

Do Taxes Matter in Business Fixed Spending Decisions by Zimbabwe Firms?

Joe Muzurura¹

Abstract

The paper examines the effect of taxation on business fixed spending decisions on Zimbabwe private firms. Business fixed spending decisions by private firms are very critical for economic growth and development in most developing countries. Higher taxation rates affect the efficiency of production and the equitable distribution of wealth in an economy. Efficient taxes with no excess burden to firms and other economic agents are fundamental for raising government revenue, enhancing price stability, and increasing domestic investment as well as accelerating the pace of economic growth in developing countries. Our study confirms taxes, high level of public corruption, adequate domestic savings, and lagged GDP as determinants of business fixed spending decisions. The findings suggest that most of the tax revenue in developing economies should be channelled to productive public expenditure such as roads, bridges, rail, energy, transport and other communication networks that are most likely to stimulate the productivity of private domestic investment. We recommend that policy makers should formulate and implement tax rules and policies that eliminate tax evasion, stimulate domestic savings, minimise tax avoidance and reduce the level of public corruption in order to achieve faster economic growth and development.

Keywords: Taxes, Business fixed spending, domestic investment, Economic Growth, Zimbabwe

1.0 Introduction

Business fixed spending on machinery and equipment enhances long-term productivity of domestic firms and economic growth. However, in the long-run the taxation of firms' income whilst providing the revenues for government expenditure, may also depress output, consumption and the growth of domestic investment. Inefficient tax policies slow down growth in labour supply as some economic agents are likely to substitute labour choice in favour of leisure. In addition, higher taxes lead to a huge outflow of resources from high productivity economic sectors such as manufacturing and mining towards informal sectors that have lower multiplier effects on the general economy. In developing countries such as Zimbabwe the economic incidence of tax on business fixed spending decisions are two pronged. First high taxes have micro-effects on the distribution of income and optimal utilisation of productive resources. Second, unreasonably high taxes also have macro-effects on the level of capacity utilisation, price stability, employment generation, poverty alleviation, level of domestic savings and economic growth.

Taxes are the primary sources of government revenue in most developing countries, accounting for between 15 and 20 percent of GDP in the past few years. However, in Zimbabwe, the real tax burden is inordinately high for few businesses engaged in manufacturing or mining since most outputs from agricultural-related industries are often underrated. Furthermore, in Zimbabwe there exists a huge informal sector, hence making it an enormous challenge for the efficient collection and enforcement of tax policies. Informal sectors because of their ability to operate illegally often go untaxed. Recently, in order to mitigate or avoid the huge excess tax burden and remain competitive in the face of external competition, the formal sector has been migrating to the informal sector. The consequence has been continued reduction of overall taxation revenue and contraction in the quality of public infrastructure.

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A fundamental question in public finance and development economics is how weaknesses in tax policy formulation and implementation affect business spending decisions on capital equipment, machinery and other production related facilities. Harbinger (1879) and Ramsey (1947) indicate that higher tax rates are negatively correlated with economic growth through the domestic investment channel. Higher excess tax burden have equally higher distortionary effects on both the demand and supply-side factors in the economy.

In addition, the allocation of productive resources in an economy may not be Pareto optimal in the presence of tax distortions. Understanding the nexus between taxes and business fixed spending decisions in Zimbabwe might indeed assist developing economies to design and implement efficient and equitable tax policies that minimises excess burden on both domestic and foreign firms. Foreign investors in most developing countries are known to consider the host country's absorptive capacity, which includes the level of taxes, market size, domestic savings, and level of corporate governance among other factors. Tax policies in Zimbabwe like in most developing countries are largely indiscriminate, blunt and inconsiderate to economic agents, yet taxation revenue plays a very important role in the growth trajectory of the economy. Taxation revenue if used properly in Zimbabwe have the strong potential to significantly encourage more business fixed spending, reduce income inequalities and poverty, improve social welfare, marshal in foreign exchange earnings as well as facilitate international trade. Overwhelming empirical evidence exist in developed countries that corporate taxes if set efficiently with minimum burden, can benefit businesses and other economic agents (see Leighfritz, 1987; Hsieh and Parker, 2002; Engen and Skinner, 1992; Easterly and Rebelo, 1993a). Widespread macroeconomic instability and business cycle volatilities being observed in Zimbabwe could be directly attributable to the effects of distortionary taxes. Moreover, the majority of the tax revenues are being channelled to non-productive expenditure such as defence, security, salary, and wages and to fund corrupt activities, which have lower multiplier effects to the general economy.

