Research Journal of Economic and Management Studies (RJEMS)
Vol.1, No.1. (2021). ISSN: 2789-6803.

Foreign Aid-Growth Nexus in Zimbabwe: An ARDL-Bounds Testing Approach

Talknice Saungweme

Great Zimbabwe University, Economics Department, P. O. Box 1235, Masvingo
Email: talknice2009@gmail.com

Abstract

The aid-growth nexus continues to be an ongoing developmental issue because of the following two questions that remain unanswered. First, why do foreign aid recipients remain poor? Second, why do developed countries continue to give aid, irrespective of how the proceeds are used in receiving countries? Zimbabwe's economy is, since 1997, characterised by poor exports performance, increasing public debt burden, and poor foreign direct investment flows. The result is insufficient gross national savings to promote sustainable economic development through sound investment. One known feasible way in literature to finance this savings gap is through foreign aid. This study, therefore, aims to investigate the impact and causal relationships between foreign aid and economic growth in Zimbabwe using an autoregressive distributed lag (ARDL) approach and an error correction model (ECM) based Granger-causality framework. The impact results suggest a long run relationship between foreign aid and economic growth, while causality results show no evidence of causality between the two variables. Policy implications are discussed.

Keywords*: ARDL, economic growth, foreign aid, Granger-causality, Zimbabwe.*

1. Introduction

The debate on the drivers of economic growth in developing and emerging economies, particularly on the effectiveness of foreign aid, has been ongoing where little is settled (International Monetary Fund/IMF, 2009: 3). Historically, Adam Smith desired to understand what really determines the *"wealth of nations".* Two centuries later, Robert Lucas was quoted saying *"once one starts to think about economic growth, it is hard to think about anything else"* (Lucas, 1988: 5). Since then, extensive empirical work has been done on the subject in a number of countries, using different methodologies, but with conflicting results.

The motivations behind foreign aid are largely determined by the donor country. On the one hand, developed countries may use aid to achieve their political, commercial and economic aspirations, while on the other hand, foreign aid has been used in recipient countries to support productive sectors; poverty extenuation programmes, increase access to social services, such as health care and basic education; promote macroeconomic and institutional structural reforms (Yiew and Lau, 2018). According to Babalola and Shittu (2020), rising foreign public debt, weak economic institutions, poor governance, high dependence on the extractive sector and high composition of commodity exports are among the tenacious

factors that have continued to retard African region and to make it highly reliant on foreign aid.

The empirical questions in the aid-growth nexus include; (i) should developing countries solicit for international aid? Or if offered, should they decline it? (ii) Is aid a stimulant to economic growth and a means of exterminating poverty in developing countries? (iii) If foreign aid complements domestic savings, why are most countries still experiencing low growth rates despite receiving substantial amounts of grants and concessionary loans? The prohibitive policy conditions that accompany aid may also have a significant influence on its effectiveness – in other words, aid with attached conditions reduces the flexibility of governments to fund productive sectors. More so, the donor community tend to apply a one size fit all methodology in pronouncing economic reforms, largely biased in favour of economic, financial and trade liberalisation.

Empirically, there have been conflicting views concerning the linkage between foreign aid and growth. While the bulk of the studies have supported the hypothesis that foreign aid enhances growth (Bonga and Nyoni, 2017; IMF, 2009; among others); others, such as Mallik (2008), have argued that aid has historically been ineffective in promoting growth and large increases in aid are therefore undesirable. A few others found no link between aid and growth (Easterly, 2005).

These mixed findings are evidence of incomplete literature on the relationship between foreign aid and growth. The current study, therefore, makes a substantial contribution to existing knowledge on the aid-growth subject on various fronts. First, this study seeks to examine both the impact and causal relationship between foreign aid and economic growth in Zimbabwe using an ARDL approach and a multivariate Granger-causality model. The chosen ARDL approach has been proved to be better when compared to other time-series techniques. For instance, the technique captures both the short run and long run impact of foreign aid on economic growth simultaneously (Pesaran *et al*., 2001). Furthermore, the applied ARDL bounds testing approach is applicable to variables with a mixed order of integration. In addition, by including investment and trade openness as intermittent variables in the causality models between foreign aid and economic growth, the omission-of-variable bias, which has not been suitably addressed by other preceding studies on the subject, is satisfactorily addressed in this study. Lastly, to my knowledge, this study may be the first of its kind in Zimbabwe to explore in detail the dynamic impact and causal relationship between foreign aid and economic growth in recent years using modern time-series techniques.

The rest of this study is organised as follows: Section 2 briefly discusses the dynamics of foreign aid and economic growth trends in Zimbabwe from 1980 to 2020. Section 3 reviews the theoretical and empirical literature on the aid-growth nexus, while Section 4 outlines the study methodology. Section 5 presents the empirical analysis. Section 6 concludes the paper.

2. Dynamics of foreign aid flows and economic growth trends in Zimbabwe (1980-2020)

On attaining independence in 1980, Zimbabwe had a strong economic base and good economic relations with the international community (Riddell, 1984). In the early 1980s, the economy shifted from inward looking policies, which were a result of sanctions imposed on Smith government, towards outward trade, financial and investment policies (Jones, 2011). It is in 1980 when Zimbabwe became an active economic international player as evidenced by becoming a member of Brettonwoods financial institutions, that is, the International Monetary Fund/IMF, and the World Bank (Jones, 2011). All these relations, in addition to the adopted developmental plans, attracted foreign financial and technical resources. Nevertheless, Zimbabwe has continued to experience low to negative economic growth rates, high poverty levels, and the country has neither transformed into a developed nor self-sustainable economy despite the aid.

