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FOREIGN DIRECT INVESTMENT IN ZIMBABWE: THE ROLE OF UNCERTAINTY, EXPORTS, COST OF CAPITAL, CORRUPTION AND MARKET SIZE

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ABSTRACT

Most of developing countries such as Zimbabwe see foreign direct investment as a panacea for augmenting domestic savings, generating employment, eradicating poverty and stimulating economic growth. Foreign direct investment also is associated with significant positive spillover benefits such as; facilitating technological progress, enhancing production efficiencies, promoting skills and knowledge diffusion and increasing international competitiveness. The paper investigated the role of cost of capital, uncertainty, exports, market size and other macro factors in attracting FDI in Zimbabwe. This paper relied on a time series analysis using Ordinary Least Regression equation for the period 1998-2017. Uncertainty and cost of capital were found to be negative and statistically significant whilst market size and lagged exports were found to be positive and statistically significant. The paper recommends adoption of policies that improve domestic absorptive capacity such as the elimination of uncertainties in the economy, promoting more trade openness, improving market size and liberalisation of credit and financial markets to reduce firm borrowing costs.

Contribution/Originality: This study contributes to the existing literature on foreign direct investment by demonstrating the role of macro-uncertainty and cost of capital in attracting FDI. In addition, this study utilizes a new estimation methodology of FDI that is based on the modification of the flexible accelerator model of investment behaviour.

1. INTRODUCTION AND BACKGROUND

Foreign direct in investment (FDI) has various definitions in the empirical literature. For instance, it has been defined as an investment that is made by an investor in order to acquire a lasting controlling interest in enterprises operating in an economy other than that of the investor. The study also defines FDI as a term that includes financial assistance from foreign governments, portfolio investment is made by foreign investors to acquire non-controlling interest in domestic companies or as direct bank loans and deposit holdings by foreigners and other indirect loans to domestic firms. Due to the inadequate mobilization of domestic savings by financial intermediaries in Zimbabwe, FDI by foreign firms remains one of the largest and valuable sources of external financing over the past three decades. The country has also been relying on other ranges of external sources of finance that include portfolio equity, brownfield investments, official development assistance, long-term and short-term loans and diaspora remittances. Unlike other developing countries, nevertheless, FDI inflows in Zimbabwe has also been one

of the least resilient to economic and financial shocks that have been embattling the country since the country's independence.

According to UNCTAD (2018) global FDI inflows are expected to grow marginally by 10% in the coming years. Despite the positive projection, FDI prospects for the country remains subdued and to a large extent ephemeral. Traditionally owing to economic mismanagement and other structural fragilities, the country has domestic savings that are too low to finance an optimal rate of capital building in private firms. This makes FDI inflows a critical source for long-term economic growth and sustainable development. This is because FDI inflows in developing countries such as Zimbabwe play a significant role in; enhancing technological progress, closing up the domestic investment-savings lacuna, facilitating employment generation and hence, human capital development. FDI inflows also augment foreign exchange earnings, export receipts and tax revenue in most developing countries such as Zimbabwe.

The World Bank (2018) reports that FDI inflows in developing countries such as Zimbabwe are commonly constrained by a concoction of inter-woven intrinsic risks that include expropriation of foreign investor property, domestic content requirements, allocative and distributive inefficiencies, currency transfer and convertibility restrictions, issues of governance, unenforceability of contractual agreements, and lack of transparency in dealing with public agencies. Nevertheless, since the country's independence FDI inflows have played a relatively small role in the economy due to numerous exogenous and endogenous headwinds that include that include; elevated macroeconomic and political uncertainties, intensified global volatilities in capital markets, low prices of export commodities, declining inter-trade flows in the region, rising volatility in exchange rates and diminishing productivity in exporting firms.

Muzurura (2018) also argues that prior to the 2017 soft military coup, the expected role of FDI was misconstrued and steeped in the country's political ideology and political tactics of post-independence. First, it was widely accepted by Mugabe's government that attracting more FDI in the country was likely to bring issues of human rights and political corruption into scrutiny. Second, it was feared that increased penetration by financially robust foreign firms in the country's main economic sectors could have negative externalities such as forcing domestic firms into oblivion due to intensified foreign competition. Third, it was broadly acknowledged by policy makers that if an entry of foreign firms in the mining sector was predominantly motivated by resource-seeking behaviour of foreign investors, then this would hasten environmental degradation and subsequent natural resource scarcity.

However, since 2017 the entire economy has been rapidly regressing towards the informal sector. Exports have glided to a standstill and hence, the resultant current unbalanced external position. The calls for attracting more FDI in the economy have been growing more strident and desperate. The new government of Zimbabwe under the brand mantra "Zimbabwe is open for business" has started dismantling trade protectionist policies that have been entrenched since the late 1990s. The liberalization of trade, exchange controls and other core FDI policies involves: strengthening the countries easy of doing business, building horizontal productive capacity, stimulating business linkages between foreign firms and local firms, shifting existing FDI towards high value-added activities, repacking of indigenization laws, offering investment incentives for inbound FDI inflows to mining and manufacturing sectors, ensuring the efficient functioning of trade and capital markets and reducing systemic hindrances for inward FDI inflows.

