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PRIVATE FIXED INVESTMENT BEHAVIOUR OF ZIMBABWE'S MANUFACTURING FIRMS: A MULTINOMIAL REGRESSION APPROACH

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Abstract

In recent years, there has been wide-ranging unanimity that suggests that private fixed domestic investment by Zimbabwe's manufacturing firms, could be a panacea for stimulating long-run rate of economic growth. Since 2013, firms' operating environment in Zimbabwe has often been characterised by numerous macro uncertainties that have been eroding returns on fixed capital. Despite private fixed investment at the aggregate level being fairly smooth over time, enormous lumpiness exists at firm-level due to formation of expectations about future prices, demand and profitability. This calls for a new ways of examining private fixed investment behaviour of firms in developing economies. The aim of the paper is to investigate private fixed investment behaviour of Zimbabwe's manufacturing firms using multinomial regression technique. The findings indicate that liquidity, credit constraints and the intensity of competitiveness influence manufacturing firms' decisions to invest. The findings also indicate that the decision to defer investment by some Zimbabwe's manufacturing firms are influenced by indigenisation laws and infrastructural constraints. The paper recommends adoption of special financial policies targeting small and medium manufacturing firms and improving the productivity of public investments. Policy makers should also re-pivot the country's indigenisation laws in order to allay fears by foreign investors of arbitrary seizure of private property.

Keywords: Business Equipment, Manufacturing Firms, Investment Behavior, Multinomial Logit Regression, Zimbabwe

INTRODUCTION

Following a prolonged struggle for political freedom that ended in 1980, like most newly independent African nations that were very supercilious about the virtues of a competitive private sector, impact of globalisation and trade openness, Zimbabwe adopted a command economy underwritten by Marxism-Leninism socio-economic ideology. Even though at independence, most manufacturing firms had lower desired fixed capital stocks, the country inherited from Rhodesian government a significantly robust and diversified manufacturing base. Due to international goodwill towards the newly independent state and resultant increase in foreign direct investment and overseas development assistance, the immediate post-independence period was met with exceptionally high GDP growth rates that averaged 12.5 in the first decade of independence. Between 1980 and 1982, the country realized an economic growth that was 5.5 percent higher than the average for Sub-Saharan African (SSA) countries. By the end of 1985, the manufacturing sector contributed 27 per cent to the country's GDP, significantly higher than the combination for agriculture and mining sectors that averaged 16.20 percent and 4.30 percent respectively. However, owing to economic mismanagement by the Mugabe regime that began in earnest in the second decade until 2017, far from being one of the region's better performing economies, Zimbabwe not only lagged behind the regional GDP average of 3.2 percent, but grew more sluggishly at 2.6 percent when compared to 24 of the 43 sub-Saharan economies. Twenty years after independence, the per capita GDP was roughly what it had been in 1981 and still lower than in 1974. Compared with a cumulative gain of at least 40% of GDP in some in Sub-Saharan Africa, Zimbabwe's GDP declined disproportionately by 37 percent.

Despite major policy interventions, the World Bank (2017) estimates that manufacturing GDP growth dropped from 15 percent in 2005 to 1.0 percent by 2016. Arrears on both domestic and foreign debts rose sharply reaching 90 percent of GDP in 2015. Failure to service external debts increased the country's risk as well as corresponding business risks. As a result, most private firms could not access international credit lines as foreign suppliers of business equipment insisted on advance payments. Exports of pure manufactures fell from 40 percent in 2009 to 23 percent in 2015 denying firms' vital source of liquidity and internal finance required for private fixed investment. The level of capacity utilisation collapsed to less than 20 percent by 2016 with only 4 percent of manufacturing firms operating at over three quarters of installed capacity. Manufacturing industry's share of GDP which at one time peaked at 19.54 percent in 2010 deteriorated significantly to 2.33 percent in 2016. The country's competitive manufacturing performance index declined from 0.248 to 0.198 in the same period, probably signifying the continued use of over-depreciated plants and machinery, increases in operational costs and

high import costs of securing new imported equipment. Investment protection one of the major indicators of the easy of doing business has also deteriorated from 81/183 in 2010 to 167/183 in 2014 (World Bank, 2015). With the collapse of Mugabe's regime after a soft coup in 2017, a new hope was ushered in when the Munangwa-led government introduced Zimbabwe 'is open for business mantra'. Despite changes in the country's leadership, private fixed investment and economic growth have failed to take off quickly as widely expected.

Prominent among the underlying current structural rigidities besetting the country are; the inconvertibility of the bond dollar, passive monetary policy due to dollarization, weak international capital inflows in the manufacturing sector, bottlenecks in the provision of productive public infrastructure as well as enflaming political and economic uncertainties. In addition, absence of laws that protect of private property rights, bureaucratic investment approval procedures, import licensing and restrictions on repatriations of profits and dividend, lack of coherent and consistent fiscal policy pronouncements, and the unresolved disputes arising from the land reform programme could be some of the factors that may be responsible for low private fixed domestic investment by manufacturing firms. Zimbabwe's manufacturing firms have been lagging behind other regional firms in terms of industrial innovation, knowledge and skills diffusion, technological progress and cost competitiveness. The entire economy has been incrusted in crunching liquidity which is likely to have far-reaching implications on the demand for private fixed investment by manufacturing firms.

Despite the importance of manufacturing firms to the growth of Zimbabwe's economy, private fixed investment in the sector has significantly declined over the years. At its peak, the manufacturing sector contributed 26.9% to the country's GDP but currently contributes around 11.5 percent. The sustained decline in business fixed investment by manufacturing firms is of grave concern given that business equipment spending, is a key determinant of production of goods and service, technological progress and therefore long-run economic growth and development. Unlike other components of aggregate domestic investment such as inventory and residential investment, more business equipment spending by manufacturing firms is a major prerequisite for building of robust productive capacities in the wider economy. Although foreign direct investment inflows, residential and inventory investments represent larger components of the aggregate domestic investment, it is business equipment spending decisions of manufacturing firms that have been largely responsible for the regulation of the rate at which physical capital is accumulated in Zimbabwe's economy, hence, economic growth. Zimbabwe's economy is highly integrated with value-chain linkages starting from manufacturing firms and spreading across different economic sub-sectors. Zimbabwe's manufacturing firms play a fundamental role in the broader economy. The sector promotes the diffusion of new and better

technologies, reduces import dependency, lowers inter-sectoral value-chain costs and thus promotes overall domestic and economic growth. The weakened state of private fixed investment by manufacturing firms is raising grave trepidations in Zimbabwe regarding the forte and sustainability of future investment, economic and development policies. In addition, low business equipment spending by manufacturing firms present a credible threat to other development oriented domestic policies that are in effect required to eradicate poverty, eliminate food insecurity, increase employment generation and sustainably improve people's living standards.