The objective of the study is to examine the effects of taxation on business fixed spending decisions in Zimbabwe. The study is significant for a variety of reasons: First, heavily taxed companies are likely to experience lower value of marginal productivity of capital equipment. In addition, high taxes have the undesirable potential of inhibiting firm productivity, decreasing profitability, weakening human capital as well as affecting adversely optimum levels research and development. Developing countries like Zimbabwe that are unable to rally adequate tax resources through broad-based tax structures and systems, which are efficiently administered and effectively enforced, are unlikely to enjoy fast economic growth rates. The paper advances the existing literature in developing countries about the effects of taxes on business fixed spending decisions of private firms. Unlike earlier studies in developing countries that utilised commonly used variables, we expand the number of variables to include levels of public corruption, inflows of foreign direct investment and effects of macro uncertainties. These variables have not been extensively interrogated in studies of taxation and private investment growth in developing economies. Like other developing countries, Zimbabwe has low inflows of foreign direct investment, high level of public corruption and macro-uncertainties in the form of political instability, currency crisis and high exchange rate volatility against major trading partners. The article is made up of five sections: Section one is the introductory section. Section two covers both theoretical and empirical literature. Section three presents the methodological framework and findings and discussions are in Section four. Section five covers conclusions and recommendation.

2.2 Empirical Literature Review

In recent empirical literature, the effect of taxation on business fixed spending decisions has become one of the leading issues in both public finance and development economics (see McBride, 2012; Arnold et al, 2011; Keho, 2010; Hines, 2007; Mihir et al, 2004b). According to McBride (2012), taxes provides governments with revenue required for productive public expenditure such as water utilities and energy and expansion of communication networks. In the past, the only objective of taxation was to raise government revenue (Harbinger, 1879; Ramsey, 1947). However, with the ever changing economic and political ideologies in developing countries, the objectives of taxation have also been evolving to significantly affecting private firm production, consumption, and distribution of wealth in an economy. Harberger (1947) indicated that taxes could be superneutral and therefore have not effect on growth. Similarly Mendoza et al (1995) used the endogenous growth model and arrived at the same conclusion. However, Engen and Skinner (1992) in a study of 107 countries that included developing countries established that taxes of 10 percentage points led to long-term reduction of growth rate of 1.4 percentage points. Auerbach and Hassett (1991), Cummins et al (1994), and Desai and Goolsbee (2004) have estimated larger effects of taxation on business fixed spending on machinery and equipment.

Furceri and Karras (2009) used an annual data from 1965 to 2007 for a panel of twenty-six countries and found that a 2 % increase in tax rate reduced real GDP per capita by a margin of between -0.5% to -1%. The effects of tax policy on business fixed spending decisions are captured by the tax-adjusted user cost of capital which is the minimum pre-tax real rate of return needed for the marginal investment to generate a zero post-tax economic rent (Jorgenson, 1963).

Dackehag and Hansson (2012) find that high levels of firm taxation discourages both domestic and foreign business fixed spending. According to Desai et al (2004), the sensitivity of FDI to tax depends on the host country's absorptive capacity such as presence of tax investment incentives. Taxes are likely to matter more in choosing an investment location when non-tax barriers are removed and as national economies converge (Dackehag and Hansson, 2012). Hsieh and Parker (2002) argue that in international financial markets, business fixed decisions on machinery and equipment are not necessarily constrained by availability of domestic savings.

