature

This section reviews existing theoretical and empirical literature relating to Diaspora Remittance and Stock Market Development. The section also reviews the determinants of stock market development augmented by the past studies related to the phenomenon under study.

2.1 Theoretical Framework

This section outlines various theories with implication on the relationship between diaspora remittances and stock market development. Four main theories have been identified namely Base-Broadening theory, Pure Self-interest theory, Random Walk Model, and the theory of Altruism. These theories are critical in providing a framework for the understanding of the relationship between diaspora remittances and development of the stock exchange market, in this case being the Zimbabwe Stock Exchange.

2.1.1 Base Broadening Theory

Base Broadening theory was proposed by Merton (1987). The theory postulates that the number of investors can be increased by liberalization of financial markets and through the inclusion of investors from foreign countries would lead to increased diversification. Diversification will lead to lower investment risk and consequently lowering the required risk premium according to Osoro et al. (2020). This will lead to the increase in the availability of capital in the stock market, liquidity and stability of prices hence leading to development of the stock market (Galindo et al., 2007). If financial markets are relaxed, it leads to increased market efficiency and better allocation of resources to the most ideal users in the domestic capital markets according to Yartey and Adjasi (2008). According to the theory, the assumed factors impeding investments from foreigners include informational barriers; investors will fail to invest in stocks if they are not fully informed about the returns available in the capital markets.

Therefore, according to this theory, if both the domestic and foreign investors from the diaspora share the same information sets, they will invest equivalently (Merton, 1987). The implication of the theory is that investment of diaspora remittance at the stock market will push stock prices up due to increased demand. The theory concludes that if there is no information asymmetry, citizens living in foreign countries and even foreigners will increase their remittances towards investments and therefore lead to increased stock market development.

2.1.2 The Pure Self Theory

Furthermore, another theory explains diaspora remittances and stock market development. The theory

was proposed by Lukas and Stark (1985). According to this theory, citizens working in the diaspora usually send remittances with an ambition to inherit and to make investments for the future with the intention to return home in future and enjoy benefits from their investments. Emigrants send remittances to their country of origin with an expectation to return home and can expect to receive family gratitude for having sent remittance as explained by Vargas and Huang (2006). The main aim of remitting income from the foreign country to the domestic country is for investments that are expected to earn returns in future when the remitter eventually returns to their country of origin. Therefore, remittances act as a strategy of investment for future returns postulated Docquier and Rappoport (2005). According to the theory remittances one way or another have a positive association with the development of the stock market in the home country, however poor economic conditions may result in low volumes of remittances. The migrants' remittance can be purely due to their self-interests (Lucas and Stalk, 1985). Therefore, they remit to invest in their home country. The theory, like the Base broadening theory, also supports the notion that diaspora remittances have a positive influence on stock market development and those countries can leverage on them to develop their stock markets.

2.1.3 The Theory of Altruism

This theory was proposed by Chami et al. (2003) and holds that the diaspora remittances increase during declining economic situations in the home country. The emigrant worker's decision to remit is mainly because of the increased income needs of the relatives back home and not necessarily to improve the economy. This theory implies that motivation of the migrant worker to remit increases when the family faces income hardships and if it weren't for this reason, no remittance would have been made. Remittances are, therefore, a form of compensatory transfers which reimburse households faced by economic disruptions thus enabling them to smoothen their consumption as stated by Chami et al. (2003). As a result, the remittances have a compensatory nature and under the Pure Altruism model this means that remittances are countercyclical, that is, they increase during times when there is deterioration in economic conditions in the business cycle (Vargas-Silva, 2002; Chami et al., 2003).

Altruistic remittances can be countercyclical to gross domestic product patterns possibly because migrants tend to remit more during periods of economic disturbances for their families in the home country to satisfy their consumption needs. This indicates that remittances have no influence on stock market development and are mainly for consumption. Relating to the theory, diaspora remittances may affect stock market development indirectly as some remittances may be saved for investment. According to the reviewed theoretical literature, one can conclude that there are contradicting views from different researchers concerning the stock market development response to diaspora remittances.