However, in spite of these efforts, FDI inflows have not responded with the expected swiftness and quantity. A composite of factors such as; threats of expropriation of private property, government policy inconsistencies, inflexibility of foreign currency transfer rules, dividend repatriation hindrances, currency convertibility restrictions between the bond note and US$, declining trade competitiveness of major exportable commodities, galloping inflation, political and economic uncertainties continue to pose significant constraints to FDI growth in Zimbabwe. According to UNCTAD (2018) the global average return on foreign direct investment is now at 6.7%, down from

8.1% in 2012. The report further indicates that the return on FDI is in decline across all regions, with the sharpest drops in Africa and in Latin America and the Caribbean. The findings imply that the lower returns on foreign assets is likely to affect longer-term FDI prospects in developing countries such as Zimbabwe. The World Bank (2018) reported that FDI to Africa fell gradually by 21 percent to US$42 billion in 2017 from $59 billion in 2016 and $61 billion in 2015. According to UNCTAD (2018) Africa hosted 3.4 percent share of global FDI inflows. The UNCTAD report indicates that FDI inflows remain disproportionately distributed across the African continent with only five countries; Angola, Egypt, Nigeria, Ghana and Ethiopia accounting for 57 % of continent's total FDI inflows. Nonetheless, FDI to Southern Africa fell by 18 percent to $21.2 billion owing mainly to regressions of FDI inflows into Zambia (by 70%), Mozambique (by 20%) and Angola (by 11%). However, FDI flows to Zimbabwe's main trading partners were $1.3 billion for South Africa, US$1.1billion for Zambia, and $2.3billion for Mozambique. According to UNCTAD (2018) Zimbabwe like Mali and Swaziland saw FDI inflows dampened due to political uncertainty, with the former attracting a trifling US$470 million in the same period. The drop in FDI in Southern Africa suggests countries will compete more intensely to attract every dollar of FDI. This poses significant challenges for Zimbabwe, a country with high perception of public corruption and political instability.

Despite the recent liberalization of current account, slowly re-dollarization of economic transactions, and the adoption of policies that enhance trade openness, Zimbabwe remains a country with low FDI potential and performance. The country is gradually being rationed out from global capital and export markets. For Greenfield investments, the country now relies on Chinese investors whose FDI creates lower domestic production capacity, less technological progress and lower human capital development. Zimbabwe with its small market also faces additional pressure, in that foreign companies are likely to look for offshoring and other investments locations offering optimum conditions such as being closer to the customer in order to offer new and quality products speedily using flexible production and services processes. In the short term, Zimbabwe is likely to be a no-go area for marketing-seeking foreign investors and for foreign investors looking for locational and internalization advantages. A number of factors such as inconsistent government investment policies, heightened political uncertainties, weak property rights and high public corruption still encumber the growth of FDI.

However, attracting quality FDI inflows offer an immediate prospect of arresting the persistently low economic growth and the inability of the country to overcome the development challenges that have hounded it since 2000. Zimbabwe's inability to attract significant FDI is indeed an oxymoronic issue. The country has an abundant natural resource base that can lure resource seeking foreign firms and those seeking efficiencies from locational and internalization advantages. The human capital base is well-developed with highly educated labour force for those foreign firms seeking labour efficiency, lower production costs, market growth potential, and new sources of comparative advantages.

A number of studies in Zimbabwe have intensively interrogated common determinants of FDI such as export growth rate, trade openness, exchange rates and gross domestic product (See (Kaur *et al*., 2013; Muzurura, 2016)). However, such studies have largely ignored the role of corruption, uncertainty, public infrastructure and market size as factors that may hinder FDI in Zimbabwe. Hence, the extant study seeks to close this lacuna in empirical literature by investigating the role of these factors. The study is significant for a number of reasons: First, the presence of foreign firms in Zimbabwe's economy is likely to enhance the accessibility of domestic firms to lucrative global markets. Many foreign firms have access to integrated global distribution networks and can also access financial, capital and export markets easily. Attracting FDI might smoothen the integration of domestic firms into international markets. Second, FDI is often conveyed by complementary spillovers that include; creating backward and forward linkage with local firms, attaining economies of scale, revamping domestic production value chains, diffusion of new technology in domestic firms and the ability to increase competitiveness and productivity of domestic firms. Third, for capital-poor developing countries such as Zimbabwe, FDI might realistically enable the country to grow its domestic investment, develop maintainable productive capacity, create employment

opportunities, and enhance skills of local labour through transfer of technology and managerial know-how. Indeed, FDI could be a solution for reducing poverty, eliminating ongoing financial crisis and increasing economic stability and development.

Third, a significant number of private firms are shutting down due to low investable funds, thereby threatening socio-economic gains that are being made in other sectors of the economy such as tourism, agriculture and mining. Attracting significant FDI inflows, therefore, offer the country an alternative and realistic development path that enables local firms to benchmark their production process against the best, and hence, achieve broad-based sustainable economic growth and development through a multiplier effect. Fourth, FDI is distinct from other forms of foreign investment such as foreign aid and portfolio investments which are prone to herd behaviour stimuli in times of contagious financial and cash crises. The paper argues that quality FDI inflows are likely to remain buoyant even in periods of cash, financial and political crises. This is because FDI inflows are motivated by prospects of making huge long-term returns to investment from domestic subsidiary firms. Foreign firms with significant controlling interests over production and distribution activities of domestic firms are less likely to disinvest immediately in the event of a political or financial crisis (Muzurura, 2018).

