Growth Effects of Foreign Direct Investments in Zimbabwe: Do Sources Matter?

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Abstract
The study investigated foreign direct investment (FDI) growth effects in Zimbabwe using data spanning 1990-2019. FDI-led growth theories often view FDI as an enabler of economic growth. However, the extent may depend upon the source of FDI. Nonetheless, existing studies on Zimbabwe base their conclusions on aggregate FDI. Accordingly, we provide fresh evidence by disaggregating FDI inflows by sources. This is logical given the reality that FDI from different sources is heterogeneous. We used the Autoregressive-Distributed-Lag (ARDL) technique to estimate a time series model derived from neoclassical and endogenous growth models. Results indicated that FDI has a significantly positive growth effect. More importantly, we document that FDI sources do matter greatly. Specifically, FDI flows from Africa and Asia were found to have positive and significant growth effects. However, FDI from Europe and the United States has negative and insignificant impacts. We proffer two recommendations. Zimbabwe should attract more FDI from economies/regions in the vicinity of its level of development. Accordingly, Zimbabwe should rationally embrace the recently launched AfCFTA. It is vital to strike a balance between market deepening and promoting domestic production. Also, while most FDI from Asia is from is China, we urge Zimbabwe to provide a conducive environment to investors from the rest of Asia. This can be achieved through signing bilateral FDI agreements with Asian countries.

Key Words: FDI, Economic growth; Trade openness; ARDL; Zimbabwe.
JEL Classification Codes: F21, F36, F43

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1. Introduction

Foreign direct investment (FDI) remains an important key aspect of global development discourse. Target 10.7 for Sustainable Development Goal (SDG) 10 recognises that FDI into Africa and other least developed and developing countries can go a long way in reducing inequality within and among countries (United Nations, 2015). FDI benefits developing countries in transferring production technology, skills, enhancing productivity, creating business for local firms, generating better-paying jobs, and accessing international marketing networks (World Bank, 2017). According to the United Nations Conference on Trade and Development (UNCTAD) (2018), FDI is a vital source of private external finance for developing countries. It adds to investible resources and capital formation. Moreso, in improving the host country's economy and productivity, FDI enhances the private sector-led growth, thereby effectively fighting poverty (Organisation of Economic Cooperation and Development, (OECD), 2019).

The main objective of the study is to investigate the growth effects of FDI in Zimbabwe. The study appreciates existing evidence on the impact of FDI on economic growth in Zimbabwe. On the one hand, evidence points to a positive impact (Moyo, 2013; Musharavati, 2017), while on the other hand, Makova (2010) provides evidence that economic growth is not exogenous to FDI. These studies have revealed important findings. However, their conclusions are based on aggregated FDI. The current study makes two contributions. Firstly, it seeks to provide novel evidence by acknowledging the impact of FDI by sources. Recognising FDI by sources provides a fair assessment given the heterogeneity of concessions, terms, and conditions attached to foreign investments. Accordingly, instead of examining the impact of aggregate FDI, the study disaggregates FDI inflows according to major regions (United States, Europe, Asia, and Africa). Secondly, in line with the increased role of trade openness as a conduit of FDI, the study provides evidence of source trade-augmented FDI on economic growth.

The remainder of this study is organised as follows: Section 2 gives an overview of FDI and economic growth in Zimbabwe. Section 3 reviews related theoretical and empirical literature, while section 4 details the study materials and methods. Results are presented and discussed in section 5, and section 6 concludes with recommendations.

2. FDI and Economic Growth in Zimbabwe

The Zimbabwean government inherited a highly controlled and inward-looking economy at the time of independence in 1980. The business environment was associated with price controls, labour market restrictions, and investment control procedures unfavourable to foreign investors (Labour and Economic Development Research Institute of Zimbabwe (LEDRIZ, 2011). To promote FDI, the government of Zimbabwe adopted the IMF-funded Economic Structural Adjustment Programme (ESAP). The policy was designed to liberalise trade by eliminating controls and trade restrictions, thereby increasing FDI flows (Robnison, 2002). In 1992 the Zimbabwe Investment Centre (ZIC) was established as part of the structural reform. The ZIC was a one-stop-shop for FDI mobilisation, which offered tax exemptions and tax holidays as a vehicle to encourage foreign capital investment. It also promoted the use of labor-intensive production techniques, transfer of technology, utilisation of local raw materials, and the development of rural areas (Zimbabwe Economic Policy Analysis and Research Unit (ZEPARU), 2011).

The government of Zimbabwe continues to see FDI as an essential ingredient in its growth endeavours. Accordingly, the government gazetted the Zimbabwe Development Agency bill

(ZIDA) in 2019 to give FDI comfort and security. Also, through the Transitional Stabilisation Programme (TSP) (2018-2020) and later on the National Development Strategy (2021-2025), a raft of measures are lined to promote FDI inflows. As a result, Zimbabwe has seen FDI inflows increasing from US$23.2 million to US$280 million in 2019, having reached a record high of US$744.6 million in 2018 and averaging US$244.88 million (COMSTAT, 2021). Between 2010 and 2019, FDI stock as a percentage of GDP averaged 26.83%. Zimbabwe has received FDI inflows in the range with other developed countries such as Italy (17.94%), Germany (25.59%), France (26.69%), and the United States of America (29.42%) (UNCTAD 2019).