Besides the aforesaid economic challenges, a significant proportion of existing fixed productive capacity in most manufacturing firms is theoretical rather than actual. This is because the manufacturing sector has been under-investing in productive fixed capital stock and hence, substantial new private fixed investment is needed to renovate and technologically update existing manufacturing equipment and other production related machinery and equipment. Owing to low desired fixed capital stock, the economy has also been absorbing disproportionately enormous amounts of imported manufactured products from the region. The imported products are being landed at below cost of domestic production, hence, reducing the demand of domestically manufactured products. The consequent negative externalities on the economy from dumping of manufactures have been a progressive reduction in manufacturing firms' capacity utilisation, international product competitiveness, increase in human capital redundancies and lower taxation revenue. The later has also been generating a weak feedback loop particularly on the provision of productive public infrastructure such as roads, sewage reticulation and communication system. Owing to these interlocking issues, the reasons why private fixed investment in Zimbabwe's manufacturing firms has been continually declining over time cannot be ascertained a priori and would therefore require empirical investigation.

The aim of the study is to investigate why business fixed spending on productive machinery and equipment has been declining in Zimbabwe's manufacturing firms. The study is significant for a number of reasons: Zimbabwe's manufacturing firms offer special opportunities for accelerating the pace of technological progress, knowledge transfer, human capital development and improving the country's balance of payment position. Furthermore, the continued decline in private fixed investment especially in export-oriented manufacturing firms have increased the vulnerability of the economy to exogenous supply-side shocks such as the volumes, composition, and timing of foreign direct investment inflows. Business equipment spending decisions are leading cause of business cycle volatility and economic growth, yet, they have not been lengthily investigated in empirical literature that focus on developing countries, Zimbabwe included. Finally, the robustness of firm-level fixed investment in the domestic

economy by manufacturing firms signals positively to foreign firms seeking competitive, locational and internalisation advantages about the state of the domestic economy. The continued deterioration of intermediate consumption of goods and services by manufacturing firms and the slowing down of manufacturing value-added average growth have been inducing adverse effects on other key economic sectors such as mining, financial services and agriculture. These sectors traditionally rely on the manufacturing sector to provide a captive market for their outputs.

Due to lack of accurate and reliable secondary data, many studies on business fixed spending behaviour in most developed countries that include Zimbabwe, have primarily been done either at sectoral or country-levels and relied on ordinary least regression models (see Jenkins, 1995; Bayai and Nyangara, 2013; Jecheche, 2010, Muzurura, 2017). Whilst studies in Zimbabwe have tended to use macro-level data, this study differs materially by using a cross-section of micro-level data collected from a survey of 150 manufacturing firms. Using highly aggregated domestic investment data as was done by previous studies risk losing significant meaning especially when the data is applied econometrically to firm-level investment behaviour. In addition, secondary data in Zimbabwe on some important firm-level variables such as firm size, firm age, firm competitiveness, borrowing costs, infrastructure and credit constraints are not available, yet, these variables could be more important in explaining fixed investment decisions. The paper also argues that business fixed investment spending at the aggregate level is fairly smooth over time despite enormous lumpiness that exists at the firm-level. Most prior studies have also assumed a linear and simple relationship between businesses fixed investment decisions and the explanatory variables. However, the current study argues that the chances of carrying out a fixed investment spending by a competitive manufacturing firm, operating in business environment characterised by investment constraints such as unpredictable demand, output variability and profitability uncertainties might not be linear.

The paper therefore argues alternatively that fixed investment spending decisions by Zimbabwe's manufacturing firms given major uncertainties in the macro environment are likely to follow a probabilistic distribution function. Thus, the paper suggests that a manufacturing firm in Zimbabwe may decide to either invest or not invest or to defer investment especially when faced with political and economic uncertainties that aggravate investment constraints. The paper posits that in uncertain business climate, investment decision outcomes whilst being independent of each other, may not necessarily produce a binary outcome. This could probably rule out the use of OLS, logit, Tobit and probit models in private fixed investment decisions in uncertain business operating environment. Hence, the paper suggests an alternative approach of understanding business fixed investment decisions in Zimbabwe's manufacturing firms by

adopting a multinomial regression technique. The reason being that investment decision outcomes are likely to produce more than two alternatives, that is, (1) invest decision (2) not invest decision and (3) defer investment decision. Depending on particular circumstances, these outcomes could even be more, hence, making a multinomial (MNL) regression model more pertinent in analysing investment decisions with many outcomes.

Our paper contributes to the theoretical literature by pioneering the use of multinomial regression models in examining business equipment decisions in Zimbabwe. More significantly, by using firm-level data instead of country-level data our paper clearly departs from previous studies that favour the use of macro-level data. The selection of manufacturing firms as a unit of analysis in this study is therefore appropriate given that fixed spending decisions are primarily made at the firm- level and rather than at the aggregate country level as assumed by many studies.

LITERATURE REVIEW

Farinha and Prego (2013) examined private domestic investment decisions of Portuguese manufacturing firms using panel data for the period 2006 to 2011. Their study employed variables such as firm size, firm's lagged investment rate, and interest burden, indebtedness, financing cost, profitability and sales. The findings indicate that lagged investment rate, sales and profitability are major determinants of investment behaviour in Portuguese manufacturing firms. Niranjan and Hosamane (2015) using the neoclassical theory of investment, explores the investment behaviour and efficiency in allocation of investment in Indian private manufacturing industries. The findings indicate relative to other factors, the responsiveness of investment is higher with accelerator and profitability variables than with the financial liberalization and policy variables.

Ochai and Mukasa (2012) employed panel data analysis to investigate the effects of investment climate factors on manufacturing firms' growth in Ugandan manufacturing firms. The results show that firm size, firm age, and average education are the main determinants of domestic investment behaviour and firm growth in a Ugandan manufacturing firms. Similarly, Twine *et al* (2015) applied the flexible accelerator theory to examine the effects of private investment in Ugandan tea-processing firms. They used a dynamic panel data model consisting of independent variables such as the foreign exchange rate, interest rate, inflation rate, ratio of the ratio of industrial production to GDP and the ratio of money supply to GDP. Their findings show that in the long run, the level of investment in machinery and equipment is positively influenced by exchange rate, profit, firm age the ratio of the ratio of industrial production to GDP and the ratio of money supply to GDP.Atif and Ahmad (2014) used OLS regression for the

period 1980 to 2009 report that lagged GDP, lagged interest rate, credit to the private sector, public investment, macroeconomic instability, ratio of external debt to exports and diaspora remittance affect business fixed investment decisions in Pakistani. Hugo *et al* (2014) employed panel data and fixed effects model to investigate the determinants of private fixed investment behaviour in Brazil's manufacturing sector for the period of 1996 to 2010. The study used variables such as capacity utilisation, real interest rate, bank deposits, exchange rate, external debt, credit availability and government expenditure. Their results reveal the importance of the credit availability, economic instability and the government expenditure as important determinants for private investment in Brazil's manufacturing sector, thereby, suggesting a strong complementarity between public and private fixed investment.