2.2 The Empirical Framework

Raza and Jawaid (2014) studied the effect of remittances on stock market development in 18 Asian countries. Market capitalization was used as a proxy for stock market development for the different countries. The study covered the period 2000-2010 and time series data was analysed using ARDL cointegration and Toda and Yamamoto causality tests. The findings indicated remittances had a

significant effect on stock market development. The Toda Yamamoto causality test indicated a bi-directional causal relationship. Notably, this study is conducted beyond the context of the African stock markets. Therefore, the market's regulations and the other factors influencing foreign financial inflows in these markets are obviously different from the Zimbabwean stock market context. This creates the need to test the relationship in the context of the African stock markets such as the Zimbabwe Stock Exchange.

Zivengwa et al. (2011) explored the causal link between stock market development and economic growth in Zimbabwe using annual time series data for the period 1980 to 2008. The study evaluated the nature of the relationship between stock market development and economic growth in Zimbabwe. Stock market development was measured using two variables namely stock market size as measured by stock market capitalization as a ratio of GDP and stock market turnover as measured by the value of stocks traded as a ratio of stock market capitalisation. Turnover ratio was used as an index of comparison for market liquidity rating and level of transaction costs. It is also a measure of the value of securities transactions relative to the size of the securities market as explained by Zivengwa et al. (2011). This study however considered market capitalization only as a proxy for stock market development due to unavailability of data for the stock market turnover.

Furthermore, Osoro (2020) conducted research to determine the impact of diaspora remittances on stock market development at Nairobi stock exchange, in the study stock market development was measured using three indicators namely market capitalization, market turnover and the Nairobi All Share Price Index. This study has adopted these variables as well; however, adjustments have been made to suit the Zimbabwean situation by excluding the all-share price index and equity turnover due to unavailability of data for the variable.

Njoroge (2014) studied the effect of Diaspora remittances on stock market performance using evidence from the Nairobi Securities Exchange. Stock market performance was measured by The Nairobi Securities Exchange All Share Price Index (NASI). Inflation, interest rates and exchange rates were used as control variables; time series monthly data for seven years from February 2008-May 2015 was used. The study findings indicated that Diaspora remittance had a strong and significant positive effect on stock market performance.

Shoko and Dube (2018) studied the impact of macroeconomic variables on stock market development at the Zimbabwe Stock Exchange and the study applied the Autoregressive Distributed lag model to determine the long-run impact of macroeconomic variables on stock market development. Mukoka (2020) and Makore (2020) studied the impact of diaspora remittances on economic growth in Zimbabwe; both studies found a significant effect of diaspora remittances on economic growth. Zhou et al. (2012) also studied the consumption response to diaspora remittances, the three stage least square model was adopted and the results indicated that diaspora remittances had a significant contribution in explaining consumption in the country. None of the studies conducted determined the impact of diaspora remittances on stock market development in Zimbabwe.

15

To continue, there are other empirical studies such as that by Ngoroje (2014), Raza and Jawaid (2014) conducted on the relationship between diaspora remittances and stock market development have either focused on either long term or short-term effects of remittances on stock market development in isolation. This study adopted a lagged model such as the Autoregressive Distributed Lag model (ARDL) which is suitable to test both the long-run and short-run dynamics simultaneously which was implemented by Osoro et al. (2020) in the study of the impact of diaspora remittances on the stock market development of the Nairobi Stock Exchange that was conducted in Kenya .These studies have equally taken a restricted view that stock market development is measured using a single indicator with more emphasis on market capitalization .However according to Osoro et al. (2020) stock market development is a multi-faceted complex process that is measured using various indicators rather than a single indicator. The current study however considered only one indicator for stock market development due to unavailability of sufficient data for the other variables suggested by Osoro et al. (2020).