The paper seeks to establish the role of corruption, uncertainty, market size, exports and cost of capital in hindering or attracting FDI in Zimbabwe. After the introduction and background, the strategy of the paper is as follows; the second section covers a comprehensive literature review of recent studies. Section three covers methods and materials whilst findings and conclusions are in that last section

2. LITERATURE REVIEW

There is growing interest on the role of FDI in both developing and developed economies (Acaravci and Ozturk, 2012; Chakraborty and Mukherjee, 2012; Kabundi and Loots, 2012; Allen and Aldred, 2013; Muzurura, 2018). Arazmuradov (2015) postulates that FDI inflows increase firm efficiencies and productivity of private domestic investments. Lamine (2010) shows that FDI inflows enable integration of the domestic economy into the global economy, thereby increasing exports earnings. FDI has been linked with improved economic growth (Kinyondo, 2012; Benedek *et al.*, 2014; UNCTAD, 2018). Shawa and Amoro (2014) report that FDI is less vulnerable to liquidity crises than domestic investment. Feeny *et al.* (2014) concur that FDI protects the local economy against domestic market imperfections that encumber credit availability in time of financial and cash crises.

In contrast, Ditimi and Ogbuagu (2014) argue that increasing FDI in the primary sector have a negative effect on economic growth. Bjorvatn *et al.* (2016) also demonstrate that if foreign firms introduce new production processes in the host market, domestic firms are likely to benefit from accelerated diffusion of new technology. According to World Bank (2018) FDI inflows into Africa are affected by low-level competitiveness, trade openness and ease of doing business. FDI in Africa is hauled in by location-specific advantages that are driven by its natural resources (Arısoy, 2012; Aga, 2014). Zurawicki and Habib (2010) and Pelizzo *et al.* (2016) observe that foreign firms face challenges caused by structural weaknesses in host economies, incomplete and unstable institutional frameworks, underdeveloped political and constitutional court systems, corruption and bureaucratic regulations.

Majeed and Ahmad (2018) showed that both exports and FDI in Pakistan positively affect each other, although the effect of exports on FDI was not very significant. Similarly, Bouras and Raggad (2015) examined the complementarity and substitutability of FDI and exports in Tunisia using a disaggregated sectorial database. They report a complementary effect between exports and FDI inflows into the manufacturing sector. Agrawal and Khan (2011) agreed FDI inflows to most developing countries were negatively affected by lower competitiveness factors, the ease of doing business and macroeconomic instability. Fafchamps and Soderbom (2014) submitted that low levels of productivity caused by poor business environment hindered FDI inflows in developing economies. According to Naude and Szirmai (2012) structural characteristics of firms in developing countries that are usually

smaller in size and with limited international exposure obstruct FDI. Conconi *et al.* (2016) note that firms that are uncertain about future returns to capital in a foreign market may choose direct exporting before undertaking FDI.

Iacovone *et al.* (2014) maintain that inadequate FDI is a binding constraint to the growth potential of domestic investment in most developing countries. Nevertheless, a number of researchers argue that FDI depends on degree of complementarity and substitutability between a number of factors that include public infrastructure, macroeconomic stability, trade openness institutional and legal framework, knowledge and human capital (Abadi, 2011; Anwar and Sun, 2014). Similarly, Eregha and Ibidapo (2012) investigated FDI in thirteen Latin American countries, eight Caribbean countries, eight Asian countries, ten European transition countries and five African countries. Their study showed that FDI crowded-out domestic investment and that the crowding out effect was greater in countries with high governance scores and political stability. Gobinda and Haider (2014) examined the effect of absorptive capacity on FDI using 146 countries worldwide over a period of 1984-2009. They reported that government failure, political risk, public infrastructure and attitude of the domestic country towards the host country were responsible for lower FDI.

Masron and Nor (2013) establish that the economy of the host country has some bearing on the attraction of FDI inflows. Absorptive capacity factors like country's business ease of business, certainty, host-country public infrastructure, credible financial institutions, and integrity of host-country institutions help to attract FDI (Bachmann *et al.*, 2013; Mathur and Singh, 2013). According Mathur and Singh (2013) the absorptive capacity of a host country depends on the country's trade regime, legislative system, and political stability. According to Masron and Nor (2013) policy commitment and credibility are important for inducing foreign investors to make investments, particularly when such investments entail large irreversible costs. Muzurura (2018) indicate that of the many sources of uncertainty that are faced by prospective investors such as exchange rate or demand shocks, the trade policy uncertainty poses a country and product specific risk that is difficult to diversify.

Tahir and Khan (2014) found trade openness, return on investment and GDP, as a proxy variable for market size, as significant determinants of FDI. However, factors such as public infrastructure, exports growth and political risk were found insignificant. Clarke (2012) and Imoudu (2012) find that the real GDP has a significant positive impact on FDI. Cleeve *et al.* (2015) used panel data to investigate FDI in 35 Sub-Saharan African countries during 1980-2012. Their results showed that there was a positive relation between FDI and human capital, the market size, the natural resource endowments and public infrastructure. Xaypanya *et al.* (2015) applied a pooled OLS and fixed effects model to examine the determinants of FDI in 8 ASEAN during 2000-2011. They reported that trade openness, infrastructure, inflation and market size were significant. Kinuthia and Murshed (2015) applied vector autoregressive regression to investigate the determinants of FDI in Kenya and Malaysia during 1960-2009. The study showed that trade openness, infrastructure and institutional development were important factors in Malaysia whilst inflation and cost variables were important in Kenya. Seyoum *et al.* (2014) used panel data to examine the interaction between trade openness and FDI inflows in 25 Sub-Saharan Africa during 1977-2009. They find a bidirectional casual relation between FDI and trade openness.