The elimination of the investment tax credit has generally been found to imply substantial reductions in fixed business spending on machinery and long-run capital intensities, with relatively smaller effects on inter-sectoral efficiency (see Bovenberg and Goulder, 1989). The uncertainty associated with frequent tax changes can increase the business risks and reduce the attractiveness of long-term business fixed spending decisions (Sumner, 1986). In contrast, Auerbach (1983) claim that investment irreversibility is likely to matter relatively more in recessions, when the capital stock exceeds its desired level, and more generally in business environments of low capital stock growth in which assets are not easily marketed. Similarly, investigators of tax reforms in many countries such as UK (see Devereux, 1989; Feldstein, 1982) and France (see Muet and Avouyi-Dovi, 1987) have also observed that a tax policy has a small effect on business fixed spending decisions. Santoro and Wei (2012) disagree, taxation in general affects firm productivity by reducing business fixed spending on machinery and thus effectively increasing the cost of investment capital. Menjo and Kotut (2012) report that tax rates through their effect on the net returns to labour, saving, investment, and aggregate demand influence both the magnitude and the allocation of productive capacity within firms. The findings suggest that high tax rates reduce the marginal productivity of private fixed capital by distorting business fixed spending decisions that favour lightly taxed economic sectors.

Engen and Skinner (1996) observe that a distortionary tax policy may permanently reduce the level of technological growth with firms. Similarly, Vartia (2008) shows that corporate tax rates negatively affect total factor productivity (TFP) by reducing company profitability and cash flows. Arnold and Schwellnus (2008) also indicate a negative effect of corporate taxation on both firm-level TFP and domestic investment, particularly in sectors with higher average profitability and in firms that lag more behind the technological frontier. Auerbach and Hines (2002) posit that taxation create distortions by affecting prices and the decision making of firms. Therefore high taxation distort the allocation of inputs within and between firms, lower the efficiency in the use of production inputs and thereby affect the overall growth of private fixed domestic investment. Hsieh and Parker (2002) indicate that in developing countries characterised by illiquid financial markets, the taxation of retained profits removes internal funds from firms where the marginal value of these funds exceeds the real interest rate. However, Bustos et al (2004) used a panel of 83 publicly held firms during 1985-1995 to calculate the user's cost of capital and demonstrated that taxes have very little effect on the desired capital stock because they are offset by tax codes that allow for the deduction of interest and depreciation. The finding suggest that business fixed spending decisions in developing countries respond strongly when the tax policy generates immediate cash flows in firms, but not when cash flows only come in the future.

Djankov et al (2010) estimated the relationship between corporate taxation and private business fixed spending using a sample that comprised 85 developed and developing countries and found that a 10 percent increase in the effective corporate tax rate reduced the ratio of private business fixed spending to GDP ratio by about 2 percent. However, a number of empirical studies have found significant effects of tax policy on private domestic investment behaviour and indicated a possible range for the investment elasticity for changes in the user cost of capital of 0.25 to 1 (see Chirinko, et al., 1996; Auerbach et al., 1994; Cummins, et al., 1994). Yet, other empirical studies that focus on the user cost of capital adjusted for taxation find an elasticity of business fixed spending decision with respect to the tax-adjusted user cost of capital of between -0.4 and -1.0 (Hassett and Hubbard, 2002). Hsieh and Parker (2002) present evidence that the reduction in taxes on retained earnings in developing countries increased the amount of funds available to constrained domestic firms. Mahadavi (2008) reports that high inflation rate forces the government to increase the taxes on goods and services. Excise taxes on some domestic products may be affected with the change in inflation rate (Tanzi, 1989).