3. Research Methodology

To determine stock market development response to diaspora remittances, the study adopted a model from a research which was conducted by Osoro (2020). Stock Market Capitalization was used as the proxy for Stock Market Development. Annual time series data for the period 1990-2020 relating to stock market capitalization and stock market turnover were collected from ZSE Annual Reports and from the World Bank database. Annual time series data for diaspora remittances was collected from the Zimbabwe Statistical Agents website. For the study, stock market development was measured using two indicators namely stock market capitalization and stock market turnover. Since stock market development is a multi- faceted process that is measured using various indicators rather than a single indicator according to Osoro (2020). However, in this study the All-Share Price index was not considered as a proxy for stock market development since the index was introduced in the year 2018 by the ZSE so data for the index that suits this study is not available. The general empirical relationship between Diaspora Remittances and Stock Market Development is presented by the General Time Series Linear Model below.

Stock Market Capitalization = f (Diaspora Remittances, Inflation, Foreign Direct Investment). This can be explained mathematically as below:

$$SMCP_t = \beta_0 + \beta_1 REM_t + \beta_2 INFL_t + \beta_3 FDI_t + \mu_t$$

Where:

$SMCP_t =$ Stock Market Capitalization at Time t

$REM_t =$ Diaspora Remittances at Time t

$INFL_t =$ Inflation Rate at Time t

$FDI_t =$ Foreign Direct Investment at Time t

$\beta_0 =$ Intercept

$\beta_1 - \beta_3 =$ Coefficients of the Explanatory Variables

The variables in equation (1) are then transformed into their natural logarithmic form to lessen variability.

16

The log-linear form gives more efficient results and reduces sharpness of data as compared to the original functional specification according to Cameron (1994). Also, such sort of conversion in variables provides elasticity estimates in the form of coefficients which a researcher can directly and easily interpret for policy purposes (Khalid & Khan, 2017). Accordingly, the structural model in the log-linear form of all variables under examination can be stated as follows:

$$ln\ SMCP_t = \beta_0 + \beta_1 ln\ REM_t + \beta_2 ln\ INFL_t + \beta_3 ln\ FDI_t + \mu_t$$

Where:

$ln\ SMCP_t$ = Natural Log Stock Market Capitalization at Time t

$ln\ REM_t$ = Natural Log of Diaspora Remittances at Time t

$ln\ INFL_t$ = Natural Log of Inflation at Time t

$ln\ FDI_t$ = Natural Log of Foreign Direct Investment at Time t

To establish the relationship between Diaspora Remittances and Stock Market Development at Zimbabwe Stock Exchange, the study adopted the Autoregressive Distributed Lag Model. The Autoregressive Distributed Lag Model was suitable since it can be applied irrespective of the core variables being integrated of order I(0) and I(1) but not mutually integrated as explained by Pesaran et al. (2001). The model is more robust and performs better in small samples than other cointegration techniques as explained by Kalim and Shahabaz (2008). Furthermore, to determine the short-run and long term relationship between diaspora remittances and stock market development in Zimbabwe, Autoregressive Distributed Lag model was used to estimate the Error Correction Model (ECM) and, thus test for both long term relationship and short term relationship simultaneously as suggested by Dube and Shoko (2020). According to Ocharo et al. (2014), it is vital to estimate the effect of one time shocks to each of the independent variable and the dependent variable in this case stock market capitalization. It follows, therefore that, in addition to the use of the Autoregressive Distributed Lag Model estimation for long-run relationship, the study used the Error Correction Model estimated from the Autoregressive Distributed Lag model to analyse short-run dynamic relationship between Diaspora Remittances and Stock Market Development. The model is specified as below:

$$\Delta lnsmcp_t = \alpha_1 + \alpha_{rem} lnREM_{t-1} + \alpha_{exr} lnINFL_{t-1} + \alpha_{fdi} lnFDI_{t-1} + \sum_{j=1}^{p} \alpha_1 \Delta ln\ REM_{t-1}$$
$$+ \sum_{j=0}^{q} \Delta \alpha_j lnINFL_{t-j} + \sum_{k=0}^{h} \Delta \delta_k lnFDI_{t-k} + \varepsilon_t$$

Where Stock Market Capitalization is the dependent variable, whereas Diaspora Remittances, Inflation and Foreign Direct Investment are the explanatory variables and ε_t is an error correction term used to capture deviations of variables from the long-run equilibrium.

