

## Foreign Aid – Economic Growth Nexus: An Empirical Study of the Zimbabwean Case <sup>1</sup>

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### ABSTRACT

The foreign aid – economic growth controversy is antique and remains vague as contemporary empirics still give mixed conclusions. Being one of the perennial beneficiaries and dependants of foreign aid, Zimbabwe has a stake in the foreign aid – economic growth debate. Like many other developing countries, Zimbabwe has been receiving continuous flow of foreign aid. Ironically, the nation continues to struggle economically and there seems to be no clear evidence on whether or not such aid has been impacting on Zimbabwe positively. Employing the OLS methodology and using the 26-year annual time series data from 1991 to 2016, this study sought to empirically establish the specific relationship between foreign aid and economic growth in Zimbabwe. Results of the study revealed a significant negative impact of foreign aid on economic growth in the short-run. The study recommends, among other possible policy remedies to Zimbabwe, the establishment of strong institutions, avoiding dependency on foreign aid through well-structured domestic resource mobilization initiatives, proper engagement of the donor community as well as accurate channeling of foreign aid resources to productive and growth enhancing economic sectors.

**Key Words:** Cointegration, Economic Growth, Foreign Aid, OLS, Zimbabwe

### 1. INTRODUCTION

Foreign aid, often referred to as Official Development Assistance (ODA) consists of resource transfers from the official sector, in the form of grants and loans at concessional financial terms, to developing countries (Moreira, 2005). Promotion of economic growth or development as well as welfare of developing countries has been defined as the prime objective of foreign aid (Moreira, 2005; McMillan, 2011; Mafuso and Moyo, 2017). Most orthodox growth theories in economics prove the importance of foreign aid in spurring economic growth although a few antagonistic theories are also available.

The relationship between foreign aid and economic growth has been explained with mixed assertions in both theoretical economic literature and empirical studies. McMillan (2011), for instance, identifies a three-fold taxonomy of the aid-growth nexus: positive aid-growth correlation, negative aid-growth correlation and conditional aid-growth correlation. Olaniyan (1996) suggest that foreign aid, in conjunction with foreign investment, the expansion of foreign trade as well as the application of technology are expected to play leading roles in the process of economic growth and this is consistent with McMillan's positive aid-growth correlation. Negative aid-growth correlation, on the other hand, relates to the anti-aid philosophy where foreign aid is

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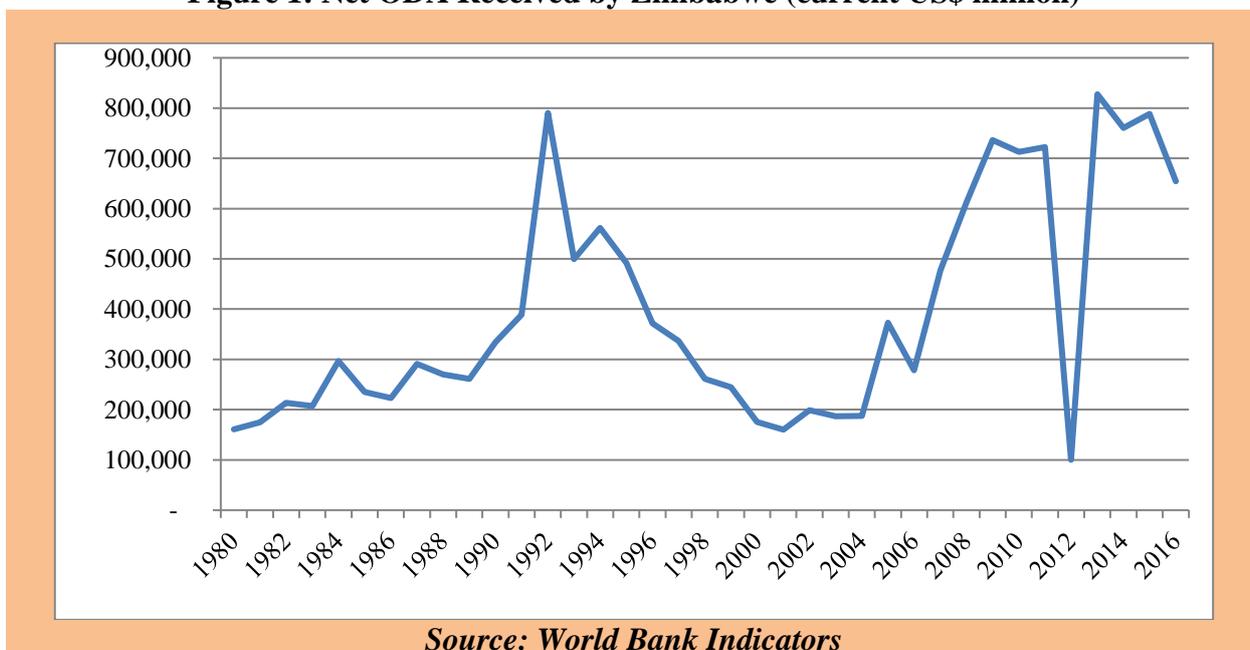
regarded as having no effect, if not even detrimental to economic growth. Conditional aid-growth correlation represents the school of thought where aid can be effective or ineffective depending on certain donor conditionalities and country circumstances (McMillan, 2011). For instance, despite foreign aid’s potential to positively contribute to economic growth of any country, the existence of a conducive business environment and favourable institutions matter.