Similarly, Bayai and Nyangara (2013) used multiple OLS regression for the period 2009 and 2011 to investigate factors affecting domestic investment behaviour after the introduction of multi-currency in Zimbabwe. They added political risk, public investment and trade terms to variables used by Malumisa (2013) and established that political risk, GDP, interest rate, trade terms and debt servicing as key determinants of domestic investment in Zimbabwe. Jecheche (2010) used a log-linear vector autoregressive regression equation to examine the relationship between domestic investment and economic growth in Zimbabwe for the period 1990 to 2009. The variables used were the log of trade volume index, the log of public investment, a dummy representing political instability, the log of credit to the private sector as well as the log of constant GDP. Their analysis shows that political instability, public investment and terms of credit had long-lasting growth effects, while the impact of credit to the private sector was found to be insignificant. According to Meghreb and Holmes (2015), larger firms finance business fixed spending on machinery and equipment utilising various sources such as retained earnings, rights issues, issuance of equity and using external debt. However, Kim *et al* (2016) indicate that that large firms display higher investment-cash flow sensitivities than small firms. Ruiz-Porras and Lopez-Mateo (2011) documented that, the effects of firm size, cash-flows, as well as future fixed investment opportunities that have a positive net present value, significantly influence an affirmative investment behaviour by small firms. Nguyen and Dong (2013) adopted a static approach and find that cash-flow, fixed capital intensity, business risks, leverage, and firm size are the key determinants of private investment behaviour in Vietnam. Goretti and Souto (2013) use data at industry-level for selected euro area countries over the period 2000 to 2011 and have provided strong evidence that high leverage interfere with private fixed investment behaviour.

METHODOLOGY

Whilst prima facie, it appears that there is probably a considerable agreement in empirical investment literature about the essential features of a very simple theoretical model of private fixed investment behaviour of a private firm, there is much less consensus concerning the appropriate framework or methodology to be adopted for applied studies on fixed investment behaviour in developing countries like Zimbabwe. Researchers studying domestic investment behaviour often wish to draw inferences about some factors that underlie strategic investment choices that private firms make in selecting future business equipment spending decisions. However, unlike in many empirical studies that assume a linear relationship and perfect certainty, we argue that firm-level investment decisions in unpredictable and volatile business environments are polychotomous in nature. Therefore, this study applies discrete choice models in the form of a MNL model in order to permit analysis of multiple investment decisions outcomes that are common in uncertain business environment. In the model utility differences among manufacturing firms determine the probability of selecting amongst a series of discrete choices such as the decision to invest, defer invest and not to invest. The choice of the multinomial investment model (MNL) has a number of advantages over the ordinary OLS regression model in that the former has more easily interpretable diagnostic statistic tests. In addition, a MNL model does not assume a linear relationship between the dependent and independent variables and also does not assume normally distributed errors.

Conceptual Framework

Common multiple dependent variable outcome models that may be used in such type of studies include multinomial logit regression (MNL) or the multinomial probit regression (MNP) regression models. However, for the purpose of this study we chose the MNL model instead of the (MNP) regression model primarily because of its simplicity and also because it is possible to investigate a wider range of research questions in one study than permitted by other model. The basic conceptual framework of the MNL investment model was generalized from binary logistic regression as was done by Aldrich and Nelson (1984) and Hosmer and Lemeshow (2000). Following also another methodology popularised by Long (1997), we selected the “NOT INVEST” decision as our baseline category for which a firm’s investment decision will be compared against. The study compared first the manufacturing firm’s decision to INVEST relative to “NOT INVEST”. Similarly, we then compared the decision by the firm to “DEFER INVEST” relative to the same baseline category, “NOT INVEST”. The rationale for adopting the “NOT INVEST” outcome as the baseline category was motivated by the number of observations that chose the “NOT INVEST” investment decision.

The critical challenge in using the MNL model is that the signs of the estimated model coefficients do not determine the direction of the relationship between an independent variable and the probability of choosing a specific alternative. In other words, a positive/negative sign on a coefficient in an MML model does not necessarily mean that, an increase/decrease in the independent variable corresponds to an increase/decrease in the probability of choosing one investment decision over the other. In order to obviate the challenges in the qualitative interpretation of coefficients, the paper relied on a commonly utilised interpretational device of a MNL model, in particular the relative risk ratio (RRR) (seeLong and Freese, 2006).We arranged the data in such a way that manufacturing firms that chose the decision to invest now, that is, INVEST outcome was given a value of 1, firms that decided not to invest, that is, the outcome NOT INVEST, was given a value of 2 and firms that decided to defer fixed investment, that is DEFER INVEST outcome was given a value of 3. Thus, our model had three dependant outcomes denoted by (1, 2, and 3) representing the decisions to invest, not to invest and to defer invest. Note that outcome 2 also represented the baseline category on which the decisions to INVEST and DEFER INVEST were compared to in line with how MNL models are interpreted(Long, 1997; Small *et al,* 1985).In the paper, the three investment decision outcomes were unordered, that is, any of the three outcomes were not necessarily better or worse than the other. In other words, there is no hierarchy among the three investment decisions options. This gave each business fixed investment decision equal probability of being selected by a manufacturing firm. However, a major corollary of employing discrete choice models, especially the MNL regression model, raised by numerous researchers which is inherent in MNL models is the fundamental assumption of independent of irrelevant alternatives (IIA) (see Alvarez and Nalgler, 1995; Dow and Endersby, 2004; Fry and Harris, 1996, 1998; Keane, 1992; Lacy and Burden, 1999; Keane, 1992; Small *et al,* 1985).