Havranek and Irsova (2015) argue that with stronger protection of intellectual property, the host country can expect more horizontal spill-overs from FDI since it becomes more difficult for domestic firms to copy technology from foreign firms. Muzurura (2018) finds that in Zimbabwe an increased government capital expenditure on the provision of adequate electricity and water supply and good tarred roads acts as an incentive for FDI. The host country's economic environment shown by the rate of economic growth, trade policy, political stability, legislation, domestic market size, and balance of payments constraints has a significant effect on FDI (Gabriel, 2013; O'Toole and Tarp, 2014; Tahir and Khan, 2014). However, IMF (2015) reports that the large capital inflows induced by financial openness have undesirable economic growth effects. The findings suggest that FDI causes rapid monetary expansion due, hence, high attendant costs of pursuing sterilization policies; inflationary pressures, real exchange rate appreciation and widening current account deficits.

Corruption has been reported to retard FDI (Dridi, 2013; Faruq *et al*., 2013; Pelizzo *et al*., 2016). Heywood and Rose (2014) postulate that corruption negatively affects the country's ability to attract FDI. Corruption is a tax on FDI profits (Muzurura, 2018). Castro and Nunes (2013) examined whether corruption deterred FDI in 73 developing countries covering the period 19980 to 2008. Their examination demonstrated that the least corrupt countries attracted more FDI since they were deemed investor friendly. However, Quazi *et al.* (2014) investigated the effect of corruption on FDI on 53 African countries for the period 1995 to 2012 and indicated that corruption had the greasing effect on investors entering the African market. Barassi and Zhou (2012) aver that corruption reduces the probability of FDI by 3 percent. At the micro level, evidence showed that corruption was associated with lower efficiency in the allocation and use of production factors hence, contributed to low FDI and economic growth (Habtemichael and Cloete, 2010; O'Toole and Tarp, 2014). Aghion *et al.* (2016) indicate that good institutions ensure the security of foreign investor's property, reduce corruption and promote a good investment climate leading to increased FDI and economic growth. Corruption discourages foreign direct investment because the various forms of rents such as bribes, kickbacks and transactions costs due to corruption delays and distortions increase uncertainty over the returns to capital and raise the cost of production, which ultimately reduces profitability (Mathur and Singh, 2013; Randall *et al*., 2015).

3. METHODS AND MATERIAL

Following some conventional practices in the empirical literature on the determinants of FDI our paper modifies the flexible accelerator model to incorporate FDI as a dependent variable (see also Muzurura (2018)). The assumption is that FDI is used for installing productive capital stock in the domestic economy by the foreign investor. Hence, starting from the simple accelerator theory that suggests a linear relationship between output Q and an increase in the stock of current capital *K*:

$$K = \gamma Q_t \tag{3.1}$$

We therefore further assume that the foreign investor partially adjusts the capital stock over many periods in response to macroeconomic fundamentals. Thus, Equation 3.1 can be modified to take this form:

$$K = (1-\gamma)Q_t \tag{3.2}$$

Equation 3.2 therefore says that foreign direct investment of productive capital stock in period is a fraction $(1-\gamma)$of the gap between the existing level of greenfield capital stock and the future desired level. We transform Equation 3.2 following Koyck geometric transformation of the flexible accelerator model to come up with Equation 3.3.

$$K_t = \alpha + \gamma_{0\,tm} + \gamma_1 Q_t + \gamma_2 Q_{t-1} + \gamma_2 Q_{t-2} + \cdots + \mu_{tm} \tag{3.3}$$

The equation shows that an investment decay rate or the speed of the fixed capital stock adjustment process to be $1-\gamma$ and is declining geometrically as time *t* increases. This process eliminates the potential of multicollinearity among the variables. If we substitute the speed of capital stock adjustment by a foreign firm into Equation 3.3 we obtain

$$K_t = \alpha + (1-\gamma)(Q_t + \gamma Y_{t-1} + \gamma^2 Y_{t-2} + \cdots \gamma^n Y_{t-n}), \quad \text{where } 0 < \gamma < 1 \tag{3.4}$$

The variable indicated by γ, is a constant rate of stock adjustment has values that range from zero to infinity. However, due to high uncertainties, corruption, low market size and the high cost of capital, it is unlikely that significant changes will take place in the short term as a result of FDI. This suggest that total output will remain constant and equal to $\tilde{Q}$. To compute $\tilde{Q}$ we multiply one period lag of Equation 3.4 by $1-\gamma$ and subtract the result from the same equation as shown below.

$$K_t - (1-\theta\gamma)K_{t-1} = \alpha + \gamma_0(Q_t + (1-\gamma)Q_{t-1} + (1-\gamma)^2 Q_{tm-2} + (1-\gamma)^3 Q_{tm-3} + \cdots..$$

$$K_t - (1-\gamma)K_{tm-1} = +\mu_t - (1-\gamma)\{\alpha + \gamma_t(Q_{t-1} + 1 - \gamma Q_{t-2} + (1-\gamma)^2 Q_{t-3} \ldots + \mu_{t-1} \quad (3.5)$$

Reorganizing Equation 3.5 and simplify it we get Equation 3.6.

$$K_t - (1-\gamma)K_{t-1} = \alpha(1-(1-\gamma) + \gamma_0 Q_t + (\varepsilon_t - (1-\gamma)\mu_{t-1}) \quad (3.6)$$

Making K_t the subject of formula results in the equation

$$K_t = \alpha(1-(1-\gamma) + (1-\gamma)K_{t-1} + \gamma_0 Q_t + \mu_t, \text{ where } \varepsilon_t = \mu_t - (1-\gamma)\mu_{t-1}) \quad (3.7)$$

