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The Impact of External Debt On Foreign Direct Investment in Zimbabwe

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ABSTRACT

Using the framework of capital market and fitness theory, the study assessed the impact of external debt on foreign direct investment in Zimbabwe for the period 1980 to 2016. An Autoregressive Distributed Lag estimation technique was employed on annual data for the period 1980 to 2016 as it suits well small sample size. The results revealed that there is both a short-run and long run relationship between external debt and foreign direct investment. The findings of the study also revealed that current external debt has a positive impact on foreign direct investment inflows. The study concluded that the existence of debt overhang, as a consequence of the accumulation of past external debt stocks, negatively impact on foreign direct investment inflows. The study recommended that the government of Zimbabwe should intensively invest in economic growth-enhancing activities in the agricultural sector, infrastructure sector, education sector, healthcare sector, and technology, and foster a politically conducive environment.

Keywords: External Debt, Foreign Direct Investments, Autoregressive Distributed Lag, Causality.
JEL Code: C1, C5, H0, H5, H6.

1.0 Introduction

The prominence of globalization and push by world economies for trade integration in the recent years have seen FDI becoming a central development contrivance for many developing countries, particularly for SADC economies (Mugowo, 2017).

The growing importance of FDI by multinational corporations (MNCs) as a development catalyst surged to extraordinary levels in the last three decades (Wan Hooi, 2010). There are several theories that attempt to explain the concept and rationale behind foreign direct investment (FDI) decisions by multinational enterprises. Two of the most influential and widely accepted theories are the Internalization Theory and the Eclectic Paradigm Theory, also known as the ownership, location, internalization (OLI) framework. These theories provide important insights into why firms choose to engage in FDI rather than alternative cross-border business modes like exporting or licensing.

The Internalization Theory was developed in the 1970s-80s by scholars such as Coase (1937), Buckley and Casson (1976). It argues that firms undertake FDI to internalize transactions rather than conducting business at 'arm's length' through external contracts with foreign firms. By setting up foreign subsidiaries

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through direct investment, firms are able to bring activities within the firm's boundaries and thereby minimize transaction costs associated with coordination, monitoring, and contractual hazards when operating across national borders (Coase, 1937). This allows the firm to maintain tight control over proprietary firm-specific advantages like proprietary technology, management skills, brands and trademarks (Buckley and Casson, 1976). Internalization through FDI also helps mitigate risks arising from uncertainty in foreign markets by bringing operations under the firm's direct control and management.

John Dunning's Eclectic Paradigm Theory provides a more comprehensive explanation for FDI. It states that for a firm to engage in FDI, it must possess three key attributes - Ownership advantages, Location advantages, and Internalization advantages. Ownership advantages refer to firm-specific competitive advantages like technologies, management skills, or brands that allow the firm to compete effectively abroad. Location advantages relate to attributes of the host country like market size, input costs, infrastructure that make it attractive for production or distribution. Internalization in this context means that the firm must internalize, or bring within firm boundaries through direct investment, the ownership and location advantages rather than use non-equity modes (Dunning, 1977, 1988).

Both theories provide rational economic bases for why firms choose to directly invest abroad rather than use alternatives like licensing, exporting or contracting. They highlight that FDI enables firms to capitalize on firm-specific competitive advantages, internalize transactions to minimize coordination costs across borders, and manage activities under their direct control when exploiting location opportunities. As such, the Internalization theory and OLI framework have influenced research studies and thinking around MNE strategies, and remain important foundational theories for understanding the rationale for cross-border investment decisions.

Among the developmental challenges facing the economy of Zimbabwe, indebtedness ranks the most and demands resolution. External debt refers to the country finances borrowed from foreign lenders that include international institutions, commercial banks and governments that carry an interest and future repayment (Enisan, 2017).

External debt is important to a country facing a resource gap; thus, it can lead to an increase in the amount of goods and services produced by a country by providing the country with the financial resources it needs to invest in infrastructure, education, and healthcare. These investments can help to improve the productivity of the economy and lead to an increase in the amount of goods and services produced. External debt can also help to stabilize the country's currency. If the country has a large foreign currency reserve, it can use this reserve to defend its currency against speculative attacks. This can help to keep the exchange rate stable, which can make it easier for businesses to import and export goods and services (Umaru, Hamidu and Musa (2013) citing Likita, 2000).

Zimbabwe is in a debt crisis prompting a lot of political, academic and economic debate on whether external debt is important for the development of the country or not. United Nations Development Programme (UNDP) (2017) opined that Zimbabwe has a huge and unsustainable external debt that impedes the growth trajectory and recovery of the economy.

The debt strategy enshrined in the Zimbabwe Accelerated Arrears, Debt and Development Strategy (ZAADDS) (2017) states that debt overhang has become a serious developmental constraint for the country since the turn of the century.