The existence of foreign assistance has been on the global scene as it has been in existence since the creation of national states and republics (Abouraia, 2014). Nyoni and Bonga (2017) suggest that foreign aid is one of the most important sources of capital for most developing countries. World Bank, in various reports of Sub Saharan African economies from early 1980s up to 2000s, has emphasized the increase in foreign aid as an important tool in remediating poverty and ensuring economic prosperity in African countries (Albiman, 2016). However, Moyo and Mafuso (2017) are of the view that foreign aid to Africa has generally benefited the ruling elites, enabling and perpetuating corrupt governments’ hold on power, thereby entrenching the pervasive under-development that has ravaged the continent.

## 2. STYLISTED FACTS ABOUT FOREIGN AID AND ECONOMIC GROWTH IN ZIMBABWE

Zimbabwe is among many nations that have been priority areas for donors and whose dire need for aid persists. Attempts for Zimbabwe to exclusively achieve growth objectives through domestic resource mobilisation are currently impractical. Since its independence from the British colonial rule in 1980, net ODA received by Zimbabwe maintained an uptrend until 1992 when the trend reversed. Figure 1 below depicts net ODA received by Zimbabwe from its birth in 1980 to 2016.

**Figure 1: Net ODA Received by Zimbabwe (current US\$ million)**



*Source: World Bank Indicators*

Another decade of a downtrend in net ODA received carried over before picking up a northward direction in 2002. The country however experienced the sharpest fall in ODA in 2012 when ODA

was at \$100,159 million, down from \$722,580 million in 2011. This sharp decrease was however transitory as 2013 registered the largest jump and all-time high ODA of \$827,540 million.

In terms of ODA regional analysis, more than a quarter of ODA provided to Africa goes to the SADC region as annotated in Table 1 below. In the SADC region alone, Zimbabwe seems to be around the midline in terms ODA receipts or the total share, with countries such as the Democratic Republic of Congo, Tanzania and Mozambique leading in terms of 2010 to 2014 average ODA shares. Seychelles, Botswana and Mauritius occupied the bottom three in 2010 to 2014 average ODA shares. The tabular trend below shows that not only Zimbabwe should be skeptical about the sustainability of foreign aid, but all SADC countries. The trend shows that ODA received is not stable and dependency on foreign aid may be highly detrimental to national growth.

**Table 1: Net ODA to SADC by Recipient Country (USD million, 2013 prices)**

	2010-2014	1980-1989	1990-1999	2000-2009	2010-2014	2012	2013	2014
	ODA % share to Africa	Annual averages				Annual amounts		
<b>Angola</b>	0.5	239	553	528	238	243	283	230
<b>Botswana</b>	0.2	279	166	153	112	74	107	99
<b>Congo (DR)</b>	6.4	1,034	429	2,255	3,392	2,898	2,583	2,373
<b>Lesotho</b>	0.5	234	160	105	244	279	320	103
<b>Malawi</b>	1.9	448	686	726	1,016	1,174	1,130	926
<b>Mauritius</b>	0.3	109	63	53	139	185	148	49
<b>Mozambique</b>	4.0	930	1,658	1,923	2,121	2,105	2,315	2,096
<b>Namibia</b>	0.5	23	250	220	258	262	261	223
<b>Seychelles</b>	0.1	48	29	25	30	36	25	10
<b>South Africa</b>	2.3	-	437	879	1,186	1,091	1,295	1,061
<b>Swaziland</b>	0.2	78	66	46	101	90	116	85
<b>Tanzania</b>	5.5	1,733	1,548	2,264	2,886	2,842	3,431	2,629
<b>Zambia</b>	1.9	779	1,192	1,248	1,016	964	1,142	984
<b>Zimbabwe</b>	1.5	557	639	400	810	1,008	824	745
<b>TOTALS</b>	<b>25.8</b>	<b>6,491</b>	<b>7,876</b>	<b>10,825</b>	<b>13,549</b>	<b>13,251</b>	<b>13,980</b>	<b>11,613</b>