Between the period 1980 and 1990, Zimbabwe developed three strategic plans to attract foreign injection of financial and investment resources, specifically in productive sectors. These developmental plans were the Growth with Equity of 1980, the Transitional National Development Plan of 1981 and the First Five year and Second Five Year Plans spanning 1982 to 1990 (Besada, 2011). The result was improved external financial inflows, trade expansion and emergence of balance of payment (BOP) support from multilateral financial institutions (Mupunga and Le Roux, 2014; IMF, 2001). Notably, the World Bank specialised in giving loans, while the IMF provided BOP support (Besada, 2011; IMF, 2001). The country also had access to international credit lines, which boosted the export sector (Mupunga and Le Roux, 2014). Accordingly, the external financial support and BOP support by the international community strengthened Zimbabwe's BOP position (World Bank, 2020). These external financial resources; loans, grants, developmental aid, humanitarian aid, among others; were given to the country through the national treasury (Government of Zimbabwe "GoZ", 2009, IMF, 2001).

It was until 1997 that Zimbabwe was actively involved in activities that were consumptive in nature, which also were not supported by its international creditors. These activities include, among others, the intervention by Zimbabwe in regional wars, such as in Democratic Republic of Congo in 1997; the war veteran gratuities of 1997; and the land reform programme of 1999 – and the fast track land redistribution programme of 2000 (Kabonga, 2020; Moyo and Mafuso, 2017). Such policies compromised Zimbabwe's international relations, especially with the multilateral financial institutions as well as with the European countries and United States of America (Kabonga, 2020; Moyo and Mafuso, 2017). As a result, these institutions and Western countries imposed trade, economic, political and financial sanctions on Zimbabwe beginning 1999 (Kabonga, 2020; Moyo and Mafuso, 2017; Jones, 2011). In consequence, by 2000, the country experienced severe capital flight and a substantial fall in external financing (GoZ, 2009). The Africa Development Bank, IMF and World Bank BOP support initiatives were stopped in 1998, 1999 and 2001, respectively (GoZ, 2009).

Following the imposition of the aforementioned sanctions, the country was declared ineligible to access international financial resources, a move which crippled the export performance of Zimbabwe and the emergence of persistent trade deficits (World Bank, 2020). Political risk in the country also impacted negatively on aid flows, investment inflows, trade relations and credit lines (IMF, 2020; 2014).

Between 2003 and 2008, Zimbabwe was in a hyperinflation environment, recording mostly negative economic growth, and suffering from high levels of unemployment, which culminated into reduced agricultural and manufacturing output (IMF, 2014). In addition, as European-Zimbabwean relations turned soar, there was a shift in aid focus from the Western countries and multilateral financial institutions to newly emerging creditors, mostly China (IMF, 2014). The remaining streams of foreign aid from traditional developmental partners also changed radically from developmental aid to largely humanitarian aid (IMF, 2014). That is, unlike in the 1980s, after 2000, aid was no longer channelled through the fiscal route, but rather through civic organisations or as specific grants to the government – mainly towards poverty alleviation programmes (Jones, 2011; GoZ, 2009). Table 1 presents the average aid/GDP ratio and average annual growth rate in Zimbabwe for the period 1970-2020.

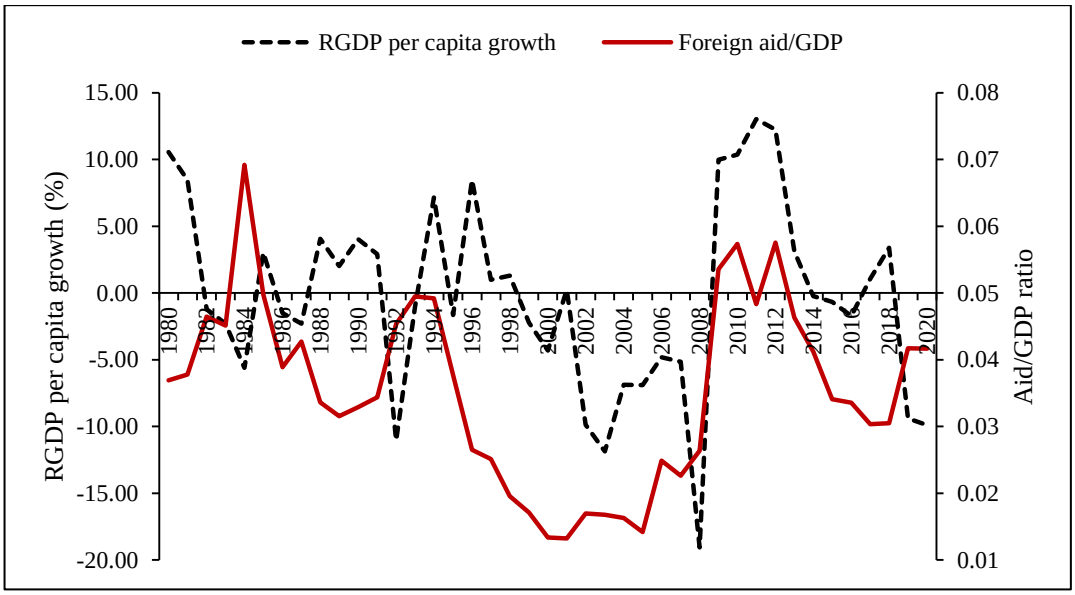
Table 1. Average Aid/GDP Ratio and Average Annual Growth Rate in Zimbabwe (1970-2020)