Justification of Variables

- **Stock Market Capitalization (SMCP)**

The dependent variable is one that is explained or determined by the explanatory variables in a study, in this case stock market capitalization as a proxy for stock market development is the dependent variable. The study considered stock market capitalization as a measurement for stock market development based on the reviewed literature. Stock market capitalization is preferred due to its direct relationship with the

17

firms' ability to mobilize capital and its future growth prospects as argued by Rajan and Zangles (2003). Moreover, market capitalization can capture the high frequency changes in the stock market development. The current study will consider market capitalization as the proxy for stock market development at Zimbabwe Stock Exchange based on the empirical literature. Also due to unavailability of sufficient data for other stock market development indicators stock market capitalization is therefore preferred.

- **Diaspora Remittances (REM)**

The variable of concern in this study is diaspora remittances (REM), which represents the level of remittance inflows to Zimbabwe expressed as a percentage of GDP. Empirical studies have reported ambiguous relationships between diaspora remittance inflows and stock market development. This study sought to determine the impact of diaspora remittances on stock market development using Zimbabwe as the case study since there is still limited literature in the country concerning how diaspora remittances can be leveraged for development.

- **Inflation Rate (INFL)**

According to a study carried out by Shoko and Dube (2020), inflation was found to have a positive significant relationship with stock market development. Considering that outcome, inflation have been considered as one of the control variables in the study. Various studies such as that conducted by Njoroge (2015) found that inflation in short-run has positive relationship with stock market development. This is explained by the fact that foreign investors will tend invest more during inflationary periods to protect the value of their money. However, Barsky (2009) explains that in the long term, this is due to the investors' risk prevalence. The foreign investors will demand a risk premium for expected poor economic performance while local investors maintain more precautionary savings and avoid risky assets. This will result in the stock returns to reduce significantly.

- **Foreign Direct Investment (FDI)**

Foreign direct investment refers is an important determinant of stock market development according to Tsaurai (2018). The study considered foreign direct investment as a control variable based on existing literature that explains that if a country receives more foreign direct investment, it is more likely to develop its stock market through increased investment capital and number of participants at the stock exchange market.

According to Gujarati (2011), any violation of the assumptions of Classical Linear Regression Model (CLRM) will not only produce parameter estimates that are not Best Linear and Unbiased Estimates (BLUE) but also inefficient and inconsistent parameter estimates. The study conducted the following tests to ensure non-violation of the assumption of the Classical Linear Regression Model: Normality test, Correlation tests, Stationarity test, and Cointegration test. The research further conducted the Heteroskedasticity test, Multicollinearity test and group Normality test to determine if the model used in the study is well specified.

18

4. Results of the Study

4.1 Normality Test

Table 3. Normality Test Results

Variables	LNSMCP	LNREM	LNFDI	LNINFL
Mean	8.378121	19.32038	-0.281544	3.891995
Median	8.213300	18.60666	0.082782	3.148453
Maximum	12.669443	21.47165	1.937309	19.25793
Minimum	6.866933	17.11135	-3.432943	-1.609438
Standard dev.	1.154398	1.519480	1.255869	3.784004
Skewness	1.845506	0.347005	-0.904107	2.293878
Kurtosis	7.450576	1.501792	3.234991	10.13727
Jarque Bera	43.18196	3.521444	4.294612	92.98473
Probability	0.000000	0.171921	0.116798	0.000000
Sum	259.7217	598.9319	-8.727864	120.6519
Sum square dev.	39.97901	69.26461	47.31617	429.5607
Observations	**31**	**31**	**31**	**31**

Source: E-Views Statistical Packages Version 9.0

Table 3 displays the raw data for the four variables used in the study namely Stock Market Capitalization (SMCP), Diaspora Remittances (REM), Foreign Direct Investment (FDI) and Inflation (INFL). All four variables coefficients are positively skewed, with the skewness coefficients all above zero. The Jarque-Bera test assumes that if a variable is normally distributed the probability values should be greater than 0.05. Therefore, from the test's results REM and FDI are normally distributed with a probability value of 0.1719 and 0.1168 respectively. The other two variables SMCP and INFL are not normally distributed as indicated by a probability value of zeros.