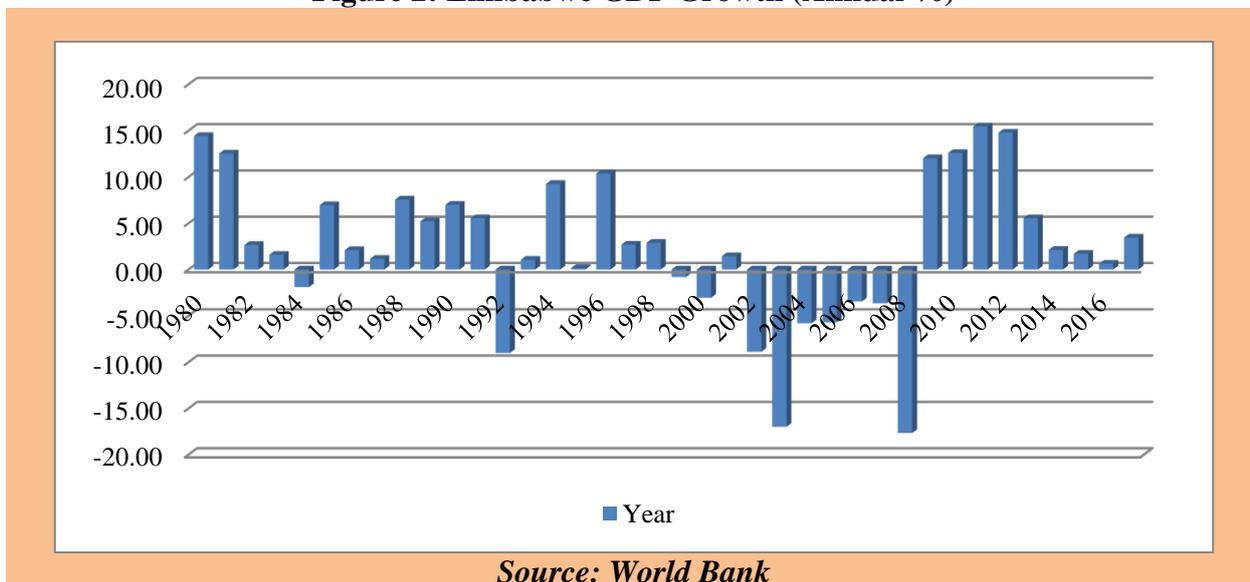
*Source: Author's own computations from World Bank Indicators*

Like ODA, GDP per capita in Zimbabwe took off from independence with a northward trend although this trend persisted for only three years before it took an opposite direction, which direction was maintained for three years as well. GDP per capita however improved for half a decade from 1986 until the 1990s when unfavorable economic fundamentals were partly explained to have stemmed from structural adjustment programmes. Sometimes partially attributed to the land reform programme, GDP per capita also followed a downtrend from the year 2002 until the trend was taken to a halt in 2009 when the government abandoned the moribund Zimbabwean dollar and adopted a multi-currency regime.

In analysing economic growth and development, it is imperative to as well assess growth rates in the gross domestic product (GDP). Improving growth rates are a crude indication of economic

progression. Figure 2 below shows annual percentage GDP growth rates for Zimbabwe since liberation in 1980 to 2017.

**Figure 2: Zimbabwe GDP Growth (Annual %)**



Source: World Bank

In terms of GDP growth, Zimbabwe started well in 1980 when it recorded the highest growth rate of 14.42% for more than three decades, which record was only broken in 2011 when GDP growth reached an all time highest rate of 15.45%. Since 1980, Zimbabwe recorded only two negative annual GDP growths (1985 and 1992) with the rest years in two decades to 1999 recording positive growth rates. Continuous negative GDP growth rates were recorded from 2002 to the worst record of 17.7% in 2008 before sharply jumping to 12% in 2009. The economy maintained positive and increasing growth rates although growth rates moved southwards in 2013 when the economy recorded a mere 5.5% growth rate, down from 14.8% in the previous year.

### 3. LITERATURE REVIEW

Development economics is rich with a number of ancient and contemporary theoretical models that seek to unpack and elucidate the link between foreign aid and economic growth. Most of these models stem from the works of Harrod (1939) and Domar (1946) and support the view that foreign aid has a positive impact on economic growth. The Two Gap Model, the Three Gap Model, the Thirlwall-Hussain Model and the Poverty Trap Model are all of the view that foreign aid influence economic growth positively. However, there are also some models that explain the damaging effects of foreign aid and the dependency theory, credited to Raul Prebisch and Paul Hans Singer, is a good example.