Since we assumed constant capital stock we can show the equation as;

$$\overleftarrow{K} = \alpha(1-\gamma)(\breve{Q} + \gamma^2 + \gamma^2\ \breve{Q} + \cdots\gamma^n\breve{Q}) = \alpha(1-\gamma)\breve{Q}(1+\gamma+\gamma^2+\cdots\gamma^n), \quad (3.8)$$

Where $1+\gamma+\gamma^2+\cdots\gamma^n$ = $1/1+\gamma$ are weights in geometric series. Thus, Equation 3.8 can be simplified as follows:

$$\overleftarrow{Q} = \alpha\breve{Q}(1-\gamma) * 1/(1+\gamma) \quad \text{or} \quad \overleftarrow{K} = \alpha Q_t \quad (3.9)$$

$\overleftarrow{K}$ represents desired capital stock, Q_t current output, α accelerator constant and t time and where the long-run multiplier is given by

$$\varepsilon_0(1 + (1-\gamma) + (1-\gamma)^2 + (1-\gamma)^3 \ldots = \frac{\varepsilon_0}{1-(1-\theta)} \quad (3.10)$$

Once a foreign firm decides on using FDI as an entry strategy into the host economy, we assume that the actual greenfield investment decision involves delayed lags due to the need to deal with macro uncertainties or even corruption. Zimbabwe is also a landlocked country which may cause logistic delays, particularly on imported equipment. Because of these reasons, we introducing lags to Equation 3.7 as follows;

$$K_{t-1} = \alpha(1-\gamma)(Q_t + \gamma Q_{t-1} + \gamma^2 Q_{t-2} + \cdots\gamma^n Q_{t-n} \quad (3.11)$$

Subtracting Equation 3.7 from Equation 3.11 we get;

$$K - K_{t-1} = \alpha(1-\gamma)(Q_t + \gamma^{n+1} Q_{t-n}) \quad (3.12)$$

Since the term γ^{n+1} tends to be zero in infinitely geometrical series, Equation 3.12 reduces to;

$$K_t - K_{t-1} = (1-\theta)\alpha Q_t \quad (3.13)$$

The equation shows that using FDI inflows, product capital stock is a portion of the gap between desired capital stock and actual capital stock. Rearranged by making K_t the subject of the formula to show;

$$K_t = (1-\gamma)\alpha Q_t + \alpha K_{t-1} \quad (3.14)$$

Substituting into Equation 3.14 the expanded form becomes;

$$K_t - K_{t-1} = (1-\gamma)\alpha(Q_{tm} + \gamma K_{t-1} - Q_{t-1} \quad \text{or} \quad I_t = (1-\gamma)\alpha Q_t - (1-\gamma)K_{t-1} \quad (3.15)$$

Domestic firms in Zimbabwe face financial constraints due to limited access to international credit markets and heightened country risk. Hence, FDI inflows as either portfolio investment of direct foreign lending are likely to play a major role in augmenting the domestic investable funds. We modify Equation 3.15 to include FDI. Denoting domestic savings by (D_t), we add changes in FDI inflows total domestic savings. Hence, Domestic savings is

$$K_t - K_{t-1} + +FDI_{t-1} - FDI_t + \{1-\delta\}K_{t-1} += DS_t \quad (3.16)$$

Equation 3.16 suggests that the desired capital stock component of domestic firms in Zimbabwe consists of two major components, which are domestic savings and FDI inflows.

We can shorten $K_t - K_{t-1}$ by denoting it as K_{di} and $FDI_{t-1} - FDI_t$ as K_{fdi} suggesting that the desired capital stock is an addition of capital stock acquired using domestic savings and the other portion is augmented by FDI inflows. Assuming that output is a function of capital stock, labour and firm productivity, we can adopt a neo-classical Cobb-Douglas production function in the form; $Q_t = A_t K_{di}^{\emptyset} K_{fdi}^{\propto} L^{\vartheta}$ ..... where is Q_t the flow of output proxied by GDP and L represent labour and A is the multiplier. Linearizing the equation by taking logs we get;

$$lnQ_t = \emptyset lnK_{di} + \propto lnK_{fdi} + \vartheta lnL_t \ldots\ldots \quad (3.17)$$

Differentiating Equation 3.17 with respect to time we obtain;

$$Q_t = \emptyset_t + \emptyset K_{di} + K_{fdi} + L_t \ldots\ldots\ldots \quad (3.18)$$

By making K_{fdi} the subject of the formula we get the proposed function form of the model

That is $fdi = f(PUBI, Unc, Exp_{t-1}, K, Corr, GDP_{t-1}, \ldots\ldots)$ (3.19)

3.1. Model Specification

The model is specified as a linear ordinary least square (OLS) regression equation as follows:

$$FDI_{t-1} = \emptyset_0 + \emptyset_1 \Delta GDP_{t-1} + \emptyset_2 PUBI_t + \emptyset_3 Corr_t + \emptyset_4 Unc_T + \emptyset_5 Exp_{t-1} + \alpha_6 DK_t + \varepsilon_t$$

Where FDI_{t-1} is lagged FDI,GDP_{t-1} is changes in lagged Gross Domestic product, $PUBI_t$ is public investment; Unc_t represent uncertainty and $Corr_t$ corruption, DK_t is cost of capital and ε_t represents an error

term. $\emptyset_0, \emptyset_1, \emptyset_2, \emptyset_3, \emptyset_4, \emptyset_5, \emptyset_6$ are elasticities. Secondary data for all variables were obtained from the World Bank (2018).