Mahdavi (2008) revealed the effect of income, profit and capital gain tax due to change in inflation rate and investment plans. The findings suggest that when the inflation rates increase, businesses protect their assets by substituting them with assets that attract less domestic tax or migrate into the informal sector. Feldstein (1996) reports that even with relatively small price changes the effective tax burden for firms rises sharply as the rate of inflation rises and falls sharply as inflation declines. Karabegovic et al (2004) observe that high marginal tax rates reduce people's willingness to work up to their full potential, to take entrepreneurial risks, and to create and expand a new business. High and increasing marginal taxes have serious negative consequences on economic growth, labour supply and private fixed domestic investment (Njuru et al, 2013; Reynolds, 2008). Tax induced corruption raises firms' operational costs, creates business uncertainty thereby deterring both domestic investment and FDI (Murphy, 2010; Shleifer and Vishny et al, 1993; Wei, 1997 and Campo et al, 1999). Corruption discourages business fixed spending owing to kickbacks, bribes and corruption. Public corruption increase uncertainty over the returns to capital and raise the cost of production and reduces profitability (Mbaku, 2010; Murphy, 2010; Mauro, 1995). Corruption acts as a tax on capital, but unlike official taxes, corruption is uncertain and unpredictable, and therefore difficult for firms to internalize (Tanzi, 1988).

3.0 Materials And Methods

Most studies on taxation and business fixed spending decisions in developing countries often adopt the neoclassical theory of investment (see Busari and Omoke, 2008; Chinyere and Ugochukwu, 2013; Bakare, 2011; Orji and Mba, 2010; Sakr, 1993) and add on an ad-hoc distributed lag in attempt to capture the dynamics of the adjustment of the actual capital stock to the steady-state desired level based on current values of demand and prices. We argue that such an application of the neoclassical model is less suited to describing the dynamics of business fixed spending decisions in Zimbabwe where variables like tax rates, foreign direct investment, inflation, domestic savings and business uncertainty vacillate with higher volatility. The study therefore modified the flexible accelerator theory to enable inclusion of business spending decision lags. Starting from the accelerator principle that theorises a linear relationship between output Y and increase in stock of current capital K: $K = \phi Y_t$ (1)

We assume that in Zimbabwe, business fixed spending on capital equipment in each period is a fraction $(1 - \phi)$ of the gap between the existing level of capital and the desired level leading to a set of lags that decline geometrically as t increases (see Chenery, 1952; Clark, 1917; Koyck, 1954; Knox, 1952);

$$\text{Hence, } K_t = \alpha(1 - \phi)(Y_t + \phi Y_{t-1} + \phi^2 Y_{t-2} + \dots + \phi^n Y_{t-n}), \text{ where } 0 < \phi < 1 \tag{2}$$

We also consider output to be constant and equal to \bar{Y} . If the expected volume of firm output remains unchanged then: $\dot{K} = \alpha(1 - \phi)(\bar{Y} + \phi^2 + \phi^2 \bar{Y} + \dots + \phi^n \bar{Y}) = \alpha(1 - \phi)\bar{Y}(1 + \phi + \phi^2 + \dots + \phi^n)$, (3)

$$\text{Where } 1 + \phi + \phi^2 + \dots + \phi^n = 1 / (1 - \phi) \text{ are weights in geometric series. Therefore equation (3) becomes: } \dot{K} = \alpha \bar{Y} (1 - \phi) * 1 / (1 - \phi) \text{ or } \dot{K} = \alpha Y_t \tag{4}$$

Where \dot{K} represents desired capital stock, Y_t current output, α accelerator constant and t time.