Period	Average aid/GDP ratio	Average annual growth rate of GDP (%)
1970-1984	0.05	-0.19
1985-1990	0.04	1.77
1991-1998	0.03	0.89
1999-2008	0.02	-7.79
2009-2013	0.05	9.75
2014-2020	0.04	-2.49

Source: Authors 'calculations from World Bank Development Indicators data

Aid disbursements to Zimbabwe were high between 1970s and early 1980s due to a number of possible reasons. Political independence in 1980 brought with it peace, restoration of normal economic activity, and a substantial boost in inflows of international reconstruction aid (Riddel, 1984). However, there was a significant decrease in multilateral and bilateral aid disbursements from 1991 to 2008 (World Bank, 2020). This decrease in aid pay-outs was not due exclusively to sanctions, but to a general reduction in world aid disbursements and to the inclination for donors to apportion away from Africa, in favour of East Europe and East Asia, regions with relatively higher living standards (Gomanee, *et al.*, 2005). This sharp drop in aid from about 1995 to 2008 is reflected by the decline in aid/GDP ratio given in Table 1. Fortunately, aid disbursements to Zimbabwe improved during the Government of National Unity (2009-2013) (IMF, 2014). Average growth was negative in the pre-independence period, 1970-1980. This could have been caused by disruptions to economic activities due to war. From

1981 to 1998, the country managed to achieve positive average growth, although average growth of the period was at its lowest between 1999 and 2008. The country experienced its worst economic performance between 1998 and 2008, recording a negative growth rate of 7.8%. However, there was an economic rebound between 2009 and 2013, which decelerated during the period from 2014 to 2020. Figure 1 presents average annual GDP per capita growth and aid/GDP ratio in Zimbabwe for the period 1980 to 2020.



Author's computation using World Bank Development Indicators data

Figure 1. Average Annual GDP Per Capita Growth and Aid/GDP Ratio in Zimbabwe (1980-2020)

Figure 1 suggests a positive relationship between aid and growth in Zimbabwe. Economic growth rates have been declining at a time when aid-to-GDP ratio was decreasing. There is potential exogeneity problem where the decline in aid flows may be attributed to donor actions against Zimbabwe, as well as endogeneity challenges in which the decline in aid was accompanied by a corresponding increase in growth (see Figure 1). The spike in aid/GDP ratio between 1991 and 1993 suggests an increase in financial flows to Zimbabwe following the adoption of IMF/World Bank supported structural reforms (Besada, 2011). In general, there is a visible downward trend in aid flows to Zimbabwe from the mid-1980s to 2005.

The withdrawal of financial support by multilateral financial institutions between 1999 and 2001 triggered financial, social and technical support withdrawal also by other bilateral and individual creditors (Mupunga and Le Roux, 2014). The only financial support that was coming to Zimbabwe after 2000 was mainly for humanitarian assistance, such as HIV/AIDS support and food assistance, social expenditures and in other pre-specified health areas. This support came directly to Non-Governmental Organisations, not to the central government as was the initial case. Thus, United States of America, although it continued supporting Zimbabwe, it changed the aid channel and also the form of financial assistance. The

composition of aid to Zimbabwe during the review period has also undergone significant change. In the 1980s until 1998, aid to the country stemmed from both international financial institutions and biliteral donors (IMF, 2001). After 1998, aid almost entirely came from bilateral economic partners only, largely China, India, Japan, South Africa, Malaysia, and Brazil (GoZ; 2009).

On the economic growth front, growth rates were moderate during the 1980-1990 period, though oscillating between 10.6 % and -5.1%. The lowest negative growth rate was recorded in 2008, at the height of economic crisis in Zimbabwe, averaging -19.1%. Although there was a general upward growth trend up to 2013, economic growth remained low thereafter, reflecting continuing serious structural distortions in the economy. The economic crisis was further exacerbated in 2020 due to the covid19 government induced lockdown measures which further paralysed economic activities and dampened recovery efforts (Ministry of Finance and Economic Development, 2020).

3. Empirical Literature Survey

The empirical on the aid-growth nexus could appropriately be bunched into four groups. The first group provides evidence consistent with economic growth reducing effect (see, among others, Mallik, 2008). These studies argue that foreign aid sponsored growth increases recipient countries' exposure to external shocks as well as perpetuating governments' extravagance and enrichment of few political figures in receiving countries. The raised arguments against foreign aid include; (i) discouragement of home-grown solutions to domestic problems as the recipient country tend to over rely on the donor country for skills, technical expertise and even other financial matters; (ii) promotion of fiscal indiscipline and unwarranted large government sizes in the recipient country leveraging on international aid; (iii) political dependence of the aid receiving country on the donor country; (iv) lack of economic (fiscal and monetary policies) and cultural sovereignty if the aid is attached with conditions of use (Mitra *et al*., 2015; Mallik, 2008). According to Julius Nyerere, foreign aid is ineffective in the growth process because "it comes much later than one expects, and not always in the form it is wanted" (Bonny and Dibua, 2003).

The second group provides evidence consistent with the growth-enhancing effect of foreign aid (Arndt *et al*., 2015; Gomanee *et al.*, 2005). This cluster of studies argues that foreign aid expands the recipient government's resource base, a condition which reduce the tax burden on investments.

The third group of studies found a statistically insignificant relationship between foreign aid and economic growth (Babalola and Shittu, 2020; Easterly, 2005). The fourth group of studies have tested the nonlinearity between aid and growth. These studies found evidence consistent with a U-shape relationship between foreign aid and economic growth (Yiew and Lau, 2018). At lower levels, foreign aid negatively impacts the countries' growth and over a period of time, it positively contributes to economic growth.