3.2. Justification of the Variables

Lagged GDP (GDP$_{t-1}$- was used to measure the market size and also to reduce simultaneity. Most studies in developing countries have used either real or lagged GDP as a proxy for market size (see Foster-McGregor *et al.* (2014), Nguyen and Dong (2013), Magnus (2010) and Kim *et al.* (2016)). A hug market size is a factor that can be used by the foreign firm to gain economies of scales and to achieve more market penetration of their products and services particularly if there are not performing well in the home market. Large market size is also likely to encourage horizontal FDI inflows. Priori expectation of the sign of market size is negative suggesting that market-seeking foreign firms might consider the country's market size as negligible to warrant huge FDI.

Uncertainty (Unce) - a number of studies on FDI examine the impact of one specific type of uncertainty obtaining in the economy. For example, Baker *et al.* (2016) used policy uncertainty to show that FDI is affected by uncertainties in the economy. Similarly, Bachmann *et al.* (2013) and Baker *et al.* (2016) used the option price to create a forward-looking measure of uncertainty in order to arrive on uncertainty-FDI. Our paper adopts a broad macroeconomic indicator in the form of inflation rate as a proxy for measuring uncertainty. The reason is that the country has often experienced episodes of inflation, deflation and hyperinflation in the past two decades. In addition, inflation is also a forward-looking measure that also matches the forward-looking nature of FDI inflows (Muzurura, 2018). A prior, uncertainty is anticipated to have a negative but significant relationship with FDI inflows.

Corruption (Corr)- the term corruption is defined in this paper to include the following; smuggling, tax evasion, collusion, theft, kickbacks, improper practices in the public sphere, bribery, and all sorts of illegal rent-seeking activities. The costs of corruption deter foreign investors since it can be considered an additional tax on foreign investment. Findings on the impact of corruption on FDI are inconsistent. Some studies suggest corruption deters FDI inflows (Dridi, 2013; Faruq *et al.*, 2013; Heywood and Rose, 2014) and others suggest a positive relationship (Quazi *et al.*, 2014). Zimbabwe is one of the countries with the highest corruption according to Transparent International Perception of Corruption Index. Therefore, the sign of the effects of corruption on FDI inflows cannot be determined prior.

Public Invest (PUB) - was measured as a ratio of gross fixed government expenditure to rGDP. A number of studies indicate that public investment on electricity and water supply and good tarred roads acts as an incentive for FDI (Cleeve *et al.*, 2015; Kinuthia and Murshed, 2015; Xaypanya *et al.*, 2015). The public infrastructure in Zimbabwe is in a pitiable state after many years of economic mismanagement. The paper expects a negative relationship between public investment and FDI inflows.

Cost of Capital (K) - The user cost of capital was proxied by the real interest rate which was calculated using the formula: k_{tm}= log [(1+NIntrest$_{tm}$) / (1+Inflation$_{tm}$)] where INFL and Ninterest denote respectively inflation and nominal interest rates. High levels of short and long term liabilities a result of high cost of capital create enormous risks of bank runs and systemic financial crises which may have a strong impact on FDI. In most cases, once foreign firms are established in the host economy they end up borrowing from host financial intermediaries. Increased competition from foreign firms with strong financial positions may end up crowding-out domestic firms from loanable funds. In contrast, FDI inflows may also boost domestic savings in the host economy which local firms may access cheaply. Therefore, the coefficient of the cost of the capital sign of the coefficient cannot be determined on a prior.

Lagged exports (Exp$_{t-1}$)-Exports from the previous year were measured as a percentage of GDP and were used as a control variable to predict the next year's exports (Muzurura, 2016). Exports-related FDI helps to expand domestic productive capacity, increase the competitiveness of domestic firms, obtain economies of scale and hence,

lower production costs. In addition, exports can be used to increase the exporting capability of domestic firms due to the transfer of efficiencies, technology, marketing and managerial skills from foreign firms through FDI. For the above reasons, the lagged exports are expected to bear a positive sign.

To improve on the robustness of our findings, the following model diagnostic tests were performed to avoid estimating a spurious regression; the Augmented Dickey-Fuller stationarity tests Breusch-Pagan heteroscedasticity tests, Ramsey Reset tests for model specification and the DW tests for autocorrelation.

4. FINDINGS

Correlation test in Table 1 shows that there is no multicollinearity among all the independent variables. We thus conclude that all the variables did not move together in a systematic manner, hence, suggesting that the model is not going to be a spurious regression.

Table-1. Multicollinearity.

Variables	EXP01	GDPT_1	GFCE	GFCF	UNCE	K	Corr
EXP_{t-1}	1.00						
$GDPT_{t-1}$	0.76	1.00					
PUB	0.17	0.23	1.00				
UNCE	-0.29	-0.42	0.09	-0.19	1.00		
K	0.52	0.07	-0.47	-0.10	0.05	1.00	
CORR	0.45	0.08	0.35	0.10	0.08	0.25	1.00

The Augmented Dickey and Fuller test in Table 2 confirms that the error terms (ε_{tm}) were independently and identically distributed. The null hypothesis was that a variable had unit root against the alternative of the presence of stationarity. The presence of unit root indicates that the variable was not stationary and may lead to wrong inference. Stationary series has a constant mean, constant variance and constant autocovariance. The stationarity tests were differenced starting with the test at levels followed by first and second differences in that order. The probability value of ADF test statistic was then compared to 0.01, 0.05 and 0.1[2]. Any probability value of a variable below 0.01, 0.05 and 0.1[2] was considered to be stationary. All independent variables except $ddEXP_{t-1}$, dGP_{t-1} and dCORR. Other results are shown in Table 2 below.