External debt has, in most instances, been used to ascertain the level of foreign direct investment in developing nations (Asiamah, Ofori and Afful, 2019). Panizza (2009) and Jones (2011) have examined external debt for two reasons. The first argument was that while external borrowing increases the access to the resources of a country, domestic borrowing only allows for resource transfer within the country. Hence, the "transfer" problem is only generated by the external debt (Keynes, 1929). Secondly, Panizza and Presbitero (2013) posits that developing countries central banks cannot print hard currency to use to pay up external debts as this makes them more vulnerable to external borrowing triggering debt crisis in the country.

However, Jones (2011) questioned the extent to which debt inherited at independence and that contracted post the year 1980 has contributed to the social and economic wellbeing of Zimbabweans. The Zimbabwean government has been using external debt to fund its industrial and agricultural sectors. These two sectors are of uttermost significance since they are the major sources of foreign currency used to service the external debt (Saungweme and Mufandaedza 2013).

Increasing external debt has serious macroeconomic consequences which can lead to poor social and economic status of a country (Kasidi and Said, 2013).

The economy is moving towards a new era that encompasses servicing of external debt and attracting foreign investments through the mantra "Zimbabwe is open for business", with the aim to become a middle-income economy by 2030. Consequently, it is against this backdrop that the study assessed the impact of external debt on foreign direct investment in Zimbabwe. This paper is subdivided as follows: section 2 reviews the literature; section 3 presents the conceptual framework for the study; section 4 outlines the econometric methodology that was employed; section 5 analyses, interprets and discusses the findings of the study. Finally, section 6 presents the conclusions and recommendations of the study.

2.0 Literature Review

The relationship between FDI and external debt is unclear, despite research suggesting that the external debt constraint affects the FDI-induced growth effect (Serfaty, 2021). High indebtedness can prevent economies from benefiting from FDI-induced growth as they work to reduce their debt levels (Gossel, 2018). Previous studies findings regarding the connection between foreign direct investment and external debt were contradictory. While some empirical studies have found a positive correlation between FDI and external debt (Melnyk *et al.*, 2014; Zaman and Arslan, 2014; Suleiman and Azeez, 2017; Osinubi and Amaghionyeodiwe, 2016), other studies have found a negative correlation (Asiamah, Ofori, and Afful, 2019; Waweru, 2018; Erdal and Basheer, 2019). Asiamah, Ofori, and Afful, (2019) examined the determinants of FDI in Ghana between the period of 1990 and 2015 using the Johansen's approach to cointegration. The findings of the study revealed that there is a cointegrating relationship between FDI and external debt. They found that inflation rate, external debt exchange rate and interest rate negatively affect FDI while in Ghana while gross domestic product, electricity production and telephone usage positively influence it.

Tanna, Li and De Vita. (2018) developed a model that formalizes a mechanism to allow for the influence of external debt in the transmission of FDI-generated externalities and conduct threshold regressions to test the existence of a debt contingency effect that limits the positive impact of inward FDI on growth. With the use of annual as well as 5-year-averaged data for 39 developing countries over the period 1984-2010, the study found that FDI-induced growth is dependent on the external debt constraint. The study found that beyond a certain threshold, high indebtedness constrains economies from reaping growth benefits from FDI as they seek to reduce their debt levels.

Moga, Helian and Igor (2016) investigated the impact of external debt and foreign direct investment on economic growth in Tanzania using time series data for the period 1971 to 2011. The study revealed that, in the long run, external debt promote economic growth in Tanzania. However, foreign direct investment exhibits a negative impact on economic growth. In the short-run, the study findings indicated that there is non-directional causality either between external debts and economic growth or between foreign direct investment, inflation and economic growth.

3.0 Data and Econometric Methodology

The current study employed Autoregressive Distributed Lagged (ARDL) Bounds test procedure on annual data collected from 1980 to 2016 to assess the impact of external debt on FDI.

3.1 Model Specification

The general model for the impact of external debt on FDI is expressed as:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots + \beta_n X_{ni} + \varepsilon_i \quad \text{.....Eq. (01)}$$

The notation X_{ni} indicates the values of the nth independent variable for the case i. The beta terms are unknown parameters and the ε_i terms are independent random variables that are normally distributed with mean zero and constant variance, δ^2.

Based on the capital market and fitness theories by Wilhelms and Witter (1998), the study adopted the following theoretical model:

$$FDI = f(capital\ market\ theory, fitnessness\ theory) \quad \text{.....Eq. (02)}$$

This model was further simplified into the following constructs:

$$FDI = f(market\ fitness, government\ fitness) \quad \text{.....Eq. (03)}$$

Where government stability points, and market fitness by GDP, population size, trade openness, inflation rate and external debt, determine government fitness construct.

Based on the above theoretical model, the model was specifiied as follows:

$$lnFDI_t = \beta_0 + \beta_1 lnEXD_t + \beta_2 lnGDP_t + \beta_3 lnPOP_t + \beta_4 lnTRADE_t + \beta_5 lnGS_t + \beta_6 lnINF_t + \mu_t \quad \text{..... Eq. (04)}$$

Where *EXD* is the external debt; *GDP* is the gross domestic product; *POP* is the total population, *TRADE* is the trade openness; *GS* is the government stability; *INF* is the inflation rate; *t* is time period and μ is the error term. *Ln* represent the natural log of the variables. The natural logarithm in this current study transformed the skewed data distributions into more symmetric forms. Hence, this stabilized the variance, reduced the impact of extreme values, and enabled the application of statistical techniques that assume normality, such as the log-linear regression.