Table 2 provides a summary of empirical studies carried out in Africa on the foreign aid-growth relationship.

Table 2. Summary of Empirical Studies on the Foreign Aid-Growth Relationship in Africa

Author (year)	Region/countries	Study period	Methodology	Findings
Babalola and Shittu (2020)	16 West African countries	1996-2017	Panel data ARDL	No relationship (neutral effect)
Juselius *et al.* (2014)	36 Sub-Saharan African countries	Mid-1960s to 2007	VAR model	Positive relationship (growth-stimulating)
Ndambendia and Njoupouognigni (2010)	36 Sub-Saharan African countries	1980-2007	Panel data Dynamic fixed effects	Positive relationship (growth-stimulating)
Mallik (2008)	Central African Republic, Malawi, Mali, Niger, Sierra Leone and Togo	1965-2005	Annual time-series data ECM	Negative relationship (growth-inhibiting)
Gomanee *et al.* (2005)	25 SSA countries	1970-1997	Pooled panel regressions	Positive relationship (growth-stimulating)

4. Research Methodology

4.1. Model Specification, Data Source and Estimation Techniques

4.1.1 Foreign aid and economic growth – Impact Analysis

Following studies carried out by Babalola and Shittu (2020) and Arndt *et al.* (2015), among others, the general model in this study is specified as:

$$y_t = \beta_0 + \beta_1 FDA_t + \beta_2 FDI_t + \beta_3 FD_t + \beta_4 GE_t + \beta_5 INV_t + \beta_6 TRADE_t + \beta_7 INFL_t + \varepsilon_t \quad (1)$$

Where y is g real GDP per capita (a proxy for economic growth); FDA is foreign developmental aid (FDA/GDP); FDI is foreign direct investment (FDI/GDP); FD is financial depth (M3/GDP); GE is government expenditure (GE/GDP); INV is gross fixed capital formation (GFCF/GDP); TRADE is trade openness ([exports + imports] / GDP); INFL is inflation; ε_t is the stochastic error term; $\beta_1 \ldots\ldots \beta_6$ are the regression coefficients and β_0 is a constant. The study uses annual time-series

data spanning from 1980 to 2020. The data for all variables come from World Development Indicators, an electronic database of the World Bank.

The study applies an ARDL-bounds testing approach to cointegration in examining the link between the variables of the model where exogeneity is inferred from statistical tests. The selected ARDL estimation technique has been found to have superior properties over other traditional cointegration tests. For example, the ARDL cointegration approach, unlike previous cointegration techniques, is applicable regardless of whether the underlying regressors are of mixed order of integration, or fractionally integrated (Pesaran *et al.*, 2001). Further, the ARDL approach produces reliable and consistent results even when the sample size is small. Finally, the ARDL technique may provide unbiased estimates of the long-run model and valid t-statistics even when some of the regressors are endogenous (see Odhiambo, 2021).

Following Pesaran *et al.* (2001), the ARDL model employed in this study can be expressed as:

$$\begin{aligned}\Delta y_t = {} & \phi_0 + \sum_{i=1}^{n} \phi_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \phi_{2i}\Delta FDA_{t-i} + \sum_{i=0}^{n} \phi_{3i}\Delta FDI_{t-i} + \sum_{i=0}^{n} \phi_{4i}\,\Delta FD_{t-i} \\ & + \sum_{i=0}^{n} \phi_{5i}\Delta GE_{t-i} + \sum_{i=0}^{n} \phi_{6i}\Delta INV_{t-i} + \sum_{i=0}^{n} \phi_{7i}\Delta TRADE_{t-i} + \sum_{i=0}^{n} \phi_{8i}\Delta INFL_{t-i} \\ & + \sigma_1 y_{t-1} + \sigma_2 FDA_{t-1} + \sigma_3 FDI_{t-1} + \sigma_4 FD_{t-1} + \sigma_5 GE_{t-1} + \sigma_6 INV_{t-1} \\ & + \sigma_7 TRADE_{t-1} + \sigma_8 INFL_{t-1} + \mu_{1t} \qquad (2)\end{aligned}$$

Where ϕ_0 = constant; $\phi_1 - \phi_8$ and $\sigma_1 - \sigma_8$ = short-run and long-run regression coefficients, respectively; Δ = difference operator; n = lag length; μ_{1t} = error term; t = time period. All other variables are as described in equation 1.

The associated error correction model for Equation 2 is expressed as follows:

$$\begin{aligned}\Delta y_t = {} & \phi_0 + \sum_{i=1}^{n} \phi_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \phi_{2i}\Delta FDA_{t-i} + \sum_{i=0}^{n} \phi_{3i}\Delta FDI_{t-i} + \sum_{i=0}^{n} \phi_{4i}\,\Delta FD_{t-i} \\ & + \sum_{i=0}^{n} \phi_{5i}\Delta GE_{t-i} + \sum_{i=0}^{n} \phi_{6i}\Delta INV_{t-i} + \sum_{i=0}^{n} \phi_{7i}\Delta TRADE_{t-i} + \sum_{i=0}^{n} \phi_{8i}\Delta INFL_{t-i} \\ & + \psi_1 ECM_{t-1} + \mu_{2t} \qquad (3)\end{aligned}$$

Where ψ_1 = coefficient of the ECM; ECM_{t-1} = error-correction term lagged by one period. All the other variables are as described in Equations 1 and 2.