Using the ARDL cointegration technique and time series data from 1980 to 2015, Mustafa et al (2018) investigated the impact of foreign aid on economic growth in Sudan. The study found the existence of a significant and positive long-run impact of foreign aid (represented by ODA) on GDP growth. Human capital development, export expansion, availability of banking credit to the private sector and privatization of parastatals or state-owned institutions were the incorporated

control variables that were also found to be significant and positively correlated with economic growth.

Using a panel data sample of 95 developing countries (Zimbabwe included), Yiew and Lau (2018) empirically investigated the role and impact of foreign aid (proxied by ODA) on economic growth (represented by GDP). The study found a U-shape relationship between foreign aid and economic growth. This means that initially, foreign aid would have a negative impact on economic growth and then positively affect economic growth after some period of time.

Using the autoregressive distributed lag (ARDL) bounds testing approach, Sotham (2018) investigated the growth impact of foreign aid in Cambodia over the period 1980-2014. The study found that foreign aid had a positive impact on growth in the short-run whilst negatively impacting on investment and growth in the long-run. The study recommended a move away from aid dependence and instituting investment friendly policies that would elevate domestic and foreign capital in Cambodia.

Kabir (2018), using data for 1972-2016 in Bangladesh, found a conditional positive impact of foreign aid on economic growth and development in Bangladesh. The study concluded that foreign aid can have positive growth effects in Bangladesh only if donors allow the government a considerable level of discretion to pursue its own development paradigm using the donated funds or capital.

Moyo and Mafuso (2017) used Zimbabwe (1980-2000) as a case study to investigate the effectiveness of foreign aid in causing economic development in developing countries. The study concluded that foreign aid in Zimbabwe, for the period reviewed, played a pivotal role although donor conditionalities were exerting an antagonistic role of pulling down positive effects of foreign aid.

Nyoni and Bonga (2017) employed a systematic review of literature as a methodology in a study intended to establish the foreign aid – economic growth nexus in developing countries. The study revealed that foreign aid stimulates economic growth in most developing countries although this link may be reversed in countries where bad governance and corruption are prevalent.

Tang and Bundhoo (2017) carried out a study to establish the link between foreign aid and the economic growth for Sub-Saharan Africa. The study used panel data from 1990 to 2012 for ten largest foreign aid recipients in Sub-Saharan Africa. Results of the study show that aid on its own does not impact significantly on economic growth but potentially increases growth provided the prevailing policy environment is favourable. The study suggests therefore that bad governance could be the reason why foreign aid is ineffective in Sub-Saharan Africa.

Balcioglu (2016) examined the relationship between the Turkish foreign aid and economic growth in the six independent Turkic states (Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan). The study used the panel cointegration methodology and data used spanned from 1992 to 2014. The study found a long run relationship between foreign aid and real economic growth and also concluded that the Turkish foreign aid has a significant and positive impact on economic growth for Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan.

Using West African countries' annual data from 1981 to 2008, Sheu and Ismaili (2016) investigated the effect on economic growth of foreign direct investment, investment, exports, broad money supply as well as foreign aid. The pooled regression, fixed effects and random effects models were used and results confirmed that foreign aid significantly and positively affect economic growth in West African countries.

Using Dynamic Ordinary Least Squares, Albiman (2016) analyses the impact of foreign aid to Tanzania's economic growth. The study used time series data from 1976-2014 (obtained from World Bank and UNCTAD) and found a negative impact of foreign aid to economic growth. The study showed also that foreign aid does not Granger Cause economic growth in the short run. The study recommended that Tanzania has to ensure integrity in the treatment of foreign aid and channel it towards productive sectors.

Using time-series data from 1972 to 2012 and the ARDL approach to cointegration, Appiah-Konadu et al (2016) investigated the effect of foreign aid on economic Growth in Ghana. The bounds test confirmed the existence of cointegration between foreign aid and economic growth in Ghana. Foreign aid was found to have an antagonistic impact on economic growth.

A study by Alemu and Lee (2015) investigated the relationship between foreign aid and economic growth in low and middle-income African countries. Employing a dynamic generalized method of moments (GMM) over a 15-year period between 1995 and 2010, the study selected a sample of 39 African countries (20 middle income and 19 low-income). Except for the sample of countries classified as middle-income, foreign aid (aid per capita) emerged to be a statistically significant determinant of economic growth in low-income countries. Results of the study showed that growth of low income African countries is heavily dependent on foreign aid.