Table-2. Stationarity Tests.

Variables	t-ADF	Critical-1%	Critical-5%	Conclusion
$DFDI_{t-1}$	-4.399	-4.122	-3.145	I(1) 1%
$ddEXP_{t-1}$	-4.088	-4.421	-3.260	I(2) 5%
$dGDP_{t-1}$	-3.122	-4.200	-3.175	I(1) 5%
ddPUB	-4.286	-4.200	-3.175	I(2) 1%
dUNCE	-4.762	-4.058	-3.120	I(0) 1%
dK	-3.385	-4.122	-3.145	I(1) 1%
dCORR	-3.079	-4.122	-3.145	I(1) 5%

The regression model was tested for serial autocorrelation and the findings are in Appendix C. The Durbin-Watson test statistic of 1.89 and the Breusch-Godfrey test where the F-statistic 0.672 is greater than the Chi-Square 0.248 indicates no autocorrelation. Similarly, heteroscedasticity a major problem in time series data and where non-standard errors which could lead to wrong inference in the interpretation of findings was also tested for using the Breusch-Pagan test. As shown in Appendix A, the F- statistic probability, 0.900 is greater than the Chi-square probability value 0.765 and both are greater than 0.05 hence, implying homoscedasticity. As per Appendix B, the model was tested for correct specification using the Ramsey Specification test in order to check the inclusion of an irrelevant variable or omission of an important variable. Against an alpha of 0.05 the null was rejected leading to the conclusion that the model was properly specified. After all the diagnostic test, the regression output adopted for

this paper is hereunder specified. Table 3 indicates that variables such as Uncertainty (UNCE), cost of capital (K), lagged GDP, corruption (CORR) and lagged exports are significant whilst corruption (CORR) and public investment (PUB) are not.

Table-3. Regression Output.

Dependent Variable: DFDI				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
dUNCER	-7.389	1.714	4.310	0.007
dDK	-59.298	16.488	3.596	0.015
dGDPT_1	8.491	1.391	6.105	0.001
ddPUB	-1.112	1.644	-0.676	0.529
dCORR	-55.935	37.602	-1.488	0.197
ddEXP01	7.099	1.098	-6.463	0.001
C	-35.901	17.693	-2.029	0.098
R-squared	0.936	Mean dependent variance		27.333
Adjusted R-squared	0.858	S.D. dependent variance		75.722
S.E. of regression	28.523	Akaike info criterion		9.832
Sum squared residual	4068.023	Schwarz criterion		10.113
Log likelihood	-51.983	Hannan-Quinn criterion.		9.726
F-statistic	12.087	Durbin-Watson stat		2.039
Prob(F-statistic)	0.008			

5. DISCUSSIONS

Uncertainty- Uncertainty proxied by inflation was found to be negative and statistically significant at 1 percent level of confidence. An increase in macro-uncertainty by 5% would be expected to decrease foreign direct investment inflows by 738 %. Factors associated with absorptive capacity such as the country's ease of doing business, weak trade terms, the perception of political and economic instability, incredible financial institutions, weak public institutions are likely to increase uncertainty on foreign investors, thereby hindering FDI. In the presence of uncertainty in the economy, foreign investors are also likely to defer greenfield investments which involve huge sunk costs which may not be recoupable in the event of decisions to disinvest. In Zimbabwe, uncertainty on the part of foreign investors are likely to be related to threats of expropriation of foreign private property, policy inconsistencies on capital investment and dividend repatriation, inflexibility of currency transfer rules by the central bank, currency convertibility restrictions, declining domestic competitiveness, the fragility of regional export markets. In addition, amplified political uncertainties which have been part of the economy since the 1990s are likely to retard FDI. Lagged GDP was found to positive and statistically significant at 1% indicating that a 1% increase in the country's market size will increase FDI by 850%. The results suggest that when foreign investors decide on entry, strategies such as FDI, the market size of the host economy is a major determinant. The market size is likely also to proxy for product demand in the host economy.

The cost of capital was found to be negative implying that in an increase in the cost of borrowing in the domestic economy by foreign firms is likely to reduce FDI. The results suggest a crowding-out effect of domestic firms from domestic financing system. Once crowded-out domestic firms are unlikely to compete effectively due to high production costs resulting from high cost of capital. Lagged exports were also found to be positive and statistically significant at 1% level of confidence. The results suggest that FDI oriented exports can be used to augment domestic investment, promoting international trade terms competitiveness, achieve domestic productivity gains, increase foreign exchange reserves and improve on the country's external position. Furthermore, exports originating from FDI inflows help to weaken foreign exchange constraints on domestic firms by facilitating imports of capital stock and can be used as a channel of accessing international credit lines. However, corruption and public investments were found insignificant, indicating that they do not play a role in attracting FDI in Zimbabwe.