In order to analyze the association amongst the variables empirically, the study employed the autoregressive distributed lag model (ARDL) technique. There are three or more reasons why technique was chosen to estimate the model. Firstly, it helps to estimate long-run association between the variables, once the optimal lag is identified. This is however, not the case with the other estimation techniques, for example, the Johansen Cointegration Test developed by Johansen (1990). This makes the ARDL procedure very simple. Secondly, it can also estimate the association between variables regardless of whether the regressors in the model are purely I(0), purely I(1) or mutually cointegrated. The ARDL model is chosen based on its ability to correct endogeneity and heteroskedasticity if appropriate lags are used. The technique further enables us to

estimate the short run and long run dynamics of the econometric model estimated. It also accommodates small sample size.

According to Pesaran *et al.* (2001), the ARDL technique models the long-run equation [04] as a general vector autoregressive [VAR] model of order p in zi

$z_i = \beta_0 + \alpha_i + \sum_{i=1}^{p} \emptyset_i z_{i=1} + \mu_i, \quad i = 1, 2, 3, 4, \dots, T$ ..... Eq. (05)

Where β_0 represents (k + 1) – a vector of intercept (drift), α represents (k + 1) – a vector of trend coefficients

Pesaran *et al.* further derived the following vector error correction model (VECM):

$\Delta z_i = \beta_0 + \alpha_i + \pi z_{i=1} + \sum_{i=1}^{p} r_i \Delta z_{i-1} + \mu_i$ .....Eq. (06)

z_t is the vector of variables Y_t and X_t respectively; Y_t is an I (1) dependent variable defined as $\ln Y_t$ (*in this case, lnFDI*); X_t (*TR, ED, INF, GDP, POP, GS, FR, ER*) a vector matrix of I (0) and I (1); r_i and π represents the coefficients that are related to the short-run dynamics of the model's convergence to equilibrium.

The conditional Vector Error Correction Model becomes:

$\Delta y_t = \beta_{y0} + \alpha_t + \theta_{yy} y_{t-1} + \theta_{xx} x_{t-1} + \sum_{i=1}^{p-1} \lambda_i \Delta y_{t-1} + \sum_{i=1}^{p-1} \theta \Delta x_{t-1} + \mu_{yt}$ .....Eq. (07)

Equation 07 above implies that:

.....Eq. (08)

Where $\boldsymbol{\theta_i}$ are multipliers; $\boldsymbol{\beta_0}$ is the drift, **p** and **q** are the optimal lag length representing the order of integration, m is the number of lags on independent variables, k is the number of lags on the dependent variable, n is the order of differencing and μ_t t is the stochastic term.

$$\Delta lnFDI_t = \beta_0 + \theta_1 lnFDI_{t-1} + \theta_2 lnEXD_{t-1} + \theta_3 lnGDP_{t-1} + \theta_4 lnGS_{t-1} + \theta_5 lnINF_{t-1} + \theta_6 lnTRADE_{t-1} + \sum_{i=1}^{p} \beta_{1i} \Delta lnFDI_{t-i} + \sum_{j=1}^{q} \beta_{2j} \Delta lnEXD_{t-j} + \sum_{k=1}^{q} \beta_{3k} \Delta lnGDP_{t-k} + \sum_{l=1}^{q} \beta_{4l} \Delta lnGS_{t-l} + \sum_{m=1}^{q} \beta_{5m} \Delta lnINF_{t-m} + \sum_{n=1}^{q} \beta_{6n} \Delta lnTRADE_{t-n} + \mu_t$$

3.2 ARDL Bounds Testing Procedure

The ARDL Bounds test procedure basically involves three steps. First, we estimate equation (8) using the ordinary least squares method (OLS).

Given the hypothesis:

$H_0: \theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = \theta_6 = 0$

$H_1: \theta_2 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq \theta_5 \neq \theta_6 \neq 0$

The test which normalizes FDI is denoted by

$F_{FDI}(FDI|EXD, TRADE, INF, GDP, POP, GS)$

Two asymptotic critical value bounds provide a test for cointegration when the independent variables are I(d) (where 0 ≤ d ≤1): a lower value assuming the regressors are I(0) and an upper value assuming purely I(1) regressors.

If the F-statistic is above the upper critical value, the null hypothesis of no long-run relationship is rejected regardless of the orders of integration for the time series. On the other hand, if the F-statistic falls below the lower critical value, we fail to reject null hypothesis and conclude that there is no long-run relationship among the series. Lastly, if the F-statistic falls between the lower and the upper critical values, the result is inconclusive.