4.2 Correlation Test

Table 4. Karl Pearson Correlation Matrix Test Results

	LNSMCP	LNREM	LNFDI	LNINFL
LNSMCP	1.000000	0.526477	0.063251	0.107380
LNREM	0.526477	1.000000	0.451180	-0.247701
LNFDI	0.063251	0.451180	1.000000	-0.142425
LNINFL	0.107380	-0.247701	-0.142425	1.000000

Source: E-Views Statistical Packages Version 9.0

The results also indicate that there exists a weak positive and negative association between the variables of the study. The results generally suggests that there exists a linear association between the study variables running from positive to negative. The following section presents the unit root tests results which are a prerequisite when handling time series data. Regressions carried out on non-stationary data result in spurious results as explained by Gujarati (2011).

4.3 Unit Root Test

Table 5. Philips- Perron Unit Root Test Results

Variable	PP t-statistic	P-value	Critical 1%	Critical 5%	Critical 10%	Decision
LNSMCP	-6.722519	0.0000	-3.679322	-2.967767	-2.622989	I (1)
LNREM	-5.489725	0.0001	-3.679322	-2.967767	-2.622989	I (1)
LNINFL	-8.305718	0.0000	-3.679322	-2.967767	-2.622989	I (1)
LNFDI	-7.432704	0.0000	-3.679322	-2.967767	-2.622989	I (1)

Source: E-Views Statistical Packages Version 9.0

The results show that all variables were not stationary at levels. However, the variables' data became stationary after first difference. This has serious implications on the regression model that the study must adopt. If the variables' data are all stationary at levels, ordinary least squares (OLS) is used, and when variables data are stationary at a level which is not of order zero, as is the case for this study, Autoregressive Distributed Lag Model (ARDL) becomes plausible for the study.

4.4 Cointegration Test

Table 6. Cointegration Test Results

Significance level	I0	I1
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

F-Statistic 8.415509

Source: E-Views Statistical Packages Version 9.0

The results for the study confirm the existence of cointegration amongst variables, as supported by an F-statistic value of 8.415509, which is above the upper bound critical value at 5% levels. These results are enough to motivate study to adopt the ARDL for the long-run results, and an unrestricted Error Correction Model (ECM) to determine the short-run relationships.

4.5 ARDL-ECModel

Table 7. ARDL-ECM Model Test Results

Dependent Variable: Stock Market Capitalization (LNSMCP)

Variable	Short-Run Co-efficient	Probability	Decision
Ln REM	-0.0828	0.016	Significant
Ln INFL	0.2974	0.011	Significant
Ln FDI	0.0165	0.723	Insignificant
ECT	-0.7203	0.000	Significant
Variable	**Long-Run Co-efficient**	**Probability**	**Decision**
Ln REM	0.0281	0.043	Significant
Ln INFL	0.1214	0.017	Significant
Ln FDI	0.0143	0.010	Significant

Source: E-Views Statistical Packages Version 9.0

Pesaran et al. (2001) explained that the coefficient of the Error Correction Term (ECT) indicates the speed at which the model adjusts to long-run equilibrium while the sign of the ECT indicates the direction of adjustment to equilibrium. According to Shahbaz et al. (2013) the coefficient of the error correction term should be negative and significant. According to Bannerjee et al. (1998) a highly significant negative coefficient of the error correction term is an indication of a stable long-run equilibrium of the model. The results presented on the table 4.5 above shows a speed of adjustment of 72% which is plausible for policy responsiveness. For the ECM, the diaspora remittances have a significant negative coefficient of -0.0828 with a p-value of 0.016. This suggests that a 1% increase in diaspora remittances result in a decrease in stock market capitalisation growth by 8%. Again, for the ARDL, the diaspora remittances recorded a significant and positive coefficient of 0.0281 with a p-value of 0.043. This suggests that a 1% increase in diaspora remittances result in 3% increase in stock market capitalisation. All things being equal, the coefficient could have been higher than 3% given the theoretical underpinnings regarding the significance of diaspora remittances in economic growth. The results could have been due to that most diaspora remittances are flowing through informal and illegal channels to Zimbabwe resulting in the government failing to tap the benefits that comes with the flows. The high coefficient of the error correct term (ECT) motivates policy makers to come up with policies that promote growth of diaspora remittances so as to enhance stock market capitalisation for Zimbabwe.