The ARDL-bound test procedure tests the null hypothesis of no long-run relationship against the alternative hypothesis of a long-run relationship. The

procedure compares the computed F-statistic with two sets of critical values, I(0) and I(1). When the computed F-statistic is greater than the upper bound critical value, the null hypothesis of no cointegration is rejected – implying the existence of a long run relationship. Also, when the computed F-statistic is below the lower bound critical value, the null hypothesis of no cointegration is not rejected. However, when the computed F-statistic falls between the lower bound and upper bound critical values, the result is inconclusive.

4.1.2 Foreign aid and economic growth – Causality analysis

In order to reduce the omission-of-variable-bias and also to increase the general validity of the causation test, two intermittent variables were added to the causality model, namely, investment and trade openness. Also, to eliminate spurious correlations, the study utilises the standard ARDL specification as suggested by Pesaran *et al.* (2001) to specify a set of four cointegration equations as follows (see, also, Odhiambo, 2021):

$$\Delta y_t = \phi_0 + \sum_{i=1}^{n} \phi_{1i} \Delta y_{t-i} + \sum_{i=0}^{n} \phi_{2i} \Delta FDA_{t-i} + \sum_{i=0}^{n} \phi_{3i} \Delta INV_{t-i} + \sum_{i=0}^{n} \phi_{4i} \Delta TRADE_{t-i} + \phi_5 y_{t-1} + \phi_6 FDA_{t-1} + \phi_7 INV_{t-1} + \phi_8 TRADE_{t-1} + \varepsilon_{1t} \quad (4)$$

$$\Delta FDA_t = \lambda_0 + \sum_{i=0}^{n} \lambda_{1i} \Delta y_{t-i} + \sum_{i=1}^{n} \lambda_{2i} \Delta FDA_{t-i} + \sum_{i=0}^{n} \lambda_{3i} \Delta INV_{t-i} + \sum_{i=0}^{n} \lambda_{4i} \Delta TRADE_{t-i} + \lambda_5 y_{t-1} + \lambda_6 FDA_{t-1} + \lambda_7 INV_{t-1} + \lambda_8 TRADE_{t-1} + \varepsilon_{2t} \quad (5)$$

$$\Delta INV_t = \beta_0 + \sum_{i=0}^{n} \beta_{1i} \Delta y_{t-i} + \sum_{i=0}^{n} \beta_{2i} \Delta FDA_{t-i} + \sum_{i=1}^{n} \beta_{3i} \Delta INV_{t-i} + \sum_{i=0}^{n} \beta_{4i} \Delta TRADE_{t-i} + \beta_5 y_{t-1} + \beta_6 FDA_{t-1} + \beta_7 INV_{t-1} + \beta_8 TRADE_{t-1} + \varepsilon_{3t} \quad (6)$$

$$\Delta TRADE_t = \omega_0 + \sum_{i=0}^{n} \omega_{1i} \Delta y_{t-i} + \sum_{i=0}^{n} \omega_{2i} \Delta FDA_{t-i} + \sum_{i=0}^{n} \omega_{3i} \Delta INV_{t-i} + \sum_{i=1}^{n} \omega_{4i} \Delta TRADE_{t-i} + \omega_5 y_{t-1} + \omega_6 FDA_{t-1} + \omega_7 INV_{t-1} + \omega_8 TRADE_{t-1} + \varepsilon_{4t} \quad (7)$$

Where:

ϕ_0, λ_0, β_0 and ω_0 are respective constants; $\phi_1 - \phi_4$, $\lambda_1 - \lambda_4$, $\beta_1 - \beta_4$ and $\omega_1 - \omega_4$ are respective short-run coefficients; $\phi_5 - \phi_8$, $\lambda_5 - \lambda_8$, $\beta_5 - \beta_8$ and $\omega_5 - \omega_8$ are respective long-run coefficients; $\varepsilon_1 - \varepsilon_4$ are the error terms; Δ is the

difference operator; n is the lag length; t is the time period; and all the other variables are as described in earlier in Equations 1 and 2.

The specified set of cointegration equations (Equations 4-7) only proposes the likelihood of causality at least in one direction. To determine the actual direction of causality, the following Granger-causality models are specified (see, also, Odhiambo, 2021).

$$\Delta y_t = \phi_0 + \sum_{i=1}^{n} \phi_{1i} \Delta y_{t-i} + \sum_{i=1}^{n} \phi_{2i} \Delta FDA_{t-i} + \sum_{i=1}^{n} \phi_{3i} \Delta INV_{t-i} + \sum_{i=1}^{n} \phi_{4i} \Delta TRADE_{t-i} + \phi_9 ECM_{t-1} + \mu_{1t} \quad (8)$$

$$\Delta FDA_t = \lambda_0 + \sum_{i=1}^{n} \lambda_{1i} \Delta y_{t-i} + \sum_{i=1}^{n} \lambda_{2i} \Delta FDA_{t-i} + \sum_{i=1}^{n} \lambda_{3i} \Delta INV_{t-i} + \sum_{i=1}^{n} \lambda_{4i} \Delta TRADE_{t-i} + \lambda_9 ECM_{t-1} + \mu_{2t} \quad (9)$$

$$\Delta INV_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta y_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta FDA_{t-i} + \sum_{i=1}^{n} \beta_{3i} \Delta INV_{t-i} + \sum_{i=1}^{n} \beta_{4i} \Delta TRADE_{t-i} + \beta_9 ECM_{t-1} + \mu_{3t} \quad (10)$$

$$\Delta TRADE_t = \omega_0 + \sum_{i=1}^{n} \omega_{1i} \Delta y_{t-i} + \sum_{i=1}^{n} \omega_{2i} \Delta FDA_{t-i} + \sum_{i=1}^{n} \omega_{3i} \Delta INV_{t-i} + \sum_{i=1}^{n} \omega_{4i} \Delta TRADE_{t-i} + \omega_9 ECM_{t-1} + \mu_{4t} \quad (11)$$

Where ϕ_9, λ_9, β_9 and ω_9 are coefficients of ECM_{t-1}; ECM_{t-1} is the error correction term lagged by one period; and all the other variables are as described in the cointegration model.