In the next stage, once cointegration exists, the conditional ARDL $(p, q^1, q^1, q^1, q^1, q^1)$ (the long-run model) for FDI can be estimated as:

$$lnFDI_i = \beta_0 + \sum_{i=1}^{P} \theta_1 lnFDI_{t-1} + \sum_{i=0}^{q^1} \theta_2 lnEXD_{t-1} + \sum_{i=0}^{q^2} \theta_3 lnGDP_{t-1} + \sum_{i=0}^{q^3} \theta_4 lnGS_{t-l} + \sum_{i=0}^{q^4} \theta_5 lnINF_{t-m} + \sum_{i=1}^{q^5} \theta_6 lnTRADE_{t-n} + \mu_t$$

.....Eq. (09)

This involves selecting the order of the ARDL model $(p, q^1, q^1, q^1, q^1, q^1)$ using AIC criterion (Akaike, 1973).

Finally, Error Correction Model (ECM) is estimated to capture the short-run dynamics of the system.

The ECM) is written as follows:

$$\Delta lnFDI_t = \gamma + \sum_{i=1}^{p} \beta_{1i} \Delta lnFDI_{t-i} + \sum_{j=1}^{q} \beta_{2j} \Delta lnEXD_{t-j} + \sum_{k=1}^{q} \beta_{3k} \Delta lnGDP_{t-k} + \sum_{l=1}^{q} \beta_{4l} \Delta lnGS_{t-l} + \sum_{m=1}^{q} \beta_{5m} \Delta lnINF_{t-m} + \sum_{n=1}^{q} \beta_{6n} \Delta lnTRADE_{t-n} + \rho ECM_{t-1} + \mu_t$$

.....Eq. (10)

From equation (10), $\boldsymbol{\beta_i}$ represent the short-run dynamics coefficients of the model's convergence to equilibrium. $\boldsymbol{ECM_{t-l}}$ is the error correction term. **γ** is the intercept term or constant in the equation, representing the baseline or average value of the dependent variable when all independent variables are zero. The coefficient of the error correction term, **ρ** measures the speed of adjustment towards equilibrium in the event of shocks in the system.

3.3 Justification of variables chosen

3.3.1 Foreign Direct Investment (FDI)

FDI refers to the net inflow of capital into a foreign country. The study uses the ratio of FDI to GDP as a measure of FDI, which adjusts for the size of the host country's economy.

3.3.2 External Debt

Higher external debt may discourage FDI inflows due to anticipated higher future operating costs. The study considers both the current ratio of external debt to GDP and lagged external debt to capture potential conflicting effects. The study expects negative relationship with the dependent variable.

3.3.3 Inflation Rate

Low inflation rates indicate economic stability and increase the return on FDI. Lower inflation reduces the cost of capital and nominal interest rates. The study expects an inverse relationship between FDI growth and inflation.

3.3.4 Gross Domestic Product (GDP)

GDP represents the total value added by producers in the economy. It is the proxy for market attractiveness and is expected to be positively correlated with FDI.

3.3.5 Government Stability

Political stability and absence of terrorism/violence index is the indicator of government stability. Stable political environments attract foreign investors by providing a sense of security and reducing country risks. The study expects a positive relationship between government stability and foreign investment.

3.3.6 Total Population

The size of the market, indicated by the total population, is important for foreign investors. Larger markets offer increased input supply, output demand, and economies of scale. The study anticipates a positive relationship between total population and FDI.

3.3.7 Trade Openness

Trade plays a significant role in influencing foreign investment. Countries with higher trade-orientation scores and open economies are more likely to attract FDI. The study uses the sum of imports and exports as a percentage of GDP to measure trade openness. A positive relationship between trade openness and FDI is expected.

3.4 Data type and Sources

The study utilized annual time series data from 1980-2016 obtained from World Bank's World Development Indicators, IMF, International Financial Statistics, ZimStats, and Government publications.

4. Interpretation and discussion of results

This section presents descriptive statistics and the results of diagnostics checks done to ensure the model reliability and validity. It also presents thorough data analysis and discussion of the results of the study.

4.1 Descriptive Statistics

The results in Table A.1 (see appendices) indicate that EXD had a mean value of 1.73 and a median of 1.78. The standard deviation of EXD is 0.22, which is lower than the mean, indicating less variation in the data. The maximum value of EXD was 2.16 whilst the minimum was 1.08, with a kurtosis of 4.49, which is the measure of peakedness of the data. The measure of skewness for EXD was -1.02 meaning that the variable is skewed to the left and the left tail is long relative to the right tail. As for FDI, the results show that it has a mean value of -0.43 and a median of -0.35. The value of standard deviation of FDI is 0.74, is higher than the mean manifesting a significant variation in the data. FDI in its logged terms has a maximum value of 0.84 and the minimum value of -2.0. In terms of skewness, FDI has a negative value of 0.37 thereby confirming that its data is skewed to the left.

Overall, Since the Jarque-Bera p-value for all the variables considered in the model except INF and EXD are greater than 0.05, this shows that majority of the variables are normally distributed.