However, Zimbabwe is still a struggling economy in the developing zone despite the amounts of FDI stock recorded in the years. China, for instance, has an average FDI stock over GDP of 10.58% for the period 2009-2018, which is lower than that of Zimbabwe, but the Chinese economy is growing at a fast rate with a GDP growth rate averaging at nearly 10% a year, (World Bank, 2019). As shown in Figure 1, Zimbabwe has been recording positive and increasing FDI net inflows (%) GDP from 1990 to 2018. Nonetheless, the GDP growth rate over the period is mainly inelastic to FDI inflows. In particular, when net FDI inflows were increasing between 2001 and 2008, the economy was experiencing its worst-ever recession, registering a -17.6% growth in 2008. This unusual correlation has motivated this study. In addition, we hypothesise that the impact of FDI should vary with sources.

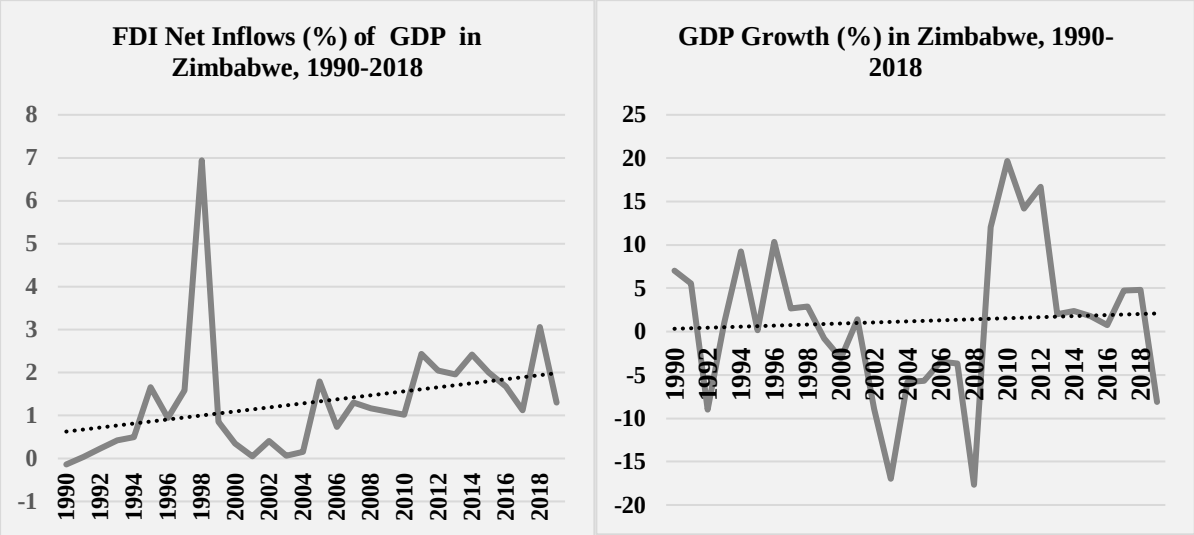

Figure 1: FDI Net Inflows (%) GDP and GDP Growth Rate in Zimbabwe, 1990-2018
Source: Authors' illustration from World Bank Development Indicators (2021).

Zimbabwe has been receiving FDI from all over the world though in the period 2000 to 2018, China and South Africa accounted for the bulk of the FDI stock in Zimbabwe, amounting to USD 556.30 million and USD 625.54 million, respectively, as shown in Figure 2, (UNCTAD, 2019). Mauritius, the United Kingdom, the United States of America, and Russia are also significant investors in Zimbabwe. Zimbabwe has also embraced intra-regional FDI from Africa with notable investing countries such as South Africa, Mauritius, Botswana, Kenya, and Zambia. The "Look East" policy adopted in 2003 has also benefited Zimbabwe as various projects such as the Kariba South, Victoria Falls International Airport construction, and Hwange power station expansion came on stream through cooperation with the Chinese government.