5. Empirical Analysis

5.1 Stationarity Test

To determine the order of integration, the stationarity of the series was tested in this study using the Perron (1997) (PPURoot) and Zivot-Andrews (1992) (ZAU Root) techniques. The selected unit root testing techniques permit for a unit root and the possibility of a structural break. The stationarity results of all the variables are presented in Table 3.

Table 3. Stationarity Test Results

Variable	Stationarity of all variables in levels	Stationarity of all variables in first difference	Decision
Panel 1: PPU Root test			
y	-1.540	-3.367*	I(1)
FDA	-2.313	-4.717**	I(1)
FDI	-3.513	-6.661***	I(1)
FD	-4.284	-4.597**	I(1)
GE	-5.940***	-	I(0)
INV	0.717	-2.788**	I(1)
TRADE	-4.554	-8.437***	I(1)
INFL	-4.111**	-	I(0)
Panel 2: ZAU Root test			
y	-2.745	-6.114***	I(1)
FDA	-3.792	-7.236**	I(1)
FDI	-4.706*	-	I(0)
FD	-4.158	-8.444***	I(1)
GE	-6.237***	-	I(0)
INV	-4.212	-6.416***	I(1)
TRADE	-3.139	-8.265***	I(1)
INFL	-3.401*	-	I(0)

*Note: *, ** and *** denote stationarity at 10%, 5% and 1% significance levels, respectively.*

The stationarity results reported in Table 3 show that the order of integration for each variable varies depending on the technique used. In the main, however, none of the series is integrated of order exceeding one, hence justifying the applicability of the ARDL cointegration approach.

5.2 Foreign Aid-Growth - Impact Analysis

5.2.1 Cointegration Test: ARDL-Bounds Testing Approach

The results of the joint bounds F-test for cointegration are presented in Table 4.

Table 4. Bounds F-test for Co-integration

Dependent variable	Function	F-statistic	Cointegration status
y	F(y|FDA, FDI, FD, GE, INV, TRADE, INFL)	3.27*	Cointegrated
Asymptotic critical values (unrestricted constant and no trend)			

	1%		5%		10%	
Pesaran *et al.* (2001: 300) critical values	*I(0)*	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*

[Case 3]	2.96	4.26	2.32	3.50	2.03	3.13

*Note: * denotes statistical significance at 10%.*

5.2.2 Long-Run and Short-Run Estimation Results

Following the confirmation of a cointegration relationship among the variables used in the study, the study proceeds to estimate long-run and short-run coefficients for Equation (2). The results are presented in Table 5, Panels 1 and 2, respectively.

Table 5. Long-Run and Short-Run Coefficients

Panel 1: Estimated long-run coefficients: Dependent – **y**			
Regressors	**Coefficient**	***t-ratio***	***p-value***
C	-8.312***	-4.955	0.000
FDA	0.011*	1.742	0.083
FDI	0.213	1.469	0.376
FD	0.414	1.030	0.751
GE	-0.371***	-3.894	0.000
INV	0.018**	2.073	0.047
TRADE	-0.530**	-2.635	0.018
INFL	-0.476***	-3.272	0.001
Panel 2: Estimated short-run coefficients: Dependent – **Δy**			
Regressors	**Coefficient**	***t-ratio***	***p-value***
Δy	0.014	0.048	0.962
ΔFDA	0.222	1.006	0.653
ΔFDA(1)	0.637	0.348	0.234
ΔFDI	0.477	1.190	0.187
ΔFDI(1)	0.454	0.669	0.509
ΔFDI(2)	0.846	0.428	0.441
ΔFD	0.133	1.652	0.133
ΔGE	-0.146***	-3.371	0.002
ΔGE(1)	-0.381	-0.676	0.734
ΔINV	0.517**	2.464	0.026
ΔINV(1)	0.199	1.118	0.171
ΔTRADE	-0.449**	-2.663	0.038
ΔINFL	-0.136**	-2.617	0.079
ΔINFL(1)	-0.056	-0.496	0.624
ECM_{t-1}	-0.417***	-4.221	0.000

R-bar-squared: 0.761; F-statistic: 6.247; Prob[F-statistic]: 0.003; DW statistic: 1.784; AIC: 6.917; SBC: 5.463

*Note: *, ** and *** denotes stationarity at 10%, 5% and 1% significance levels, respectively.*

The results reported in Table 5, Panels 1 and 2, respectively, show a statistically significant positive sign of foreign aid, implying that foreign aid has an overall positive impact on economic growth, in the long run only. This result is consistent with the findings in Arndt *et al.* (2015) and Juselius *et al.* (2014). Other results show that investment has a positive impact on economic growth, irrespective of the time frame considered. In addition, the coefficients of government expenditure, trade openness and inflation are statistically significant and negative, both in the short run and in the long run. These results suggest that a large proportion of government expenditure is committed to none productive sectors (GoZ, 2018; 2009). According to Dudzevičiūtė *et al.* (2017), government recurrent spending is growth-inhibiting in countries with ineffective governments. Contrary to study expectations, trade openness has a negative impact on economic growth in Zimbabwe. According to Keho (2017), trade openness has a negative impact on economic growth in countries with low financial development. The coefficients of foreign direct investment and financial development are statistically insignificant. The error correction term ECM(-1) has the expected statistically significant negative sign, implying that in the event of a shock in the Zimbabwean economy, economic growth adjusts to equilibrium at a rate of 41.7% per annum.