In most developing countries like Zimbabwe once a firm makes a decision to spend on machinery and equipment, the actual spending decision is not automatically done but involves variable investment lags due to the high import content on machinery and equipment. The business fixed spending decision lag is therefore long as firms are likely to consider the possibilities of investment irreversibility, macro-uncertainties such as political instability, policy incredibility and inconsistency, foreign exchange and interest rates volatility and negotiating tax incentives (e.g. tax holidays, special initial allowances etc.). We therefore lag equation (2) as follows: $K_{t-1} = \alpha(1 - \phi)(Y_t + \phi Y_{t-1} + \phi^2 Y_{t-2} + \dots + \phi^n Y_{t-n})$ (5)

$$\text{Multiplying equation (5) by } \phi \text{ we obtain: } \phi K_{t-1} = \alpha(1 - \phi)\phi (Y_{t-1} + \phi^2 Y_{t-2} + \phi^3 Y_{t-3} + \dots + \phi^{n+1} Y_{t-n}) \tag{6}$$

$$\text{Subtracting (6) from (2) we get; } K_t - K_{t-1} = \alpha(1 - \phi)(Y_t + \phi^{n+1} Y_{t-n}) \tag{7}$$

Since the term ϕ^{n+1} tends to be zero in infinitely geometrical series, the equation reduces to

$$K_t - K_{t-1} = (1 - \phi)\alpha Y_t \tag{8}$$

$$\text{We rewrite the equation as } K_t = (1 - \phi)\alpha Y_t + \alpha K_{t-1} \tag{9}$$

The net fixed business spending in two periods is the change in the stock of capital, $K_t - K_{t-1}$ therefore subtracting K_{t-1} from both sides of the equation we get net private fixed domestic investment: $K_t - K_{t-1} = (1 - \phi)\alpha(Y_t + \phi K_{t-1} - K_{t-1})$ or $I_{nt} = (1 - \phi)\alpha Y_t - (1 - \phi)K_{t-1}$ (10)

According to Koyck (1954), the net investment $K_t - K_{t-1}$ is the distributed lag accelerator which is inversely related to the capital stock of the previous period and is positively related to the total output level. In the model we lag private sector gross fixed capital in private firms in order to show the flexible accelerator. Due to traditional low domestic savings the study presumes that private FDI inflows are used to augment the domestic savings (S_t) as shown below (see Sikwila, 2015; Muzurura, 2018). $FDI_{t-1} - FDI_t + K_t - K_{t-1} + \{1 - \vartheta\}K_{t-1} = S_t$ (11)

Where ϑ represents reducing depreciation rates on machinery and equipment. We also assume that different processes of business fixed spending decisions and financing plans overlap in different time-periods. Since there is a path dependency that link past and future levels of capital accumulation (see Ford and Poret, 1991; Kopcke and Brauman, 2001; Orhangazi, 2008b; Arestis et al, 2012), we include GDP as a lagged variable.

Model specification

We expand equation 11 to take the following econometric form

$$PFDI_{t-1} = \ln TAX_t + DS_t + GDP_{t-1} + FDI_t + CORR_t + UNCERT_t + \varepsilon$$

Where

$PFDI_{t-1}$ Lagged private fixed domestic investment

$\ln TAX_t$ log of Tax Revenue

DS_t Domestic Savings

GDP_{t-1} lagged Gross Domestic product

$CORR_t$ Corruption

FDI_t Foreign direct investment inflows

$UNCERT_t$ Macro-uncertainties

$\varepsilon =$ Error term

Description and justification of variables

Private fixed domestic investment ($PFDI_{t-1}$)

The dependent variable is lagged private fixed domestic investment, measured by the ratio of private sector gross domestic capital formation of the private sector to the GDP. We lag PFDI in order to account for partial adjustment in fixed business spending following Muzurura, (2017).

Log of Tax revenue

We measure tax revenue as a percent of GDP. The variable was included because tax rates affect net returns to labour, domestic savings, business fixed spending, and aggregate demand. A number of empirical studies have found significant effects of tax policy on business fixed spending decisions (see Helms (1991), Aghion et al (2016), Barro (1990), Barro and Sala-i-Martin (1995), Modi and Stone (1990), Fisman and Gatti (2002), Mauro (1995, 1998), Hassett and Mathur (2008), Gordon and Lee (2007), Hauner and Kyobe (2010) and Straub (2008, 2011)). The effects of tax on business spending decisions studies have largely produced ambiguous results. However, Zimbabwe has probably highest tax rates in the whole world and therefore, we expect a negative relationship between taxation and business fixed spending decisions. This implies that the higher the tax the lower the fixed business spending by domestic firms.