4.2 Results of Diagnostic Tests

4.2.1 Multicollinearity Test Results

The results from the pairwise correlation matrix signify that there is no existence of multicollinearity between the exogenous variables. The pairwise correlation between all variables are less than 0.8 (see Table A.2 on appendices) and as such we adopted the 'do nothing approach' as prescribed by Gujarati (2004).

4.2.2 Results of the Unit Root Test

The unit root status of all variable was confirmed by Augmented Dickey-Fuller (ADF) test. This was done to ensure that the variables were not integrated of order two (that is, stationary at the I(2)) so as to avoid spurious ARDL model results. The results of the ADF test (see table A.3) suggest that all the variables were stationary at the first difference, indicating the existence of unit root in the raw data. The existence of unit root accentuates the presence of non-stationarity in the variables and hence the use of the first difference of the variables for estimation and analysis. The same conclusion was reached when Phillips-Perron test was conducted (see table A,3 column 4 and 5 on appendices).

4.2.3 Results of the ARDL Bounds Test for Cointegration

The results in Table A.4 (see appendices) show that the computed F-statistic of 6.309238 greater than the upper critical bound of 4.43 at the 5% level of significant. This implies that there is long-run association among the variables under study.

4.2.4 The results of the test for Heteroskedasticity

The study utilized the Breusch-Pagan-Godfrey test to diagnose the presence of heteroskedasticity in the model. The results in Table A.5 (see the appendices) indicated that the p-value of the F-statistic, 0.17 is greater than 0.05, we fail to reject the null hypothesis of homoskedasticity and conclude that the model does not suffer from heteroskedasticity.

4.2.5 Results of the test for Autocorrelation.

The study performed Breusch-Godfrey Serial Correlation LM test to assess the existence of autocorrelation in the disturbance terms. The results (see Table A.6 on appendices) established that the p-value of the F-statistic, 0.40, exceeds 0.05; indicating that there is no autocorrelation within the model.

4.2.6 Results of the Model Specification Tests

The study utilized the Ramsey RESET test to check the presence of misspecification errors. A correctly specified model will generate an adequate picture of the relationship between external debt and foreign direct investment. The results of (see Table A.7 on appendices) indicated that the p-value of the RESET test statistic, 0.78, is greater than 0.05. Therefore, we failed to reject the null hypothesis and concluded that the model is correctly specified.

4.3 Results of the Estimated Long Run Equation using the ARDL Approach.

The results of the bounds test clearly show that there is long run cointegration relationships that exist among the variables, hence, an Autoregressive Distributed lag model, the ARDL (1.2.1.0.1.1) was selected based on AIC for the optimal lag length. The results obtained by normalizing the Foreign Direct Investment (FDI) are shown in Table A.8 (see appendices). The results revealed that external debt positively impact on FDI in the long run since its coefficient is positive and statistically significant at the 1% level. In conclusion, a 1% increase in external debt, foreign direct investment inflows will also increase by 4.741%, ceteris paribus. The findings are in line with economic theory by Keynes (1929) which argues that foreign debt is good if the proceeds of such are invested in productive activities that can finance the debt. The findings also corroborate earlier findings by Abala (2014) who found a positive, insignificant relationship between external debt and FDI inflows.

The coefficient of LNGDP is negative and statistically significant at the 5% level. Therefore, in the long run, for a 1% increase in GDP, FDI in Zimbabwe will decrease by 0.4289%, ceteris paribus. The results are inconsistent with the apriori conditions. This implies that an increase in GDP in Zimbabwe does not attract FDI probably due to excessive country risk as opined by Muwando and Gumbo (2013). The finding diverges with Moga, Helian and Igor (2016) who found that GDP positively affects foreign direct investment in the long run.

The coefficient of government stability is positive but statistically insignificant. The findings are in line with Wilhelms and Witter (1998) who argues that when the coefficient of government stability is positive, foreign investors are attracted since investors are reluctant to invest in political insecure environment. The results concur with the classical theory of debt by Keynes (1929). The results are also in line with Mahembe and Odhiambo (2013) who found out that government stability has a positive impact on FDI.

Inflation has a positive coefficient of 0.039437 but statistically insignificant. This finding contradicts with the study's expectation that a rise in inflation reduces foreign direct investment inflows. The findings concur with Khamis *et al.* (2015) and Khaled and Mohammad (2019) who argued that inflation, per se, is not harmful to growth of FDI inflows. Khaled and Mohammad ibid further point that there is a threshold beyond which inflation is harmful to foreign direct investment and economic growth. Moreover, when inflation is creeping it is not harmful to investment and growth.

The coefficient of population is -5.454088 and statistically significant at the 5% level. This implies that a 1% increase in population reduces FDI growth by approximately 5.45%, ceteris paribus. Thus, the results

suggest that population does not enhances foreign direct investment in the long run. This is inconsistent with theoretical expectation under the market fitness theory (Lall, 1979). The results are consistent with Keynes (1929) who postulates that population growth is detrimental to growth of an economy in the long run. The results are also in line with the findings of Tanna, Li and De Vita (2018) who found that population growth is detrimental to growth of foreign direct investment inflows.