Regarding diagnostic tests, the Breusch-Godfrey serial correlation LM test results show an F-statistic value of 0.662 with a p-value of 0.113 signifying absence of serial correlation problem. In addition, the applied model passes the performed stability test as revealed by cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMQ) plots in Figures 2 and 3, which are within the boundaries at 5% significance level, implying that the estimated results are reliable.

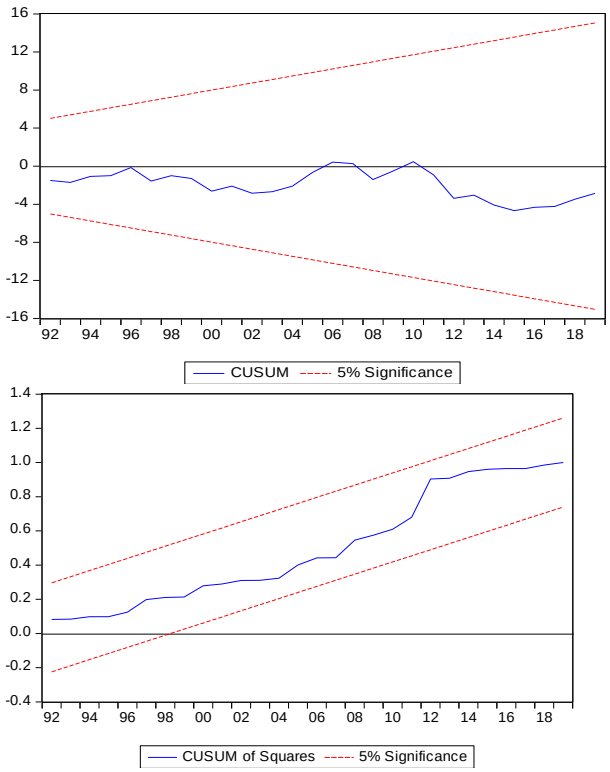


Figure 2. CUSUM and CUSUMQ Plots

5.3 Foreign Aid-Growth - Causality Analysis

Tables 6 and 7 present the cointegration and causality test results, respectively. The results reported in Table 6 show that cointegration exists only when economic growth is the dependent variable.

Table 6. Bound F-Test for Cointegration Results

Dependent Variable	Function	F-statistic	Cointegration Status
y	F(y| FDA, INV, TRADE)	3.822*	Cointegrated
FDA	F(FDA| y, INV, TRADE)	2.131	No cointegration
INV	F(INV| y, FDA, TRADE)	1.684	No cointegration
TRADE	F(TRADE| y, FDA, INV)	1.597	No cointegration

Asymptotic critical values (unrestricted intercept and no trend)						
Pesaran et al. (2001: 300)	10%		5%		1%	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*

Table CI(iii) Case III	2.72	3.77	3.23	4.35	4.29	5.61

*Note: * signify statistical significance at 10%.*

Table 7. ECM Based Granger-Causality Test Results

Dependent Variable	F-statistics [probability]				ECT_{t-1} [t-statistics]
	Δy_t	ΔFDA_t	ΔINV_t	$\Delta TRADE_t$	
Δy_t	-	4.702 [0.370]	2.596** [0.038]	2.082 [0.747]	-4.833*** [3.668]
ΔFDA_t	0.849 [0.169]	-	1.044 [0.811]	3.124 [0.525]	-
ΔINV_t	0.727 [0.303]	2.574 [0.769]	-	4.086* [0.092]	-
$\Delta TRADE_t$	2.892 [0.463]	1.653 [0.431]	3.752* [0.060]	-	-

*Note: * and ** signify statistical significance at 10% and 5% levels, respectively.*

The multivariate Granger-causality results reported in Table 7 indicate that there is no causal relationship between foreign aid and economic growth in Zimbabwe. The other results show that there is a distinct unidirectional causality from investment to economic growth. The results apply, irrespective of whether the causality is carried out in the short run or in the long run. This finding is confirmed by the corresponding F-statistic of investment in the economic growth function, which is statistically significant. The results further show that there is a short-run bidirectional causality between trade openness and investment. This short-run causality is confirmed by the corresponding F-statistics of trade openness in the investment function, and of investment in the trade openness function, which are statistically significant. Other results presented in Table 6 show that, there is no causality between: trade openness and economic growth; investment and foreign aid; trade openness and foreign aid.

6. Conclusion and Policy Suggestions

In this paper, the dynamic impact and causality relationships between foreign aid and economic growth in Zimbabwe, using time-series data spanning from 1980 to 2020, were examined. The study was motivated by the absence of comprehensive studies on the foreign aid-growth linkages in Zimbabwe, on the one hand, and the overall inconclusive results in literature on the relationship between foreign aid and economic growth, particularly in developing countries. The study employed an ARDL approach and ECM-based Granger-causality to examine the underlying relationships. The impact results show that foreign aid has a positive impact on economic growth in Zimbabwe, in the long run only. To reduce chances of committing the omission-of-variable-bias, two intermittent variables were included in the causality model, namely, investment and trade openness. The causality results provide no evidence of a causal relationship between foreign aid and economic growth in the study country. In light of the study findings, the study recommends the government of Zimbabwe to implement sound macroeconomic policies that attracts foreign development aid and thus sets the country on an

optimal and sustainable growth path. The study further recommends for public sector expenditure reforms to promote productive spending.