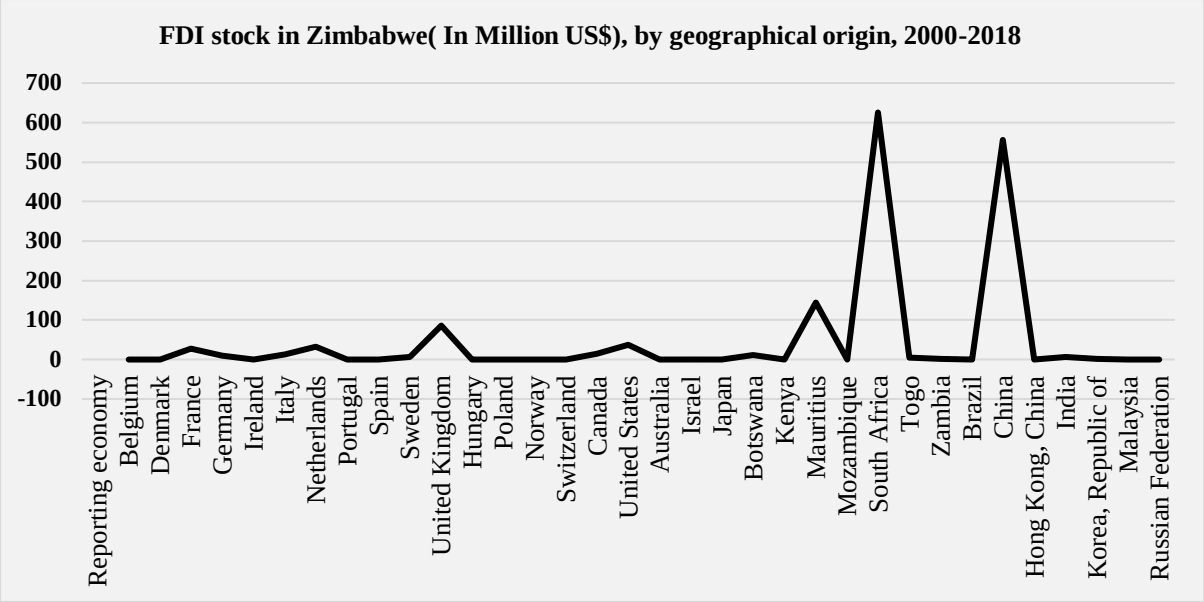

Figure 2: FDI stock in Zimbabwe (In Million US$), by geographical origin, 2000-2018.
Source: Authors' illustration from UNCTAD FDI Statistics (2019).

3. Related Literature

3.1 Theoretical Literature Review

3.1.1 FDI and Economic Growth

We trace the transmission mechanisms through which FDI causes economic growth to Neoclassical growth theory and endogenous growth theory. The Neoclassical theory, developed by Solow and Swan (1956), is an improvement on the Keynesian Harrod-Domar model (Harrod, 1939, 1948; Domar, 1946, 1947), emphasises three economic forces, i.e., labour, capital, and technology, as the drivers of a country's economic growth (Kasun, 2019). The basis of the model is a closed economy with no room for international trade such that growth is exogenous. However, the Solow-Swan model assumes constant returns to scale and diminishing marginal returns from capital. These restrictive assumptions imply that the Solow-Swan model could not explain technological progress and, therefore, differences in income per capita across nations. Although the theory does not directly link FDI and growth, explaining the role of domestic capital is the foundation upon which the role of FDI in economic development is grounded.

In an outward-oriented economy with free trade, domestic capital is not sufficient for growth. Endogenous theorists (Romer, 1986, 1990; Lucas, 1988; Grossman and Helpman, 1991), following previous work by Arrow (1962) and Shell (1966), argue that economies do not exist in autarky but rely on one another. They recognise an open economy associated with foreign capital and savings in the form of FDI. Thus FDI is incorporated into the production function as a complement to domestic capital. The endogenous growth theory identifies FDI as a carrier of technology transfer (Amy & Saggi, 2008), a source of employment creation (Du and Ishizuka, 2014), an enabler of competition (OECD, 2016), and an enhancer of human capital development (Andreica & Maricescu, 2011).

Firstly, the main channel through which FDI affects growth is through technology transfer. FDI shifts production to the host country, which lowers technology adoption costs. This happens typically through imitation and reverse engineering (Amy & Saggi, 2008). Technology transfer embodied in FDI leads to increased total factor productivity (OECD, 2016) and economic growth. Secondly, foreign investors, through MNEs, bring in much-needed capital, particularly

in developing countries. Multinational enterprises (MNEs) have access to financial resources not available to host-country firms by virtue of their large size and financial strength (Kurtishi-Kastrati (2013). Also, MNEs, often use FDI to serve foreign clients through intra-subsidiary trade.

Thirdly, FDI promotes economic growth through employment creation (Du and Ishizuka, 2014). Foreign investments require labour and many locals get jobs. More recently, World Bank (2020) links the employment effects of FDI to different types of local firms (1) foreign-owned local firms that are subsidiaries of MNEs; (2) domestic firms that trade (suppliers or buyers) with MNE subsidiaries, and (3) domestic firms that compete with MNE partners. Empirical evidence by Craigwell (2006) and Rahman (2014) show that FDI positively relates to employment creation. The employment creation effect is more pronounced in developing countries where capital is scarce and abundant labor than in developed countries. This results in an increase in national income and more buying power for both foreign and local employees. Fourthly, the economy may benefit from the competition that comes with FDI. According to an OECD report (2016), FDI acts as a powerful spur to competition and innovation, encouraging domestic firms to reduce costs and enhance their competitiveness. Increased international FDI flows stimulate growth through more efficient production, and they lower prices through greater competition. Due to competition exerted by foreign firms, indigenous firms are forced to find new and improved production methods to enhance productivity and quality of goods and services (Andreica & Maricescu, 2011). This helps increase industrial efficiency and resource allocation making local firms more proficient.

Lastly, FDI increases growth through the human capital and skill accumulation channel. FDI transfers knowledge which supplements the existing stock of knowledge in the host country (Andreica & Maricescu, 2011). New and better skills are brought into the local market through labour training, transfer of skills, and new managerial and organisational practice transfer. Workers gain new skills through explicit and implicit training and take these skills with them when they re-enter the domestic labour market. Economic growth is thus promoted via a skilled and experienced workforce who use best practices efficiently (Majeed and Ahmad, 2008; Naros, 2019).

3.1.2 FDI, trade openness, and economic growth

Often, the role of FDI in promoting economic growth is connected to trade openness. Nunnenkamp and Spatz (2003) stressed that open trade policy is crucial for the growth effects of FDI. This happens as foreign investors use complex integration strategies that require unrestricted imports of intermediate goods at all stages of the production process. Younus (2014) identified trade openness as an important channel through which the host country can exploit the positive growth effects of FDI. In his study, Ogbokor (2016) found that openness and net foreign direct investment contributed more towards innovations in economic growth. According to the World Bank 2018 report, countries that are open to international trade tend to grow faster, innovate and improve productivity, as supported by several empirical studies such as Keho and Yaya (2017) and Malefane and Odhiambo (2018). Petrucha and Zelazny (2019) argued that FDI and trade are potentially significant sources of productivity growth.