Hausman and McFadden (1984) and Green (2002) define the IIA as the ratio of probability of choosing two alternatives that are independent from an existing third alternative. The IIA assumption says that the ratio of the choice probabilities of any two alternatives is unaffected by the systematic utilities of any other available alternatives (Hausman *et al.,* 1984). If the IIA assumption is violated, it consequently follows that the MNL model cannot be used or is invalid. The IIA property implies that those variables that are omitted from the model are independent random variables in a way that is analogous to the assumption of independent error terms in the linear regression model. The most frequently used tests for IIA are the Hausman and McFadden (HM) test and the Small and Hsiao (SH) test (see Greene 2003; Train 2003; Zhang and Hoffman, 1993). In order to test for the violation of IIA the paper used the most widely accepted test, the McFadden *et al* (1981) test. Whilst we could also use the Small and

Hsiao test, according to Cheng and Long (2007) and Bowen and Wiersema (2004), the Small and Hsiao tests have shown poor properties in small samples and also often show conflicting results under certain data structures. However, for the purpose of increasing validity and reliability of our findings the paper also used the Small and Hsiao tests, since we considered our sample large and representative enough. The MNL regression model also requires that individual investment decision outcomes be tested for possible combination (Hausman and McFadden, 1984). The rationale for carrying out outcome and variable combination test was to ensure that firms' investment decisions, INVEST, NOT INVEST and DEFER INVEST were indeed independent and could not be collapsed to a binary model in the form of Logit, Probit or Tobit. For instance, at prima facie, the decision to DEFER INVEST and NOT INVEST appears to be the same investment decision outcome. In order to check for this assertion the study therefore used the likelihood ratio test to check for possible combination of the investment decisions. The likelihood ratio test evaluates the overall relationship between an independent variable and dependent variables (Greene, 2003; Zhang and Hoffman, 1993). The null hypothesis used in the testing was that the estimated coefficients was jointly zero. However, in order to assess whether or not the independent variable was statistically significant in differentiating between two groups in each of embedded binary logistic comparisons we employed the Wald test.

Model Specification

Starting from the logistic regression formula;

$$Pij = \text{Prob}(y_i = jx_i = \frac{\text{expon}(x_i\beta_j)}{\sum_{j=0}^{2}\text{expon}(x_i\beta_j} \quad (1)$$

Where, y_i and jx_i denote the exponentiated probability of the investing decision. We expand the aboveequation into three equations to represent the three dependents or investment decision outcomes, that is; INVEST; NOT INVEST and DEFER INVEST in the respective order as shown below.

Pijt, 1= P (Yijt=1) = expon [X'ijtβ1]/ [expon[X'ijtβ1] +[X'ijtβ2] +[X'ijtβ3]] (2)

Pijt, 2= P (Yijt=2) = [expon(X'ijtβ2]/ (expon[X'ijtβ1] + [X'ijtβ2] +[X'ijtβ3]] (3)

Pijt, 3= P (Yijt=3) = [expon(X'ijtβ3]/ (expon[X'ijtβ1] +[X'ijtβ2] +[X'ijtβ3]] (4)

Equation (2) represents the probability that the *ith* manufacturing firm will choose alternative j (j = 1, (INVEST) and similarly equation (2) represents the decision NOT TO INVEST. Equation (3) the decision to DEFER investment, X'i are firm-specific regressors such as; firm size, firm age, firm constraints, firm competitiveness, firm borrowing costs, indigenisation and so on, that are thought to explain fixed investment behaviour of Zimbabwe's manufacturing firm. The elasticities

$\beta 1$, $\beta 2$ and $\beta 3$ are the coefficient vectors which are assumed to have positive signs. Thus, there is one set of coefficients for each choice alternative or variable. In order to guarantee identification of the equation, **β**j is set to zero for the referent or baseline category, which is the firm's decision to NOT INVEST outcome. Setting **β**0= 0 and computing the predicted probabilities yields the equation (5) below;

$$Pij = \Pr(y_i = j \mid x_i = \frac{\exp(x_i \beta_j)}{\exp(x_i + \sum_{j=0}^{2} \exp(x_i \beta_j} \quad (5)$$

$$= \frac{\exp(x_i \beta_j)}{\sum_{j=2}^{2} \exp(x_i \beta_j} \quad (6)$$

The baseline or referent category which is the decision NOT INVEST is given by equation (7) below which can be further reduced to equation (8). As indicated elsewhere our choice of NOT INVEST as a referent group was influenced by the number of observations that chose this outcome. However, in MNL regression equations, such a choice can be set by default.

$$Probij = \text{Prob}(y_i = jx_i = \frac{\exp(x_i \beta_j)}{\exp\ on(x_1 3) + \sum_{j=0}^{2} \exp(x_i \beta_j} \quad (7)$$

$$Probij = \text{Prob}(y_i = jx_i = \frac{1}{1 + \sum_{j=1}^{2} \exp(x_i \beta_j} \quad (8)$$

With the decision NOT TO INVEST set as base category, we can expand equations (7) and (8) as follows;

Probijt, 1= Prob (Yijt=2) = [expon[X'ijtβ2]/1+expon[X'ijtβ2] +expon[X'ijtβ3]] (9)

Probijt, 3= Prob (Yijt=3) = (expon[X'ijtβ3]/1+exp[X'ijtβ2] +expon[X'ijtβ3]] (10)

Probijt, 2= Prob (Yijt=1) = [1/1+expon[X'ijtβ2] +expon [X'ijtβ3]] (11)

The last category of dependant variable (NOT INVEST) was selected as the reference category which was compared relative to the INVEST and DEFER investment decisions respectively (see Liao, 1994; Selim, 2008). The coefficients of the "INVEST" and "DEFER INVEST" were interpreted with the respect to the base category (NOT INVEST). As recommended by Long (1997) we then compute the probabilities of each alternative relative to the benchmark option (NOT INVEST) as follows;

Prob (Yijt=2)/Prob [=Yijt=1) = expon (X'ijtβ2) (12)

This equation shows the relative risk of INVEST outcome relative to DEFER invest outcome, an important equation in the interpretation of data.

P (Yijt=3)/Prob [=Yijt=1] = exp(X'ijtβ3) (13)

Similarly, this equation represents the relative risk of NOT INVEST relative to DEFER INVEST.

The relative risk ratio (RRR) indicates how the relative risk of the alternative compared to the benchmark option changes with a unit increase in the explanatory variable. The general form of

the equation takes the same format as the original MNL model "NOT INVEST" as the benchmark category. The RRR investment decision equation is specified as follows:

RRR= [Prob {Yijt=h|xijt+1}/P {Yijt=3|xijt+1}] / [Prob {Yijt=h|xijt}/Prob {Yijt=3|xijt}] I, j=1… N; I ≠ j; t=1…..T (14)

Equation (14) indicates that a unit increase in the explanatory variable increases or decreases the likelihood of the firm investing, compared to the benchmark or baseline category which is the NOT INVESTING decision. According to Bowen ad Wiersema (2004) and Cameron and Trivedi (2005), testing whether a specific coefficient is equal to zero or interpreting its sign makes little sense if the researcher wishes to draw valid conclusions about the direction, significance and/or magnitude of the relationship between the dependent variable and a given predictor. In line with some recent empirical literature of FDI which used a similar model, our interpretation of findings will be based on equation (15) even though some older studies prefer using equations (9) to (11).