4.6 Stability Tests

Table 8. Group Normality Tests Results

Jarque- Bera	Skewness	Kurtosis
3.3411	0.542850	4.259654
0.188095		

Source: E-Views Statistical Packages Version 9.0

According to the Jarque-Bera Group Normality test, there exists a normal distribution of the error terms as indicated by the P-Value of 0.188095 which is above the 0.05 significance level.

Table 9. Heteroskedasticity Test Results

F-statistic	0.529213	Prob. E (20,8)	0.8813
Obs*R-squared	16.51632	Prob. Chi-Square (20)	0.6841
Scaled explained SS	16.93224	Prob. Chi-square (20)	0.6574

Source: E-Views Statistical Packages Version 9.0

The results show the Prob. Chi-Square values greater than the significance level of 0.05. The results suggest that the error terms are homoscedastic.

Table 10. Multicollinearity Test Results

Variables	Co-efficient Variance	Uncentered VIF	Centred VIF
LNSMCP1(-1)	0.049539	1.377938	1.365109
LNREM1	0.185217	1.243721	1.189314
LNFDI1	0.027657	1.148214	1.136280
LNFDI1(-1)	0.033251	1.456401	1.449583
LNINFL1	0.002104	1.029883	1.029017
C	0.031796	1.092289	NA

Source: E-Views Statistical Packages Version 9.0

According to Field (2009), VIF values more than 10 or a tolerance statistic less than 0.1 are indicators of the presence of Multicollinearity. The table above shows the variance inflation factors test for Multicollinearity and it shows that there is no Multicollinearity since all the Variance inflation factors are all below 10 and the tolerance statistic is less than 0.1. Therefore, the model used in the study did not suffer from the effects of Multicollinearity and produced reliable results. It follows, therefore, that the model used for this study is well specified.

5. Conclusion and Policy Recommendations

Stock market plays an important role in economic development and growth by creating liquidity and allocation of resources to deficit sectors of the economy. This study found that Diaspora Remittances have a negative and insignificant relationship with Stock Market Development in the short-run and positive and significant relationship in the long-run. This study, therefore, make recommendations based on the following proposed Diaspora Remittances-Stock Market Development Inclusive Framework;
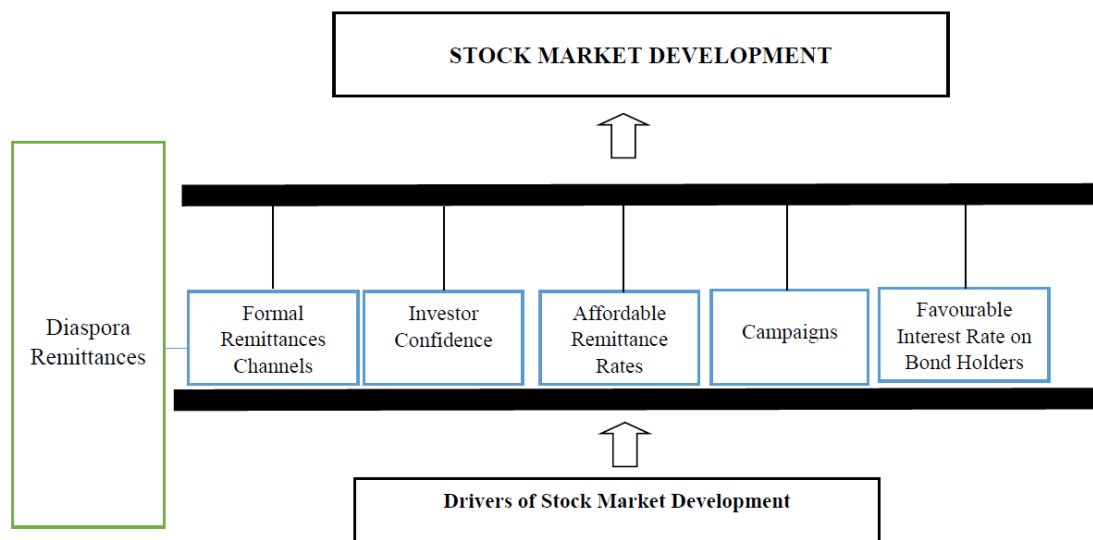
Figure 1. Diaspora Remittances-Stock Market Development Inclusive Framework (Self, 2022)