Baliamoune-Lutz (2004) found that foreign investment has a positive impact on economic growth through improving exports. A similar view was shared by Kabir (2007) that FDI increases the amount of exports and thus enhances foreign currency earnings. Foreign firms also increase export markets by opening up new marketing and distribution channels, thereby building the capital absorption capacity of economies, which becomes a tool for employment

creation, poverty reduction, and economic growth through FDI (Hacke and Wood (2013). FDI also bridges the gap for foreign exchange. This creates easy access for local firms to foreign capital input and increases investment in the long run.

It is, however, essential to note that an increase in FDI will not always lead to economic growth as the standard position `rubber-stamped' by theory. The OECD report (2016) highlighted that FDI creates a monopolistic structure leading to underutilisation of productive forces and that an economy controlled by foreigners would not develop organically but would instead grow in a disruptive manner. Toone (2013) and Gammoudi *et al*. (2016) also argued that FDI is a mechanism for exploiting and controlling developing countries by western industrialised nations. FDI may also be capital-intensive, which can sometimes be very risky and economically non-viable. FDI increases the host country's imports because FDI-financed companies often need high capital and intermediate goods that are not available in the host country (Rahman, 2015). Increasing imports may harm economic growth due to the resulting trade deficit (Fry, 1999). FDI may hurt economic development of the host country if the FDI-financed companies repatriate excessive profits to the parent company, which adversely affects the BOP of the host country (Jensen, 2008).

3.2 Empirical Literature Review

Studies on the growth effects of FDI are comprehensive but inconclusive. We observed that the diversity in the evidence is in different countries and regions, time periods, and econometric estimation techniques. Two stands of literature exist. Some studies (Tiwari and Mutascu, 2010; Moyo, 2013, Ogbokor, 2016; Tang and Tan, 2017; Musharavati, 2017) document that FDI provides growth effects while other studies (Rahman, 2015; Pandya and Sisombat, 2017; Wakyereza, 2017) find otherwise. In the interest of space, we briefly review studies from the SADC region and in Zimbabwe.

In the SADC region, Maliwa and Nyambe (2015) and Ogbokor (2016) employed the cointegration approach on times series data in their empirical studies but yielded different results. Ogbokor (2016) measured in quantitative terms the influence of foreign direct investment on Namibia's economic growth using Johansen cointegration techniques. The study applied an annual dataset stretching from 1990 to 2014 and found FDI to have a strong influence on economic development. However, Maliwa and Nyambe (2015), in their investigation on the impact of FDI on economic growth in Zambia for the period 1980 to 2012, documented a different view. The Johansen cointegration test and the Granger causality procedure were used to examine the relationship. The results showed that FDI does not Granger cause economic growth in Zambia.

Studies in Zimbabwe, including Moyo (2013), Zingwena (2014), Moyo (2017), and Mushavarati (2017), among others, provide evidence that FDI has a significant positive impact on economic growth. Moyo (2013) analysed the effect of FDI on GDP in Zimbabwe during the multiple currency era (2009 to 2012). In his methodology based on the paradigm of positivism (quantitative research), he tested two models; (1) linking FDI to economic growth and; (2) linking macroeconomic variables (government expenditure, inflation, interest rates, external debt, private investment, and net exports) to economic growth (FDI inclusive). Evidence gathered in his paper showed that an increase in FDI by 1% resulted in a 24.6% increase in GDP. Moyo also found that government expenditure and private investment have a significant and positive impact on gross domestic product. However, increases in inflation and interest rates were found to affect GDP negatively. The data was inconclusive on the effect of external

debt and net exports on economic growth. This could have been due to the limited data sample (2009-2012) employed in the research.

Unlike Moyo (2013), Musharavati's (2017) analysis was before the multiple currency era. He examined the relationship between FDI and economic growth in Zimbabwe using the ARDL cointegration approach on time series data spanning 1975 to 2007. To improve the explanatory power of his model, he included some explanatory variables such as trade openness, government expenditure, and agricultural productivity. Like the findings of Moyo (2013), the short and long-run relationship showed that FDI has a positive and significant effect on economic growth. Zingwena's (2014) study focused on the impact of FDI on the agricultural sector of Zimbabwe for the period 1980 to 2012 using the Stock-Watson Dynamic Ordinary Least Squares (DOLS) to analyse the long-run elasticities. The study revealed a positive relationship between FDI and agricultural growth in the long run with an elasticity of 0.07. This study was different from that of Moyo (2013), and Mushavarati (2017) in that Zingwena examined the impact of FDI on the agricultural industry.

The current study contributes to evidence on the FDI-economic growth nexus in Zimbabwe in two ways. Firstly, we recognise that existing evidence is ignorant of the heterogeneity of FDI. Studies which used aggregate FDI to conclude a positive or negative growth effect implicitly assumes that FDI from different sources is homogenous. Accordingly, we provide new evidence by acknowledging the source-heterogeneous impact of FDI on economic growth in Zimbabwe. Recognising FDI by sources provides a fair assessment given the heterogeneity of concessions, terms, and conditions attached to foreign investments. Accordingly, instead of examining the impact of aggregate FDI, we disaggregate FDI inflows according to major regions (United States, Europe, Asia, and Africa). Secondly, in line with the increased role of trade openness as a conduit of FDI, the study provides evidence of source trade-augmented FDI on economic growth.