The final empirical model was therefore specified as follows;

$Y^*ijt_m = \boldsymbol{\rho}I + \boldsymbol{\rho}j + \boldsymbol{\phi}t_m + X'ij\beta + \varepsilon ij$ I, j=1… N; I ≠ j; t_m=1… T (15)

Where; Y*ijt is the total fixed investment, from firm *I* to firm *j* in time t_m and is a qualitative variable with three possible outcomes. Y^*ijt_m is a vector of *N* explanatory variables, that is, the factors that influence investment behaviour of manufacturing firms. The researcher used time-invariant unobservable source and firm fixed effects ($\boldsymbol{\rho}$I and $\boldsymbol{\rho}$j) to account for peculiar firm characteristics and also added unobservable time fixed effect ($\boldsymbol{\phi}t_m$) and εij is the unobservable error term.

Variable Definition

Outcome (dependent) variables (Y*)

Invest	1. If a firm decides to carry out new fixed investment.
Not invest	2. If a firm does not decide to carry out new investment.
Defer Invest	3. If a firm decide to defer new investment to a later period.

Independent Variables

Firm size	
50 employees and below	1. If firm employs 50 employees, 0 otherwise
51-100 workers	1. If a firm employs between 51 and 100 employees, 0 otherwise
100-500 workers	1. If a firm employs between 100 to 500 workers, 0 otherwise
Above 500 employees	1. If a firm employs over 500 workers, 0 otherwise

Business Constraints	
Liquidity constraints	1. If a firm faces liquidity constraints, otherwise 0
Credit constraints	1. If a firm faces credit constraints, otherwise 0
Infrastructural constraints	1. If a firm faces infrastructural constraints, otherwise 0
Business Operating Environment	
Competitiveness	1.if a faces foreign competition, otherwise 0
Indigenisation effects	1 if a faces requires indigenisation, otherwise 0

Firm-level data was collected over a three week period using structured questionnaire from a cross-section survey of 150 Zimbabwe's manufacturing firms.

Justification of Variables

Firm Size

Firm size is usually measured as the natural logarithm of the book value of total assets, its age or using the number of employees. In the study firm size has been measured using the number of employees. Larger firms possess more resources than smaller firms. Firms' investment spending on business equipment is likely to be more influenced by liquidity than that of older firms (Schaller (1993). Ketchen, 1999), and that firm size is an indication of a firm's potential to meet resource requirements (Buckley and Casson, 1998). Small firms are more likely to be financially constrained for several reasons. First, transaction costs are mostly likely to be fixed, hence making external finance relatively more expensive for smaller firms. Furthermore, smaller firms often tend to be less diversified and display greater earnings volatility. Secondly, small firms are less often rated and, thus, suffer from greater informational asymmetries between lender and borrower. Small and young firms are likely to be a riskier prospects since the shorter track record makes it more difficult to judge the quality of their financial statements. Thirdly small firms have a greater risk of bankruptcy due to low diversification of product portfolio compared to larger firms. Larger firms can finance capital expenditures from internal resources, issuance of equity, or debt. By contrast, smaller firms are limited to the extent of their internal earnings and the potential for issuing equity. In particular, small firms are more likely to be unable to obtain capital at market interest rates and therefore subject to credit rationing. We predict that the size of the manufacturing firm is likely to influence likely to influence investment decisions undertaken by firms.

Indigenisation Laws

Enforcement of indigenisation laws increase uncertainty in firms that are required to comply with the laws. Perceptions of unfair indigenisation laws, cumbersome licencing regulations,

unpredictability of the judiciary, rule of law, property rights, and quality of institutions that enforce indigenisation laws all impact firm's expectations (Goswami and Haider, 2014; Welter, 2002; Ochai and Mukasa, 2012). The laws have been applied inconsistently and moreover there is a lot of policy reversals in indigenisation laws. Because fixed investment is irreversible and there is some flexibility in the timing of investment, therefore for firms awaiting indigenisation, there is a positive-value option to wait and delay investment decisions (McDonald and Siegel, 1986); Dixit and Pindyck, 1994; Abel and Eberly, 1994). We postulate that if a firm defers investment the relative risk of not investing in the future is low given that all other variables important variables like financial constraints remain constant in the model. In addition manufacturing firms that utilise irreversible capital and also have some flexibility in the timing of their fixed business spending, prefer to adopt a "wait and see what happens" approach and delay investment when uncertainty increases. In this case, waiting allows the firm to gather new information about the direction of laws relating to indigenisation.

Financial Constraints

Fluctuations in internal finance, as reflected by cash-flows, are more important in determining the level of business equipment investment. Large firms, on the other hand, have better access to external funding, collateral, domestic credit and face little financial constraints. If firms are credit rationed the rate of fixed investment depends not only on the market interest rate and the profitability of investment, but also on the availability of investible funds which in turn, will depend on the cash flow of the firm considering fixed investment (Strong, 1990). Small and innovative firms have more constraints and difficulties in accessing finance, because they tend to have riskier projects and business models (Lee *et al.,* 2015). We posit that if there is a unit increase in the firm's financial constraints, the relative risk ratio of not investing will increase by high proportionate factor.

Firm Competitiveness

A firm's decision to expand the level of productive capacity depends on the expected degree of capacity utilization in the economy which also provides an indicator of demand conditions and level of profitability. However, the actual capital intensity of the additional capacity depends on relative prices such as the cost of capital and labour. According to Sneesens (1987), fixed investment behaviour depends both on profitability and on the prevailing sales constraints which subsequently determine the rate of capacity utilization. The capital stock falls in the long run if high levels of profitability uncertainty exists. We therefore expect that if a firm were to increase capacity utilisation the relative risk of low investment decreases by a proportionate factor given

that other variables in the model remain constant. The presence of foreign firms may cause significant reductions of market share for domestic firms, driving their operations to a less efficient scale, with the associated increase in average costs (Anwar and Sun, 2014; Aitken and Harrison, 1999). Jenkins (1998) notes that over time, where foreign and local firms are in competition with each other, producing similar products, on the same scale and for the same market, there is a tendency for local firms to adopt similar production techniques to those of the MNFs. Industry competitiveness depends on aggregate output, profitability levels, barriers to entry and exit, capacity utilisation and on the prevailing sales constraints among others. We expect that if the level of competitiveness increases by a unit the relative risk ratio of deferring investment increases and the firm may not invest at all in the future, given that all other variables in the model remain constant.