Explanation of the Framework

- The government must take measures to boost investor confidence by encouraging the diaspora population to invest more in Zimbabwe. This can be done by mitigating cases of corruption, having stable political environment, formulation of policies that ensures macroeconomic environment stability, and having the right governance systems.

- The government and nongovernmental organizations must educate Zimbabweans in diaspora the importance of investing home.

- The government must set up affordable formal diaspora remitting channels to encourage more remittances to flow through formal channels to leverage on the resource for stock market development.

- The government must set up a board charged with the responsibility of encouraging migrants to invest back home, and ensuring that citizens are encouraged to remit their funds back home at affordable rates.

- The government must offer favourable interest on bond holders so as to lure those in the diaspora to invest their money either in the equity and or bond markets.

References

Adenuga, A. O. (2010). Stock market development indicators and economic growth in Nigeria (1990-2009*): Empirical investigations. Economic and Financial Review*, *48*(1), 2.

Bakewell, O. (2008). In Search of the Diasporas within Africa A la recherché des diasporas à l'intérieur de l'Afrique. *African diaspora*, *1*(1-2), 5-27.

Banerjee, A., Dolado, J., & Mestre, R. (1998). Error-correction mechanism tests for cointegration in a single-equation framework. *Journal of time series analysis*, *19*(3), 267-283.

Bayar, Y. (2016). Macroeconomic Determinants of Stock Market Development: Evidence from Borsa Istanbul. *Financial studies*, *20*(1).

Bodomo, A. (2013). African diaspora remittances are better than foreign aid funds. *World Economics*.

Broadbent, S. R., & Kendall, D. G. (1953). The Random Walk of Trichostrongylus Retortaeformis. *Biometrics*, *9*(4), 460-466.

Brooks, C. (2008). RATS Handbook to accompany introductory econometrics for finance. *Cambridge Books*.

Cameron, M. W. (1994). *Efficiency and Fairness on the Road: Strategies for Unsnarling Traffic in Southern California* (No. Transportation Rept, 1994).

Chami, M. R., Jahjah, M. S., & Fullenkamp, C. (2003). Are immigrant remittance flows a source of capital for development? *International Monetary Fund Economics.*

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association*, *74*(366a), 427-431.

Engle, R., & Granger, C. (1987). *Long-run economic relationships: Readings in cointegration*. Oxford University Press. *Models in finance*, 389-400.

Fama, E. F. (1975). Multiperiod consumption-investment decisions. *Stochastic optimization*.

Field, A. (2009). *Discopering statistics using SPSS* (3rd ed.).

Galindo, A., Schiantarelli, F., & Weiss, A. (2007). Does financial liberalization improve the allocation of investment? Micro-evidence from developing countries. *Journal of development Economics*, *83*(2), 562-587.

Greene, W. H. (2003). *Econometric analysis*. Pearson Education India.

Gujarati, D. N. (2011). *Econometrics by example* (Vol. 1). New York: Palgrave Macmillan.