References

1. Arndt, C., Jones, S., and Tarp, F. (2015). Assessing foreign aid's long-run contribution to growth and development, World Development, 69(C), pp. 6-18.

2. Babalola, S., and Shittu, W. (2020). Foreign aid and economic growth in West Africa: Examining the roles of institutions, International Economic Journal, 34(3), pp. 534-552.

3. Besada, H. (2011). *Zimbabwe: Picking Up the Pieces.* Palgrave Macmillan, USA.

4. Bonga, W.G., and Nyoni, T. (2017). An empirical analysis of the determinants of private investment in Zimbabwe, Dynamic Research Journals' Journal of Economics & Finance, 2(4), pp. 38-54.

5. Bonny, I., and Dibua, J.I. (2003). Deconstructing Ujamaa: The Legacy of Julius Nyerere in the Quest for Social and Economic Development in Africa, *African Journal of Political Science,* 8(1), pp. 59-83.

6. Dudzevičiūtė, G., Šimelytė, A., and Liučvaitienė, A. (2017). Government expenditure and economic growth in the European Union countries, International Journal of Social Economics, 45(3), pp. 372-386.

7. Easterly, W. (2005). Can foreign aid save Africa? Clemens Lecture Series 2005 No. 17, Saint John's University. Collegeville. MN.

8. Gomanee, K., Girma, S., Morrissey, O. (2005). Aid and growth in sub-Saharan Africa: Accounting for transmission mechanisms, Journal of International Development, 17(1), pp. 105-1075.

9. Government of Zimbabwe (GoZ). (2009). Short-term emergency recovery programme. Ministry of Finance and Economic Development. Harare. Government Printers.

10. International Monetary Fund (IMF). (2001). Zimbabwe: 2001 Article IV consultation-staff report press release; and statement by the executive director for Zimbabwe. Washington DC. International Monetary Fund.

11. International Monetary Fund (IMF). (2009). Development Aid and Economic Growth: A Positive Long-Run Relation. WP/09/118. Washington DC. International Monetary Fund.

12. International Monetary Fund (IMF). (2014). Zimbabwe: 2014 Article IV consultation-staff report press release; and statement by the executive director for Zimbabwe. Washington DC. International Monetary Fund.

13. Jones, T. (2011). *Uncovering Zimbabwe's debt: The case for a democratic solution to the unjust debt burden*, Jubilee Debt Campaign. London.

14. Juselius, K., Møller, N.F., and Tarp, F. (2014). The long-run impact of foreign aid in 36 African countries: Insights from multivariate time series analysis, Oxford Bulletin of Economics and Statistics, 76(2), pp. 153-184.

15. Kabonga, I. (2020). Analysis of the Fast Track Land Reform Programme (FTLRP) contribution to access to natural, financial and physical capital in Norton, Zimbabwe, Cogent Social Sciences, 6(1), pp. 1-15.

16. Keho, Y. (2017). The impact of trade openness on economic growth: The case of Cote d'Ivoire, Cogent Economics & Finance, 5(1), pp. 1-14.

17. Lucas, R.E. Jr. (1988). On the mechanics of economic development, Journal of Monetary Economics, 22(1), pp. 3-42.

18. Mallik, G. (2008). Foreign aid and economic growth: A cointegration analysis of the six poorest African countries, *Economic Analysis and Policy*, 38(3), 251-260.

19. Meier, G.M., and Stiglitz, J.E. (2001). *Frontiers of development economics, the future in perspective.* Oxford: Oxford University Press.

20. Mitra, R., Hossain, M.S., and Hossain, M.I. (2015). Aid and per-capita economic growth in Asia: A panel cointegration tests, Economics Bulletin, 35(4), pp.1693-1699.

21. Ministry of Finance and Economic Development (MOFED). (2020). National budget statement. Fidelity Printers. Harare.

22. Moyo, L., and Mafuso, L.T. (2017). The effectiveness of foreign aid on economic development in developing countries: A Case of Zimbabwe (1980-2000), Journal of Social Sciences, 52(1-3), pp. 173-187.

23. Mupunga, N., and Le Roux, P. (2014). Analysing the theoretical and empirical foundations of public debt dynamics in Zimbabwe, Economic Research Southern Africa (ERSA), pp. 1-20.

24. Ndambendia, H., and Njoupouognigni, M. (2010). Foreign aid, foreign direct investment and economic growth in sub-Saharan Africa: Evidence from pooled mean group estimator (PMG), International Journal of Economics and Finance, 2(3), pp. 39-45.

25. Odhiambo, N.M. (2021). Energy consumption and economic growth in Botswana: empirical evidence from a disaggregated data, International Review of Applied Economics, 35(1), pp. 3-24.

26. Pesaran, M.H., Shin, Y., and Smith, R. (2001). Bounds testing approaches to the analysis of level relationships, Journal of Applied Econometrics, 16(3), pp. 289-326.

27. Riddell, R. (1984). Zimbabwe: The economy four years after independence, African Affairs, 83(333), pp. 463-476.

28. World Bank. (2020). World development indicators. Washington DC. World Bank. [Online]. Retrieved from <http://databank.worldbank.org/data/databases.aspx>. [Accessed 21 January 2021].

29. Yiew, T.H., and Lau, E. (2018). Does foreign aid contribute to or impeded economic growth? Journal of International Studies, 11(3), pp. 21-30.