Abouraia (2014) examined the impact of foreign aid on economic development of developing countries using the case of Philippines. Using the Ordinary Least Squares methodology, the study found out that foreign aid (represented by ODA per capita) has a positive impact on economic development in Philippines. Whilst foreign aid is helpful and cannot be denied, the study however challenges developing countries to create enabling environment that would lure foreign direct investment.

A few studies in the aid-growth literature suggest the neutrality of foreign aid and one such study was by Ahmed (2014), a cross-sectional study on aid to Sub-Saharan Africa. Zimbabwe included, 13 year period data (from 2000 to 2012) for 47 Sub-Saharan countries was used. OLS results of the study showed that foreign aid does not have a significant impact on economic growth in Sub-Saharan Africa.

Trinh (2014) investigated the foreign aid – economic growth nexus in Vietnam from 1993 to 2012. In order to ascertain the contribution of foreign aid to the factors of production, growth accounting analysis was found useful and was conducted in the study. Using the ARDL approach, the empirical results found a significant and positive correlation between foreign aid and economic growth in Vietnam. The study however makes it clear that the positive impact of foreign aid to economic growth is not outright as it acknowledges detrimental factors such as high volatility and unpredictability of aid inflow, absorptive capacity constraints as well as rent seeking behavior.

Gyimah-Brempong and Racine (2014) analysed the impact of foreign aid on developing countries' economic growth. The study found a significant impact of aid on economic growth and also

revealed that the effect depends on how foreign aid is measured. The study found a positive growth effect when aid was measured as the ratio of net aid disbursement to GNI whereas measuring aid as net aid inflow per capita showed no significant growth effect of aid. The study concluded that a good policy environment increases the effectiveness of aid in less developed countries.

## 4. RESEARCH METHODOLOGY

### 4.1 Model Specification

Theoretical growth literatures as well as related empirical studies form the basis of the empirical model for estimating the foreign aid – economic growth nexus in this study. Among other relevant covariates that affect economic growth and development as explained by the theoretical growth literature and supported by other relevant empirical studies, the effect of foreign aid shall be examined. As in Albiman (2016), the starting point for the study’s model specification is the Solow’s neoclassical growth model. The study uses a Cobb Douglas production function, which assumes constant returns to scale and has two factors of production: labour and capital. The model would therefore be illustrated algebraically as in equation (1) below:

$$Y = F(K, AL) = K^\alpha (AL)^{1-\alpha} \quad 0 < \alpha < 1. \dots\dots\dots(1)$$

Where Y represents economic growth

*K* is the capital stock used in production

*L* is the labour force

*A* is factor productivity

$\alpha$  and  $1-\alpha$  are returns (elasticities) with respect to capital and labour respectively. The value taken by  $\alpha$  shows that all factors of production, capital and labour, are relevant in generating economic growth. In other words, capital and labour complement each other. The sum of powers for the factor inputs in this Cobb Douglas production function is unit and this denotes constant returns to scale.

Foreign aid is incorporated in the model as an input through the factor productivity denoted by *A*. The study adopts Albiman (2016)’s reasonable assumption that factor productivity *A* is a combination of foreign aid, foreign direct investment as well as exports. An inverted U-shaped relationship between aid and economic development has been found by recent studies to hold. This discovery means that there are diminishing returns to aid caused by absorptive capacity constrains in recipient countries (Ekanayake and Chatrna, 2010). The study therefore incorporates this relationship by the inclusion of a square term. Thus, linearising equation (1) by taking logarithms of both the output and covariates would result in an empirical model illustrated as equation (2) below. The resultant log transformation is advantageous in terms of simple interpretation of coefficients as well as making highly skewed data distributions less skewed. Taking logs is also expected to have the same advantageous effect as deflating: it stabilizes variances, that is, reducing the problem of heteroskedasticity. Below is the linearised empirical model:

$$LGDP_t = \alpha + \beta_1LFDI_t + \beta_2LAID_t + \beta_3LAID^2 + \beta_4LEXP_t + \beta_5LCAP_t + \beta_6LLAB_t + \mu_t(2)$$

Variables (the dependent and independent variables) in the model are all described and defined in table 2 below:

**Table 2: Explanation of variables**

Variable	Symbol	Description and Justification	Expected Sign
Economic Growth	LGDP	Represents the natural log of the real GD per capita and this shall act as a proxy of economic growth.	N/A
Foreign Direct Investment	LFDI	Denotes the natural log of Foreign Direct Investment as a percentage of GDP. FDI affects economic growth by encouraging adoption of new technologies in the production process through technological spillovers, by stimulating knowledge transfer and by introducing alternative management practices (Mahembe and Odhiambo, 2014).	Positive
Foreign Aid	LAID	Natural log of foreign aid. This shall be proxied by Official Development Assistance (ODA) as a percentage of GDP. Growth theories and empirical literature support the view that foreign aid should spur economic growth.	Positive or negative
Square of Foreign Aid	LAID <sup>2</sup>	Natural log of the square of ODA as a percentage of GDP. The square variable captures the possible non-linearity of the relationship at the same time investigating the possibility of either the U-shaped or inverted U-shaped relationship of economic growth and foreign aid.	Positive or negative
Exports	LEXP	Represents the natural log of exports and data for exports as a percentage of GDP shall be used. For decades, economies that relied on exports to drive their economies have achieved considerable success in accelerating their economic growth (Tang et al. 2015).	Positive
Capital	LCAP	Natural log of capital and shall be proxied by the gross fixed capital formation as a percentage of GDP. Capital influences economic growth through various channels and one major channel is the direct contribution of capital equipment to improved production and efficiency.	Positive
Labour	LLAB	Natural log of the labour force as a factor of production and shall be proxied by population growth rate. Assuming the validity of the continuity property of a production function, expansion of the labour force is expected to positively impact on output.	Positive

*Source: Author's own analysis*

## 4.2 Data Types and Sources

The quality of any empirical findings is a joint product of data quality and the correct specification of the model. The study used secondary data obtained from the World Bank, one of the most reliable sources if not the most reliable. Regression of the empirical model exclusively made use of secondary data from the World Bank and this ensures more credibility of results as compared to the use of self-gathered primary data. The study uses annual time-series data for the 26 years from 1991 to 2016. Data for the 37 year period from Zimbabwe’s independence in 1980 to 2016 was initially used but the first eleven years were dropped after taking logs. This was necessitated by some negative values of FDI which became undefined after taking logs.

## 5. PRESENTATION AND INTERPRETATION OF RESULTS

### 5.1 Descriptive Statistics

Descriptive statistics provide a summarized analysis about the samples and measures of data series. In econometrics, data behaviour such as skewness, normality and deviation (spread) ought to be inferred. The summary descriptive statistics of all variables used in the study are presented in Table 3 below.

**Table 3: Descriptive Statistics**

	LGDP	LCAP	LEXP	LFDI	LLAB	LODA	LODASQ
<b>Mean</b>	2.799834	1.035299	1.511467	-0.110560	0.234291	0.756833	1.513666
<b>Median</b>	2.793825	1.085726	1.538257	0.074988	0.248635	0.737443	1.474886
<b>Maximum</b>	3.014275	1.390533	1.637421	0.841363	0.401491	1.188238	2.376475
<b>Minimum</b>	2.512789	0.301126	1.339184	-1.490908	0.025830	0.395310	0.790620
<b>Std. Dev.</b>	0.141619	0.329875	0.082982	0.581370	0.117149	0.202272	0.404543
<b>Skewness</b>	0.008884	-1.072635	-0.580721	-0.853143	-0.349737	0.160535	0.160535
<b>Kurtosis</b>	2.165818	2.937283	2.241741	3.021721	1.886296	2.310548	2.310548
<b>JB Statistic</b>	0.754190	4.989964	2.084231	3.154539	1.873735	0.626634	0.626634
<b>Probability-JB</b>	0.685851	0.082498	0.352708	0.206538	0.391853	0.731018	0.731018
<b>Observations</b>	26	26	26	26	26	26	26

**Key:** LGDP= Log of Gross Domestic Product, LCAP=Log of Capital, LEXP=Log of Exports, LFDI=Log of Foreign Direct Investment, LLAB=Log of Labour, LODA=Log of Official Development Assistance, LODASQ=Log of the square of Official Development Assistance, JB=Jarque-Bera

*Source: Source: Author’s own computation from E-views*

The Jarque-Bera (JB) statistic shows that all data series are normally distributed at 5% level of significance. This is also supported by the measures of Kurtosis which are below and around 3 (the rule of thumb for normality) for all variables. The descriptive statistics also reveal that all variables are not very skewed and this is shown by very small positive values of the skewness measure (positive skewness) and also very small negative values (negative skewness).

## 5.2 Results from Unit Root Stationarity Test

Stationarity tests were carried out using the ADF test and a synopsis of results is presented in Table 4 below.