LNTRADE positively influence LNFDI in the long run since the coefficient is positive and the variable is statistically significant at the 5% level. Results in Table A.8 (see appendices) revealed that a unit increase in trade openness, increases FDI by 3.628%, ceteris paribus. These results are in line with theoretical view of the Eclectic paradigm theory by Dunning (1993). The findings are also consistent with Shkolnyk and Koilo (2018) who found a positive relationship between openness and foreign direct investment.

4.4 Results of the Error Correction Model (ECM) for the selected ARDL Model

The presence of cointegration relationships amongst variables implies the estimation of ECM to determine the short run dynamic behavior of the variables, Table A.9 (see appendices).

From the Table A.9, a Durbin-Watson statistic of 1.973586 shows that there may be no strong serial correlation. This was confirmed by the LM Table A.6 (see appendices) test which highlighted that serial correlation do not exist in the model. The p-value of the F-statistic overly shows that the model is statistically significant at 1% level. Adjusted R-squared value of 0.76 indicates that about 76% of the variation in FDIs is explained by the GDP, population size, trade openness, inflation rate and external debt.

4.5 Results of stability tests

To check the stability of the model, the study utilised the CUSUM and CUSUM of Squares Test. The results in Figure A.1 indicated that, the CUSUM and CUSUM of squares lies within the 5% boundary, hence the model is stable.

The coefficients of all the explanatory variables provide interesting results since their signs in the short run are similar to those in the long run except the coefficient of the population variable whose sign changed from negative to positive and the coefficient of the one period lagged external debt is now consistent with the apriori conditions.

The coefficient of lagged external debt is negative but statistically insignificant. The results concur with Krugman (1988) who argues that foreign investors will be discouraged from investing in a country that has a large external debt since part of their proceeds would be used to service the country debt through high taxation. The results are also in line with Waweru (2018) who opines that the accumulation of external debt has a negative impact on FDI inflows.

The coefficient of GDP is negative but also statistically insignificant. The finding diverges from Lim (2001) and apriori conditions. This finding does not conform to market fitness theory economic theory, which states that a high GDP is a sign of vibrant economy with strong purchasing power thus attracting FDI inflows. In Zimbabwe, purchasing power is not that strong testifying that the results obtained under study are handy. This finding is also in line with the results obtained by Enisan (2017) found that there is a negative relationship between GDP and FDI. Furthermore, they contradict with (Asiamah, Ofori and Afful, 2019) who discovered that there is a positive relationship between GDP and FDI.

Population has a positive coefficient of 132.582411 in the short run and is statistically significant at the 5% level. This means that in the short run, a 1% increase in population increases FDI by approximately 0.01%, keeping other factors constant. This is in line with Lall (1979) who argued that as population grows, it raises the market size and hence the aggregate demand. When the aggregate demand goes up, this may attract investors since there will be potential for market availability and then demand and supply for labour which subsequently results in output growth. These results contrast with Keynes (1929) who stipulates that population growth is detrimental to an economy because as population rises, competition for resources also increases, hence leading to poverty and extinction of resources. The results are also consistent with the findings by Sajjad, Bilal and Khan (2018) who found that population growth positively affect FDI inflows.

The ECT (-1)) is negative and statistically significant at the 1% level. This is an indication of joint significance of the long-run coefficients. The estimated coefficient of the ECT (-1) is -1.212685, this shows a very high speed of adjustment to equilibrium after a shock. This is approximately more than 121% of disequilibria from the previous year's shock converge back to the long-run equilibrium in the current year.

4.6 Results of the Granger Causality

The granger causality or the block exogeneity Wald test results are shown in table 4.10 (see appendices).

The results revealed that there is a unidirectional causality between FDI and External debt. This implies that external debt does granger cause foreign direct investment while foreign direct investment does not granger cause external debt. The results are in line with Singh and Mohan (2019) who found there is a

unidirectional causality between FDI and external debt. Therefore, this necessitated the use of external debt to forecast FDI inflows as well as its own lags in this study.

5.0 Conclusion and recommendations

The study concluded that current external debts flow significantly affect foreign direct investment positively whilst the accumulation of past debt stocks leads to negative impact, which ultimately discourages external investors to invest in Zimbabwe. The major possible reasons for a negative impact include the following:

Debt Overhang: Since Zimbabwe has a high level of external debt relative to its GDP, it may create concerns among foreign investors regarding the country's ability to service its debt obligations. This debt overhang can lead to increased perceived risk and discourage foreign investors from making FDI commitments.

Crowding Out Effect: High levels of external debt can crowd out private sector investment by absorbing a significant portion of available capital. This can limit the availability of funds for productive investments and hinder FDI inflows.

Macroeconomic Instability: If Zimbabwe's external debt is coupled with macroeconomic instability, such as high inflation rates or volatile exchange rates, foreign investors may perceive the country as a risky investment destination. Such instability can deter FDI inflows and lead to a negative relationship between external debt and FDI.