Infrastructural Constraints

In the developing countries, the role of public investment in stimulating the productivity of private fixed domestic investment and the growth process have come under increasing scrutiny (Pradhan, *et al.,* 2016; Ener *et al.,* 2013; Cavallo and Daude, 2011; Khan and Kumar, 1993; Serven and Solimano, 1990; Ngague and Tchaouassi, 2014; Tchouassi and Nganue, 2014; Khan and Reinhart, 1990; Tun Wai and Wong, 1982)). Public investment in roads, rail energy and communication networks increases the marginal productivity of existing factor inputs by increasing the level of private firms' production whilst at the same time reducing marginal production costs. Sundararajan and Thakur (1980) observe that increased public investment enhances productivity of private fixed domestic investment through crowding in externalities which may reduce the cost of production in firms. However if public investment is financed by deficit and seignorage it may crowd out private fixed domestic investment as a result of high interest rate, credit rationing and high tax rates. The negative relationship between public investment and private investment is identified in the empirical studies of, Rossiter (2002); Quattara, (2000); Cavallo and Daude (2011); Jecheche (2011); Ghura and Goodwin (2000). Zimbabwe's public infrastructure is dilapidated with roads, railway system requiring urgent restoration. Electricity and water supplies are in short supply. We therefore expect firms to defer investment relative to not investing due to high operating costs due to public infrastructure constraints.

FINDINGS

To assure ourselves of the appropriateness of our estimated MNL investment model we had to evaluate the quality of our final model specification using diagnostic tests such as the independence of irrelevant alternative and coefficient combination and multicollinearity tests.

Independence of Irrelevant Alternative (IIA) Test

The multinomial logit model relies heavily on the assumption of independence of irrelevant (IIA) alternatives, which means that the odds of the decision to INVEST versus an alternative choice such as NOT INVEST are not dependent on the number of choice alternatives included. IIA is a test that a variable has not effect on other choices made by a firm. Table 1 shows findings from the Hausman and Small-Hsiao test for the independence of irrelevant alternatives. The INVEST decision has a coefficient of -13.933 and not invest (-614.80) whilst DEFER Investment has a coefficient of -216.321. A negative coefficients indicates that the assumption of IIA has not been violated. The study therefore rejects the hypotheses that the three outcomes, INVEST, NOT INVEST AND DEFER INVEST do not affect the variables considered important for a firm's investment decision. Similar conclusions on IIA can be arrived at by using the *p-value* shown also in the same table. The *p-value* for the decision to invest is statistically significant at 95% level whilst the decision to defer investment and not to invest are at 1% level of significance. Hence, using the *p-value*, the assumption of IIA could also not be rejected and thus the assumption of IIA was not violated.

Table 1. Hausman and Small-Hsiao Tests for the Independence of Irrelevant Alternatives (IIA) assumption

mlog test, hausman smhsiao base

*** Hausman tests of IIA assumption)N=79)

Ho: Odds (Outcome- J) vs Outcome-k) are independent of other alternatives

Omitted	**Chi 2**	**df**	**P>chi1**	**evidence**
invest	-1.666	8	------	------
defer invest	-7.709	8	------	------
Not invest	0.000	8	1.000	for Ho

note: if chi2<0, the estimated does not meet asymptotic assumptions of the test

Ho Odds(outcome-J) vs Outcome-K) are independent of other alternatives

Omitted	**lnl(full)**	**lnL (omit)**	**chi2**	**df**	**P>chi1**	**Evidence**
Invest	-13.933	-6.062	15.742	8	0.046	against Ho
Defer invest	-614.8	-0.00012	29.606	8	0.000	against Ho
Not invest	-216.321	-0.0004	32.642	8	0.000	against Ho

Test for Combining Dependent Categories-The Wald test

In order to test on whether the independent variables differentiate pairs of outcome categories such as INVEST and NOT INVEST and DEFER INVEST, we carried a Wald test as shown in table 2 below.

The results are statistically significant at 95% level of confidence and this indicates that the different investment alternatives cannot be combined and therefore can be analysed separately. In other words the test confirms that the three decisions are independent of each other, a firm cannot simultaneously decide to invest and not invest at the same time. The Ward test shows that the decisions to invest, or not to invest or to defer investment are separate investment decisions undertaken by manufacturing firm operating in uncertain business environment. The uncertainty can be due to profitability, cash flow, future product demand or political concerns. For instance, a manufacturing firm facing firm-unique uncertainties in its business operating environment, may either decide to defer investment or invest or not to undertake any investment. These decisions are separate.

Table 2. Wald Tests

.mlogtest, combine

***Wald test for combining alternatives (N=79)

Ho: All coefficients except intercepts associated with a given pair
of alternatives are 0 (i.e alternatives can be combined)

Alternative that was tested		chi-squared	df	P>chi-squared
Invest	Defer Invest	14.809	7	0.039
Invest	Not Invest	11.582	7	0.015
Defer Invest	Not Invest	15.900	7	0.026

Multicollinearity Tests

As shown in the table 3 below all predictor variables did not move together in systematic ways and therefore we concluded that individual effects of all variables on the outcomes, INVEST, NOT INVEST and DEFER investment can be isolated. The study dropped corruption, FDI, and GDP variables due to the existence of multicollinearity.

Table 3. Multicollinearity Test

	Firm size	Credit constraints	Competitiveness	Liquidity constraints	Borrowing costs	infrastructure	indigenisation
Firm size	1.00						
Credit constraints	-0.26	1.00					
Competitiveness	-0.19	0.11	1.00				
Liquidity constraints	-0.20	0.31	-0.05	1.00			
Borrowing costs	-0.04	0.04	-0.27	0.08	1.00		
infrastructure	0.15	0.09	-0.02	0.12	-0.06	1.00	
indigenisation	.025	-0.16	-.011	-.0.03	0.13	0.13	1.00

Measures of Fitness and Hypotheses Testing:

In order to check whether a variable can be dropped from the MNL model we carried a combination of coefficient test for all variables used in the MNL model. As indicated in Table 4, borrowing costs was found to be insignificant whilst variables such as firm size, competitiveness, infrastructure, indigenisation, liquidity constraints and credit constraints were found to be statistically significant across equations. The test indicates that borrowing costs, hence, the user cost of capital can be dropped from analysis of the output.