Lagged GDP_{t-1}

The expected change in GDP reflects the accelerator element in business fixed spending decisions. The expected change in GDP has been lagged because; First, private fixed domestic investment is associated with economic growth through the accelerator effect which makes private investment a liner proportion of changes in GDP. Second, the current values of the real GDP growth rate may be affected by the investment rate, and therefore lagged values of GDP reduces the possibility of the simultaneous equations bias in the coefficient estimates. Serven (1993) recommends the use of lagged GDP in order to reduce simultaneity. Third, most studies on business fixed spending decisions in empirical literature have proxied for market size either with real or real lagged GDP (see Foster-McGregor et al., 2013; Eddine et al., 2014); Nguyen and Dong, 2013; Magnus, 2010); Kim, 2010; Faini and de Melo, 1990; Wheeler and Mody, 1992; Jenkins, 1998; Aseidu, 2002; Agosin and Mayer, 2000; Tan et al., 2008); Li and Liu., 2005); Kim and Seo, 2003). Assuming an accelerator effect, priori expectation sign of the lagged GDP is positive and significant implying that companies associate a large market size with high effective demand and profitability, which require higher investment in capital equipment to keep up with growing demand.

Corruption (CORR)

Corruption is defined to include collusion, theft, kickbacks, frequency of irregular payment to employees, the policy and the judiciary, improper practices in the public sphere, bribery, and other illegal rent seeking activities (Lambdsdorff, 2003; Zouhaier, 2011). The research measured corruption by the corruption perception index (PCI). The PCI ranges from 0 (most corrupt) to 10 (least corrupt). In this study we have recorded corruption in such a way that a high number represents high corruption in order to avoid the usual awkwardness in the interpretation of results. Corruption results in economic inefficiency and loss of manufacturer and consumer surplus, because of its adverse effect on the allocation of funds on production and on consumption. Numerous studies have established that corruption has significant impact on business fixed spending decisions (Brunetti and Weder (1998), Mauro (1995, 1997), Campos et al (1999), Al-Marhubi(2000), Rock and Bonnett (2004), de Honlonkou (2003). Therefore, the expected sign of effects of corruption on business fixed spending decisions cannot be determined a prior.

Firm uncertainty (FIRMU)

The research uses the volatility of inflation as a proxy of business uncertainty. This is in line with a number of empirical studies that show that inflationary volatility leads to growing uncertainty on firms' investment decisions and may delay business fixed spending decisions (see e.g. Ben et al, 2016; Fisher, 2009; Tanzi and Davoodi, 2002; Kalckreuth, 2000; Mauro, 1995; Ferderer, 1993; Serven and Solimano, 1993). The level of firm uncertainties has been found to increase firm's production costs and reduce business confidence over the returns to fixed capital (Shleifer and Vishny, 1993; Wei, 1997). We therefore expect a negative and significant relationship between firm uncertainty as proxied by inflation and business spending decisions.

Private foreign fixed inflows (FDI_{t-1})

FDI_{t-1} is measured as the ratio of private FDI inflows to the GDP. We opted for this measure rather than the log of FDI inflows since the latter measure is itself a component of private fixed investment and thus may be endogenous with business fixed spending. The inclusion of this variable is critical in Zimbabwe because FDI inflows are known to ease the financing constraints of domestic firms. A greater number of recent studies acknowledge the benefits of private FDI inflows to developing countries(see for example Allen and Aldrid, 2013; Bjorvatn et al., 2016; Bellos and Subasat, 2016; Miankhel et al., 2016; Havranek and Irsova, 2015; Agrawal, 2015; Lengerts and Merlevede, 2014; Feeny et al., 2014; Conconi et al., 2013).