4. Materials and methods.

We used the Autoregressive Distributed Lag (ARDL) technique to estimate a time series model derived from the neoclassical and endogenous growth models. We use time-series data for Zimbabwe for the period spanning 1990-2018. Unit root tests were done using the Augmented Dick-Fuller (ADF) and the Philips-Peron tests. Also, for robustness, we did conventional tests for multicollinearity, autocorrelation, and heteroscedasticity.

4.1 Theoretical Framework.

Our model is based on neoclassical and endogenous growth theories. In the neoclassical theory, developed by Solow (1956) and Swan (1956) following previous work by Harrod (1939, 1948) and Domar (1946, 1947), a country's output is a function of labour, capital, and technology. Accordingly, an economy's output can be specified as:

$$Y = Af(K, L) \tag{1}$$

Where; Y is output, A is an exogenous state of technology, K capital, and L is labour. Eq. (1) relates to Endogenous theorists (Romer, 1986, 1990; Lucas, 1988; Grossman and Helpman, 1991) who assume an economy a closed and thus emphasise the importance of foreign capital in stimulating growth. Literature identifies technology transfer (Amy & Saggi, 2008), employment creation (Du and Ishizuka, 2014), and competition (OECD, 2016) among benefits of FDI on economic growth. Accordingly, we disaggregate capital into two; (1) domestic and (2) foreign. Eq (1) becomes:

$$Y = Af(K_D, K_F, L) \quad (2)$$

Where; K_D = Domestic capital; K_F = Foreign capital (FDI stock). Also, FDI indirectly impacts growth through the 'spillover effects. In particular, FDI promotes growth by augmenting human capital development, bringing in managerial skills, facilitating labour training and skill acquisition, fostering growth in the host country (Blomstrom, 2003; Majeed and Ahmad, 2008; Naros, 2019). Thus the production function is augmented as follows:

$$Y = Af(K_D, K_F, HC) \quad (3)$$

Where;HC= Human capital and replaces labour. Further to human capital, the growth effects of FDI are strengthened by trade openness (Nunnenkamp and Spatz, 2003; Younus, 2014; Ogbokor, 2016; Keho and Yaya, 2017; Malefane and Odhiambo; 2018; Petrucha and Zelazny, 2019). In recognition of this, we incorporate trade openness into (3) such that:

$$Y = Af(K_D, K_F, HC, TO) \quad (4)$$

Where;TO= Trade openness index. One other factor which cannot be ignored in explaining economic growth in Zimbabwe is inflation. Zimbabwe has been and continues to fight against high and unstable inflation rates in the last three decades. Besides, its effect on economic growth is widely recognised (Moyo, 2013; Zingwena, 2014; Ndoricimpa, 2017; Davis, 2019). With annual inflation rate, our benchmark model becomes:

$$Y = Af(K_D, K_F, HC, TO, INF) \quad (5)$$

Where;INF= Inflation rate. Recognising trade openness being an enhancer of FDI and in line with our second contribution, we include an interaction term between FDI and TO from each source in Eq. (5). This gives:

$$Y = Af(K_D, K_F, HC, TO, INF, K_F * TO) \quad (6)$$

Where; $FDI.TO$= Interaction term between FDI and TO.

4.2 Econometric Estimation Techniques

4.2.1 Unit root testing

We carried out unit root tests to avoid spurious estimates resulting from data with a time trend. Also, we did this to ascertain that no variable is integrated of order I (2), a case with which the ARDL is not compatible. For robustness, we use two-unit root tests; the Augmented Dicky Fuller Test (ADF) by Dickey Fuller (1979) and the Phillips and Perron (PP) (1988). In both cases, the null hypothesis (H_0) of non-stationarity is tested against the alternative H_1 stationarity. As a rule of thumb, H_0 is rejected if the probability value is less than 0.05.

4.2.2 ARDL Econometric Model: Estimation and Cointegration Test

To obtain estimates for parameters in (6) and the cointegration test, we used the ARDL estimation approach. The approach was first used by Davidson *et al*. (1978) and popularised by Pesaran and Shin (1995) and Pesaran *et al*. (1999). The concept of cointegration was first introduced by Granger (1981) and elaborated further Engle and Granger (1987), Engle and Yoo (1987), Phillips and Ouliaris (1990), Stock and Watson (1988), Phillips (1986 and 1987), and Johansen (1988, 1991, and 1995). Traditionally, cointegration tests and long-run association examinations were done using the vector autoregressive (VAR) and the vector error correction models (VECM). However, in recent years, such studies are increasingly switching to ARDL (Sunge and Makamba, 2020).