Table 4. Likelihood-Ratio Variable Fitness Test

.mlogtest, lr

***Likelihood-ratio tests for independent variables (N=79)

Ho: All coefficients associate with given variable(s) are 0

predictor	**chi-squared**	**df**	**P>chi-squared**
firm size	7.539	2	0.023
credit constraints	8.673	2	0.013
competitiveness	18.839	2	0
liquidity constraints	12.968	2	0.002
borrowing costs	0.06	2	0.971
infrastructural constraints	8.125	2	0.017
indigenisation	14.784	2	0.001

DISCUSSIONS

Discussions Using Relative Risk Ratio (RRR)

Unlike binary models (or even OLS models), a positive sign on a coefficient in an MLN model does not necessarily mean that an increase in the independent variable corresponds to an increase in the probability of choosing an outcome (see also Wiersema and Bowen, 2009; Bowen and Wiersema, 2004; Hoetker, 2007; and Zelner, 2009; Long, 1997; Long and Freese, 2006). Furthermore, the sign on a single coefficient such as liquidity constraints or competitiveness only tells us about the contrast among two categories. Therefore, using the coefficient of liquidity constraints for example to support a hypothesis about the effect that a single predictor has on the probability of a single outcome risks getting invalid inference and generalisation. According to Bowen and Wiersema (2004), researchers routinely and wrongly assume that the sign and significance of MLN model coefficients can be used to evaluate their hypotheses (such as liquidity constraints reduces private fixed investment in firms). This is because the relationship between the predictor variables and the probability of a given choice outcome such as a firm deciding to defer investment is non-linear. In addition, the sign and size of the coefficients indicate neither the direction nor the size of the marginal effect on the probability that an alternative is chosen (Cameron and Trivedi, 2005; Greene, 2003). First, coefficients critically limit interpretation and also complicates communication of results. For instance, we are limited to making general statements as in above interpretations of the regression output, about how a predictor such as credit constraints is related to the probability of one choice outcome (relative to the base category.

According to Bowen and Wiersema (2004), if the researcher wants to draw valid conclusions about the direction and magnitude of the relation between a predictor and dependent variables in an MLN model, the researcher must calculate relative risk ratios which may or not share the sign of the coefficients in the MNL model. Instead, the coefficient of a predictor variable with regard to a specific category (such as a firm's decision to defer investment) indicates how that predictor relates to the probability of observing a particular category relative to the base category. Taking into consideration the above shortcomings of MNL model we now proceed to interpret the MNL model coefficients using the relative risk ratio as recommended by a number of studies (see Wiersema and Bowen, 2009; Bowen and Wiersema, 2004; Hoetker, 2007; and Zelner, 2009; Long, 1997; Long and Freese, 2006). It is well known, however, that most people misinterpret odds ratios as risk ratios (Klaidman 1990; Teuber 1990; Altman, Deeks, and Sackett 1998; Bier 2001). The table below shows the relative risk ratios used for the interpretation and explanation of our findings.

Table 5. Relative Risk Ratios

mlogit, rrr			number of observations =			79
			LR Chi2(14)	=		66.04
Multinomial logistic regression			Prob> chi2=			0.0000
			Pseudo R-squared =			0.5095
Log likelihood= - 31.791117						
investment Decision	**RRR**	**std. Err**	**z**	**P>lzl**	**95% conf.**	**interval**
Invest						
ln firmsize	0.342	0.156	-2.35	0.019	0.140	0.836
credit constraints	0.000	0.000	-2.09	0.037	2.790	0.583
competitiveness	15020.58	84759.33	1.70	0.088	0.236	9.556
liquidity constraints	0.000	0.000	-2.57	0.010	8.660	0.083
borrowing costs	0.038	1.579	-0.23	0.816	0.001	1216.48
infrastructure constraints	0.997	0.0182	-0.02	0.985	0.697	1.426
indigenisation laws	0.060	0.158	-1.07	0.286	0.000	10.603
Not Invest	**base outcome**					
Defer Invest						
ln firm size	1.062	0.360	0.18	0.858	0.546	2.066
credit constraints	0.025	0.062	-1.47	0.142	0.000	3.466
firm level competitiveness	1.072	408586.1	3.04	0.002	61.299	1.888
liquidity constraints	27.204	101.912	0.88	0.378	0.176	42014.7
borrowing costs	1.059	3.391	0.02	0.986	0.002	563.293
infrastructure constraints	0.001	0.003	-2.37	0.018	4.696	0.310
indigenisation laws	1783.566	4944.583	2.70	0.007	7.789	408391.2

Firm Investing Relative to a Firm Not Investing-RRR

Firm size - This is the relative risk ratio for a one unit increase in firm size for investing relative to a firm deciding not to invest given that the other variables in the model are held constant. If a manufacturing firm size were to increase its size by one unit, the relative risk for investing relative to not investing would be expected to decrease by a factor of 0.342 given the other variables in the model are held constant. More generally, we can conclude that if a manufacturing firm were to reduce its size it would be expected to fall into not investing decision as compared to the investing decision. The results suggest that small firms in Zimbabwe's manufacturing sector are unlikely to undertake business fixed spending on machinery and

equipment given an opportunity to make an investment decision. Our results are confirmed by Meghreb and Holmes (2015), Gill *et al.,* (2012) and Hu and Schiantarelli (1998) Laux (2008), Sandahl and Sjogren (2003) who find the small firms are constrained by a number of factors such as credit constraints, high cost of capital and low cash flows. We have various explanation for our findings: small and young firms in Zimbabwe's manufacturing sector have an increased probability of reducing fixed investments due to financial constraint as well as credit unavailability. Small manufacturing firms have limited access to capital markets whilst large manufacturing firms, on the other hand, have better access to external funding because they have collateral and credit history. Second, our results can also be explained by the fact that hat larger manufacturing firms are able to finance capital expenditures from various sources such as internal resources, issuance of equity and debt and therefore are likely to pursue business fixed spending.

Third, small manufacturing firms are more sensitive than larger manufacturing firms to cash flow fluctuations. Hence, in times of profitability uncertainties small firms are likely to reduce business fixed spending. Thus, the findings suggest that in Zimbabwe's manufacturing sector, the size of a firm is likely to be closely related to liquidity and credit constraints. Small firms tend to have riskier projects and business models and therefore, are unlike to get financial support for business equipment spending. Our results do not agree with Giovannini *et al.,* (2015), Haldane, (2011), Cheng *et al.,* (2013) and Biddle *et al.,* (2009) who find that firms may under invest or over invest irrespective of the size of the firm due to managerial inefficiency or in cases where short-term gains are valued above long-term productive investment.