**Table 4: Summary of Stationarity Tests**

Variable	ADF Test Statistic (trend and intercept)	Critical value at 5%	Decision
LGDP	-1.559805	-3.603202	Not stationary
DLGDP	-4.856908	-3.612199	I(1)
LCAP	-2.478924	-3.603202	Not stationary
	-6.118198	-3.612199	I(1)
LEXP	-3.565235	-3.603202	Not stationary
DLEXP	-5.912619	-3.622033	I(1)
LFDI	-3.207965	-3.603202	Not stationary
DLFDI	-6.287576	-3.612199	I(1)
LLAB	-2.872376	-3.632896	Not stationary
DLLAB	-1.783049	-3.644963	Not stationary
DDLLAB	-4.001524	-3.632896	I(2)
LODA	-1.858903	-3.603202	Not stationary
DLODA	-6.363530	-3.612199	I(1)
LAODASQ	-1.858903	-3.603202	Not stationary
DLODASQ	-6.363530	-3.612199	I(1)

Key: D means differenced once and DD means differenced twice  
*Source: Author's own computation from E-views*

The null hypothesis that the series is non-stationary is rejected in favor of stationarity only if the absolute value of the estimated ADF statistic is greater than the absolute critical value. Of all the original data, not even a single series was stationary in level and therefore all series were differenced at least once. Except for LLAB which was stationary after differencing twice, the rest of the variables were stationary after differencing once, hence integrated of order 1, that is, I (1).

### 5.1.3 Multicollinearity

The correlation matrix in Table 5 shows correlation among various explanatory variables.

**Table 5: Correlation Matrix**

	DDLLAB	DLCAP	DLEXP	DLFDI	DLODA
DLCAP	-0.254426				
DLEXP	0.128817	-0.025246			
DLFDI	0.253800	-0.008218	0.156931		
DLODA	0.243067	-0.221650	0.107003	0.414361	
DLODASQ	0.243067	-0.221650	0.107003	0.414361	1.000000

*Source: Author's own computation from E-views*

The problem of multicollinearity is indicated by a high absolute correlation (above 0.8) between two explanatory variables. As shown in table 5, multicollinearity is not a problem for all variables except for the correlation between DLODA and DLODASQ which is perfect. All other correlations are far below the 80% benchmark, with highest being that between DLFDI and DLODA or DLFDI and DLODASQ which is 0.414361. As a solution to the multicollinearity problem detected in table 5 above, the log of the square of ODA (DLODASQ) shall be dropped, leaving the empirical model with only explanatory variables that are not highly correlated. Autocorrelation can generally be tested using the Durbin-Watson test. The rule of thumb for the

### 5.2 Results Presentation

Table 7 below gives a synopsis of the results of the empirical model generated by the study. The summary table presents coefficients, standard errors, test statistics as well as corresponding probability values for the constant term and all explanatory variables used in the study. Additionally, the table incorporates some pertinent model statistics such as the R-squared and the Durbin-Watson Statistic.

**Table 6: Summary of the empirical model results**

VARIABLE	COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
Constant	0.002905	0.012421	0.233878	0.8177
Capital	0.027957	0.041810	0.668655	0.5122
Exports	-0.491906	0.145097	-3.390176*	0.0033
FDI	0.021657	0.028368	0.763440	0.4551
Labour	0.136368	1.136440	0.119996	0.9058
ODA	-0.229111	0.105098	-2.179966*	0.0428
<b>R-squared: 0.514443</b>				
<b>F-statistic: 3.814159</b>				
<b>Probability (F-Statistic): 0.015668</b>				
<b>Durbin-Watson statistic: 1.365694</b>				
<i>Key: STD. ERROR= Standard Error, T-STATISTIC= Test Statistic, * = significant at 5% level</i>				
<i>Source: Author's own computation from E-views</i>				

DW test statistic is that it should be around 2. The DW statistic for the empirical model estimation in this study is 1.365694 and this roughly shows that the problem of autocorrelation is not available in the model.

The Breusch-Pagan-Godfrey Test in the study tested the null hypothesis of homoskedasticity against the alternative hypothesis of the presence of heteroskedasticity. The test failed to reject the null hypothesis and therefore implying the absence of heteroskedastic variances. The probability of the Breusch-Pagan-Godfrey F-Statistic is 0.1589 and this is the basis for the conclusion.

### 5.3 Cointegration

The two step Engel-Granger Method (1987) was used to test for cointegration. The method simply involves generating the residual series of the model and then testing the stationarity of the series using the Augmented Dickey-Fuller Test.