The favour in ARDL can be attributed to its attractiveness in dealing with common time series data problems. ARDL can be used for variables integrated at different levels (Duasa, 2007; Pesaran *et al*., (2001). Also, ARDL reduces the chances of spurious results and works better even for small sample sizes (Pesaran *et al*., 2001). It provides short-run and long-run estimates at one go (Sunge and Makamba, 2020) and executes the cointegration test using the Bound-Testing approach. Generally, the ARDL considers the effect of the lags of both dependent (p) and independent (q) variables on the dependent variable. According to Pesaran *et al*. (1999), the generalised ARDL (p, q) model is specified as:

$$Y_t = \alpha_{0i} + \sum_{i=1}^{p} \delta_i Y_{t-i} + \sum_{i=0}^{q} \beta_i X_{t-i} + \mu_t \quad (7)$$

Where Y is the dependent, X is a $kx1$ vector of explanatory variables, β is a $kx1$ parameter vector, $\delta_j$is the scalar vector, μ is the stochastic term, and t denotes time. Eq. (7) says that in addition to the explanatory variables, Y also depends on the lags of both dependent (p) and independent (q) variables. Expressed in error correction terms (6) becomes:

$$\Delta y_t = \phi(y_{t-1} + \theta' x_t) + \sum_{i=1}^{p-1} \delta_i^* \Delta y_{t-i} + \sum_{i=0}^{q-1} \beta_i^* x_{t-i} + \mu_t \quad (8)$$

Where $\theta = -\left[\frac{\beta}{\phi}\right]$. It measures the long-run elasticities of x_t on y_t. Δ= First difference operator. ϕ is the error correction term or speed of adjustment. It explains the speed with which y_t reverts to long-run equilibrium following shocks in x_t (Sunge and Makamba, 2015). When θ is significantly negative, there is convergence and stability in the long-run relationship. Short-run parameters of the independent and independent variables are shown by their respective lagged differences, δ_j^* and β_j^*, respectively. Expressing the theoretical specification (6) in natural logarithms and inform of an ARDL model in Eq. (8) gives:

$$\Delta IgGDP_t = \alpha_{01} + \phi(\beta_1 IgGDP_{t-1} + \beta_2 IgFDI_{t-1} + \beta_3 IgTO_{t-1} + \beta_4 IgHC_{t-1} + \beta_5 IgINF_{t-1}) + \sum_{i=1}^{p} \delta_{1i} \Delta IgGDP_{t-i} + \sum_{i=1}^{q} \delta_{2i} \Delta IgFDI_{t-i} + \sum_{i=1}^{q} \delta_{3i} \Delta IgTO_{t-i} + \sum_{i=1}^{q} \delta_{4i} \Delta IgHC_{t-i} + \sum_{i=1}^{q} \delta_{5i} \Delta IgINF_{t-i} + \mu_{1t} \quad (9)$$

To test for cointegration of variables in Eq. (8), the bound-testing approach is used under the following hypothesis;

$$H_0: \beta_{1i} = \beta_{2i} = \beta_{3i} = \beta_{4i} = \beta_{5i} = 0, (No\ Cointegration)\ H_1: \beta_{1i} \neq \beta_{2i} \neq \beta_{3i} \neq \beta_{4i} \neq \beta_{5i} \neq 0, (Cointegration)$$

According to Pesaran *et al*. (2001), the computed F-statistic is compared with the first and second critical values known as the lower bound and the upper bound, respectively. The null hypothesis (H_0) is rejected when the value of the F-statistic exceeds the upper critical bounds value. In contrast, it cannot be rejected if the F-statistic is lower than the lower bounds value. Otherwise, the cointegration test is inconclusive when the F-statistic lies between the lower and upper bounds. In such a case, it can be clarified either by the Johansen cointegration test (Johansen 1995). Alternatively, checking the constancy of cointegration space using cumulative sum recursive residuals (CUSUM) can be done (Brown *et al*., 1975).

4.3 Data and Variables

Variable descriptions, descriptive statistics and data sources are summarised in Table 1. Zimbabwe received its highest and lowest GDP in 2018 and 2008, respectively. The highest GDP in 2018 could be attributed to the hike in the sale of gold. Also, the change in the administration in government and new policies under the Transitional Stabilisation Programme

(TSP) boosted confidence and economic activity. For the same reasons, the country also received the highest FDI in 2018. The least was recorded in 1990 due to the business environment associated with price controls, labour market restrictions, and investment control procedures unfavourable to foreign investors. In 2008, Zimbabwe was at the height of its worst economic crisis hence the lowest GDP. The economy was associated with a hyperinflationary environment that discouraged investment both locally and internationally, high levels of unemployment, the shutdown of industries, among others.

Table 1: Data Description and Sources

Variable	Proxy	Statistics	Source
Economic growth ($\boldsymbol{GDP_t}$)	GDP (US$)	(10800) [67500]	WBDI
Foreign direct investment ($\boldsymbol{FDI_t}$)	Foreign Direct Investment Net Inflows (% of GDP)	(1.31) [1.37]	UNCTAD
Human capital ($\boldsymbol{HC_t}$)	Labor force participation rate (% of total population ages 15-64)	(82.68) [1.26]	WBDI
Trade openness index ($\boldsymbol{TO_t}$)	Trade as a % of GDP	(107.91) [68.74]	WBDI
Inflation ($\boldsymbol{INF_t}$)	Average Consumer Prices (annual %)	(954) [4517]	World Bank

In paranthesis ( ) is the mean and in brackets [ ] is the standard deviation. WBDI = World Bank Development Indicators; UNCTAD=United Nations Conference on Trade and Trade Development. Source: Authors' illustration

5. Results Presentation and Discussion

5.1 Unit Root Test Results

Results of the ADF and PP unit root tests are presented in Table 2 (Appendix). It can be seen from Table 2 that some variables are I(0) while others are I(1). No variable is stationary at order 2. This revelation dismisses the use of VAR and VECM approaches and validates our use of the ARDL approach. We proceeded to estimate an ARDL bound cointegration test.