Policy Uncertainty: If the government's handling of external debt or its overall economic policies create uncertainty, foreign investors may adopt a cautious approach and reduce FDI commitments. Uncertainty regarding debt repayment, policy reversals, or regulatory changes can erode investor confidence and contribute to a negative relationship.

Debt Service Burden: High debt service obligations can divert a significant portion of government revenues away from productive investments and public services. This reduced fiscal space can negatively influence the overall business environment and discourage FDI inflows.

Confidence in Economic Stability: If Zimbabwe has effectively managed its external debt and demonstrated a commitment to repayments; it can instil confidence in foreign investors. This confidence in economic stability may attract foreign investors who see the country as a favourable investment destination.

Access to Financing: External debt can provide the government with access to financing for infrastructure development, which can create an enabling environment for foreign investment. Improved infrastructure, such as transportation networks or power supply, can make Zimbabwe more attractive to foreign investors by enhancing the country's business environment.

Market Expansion: When a country takes on external debt for economic growth, it may lead to increased domestic consumption and market expansion. A larger market size can be appealing to foreign investors looking to tap into a growing consumer base.

Government Reforms: Taking on external debt often comes with conditions or requirements from international lenders, such as implementing economic reforms or improving governance. These reforms can enhance the business environment and create a more favourable investment climate, attracting foreign investors.

Debt-for-Equity Swaps: In some cases, external debt may be converted into equity in local businesses through debt-for-equity swaps. This can provide opportunities for foreign investors to acquire stakes in Zimbabwean companies at favourable terms, facilitating FDI inflows.

The main recommendations of the study include development of sound debt utilization and management framework, effective and efficient utilization of debt funds, privatization of industries, and implementation of a debt-servicing framework.

Future researchers ought to investigate on the effect of other variables like institutional quality, property rights, corruption and ease of doing business on FDI inflows. Other researches can also analyse the role of external debt on capital flight in Zimbabwe.

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1.0 APPENDICES

Table A.1
Summary of Descriptive Statistics

	LNEXD	LNFDI	LNGDP	LNGS	LNINF	LNPOP	LNTRADE
Mean	1.734072	-0.428279	0.615293	1.879647	1.306800	7.057138	9.700793
Median	1.782042	-0.346787	0.715984	1.819158	1.272770	7.075301	9.648788
Maximum	2.157819	0.841359	1.293922	2.215574	4.387586	7.208182	10.10356
Minimum	1.080266	-2.000000	-0.801272	1.609438	-0.657577	6.855166	9.396625
Std. Dev.	0.216726	0.739900	0.473883	0.197116	0.911066	0.095967	0.199429
Skewness	-1.015701	-0.367921	-0.669536	0.334940	0.997816	-0.464177	0.704618
Kurtosis	4.492150	2.016591	3.346124	1.876155	5.283663	2.317893	2.557786
Jarque-Bera	9.794372	2.325691	2.949077	2.353680	14.17973	2.045963	3.363145
Probability	0.007468	0.312595	0.228884	0.308251	0.000834	0.359521	0.186081
Sum	64.16068	-15.84631	22.76582	62.02837	48.35161	261.1141	358.9293
Sum Sq.Dev.	1.690923	19.70826	8.084341	1.243356	29.88146	0.331549	1.431783
Observations	37	37	37	37	37	37	37

Source: *Researcher's own computations using E-views 9*

Table A.2
Pairwise Correlation Matrix Results

	LNEXD	LNFDI	LNGDP	LNGS	LNINF	LNPOP	LNTRADE
LNEXD	1.000000	0.473596	0.176413	0.338195	0.374744	0.577891	0.237385
LNFDI	0.473596	1.000000	-0.100845	0.171409	-0.256059	0.701132	0.738753
LNGDP	0.176413	-0.100845	1.000000	-0.008718	-0.086149	0.095338	0.053129
LNGS	0.338195	0.171409	-0.008718	1.000000	0.456701	0.333500	0.079106
LNINF	0.374744	-0.256059	-0.086149	0.456701	1.000000	-0.152378	-0.507041
LNPOP	0.577891	0.701132	0.095338	0.333500	-0.152378	1.000000	0.085060
LNTRAE	0.237385	0.738753	0.053129	0.079106	-0.507041	0.085060	1.000000

Source: *Researcher's own computations using E-views 9*

Table A.3
Unit root test results

Variable	ADF statistic		Phillip-Perron		Order of integration
	Level	1st difference	Level	1st difference	
LNEXD	-2.537593	-5.225998**	-2.547972	-4.713895**	I(1)
LNFDI	-3.336891	-7.779094**	-3.343134	-7.866925**	I(1)
LNGDP	-2.854451	-11.52686**	-5.132689	-13.47174**	I(1)
LNGS	0.040918	-5.219298**	-1.934193	-5.222428**	I(1)
LNINF	-2.650591	-7.572126**	-2.557879	-7.743983**	I(1)
LNPOP	-0.803701	-3.468326**	-3.187299	-3.093265**	I(1)
LNTRADE	-1.30735	-3.331337**	-1.971823	-3.255943**	I(1)