6. CONCLUSIONS AND RECOMMENDATIONS

The paper used OLS regression for the period 1998 to 2017 to examine the determinants of FDI in Zimbabwe. Rather than using traditional variables such as market size and exports/GDP ratio, the paper relied on rarely used variables such as the cost of capital, uncertainty, corruption and public investment. Our findings suggest that macro-uncertainties, market size, cost of capital and exports were major determinants of FDI in Zimbabwe. The paper recommends the government adopt policies that reduce uncertainties in the economy. In particular, the government should relax rules on repatriation of investment returns, facilitate currency convertibility especially of the local bond currency as well as building an environment of political and economic stability. In addition, the government should implement policies that increase FDI such as reducing the cost of capital, offering foreign investors investment and tax incentives such tax breaks, tax credits and accelerated depreciation allowances on imported capital equipment. However, caution should be exercised in offering investment incentives since they are known to have distortionary effects in countries with corruption, weak administrative and institutional capacity. Instead, eliminating public infrastructure deficiencies and further removing economic barriers that distort market efficiency and resource allocation that impede economic growth and market size could be a solution for attracting sustainable FDI inflows quickly.

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Appendix-A. Heteroscedasticity Test: Breusch-Pagan-Godfrey

Variable	Coefficient	Std. Errror		Prob
F-statistic	0.321705	Prob. F(6,5)		0.9001
Obs*R-squared	3.342277	Prob. Chi-Square(6)		0.7648
Scaled explained SS	1.160362	Prob. Chi-Square(6)		0.9788
Test Equation:				
Dependent Variable: RESID^2				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	771.1407	553.3745	1.393524	0.2222
INF	-49.24163	53.61959	-0.918351	0.4006
DK	300.9063	515.6935	0.583498	0.5849
DGDPT_1	-40.71295	43.49676	-0.936000	0.3922
DDGFCE	5.756278	51.43076	0.111923	0.9152
DCORR	1082.433	1176.040	0.920405	0.3996
DDEXP01	10.24897	34.35143	0.298356	0.7774
R-squared	0.278523	Mean dependent var		339.0019
Adjusted R-squared	-0.587249	S.D. dependent var		708.1059
S.E. of regression	892.1148	Akaike info criterion		16.71626
Sum squared resid	3979344.	Schwarz criterion		16.99913
Log likelihood	-93.29759	Hannan-Quinn criter.		16.61154
F-statistic	0.321705	Durbin-Watson stat		2.143307
Prob(F-statistic)	0.900056			

Appendix-B. Ramsey Model Specification Test

Ramsey RESET Test
Equation: EQ01
Specification: DFDI INF DK DGDPT_1 DDGFCE DCORR DDEXP01 C
Omitted Variables: Squares of fitted values

Variable	Value	df	Probability
t-statistic	1.165341	4	0.3086
F-statistic	1.358019	(1, 4)	0.3086
Likelihood ratio	3.507600	1	0.0611
F-test summary:			
	Sum of Sq.	**df**	**Mean Squares**
Test SSR	1031.063	1	1031.063
Restricted SSR	4068.023	5	813.6047
Unrestricted SSR	3036.961	4	759.2402
Unrestricted SSR	3036.961	4	759.2402
LR test summary:			
	Value	**df**	
Restricted LogL	-51.98330	5	
Unrestricted LogL	-50.22950	4	
Unrestricted Test Equation:			
Dependent Variable: DFDI			
Method: Least Squares			
Sample: 2000 2011			
Included observations: 19			
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
INF	2.314734	4.659010	0.496830	0.6454
DK	7.882624	46.90724	0.168047	0.8747

DGDPT_1	3.927348	4.140094	0.948613	0.3965
DDGFCE	1.307935	2.614563	0.500250	0.6432
DCORR	10.46151	67.56972	0.154825	0.8845
DDEXP01	-1.992587	4.508391	-0.441973	0.6814
C	-8.862613	28.81776	-0.307540	0.7738
FITTED^2	0.003816	0.003274	1.165341	0.3086
R-squared	0.951849	Mean dependent var		27.33333
Adjusted R-squared	0.867586	S.D. dependent var		75.72212
S.E. of regression	27.55431	Akaike info criterion		9.704916
Sum squared resid	3036.961	Schwarz criterion		10.02819
Log likelihood	-50.22950	Hannan-Quinn criter.		9.585230
F-statistic	11.29612	Durbin-Watson stat		2.529902
Prob(F-statistic)	0.016832			

Appendix-C. Breusch-Godfrey Serial Correlation LM Test

Variable	**Coefficient**	**Std. Error**		**Prob.**
F-statistic	0.453554	Prob. F(2,3)		0.6728
Obs*R-squared	2.786026	Prob. Chi-Square(2)		0.2483
Test Equation:				
Dependent Variable: RESID				
Method: Least Squares				
Sample: 2000 2017				
Included observations: 19				
Presample missing value lagged residuals set to zero.				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
INF	0.693588	2.090986	0.331704	0.7619
DK	3.690633	19.06739	0.193557	0.8589
DGDPT_1	-0.599848	1.696218	-0.353639	0.7470
DDGFCE	-0.732705	2.026830	-0.361503	0.7417
DCORR	5.394223	42.92819	0.125657	0.9080
DDEXP01	0.327852	1.297160	0.252746	0.8168
C	-4.739874	20.74014	-0.228536	0.8339
RESID(-1)	-0.174162	0.556050	-0.313214	0.7746
RESID(-2)	-0.603996	0.637493	-0.947455	0.4133
R-squared	0.232169	Mean dependent var		5.92E-15
Adjusted R-squared	-1.815381	S.D. dependent var		19.23071
S.E. of regression	32.26740	Akaike info criterion		9.899698
Sum squared resid	3123.555	Schwarz criterion		10.26338
Log likelihood	-50.39819	Hannan-Quinn criter.		9.765050
F-statistic	0.113389	Durbin-Watson stat		1.897914
Prob(F-statistic)	0.993550			