5.2 Cointegration Test

The bound cointegration test results are summarized in Table 3.

Table 3: Bound Cointegration Test Results

Dependent variable	AIC lags	F-Statistic	Decision
$F_{EG}(EG\|FDI, TO, HC, INF)$	2	20.174	Cointegration
$F_{EG}(EG\|FDI.TO, HC, INF)$	2	4.825	Cointegration
$F_{EG}(EG\|FDIUS, TOUS, HC, INF)$	2	4.785	Cointegration
$F_{EG}(EG\|FDIUS.TOUS, HC, INF)$	2	8.619	Cointegration
$F_{EG}(EG\|FDIEU, TOEU, HC, INF)$	2	9.174	Cointegration
$F_{EG}(EG\|FDIEU.TOEU, HC, INF)$	2	9.086	Cointegration
$F_{EG}(EG\|FDIASIA, ASIATO, HC, INF)$	2	12.667	Cointegration
$F_{EG}(EG\|FDIASIA.ASIATO, HC, INF)$	2	9.630	Cointegration
$F_{EG}(EG\|FDIAFR, AFRTO, HC, INF)$	2	3.589	No cointegration
$F_{EG}(EG\|FDIAFR.AFRTO, HC, INF)$	2	5.267	Cointegration

Source: Authors' computation using Stata 14.1

5.3 ARDL Estimation Results

To empirically analyse the short-run dynamics and long-run relationships among the variables, error correction and autoregressive distributed lag (ARDL) models were applied, respectively. The results of the estimation are tabulated in Table 4[1]. In line with the objectives of the study, we ran ten models. Model 1 is the benchmark model which answers the primary goal of growth effects of FDI. Model 2 examined the growth effects of FDI in the presence of an interaction term, trade openness. Models 3-10 helped to deliver the study's main contribution: the growth effects of FDI by sources.

Model 1 is highly statistically significant with an adjustment term of -0.05. The model has an R^2 of 0.926, implying that 92.6% of the variations in GDP are explained by foreign direct investment (FDI), trade openness (TO), human capital (HC), and inflation (INF), thus the model fits well. The estimated coefficient on FDI is positive and statistically significant at 1%. For every 1% increase in FDI, the GDP grew at 0.15%. Our finding is in tandem with Tsaurai and Odhiambo (2012), Moyo (2013), Zingwena (2014), Moyo (2017), and Mushavarati (2017). TO estimates provided unusual but unsurprising findings. TO is statistically significant at 1% but with a negative estimated coefficient. A 1% increase in TO decreases GDP by 0.16%. This is not in sync with the conventional wisdom that more open economies tend to grow faster.

[1] In Model 1 and 2, GDP is regressed on aggregated FDI and aggregated FDI with an interaction term of aggregated TO, respectively. In models 3 to 10, GDP is regressed on FDI by sources. ***, **, * shows 1%, 5% and 10% level of significance; I(0) and I(1) refers to levels and 1st difference stationarity respectively. Standard errors are in parentheses ( ).

Table 4: ARDL Estimation Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
lgfdi	0.147*** (0.036)									
lgto	-0.163*** (0.039)									
lghc	8.948** (2.815)	26.021 (18.711)	8.272 (6.390)	4.464 (2.985)	13.672*** (2.928)	13.995*** (3.875)	-11.486 (6.064)	-1.313 (4.401)	14.277** (6.384)	8.368** (4.220)
lginf	-0.136*** (0.014)	-0.193** (0.071)	-0.128** (0.042)	-0.120*** (0.018)	-0.184*** (0.026)	-0.216*** (0.034)	-0.192*** (0.021)	-0.190*** (0.024)	-0.075*** (0.021)	-0.208*** (0.034)
lgfdito		0.278 (0.281)								
lgfdius			-0.101 (0.086)							
lgtous			-0.243 (0.172)							
lgfdiustous				-0.151*** (0.031)						
lgfdieu					-0.072 (0.067)					
lgtoeu					-0.266*** (0.063)					
lgfdieutoeu						-0.203*** (0.061)				
lgfdiasia							0 .161*** (0.032)			
lgtoasia							0.560** (0.226)			
lgfdiasiatoasia								0.117*** (0.027)		
Lgfdiafr(-2)									0.06** (0.027)	
lgtoafr(-1)									0.011 (0.115)	
Lgfdiafrtoafr(-1)										0.002 (0.030)
ect	-1.047***	-0.259	-0.912***	-0.877***	-0.691***	-0.569***	-0.708***	-0.771***	0.395	-0.601***
R^2	0.926	0.901	0.841	0.821	0.796	0.747	0.892	0.656	0.965	0.940

However, Zimbabwe's trade circumstances make it possible. The negative impact resembles the country's continuously unfavorable trade balance. Balance of trade averaged -233.94 USD million from 1991 until 2019, reaching a record low of -3957.75 USD Million in December 2009 (World Bank, 2020). It follows that the country heavily depends on imports. Increasing imports hurts economic growth due to the resulting trade deficit. In particular, for net importers, more trade openness may lead to a fall in GDP growth through loss of markets, a fall in domestic output as local producers rely on imported goods, increase in unemployment, among others.