Source*: Researcher's own computations using E-views 9*

**denotes the rejection of the null hypothesis of non-stationarity at 5% significant level.

Table A.4
ARDL Bounds Test

Test Statistic	Value	K
F-statistic	6.309238	6

Critical Value Bounds

Significance	Bound LOWER	Bound UPPER
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source*: Researcher's own computations using E-views 9*

Table A.5
Heteroscedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.590665	Prob. F(12,20)	0.1733
Obs*R-squared	16.11502	Prob. Chi-Square(12)	0.1860
Scaled explained SS	6.700164	Prob. Chi-Square(12)	0.8768

Source: *Researcher's own computations using E-views 9*

Table A.6
Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.978154	Prob. F(2,18)	0.3951
Obs*R-squared	3.234974	Prob. Chi-Square(2)	0.1984

Source: *Researcher's own computations using E-views 9*

Table A.7
Ramsey RESET Test

	Value	Df	Probability
t-statistic	0.289221	19	0.7755
F-statistic	0.083649	(1, 19)	0.7755

Source: *Researcher's own computations using E-views 9*

Table A.8
Estimated Long Run Coefficients using the ARDL Approach
Dependent variable LNFDI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEXD	4.741080	0.777116	6.100869**	0.0000
LNGDP	-0.428883	0.169520	-2.529987*	0.0199
LNGS	0.813091	0.581282	1.398790	0.1772
LNINF	0.039437	0.090130	0.437552	0.6664
LNPOP	-5.454088	2.097073	-2.600809*	0.0171
LNTRADE	3.627910	0.763860	4.749443**	0.0001
C	-7.731597	9.448266	-0.818309	0.4228

Source: *Researcher's own computations using E-views 9*

** (*) denote the rejection of the null hypotheses at 5% level of significance.

Table A.9
ECM for the Selected ARDL Model
Dependent variable D (LNFDI)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNEXD)	2.267853	1.021432	2.220268**	0.0381

D(LNEXD(-1))	-1.834416	1.360022	-1.348814	0.1925
D(LNGDP)	-0.254616	0.138247	-1.841750*	0.0804
D(LNGS)	0.986023	0.745550	1.322544	0.2009
D(LNINF)	0.047824	0.108903	0.439148	0.6653
D(LNPOP)	132.582411	45.811153	2.894108***	0.0090
D(LNTRADE)	1.333733	2.359497	0.565262	0.5782
ECT(-1)	-1.212685	0.186093	-6.516566***	0.0000

Cointeq = LNFDI - (4.7411*LNEXD -0.4289*LNGDP + 0.8131*LNGS +0.0394*LNINF - 5.4541*LNPOP + 3.6279*LNTRADE -7.7316)

R-squared	0.851129	Mean dependent var	-0.279592
Adjusted R-squared	0.761806	S.D. dependent var	0.631351
S.E. of regression	0.308132	Akaike info criterion	0.770523
Sum squared resid	1.898900	Schwarz criterion	1.360057
Log likelihood	0.286365	Hannan-Quinn criter.	0.968883
F-statistic	9.528709	Durbin-Watson stat	1.973586
Prob(F-statistic)	0.000008		

Source: *Researcher's own computations using E-views 9*

*** ** (*) denote the rejection of the null hypotheses at 1%, 5% (10%) level of significance

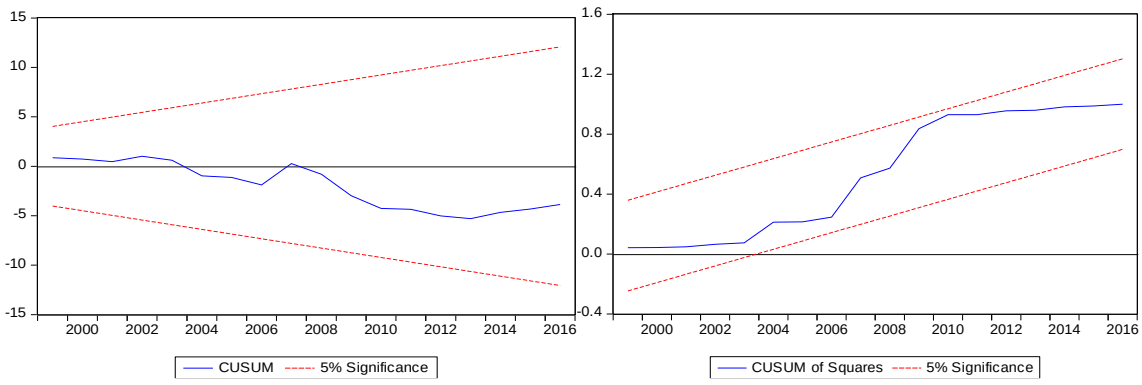
Table A.10
Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
LNEXD does not Granger Cause LNFDI	37	8.29731	0.0014
LNFDI does not Granger Cause LNEXD		0.02374	0.9766

Source: *Researcher's own computations using E-views 9*

Figure A.1

Structural Stability test



Source: Researcher's own computations using E-views 9