Credit constraints - This is the relative risk ratio for a one unit increase in credit constraints for investing relative to a firm deciding not to invest given that the other variables in the model are held constant. If a firm's credit constraints were to increase by one unit, the relative risk for investing relative to not investing would be expected to decrease by a factor of 0.02 given the other variables in the model are held constant. More generally, we can conclude from the findings that if a manufacturing firm's credit constraints were to increase, the firm would be expected to decide not to invest compared to investing decision. The results indicate that in the face of credit constraints manufacturing firms may choose not to carry out fixed investments. The decision not to invest is explained by the fact that Zimbabwe's manufacturing firms are likely to lack quality collateral that hinder the ability to access domestic and international credit lines and therefore business fixed spending in such firms depend on borrowing costs, profitability and cash flows only. This suggest that manufacturing firms may have to depend also on the amount of savings from past earnings and current profits. Our results do not agree with

Kim *et al* (2016) and Soumaya (2012) who argue for a robust relationship with financiers as important for firms whose access to funds in credit markets is limited.

Liquidity constraints -This is the relative risk ratio for a one unit increase in liquidity constraints for investing relative to a firm deciding not to invest given that the other variables in the model are held constant. If a firm's liquidity constraints were to increase by one unit, the relative risk for investing relative to not investing would be expected to be constant given the other variables in the model are held constant. More generally, we can conclude that if a manufacturing firm's liquidity constraints were to increase the firm would be expected to be indifferent on whether to invest or not to invest. The results imply that illiquidity constraints can or cannot preclude a huge manufacturing firms from investing in new equipment since it can borrow externally to fund business fixed spending. However, a greater liquidity for small manufacturing firms not only permits an expansion of capital budgets, but also indicates a greater return on assets, which, in turn, may foster the demand for business fixed spending by increasing expected yields. Our results do not agree with both the *q* and the neoclassical investment theories that argue that a firm that has low or negative current cash flows and little cash reserves, can still invest in new equipment if such fixed investment is expected to have a high future marginal profitability.

Deferring Investment Relative to not Investing

Public infrastructure constraints - This is the relative risk ratio for a one unit increase in public infrastructure for differing investment relative to not investing at all given that the other variables in the model are held constant. If public infrastructure constraints were to increase by one percent, the relative risk for a firm's decision to defer investment would be expected to increase by a factor of 0.001 given the other variables in the model are held constant. The results indicate that the state of public infrastructure constraints causes manufacturing firms to defer fixed investment in new production plants. Our results are confirmed by several studies (Pradhan, *et al* 2016; Teles and Mussolini 2012; Ener *et al* 2013; Cavallo and Daude 2011; Cavallo and Daude, 2011; Jecheche, 2011). Ambiguous results on the role of public infrastructure have been obtained by Kormendi and Meguire (1985), Grier and Tullock (1996), Chhiber and Wijnbergen (1988); Tatom, (1991), Holtz-Eakin (1994); Evans and Karras (1994). The state of public infrastructure especially roads, rail and energy and other communication networks increase production costs to manufacturing firms. Similar results have been obtained also under time series analysis.

Firm-level competitiveness - This is the relative risk ratio for a one percent increase in the level of competitiveness for differing investment relative to not investing at all given that the other variables in the model are held constant. If the level of a firm's competitiveness were to increase by one percentage point, the relative risk for a firm's decision to defer investment would be expected to increase by a factor of 1.073 given the other variables in the model are held constant. The results suggest that if the intensity of firm-level competitiveness increase firms would prefer to defer investment rather than not investing at all. The likely explanation is that if a firm's products face competition from similar domestic products or from foreign firm this affects the level of profitability. A manufacturing firm may prefer to defer in procuring new plants in order to avoid over-capacity since the actual capital stock will be more than the desired capital stock given declining product demand. This is because an increase in the level of product competitiveness encourages a significant reductions in a manufacturing firm's market share and thus cause the firm to defer investment and not necessarily forgoing investment activities permanently. The findings agree with Conconi *et al* (2013) and Anwar and Sun (2014) who find a firm's investment behaviour depending on competitiveness, profitability and on the prevailing sales constraints. Our results do not agree with Howard *et al.,* (2012) and Glass and Saggi (2002) who indicate that and increase in competition incentives domestic firms to achieve a more efficient utilisation of existing technology, or even to adopt a new technology.

Indigenisation laws - This is the relative risk ratio for a one unit increase in the ratio of indigenisation requirement for differing investment relative to not investing at all given that the other variables in the model are held constant. If the ratio of indigenisation were to increase by one percent, the relative risk for a firm's decision to defer investment would be expected to increase by a factor of 1783 given the other variables in the model are held constant. The findings suggest that firms may prefer to defer investment relative to not investing at all when they are required to comply with indigenisation laws that forces manufacturing firms to cede control of the organisation. Indigenisation laws signal to investors the inadequacy of laws that protect private property rights. In Zimbabwe indigenisation laws have been applied arbitrarily and hence it is possible for manufacturing firms to interpret indigenisation as indicating the unpredictability of rulemaking, high risk of contract repudiation, corruption and time inconsistence of government policy towards foreign investors. Thus, indigenisation laws causes both current and prospective foreign investors to defer investment. Our results also suggest that inconsistent application of indigenisation laws create uncertainty in foreign owned firms thus causing potential investors to hold back from committing to new projects or to prefer short-term

projects to longer-term ones that would have higher returns and more impact on productivity growth.

CONCLUSIONS

Most studies on domestic investment emphasise the role of business equipment spending behaviour of manufacturing firms in enhancing technological progress, increasing efficiencies in manufacturing processes, improving employment generation and facilitating human capital development. Zimbabwe's manufacturing firms unlike other firms in the economy, offer more distinctive opportunities for rapid national fixed capital accumulation, technological diffusion, and employment generation. Of noteworthy, other positive externalities associated with Zimbabwe's manufacturing firms that are less available in firms operating in other sectors include the ability to attract huge inflows of foreign direct investment and the capacity to facilitate the growth of export performance. Hence, the declining business fixed spending on equipment and machinery in Zimbabwe's manufacturing firms is potentially weakening economic activities in the wider economy by creating a major feedback diadem for low economic growth. The findings from multinomial regression indicates that liquidity constraints, credit constraints and the level of competitiveness influence manufacturing firms decisions to invest relative rather not investing given that infrastructure, borrowing costs and indigenisation laws are held constant. Similarly, the findings also indicate that the decision to defer investment by Zimbabwe's manufacturing firms are influenced by indigenisation laws and infrastructural constraints. We recommend a number of policy prescriptions such as: adoption of special financial policies targeting small and medium manufacturing firms; improving the productivity of public investments/expenditures; the need to repackage and re-pivot the country's indigenisation laws to take into account both domestic and foreign investors trepidations and the need for balanced and coherent approach to macroeconomic policy formulation and implementation by policy makers. Whilst this study pioneers the use of multinomial regression techniques in understanding investment behaviour of firms in developing countries, further studies are required in order to prove the robustness of this technique.

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