The estimated human capital coefficient is positive and statistically significant at 5%. The finding echoes theoretical and empirical literature suggesting that human capital development increases economic growth. A 1% increase in HC increases economic growth by 8.95%. The estimated coefficient on inflation is negative and highly statistically significant. This confirms the theoretical foundations that inflation can adversely impact a country's growth rate by affecting capital accumulation, investment, and exports (Neuhaus 2006, Ndoricimpa 2017, Davis 2019). A 1% increase in inflation decreases GDP by 0.14%. An adjustment term of -1.05 is highly statistically significant in correcting previous period errors in the current period.

Results on the impact of FDI by source reflect its heterogeneous effects. FDI estimates in models 3 (US) and 5 (EU) show negative and insignificant effects, while estimates from models 7 (Asia) and 9 (Africa) indicate a positive and significant growth effect. A 1% increase in FDI from Asia increases GDP by 0.16% and is highly statistically significant. Therefore, if Zimbabwe is to look for sustainable FDI beyond Africa, it should be from Asia as the gap in development is small relative to the West. Hence there are more win-win relations. Our finding is in tandem with Tang and Tan (2017), which found that FDI flows from Southeast Asia contribute more significantly to Malaysia's economic growth.

FDI from Africa is significant at 5% in explaining economic growth in Zimbabwe in the short run. A 1% increase in the second lag of FDI within Africa increases GDP by 0.06%. This finding adds weight to the recently operationalised Africa Continental Free Trade Area (AfCFTA) prospects to transform the growth agenda in Africa. Trade openness with Asia is statistically significant at 5% resulting in a 1% increase in $TOASIA$, boosting GDP by 0.56%. The first lag of trade openness with Africa has a positive coefficient estimate though not significant. Augmented by trade openness, FDI from Asia reduces to 0.12% and is statistically significant at 1%. Augmented by trade openness, FDI from Africa has a positive growth effect though insignificant in explaining economic growth.

As shown in models 3 and 4, FDI from the United States and trade openness with the United States have significantly negative growth effects. Our finding differs from evidence by Tang and Tan (2017), which showed that FDI flows from North America contributed more significantly to Malaysia's economic growth. Nonetheless, FDI from the US is augmented by trade openness through an interaction term $FDIUS.TOUS$ is highly statistically significant with a negative coefficient estimate. Also, model 5 reveals that FDI from Europe had a negative and insignificant growth effect. Unlike the US, trade openness with Europe is statistically significant at 1% with a negative coefficient. A 1% increase in trade openness with Europe decreases GDP by 0.27%. The combined effect of an interaction term of $FDIEU$ and its trade openness is also negative and statistically significant at 1%. Augmented with FDI from Europe, trade openness with Europe reduces to 0.06%.

The negative coefficient estimates of $FDIUS$ and $FDIEU$ and their trade openness could have been due to the terms of the FDI from western regions. Some investors bring in all resources from their host country on whatever project or investment they will be embarking on to supply their labor and repatriate the same back to their country, including profits at the end of such projects or investments. Therefore, the ultimate benefit for Zimbabwe is not felt as the economy is left in its original state, if not worse, in terms of economic growth. Some of the concessions are short-termed to the benefit of the West, leaving Zimbabwe in a worse-off position. In addition, some investors, enterprises, and MNCs only bring in free aid under non-governmental organisations without necessarily investing in business ventures that have a bearing on the economy of Zimbabwe. Also, the issue of sanctions by the West contributes to the negative impact of FDIUS and FDIEU on economic growth in Zimbabwe.

In summary, we firmly conclude that sources matter in analysing the growth effects of FDI. Growth effects are positive and significant if FDI is coming from a country or region whose level of development is in the vicinity of the host country. We did diagnostic checks for multicollinearity, serial autocorrelation, and heteroscedasticity to avoid spurious results. Results for models 1 and 2, which form the benchmark model, are tabulated in Tables 5 and 6 (Appendix). We find that the results are free from the three problems.

6. Conclusion and Policy Recommendations

The study investigated the growth effects of foreign direct investment (FDI) in Zimbabwe. The study is motivated by a mismatch between relatively significant FDI inflow into Zimbabwe and weak growth. FDI-led growth theories often view FDI as a potential contributor to a country's economic growth. However, the extent may depend upon the source of such investment inflows. Nonetheless, existing studies on Zimbabwe base their conclusions on aggregate FDI. Recognising FDI by sources is logical given the reality that FDI from different sources is heterogeneous. Accordingly, we provide new evidence by disaggregating FDI inflows by sources. We used the Autoregressive-Distributed-Lag (ARDL) technique to estimate a time series model derived from neoclassical and endogenous growth models.

Results indicated that FDI has a significant growth effect. More importantly, we document that the source of FDI does matter greatly. FDI flows from Africa and Asia was found to have significant and growth effects. However, FDI from Europe and the United States has negative and insignificant impacts. We proffer two recommendations. Zimbabwe should attract more FDI from economies/regions in the vicinity of its level of development. Accordingly, Zimbabwe should rationally embrace the recently launched AfCFTA. It is vital to strike a balance between market deepening and promoting domestic production. Also, while most FDI from Asia is from is China, we urge Zimbabwe to provide a conducive environment to investors from the rest of Asia. This can be achieved through signing bilateral FDI agreements with Asian countries.

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