Hearn, B., & Piesse, J. (2010). Barriers to the Development of Small Stock Markets: A Case Study of Swaziland and Mozambique. *Journal of International Development*, *22*, 1018- 1037.

Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica: journal of the Econometric Society*, 1551-1580.

Khalid, W., & Khan, S. (2017). Effects of macroeconomic variables on the stock market volatility: the Pakistan experience. *Global Journal of Management and Business Research*.

Lucas, R. E., & Stark, O. (1985). Motivations to remit: Evidence from Botswana. *Journal of political Economy*, *93*(5), 901-918.

24

Magweva, R., & Mashamba, T. (2016). Stock market development and economic growth: An empirical analysis of Zimbabwe (1989-2014). *Financial Assets and Investing*, *7*(3), 20-36.

Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information.

Mohapatra, S., & Ratha, D. (2011). Migrant remittances in Africa: An overview. *Remittance markets in Africa*, 3-70.

Mukoka, S. (2020). Diaspora Remittances and Economic Growth in Zimbabwe. *Diaspora*, *1*(4).

Munanga, M. D. (2020). *The Impact of Diaspora Remittances on Economic Growth: Evidence from Zimbabwe* (Master's thesis, Faculty of Commerce).

Njoroge, W. (2015). Effect of diaspora remittance on stock market performance: Evidence from Nairobi Securities Exchange. *International Journal of Current Aspects in Finance (IJCAF)*, *2*(2), 1-11.

Ocharo, K. N., Wawire, N. W., Ng'ang'a, T. K., & Kosimbei, G. (2014). Private capital inflows and economic growth in Kenya.

Osoro, C. (2020). Diaspora Remittances and Stock Market Development at Nairobi Securities.

Oziengbe, S., & Ovuefyen, J. (2013). Foreign Financial Resources Inflow and Stock Market Development; Evidence from Nigeria and Ghana. *The Research Journal of Finance and Accounting*, *4*(9), 51-63.

Paramati, S. R., & Gupta, R. (2013). An empirical relationship between exchange rates, interest rates and stock returns. *Interest Rates and Stock Returns (October 4, 2013)*.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American statistical Association*, *94*(446), 621-634.

Rajan, R. G., & Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth century. *Journal of financial economics*, *69*(1), 5-50.

Rapoport, H., & Docquier, F. (2006). The economics of migrants' remittances. *Handbook of the economics of giving, altruism, and reciprocity*, *2*, 1135-1198.

Sam, C. Y., McNown, R., & Goh, S. K. (2019). An augmented autoregressive distributed lag bounds test for cointegration. *Economic Modelling*, *80*, 130-141.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Pearson education.

Shahbaz, M. (2013). Linkages between inflation, economic growth and terrorism in Pakistan. *Economic modelling*, *32*, 496-506.

Shahbaz, M., Hooi Lean, H., & Kalim, R. (2013). The impact of foreign direct investment on stock market development: Evidence from Pakistan. *Economic research-Ekonomska istraživanja*, *26*(1), 17-32.

Tsaurai, K. (2014). Stock market and foreign direct investment in Zimbabwe.

25

Tsaurai, K. (2018). What are the determinants of stock market development in emerging markets? *Academy of Accounting and Financial Studies Journal*, *22*(2), 1-11.

Vargas-Silva, C. (2008). Are remittances manna from heaven? A look at the business cycle properties of remittances. *The North American Journal of Economics and Finance*, *19*(3), 290-303.

White, H. (1980). A Heteroskedasticity-consistent covariance matrix estimator and a direct test for Heteroskedasticity. *Econometrica: journal of the Econometric Society*, 817-838.

Yartey, C. A., & Adjasi, C. K. (2007). Stock market development in Sub-Saharan Africa: Critical issues and challenges. *Available at SSRN 1012992*.

Zimbabwe Stock Exchange Annual Reports (2015-2020).

Zivengwa, T., Mashika, J., Bokosi, F. K., & Makova, T. (2011). Stock market development and economic growth in Zimbabwe. *International Journal of economics and Finance*, *3*(5), 140-150.