The preliminary regression equation consistent with results in 4.2 above can be illustrated as follows:

$$d(LGDP) = 0.002905 + 0.027957 * d(LCAP) - 0.491906 * d(LEXP) + 0.021657 * d(LFDI) + 0.136368 * d(LLAB, 2) - 0.229111 * d(LODA) + \text{error term}$$

The residual series equation (denoted by *error*) therefore becomes:

$$\begin{aligned} \text{error} &= d(LGDP) - [0.002905 + 0.027957 * d(LCAP) - 0.491906 * d(LEXP) \\ &\quad + 0.021657 * d(LFDI) + 0.136368 * d(LLAB, 2) - 0.229111 * d(LODA)] \\ &= d(LGDP) - 0.002905 - 0.027957 * d(LCAP) + 0.491906 * d(LEXP) - 0.021657 \\ &\quad * d(LFDI) - 0.136368 * d(LLAB, 2) + 0.229111 * d(LODA) \end{aligned}$$

**Table 7: Augmented Dickey-Fuller Unit Root Test on Error**

Augmented Dickey-Fuller Test Statistic		-3.446284
Critical Test Values:	Level of Significance	
	1%	-3.752946
	5%	-2.998064
	10%	-2.638752
<i>Source: Own calculations from E-Views 8</i>		

Since the absolute value of the ADF Test Statistic is greater than absolute values of the critical test value at 5 per cent level of significance as annotated in Table 8 above, a conclusion can be made that the residuals are stationary at level and this implies cointegration.

#### 5.4 Results Interpretation

The R-squared of the empirical model revealed that about 51 per cent variation in economic growth is explained by the variation in the explanatory variables. This is a rough indication that the hypothesis that the model has a good fit may not be rejected. Also the F-statistic, with a probability of 0.015668, shows that the model is significant at the 5% level. Despite having positive coefficients as expected, the model shows that capital, FDI and labour are insignificant in explaining Zimbabwe's economic growth. On the other hand, the model shows that exports and ODA are significant. Results in relation to exports and ODA show that these two variables have a negative impact on economic growth and although common in other empirical findings, this is contradictory to priori expectations.

Results of the study show that exports negatively impact on Zimbabwe's economic growth, a result that contradicts orthodox economic theory. Quantitatively, results show that a 10 per cent increase in exports would result to a decrease in economic growth by 4.92 per cent. This seemingly spurious result may be a communication that Zimbabwean exports are insufficient or do not meet the quality that would trigger growth in the northward direction. Issues in Zimbabwe related to beneficiation of exports and value addition may validate this result.

Foreign aid, as proxied by ODA, was found to be negatively correlated to Zimbabwe's economic growth between 1991 and 2016. The study shows that a 10 per cent rise in ODA would correspond to a sink in economic growth by 2.29 per cent. Despite the result's contradiction to the priori expectation, it is not a very peculiar result. This result has several possible implications and is consistent with some empirical results such as Albiman (2016), Appiah-Konadu et al (2016), Kabete (2008) and Mallik (2008). Albiman (2016) suggests that an increase in foreign aid can distort domestic saving, increase domestic consumptions and discourages tax revenue in a given country. Political abuse of foreign aid, poor institutions and the unfavorable business environment may all play roles in negating the possible gains of foreign aid.

## 6. CONCLUSIONS AND RECOMMENDATION

The study tested the link between foreign aid and economic growth in Zimbabwe using the OLS methodology and time series data for the 26-year period from 1991 to 2016. Most control variables used in the empirical model as dependent variables for economic growth were found to be insignificant except for the variable of interest, foreign aid as well as exports. Foreign aid as well as exports were however found by the study to negatively influence economic growth. The negative impact of foreign aid to economic growth may imply that Zimbabwe needs not to depend on foreign aid as this dependency instead retards economic progression.

Alternatively, aid may not be a problem on its own but root problems may related to a number of issues such as the quality of institutions that are expected to complement the effectiveness of foreign aid. This result necessitates the need for the government and responsible authorities to relook at and improve the implementation of foreign aid induced projects. As Albiman (2016) also suggest, the government ought to channel foreign aid to more productive sectors such as industry development, infrastructure as well as human capital development.

Zimbabwe is strongly recommended to rationalize government expenditure and also make sure that foreign aid is properly used for intended projects. The country also needs to establish and implement favourable stakeholder engagement meant to synchronize critical national development needs with the donor community's requirements. A platform should be created where each party is willing to compromise in ensuring that a proper and optimal course of action is taken. In turn, the government should commit itself to transparency and integrity in the implementation of such projects. Systematic development project monitoring and evaluation should also help the government and the donor community to review project processes in a bid to make sure donor projects improve economic growth and development.

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