Rate of domestic savings (Dsavingst)

Rate of domestic savings was measured as a percentage of GDP. Business fixed spending decisions can be financed through both domestic and private FDI inflows. However, given the low FDI inflows to most developing countries, most businesses rely more on domestic savings for fixed business spending. Both the classical and neo-classical growth models postulate that adequate mobilisation of domestic savings are vital for the growth of private fixed domestic investment (Solow-Swan, 1956; Domar, 1946; Frankel, 1962; Romer 1986; Harrod, 1939; Ramsey, 1928; Cass, 1965; Koopmans, 1965). We therefore anticipate a negative coefficient sign indicating that a decrease in domestic savings is likely to affect business fixed spending decisions in the same direction.

4.0 Results and Discussion

Stationarity

As per table 1, the probability value of Augmented Dickey Fuller (ADF) statistic were compared to 0.01, 0.05 and 0.10. Any probability value of a variable below these three values was considered to be stationary.

Table 1: Stationarity Tests Using Adf

Variables	t-ADF	Critical-1%	Critical-5%	Conclusion
DPFDI	-7.291754*	-4.057910	-3.119910	I(1)
Dln Tax	-4.170845*	-4.121990	-3.144920	I(2)
DGDPT-1	-3.373256**	-4.057910	-3.119910	I(1)
DFDI	-6.911760*	-4.057910	-3.119910	I(1)
DDS	-4.268035*	-4.297073	-3.212696	I(2)
DDINF	-6.242802*	-4.121990	-3.144920	I(2)
DCORR	-4.294142*	-3.200056	-3.175352	I(1)

Source: own computation

All variables except lagged GDP were stationery at 5% level of significance level. Other variables were stationery at 1 % level of significance. Inflation, a proxy for firm uncertainties and domestic savings were differenced twice and become stationery at 1% level of significance. As shown in the table 2 there is no multicollinearity among variables. The highest relationship that is close to collinearity is that between corruption and domestic savings.

Table 2: Multicollinearity tests

	LN_TAX	INF	GDPT_1	FDI	DS	CORR
LN_TAX	1.000000					
INF	0.306142	1.000000				
GDPT_1	0.355288	0.592961	1.000000			
FDI	0.397098	0.305019	0.504095	1.000000		
DS	0.420866	-0.449098	0.147748	0.184673	1.000000	0.788510
CORR	0.488765	-0.347748	0.228211	0.395102	0.848510	1.000000

Source: own computation

Table 3 shows regression output. The R-squared was found to be 81% indicating a parsimonious model that is able to explain variations in the independent variables. Before the interpretation of the results various model diagnostic tests such as; heteroscedasticity, tests for normality, multicollinearity and the Ramsey specification tests were carried out in order to test the robustness of the final model.

Table 3: Regression output

Method: Least Squares				
Date: 08/23/17 Time: 12:50				
Sample (adjusted): 2000 2012				
Included observations: 13 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DDLN_TAX	-7.258724	2.071720	3.986409	0.0072
DGDPT_1	0.93284	0.184253	2.891945	0.0276
DCORR	-22.62545	5.606561	-4.035530	0.0068
DFDI	0.849085	0.809241	1.049236	0.3345
DDS	0.677247	0.173563	3.902015	0.0080
DDINF	0.025467	0.008926	2.853171	0.0291
C	-0.255706	1.177792	-0.217106	0.8353
R-squared	0.817921	Mean dependent variance		1.534305
Adjusted R-squared	0.635842	S.D. dependent variance		5.919969
S.E. of regression	3.572436	Akaike info criterion		5.688106
Sum squared resid	76.57380	Schwarz criterion		5.992309
Log likelihood	-29.97269	Hannan-Quinn criterion.		5.625578
F-statistic	4.492118	Durbin-Watson statistics		1.785948
Prob(F-statistic)	0.045078			

Source: Own computations

Taxes were found to be negative significant at 5% level. The coefficient is -7.258724 indicating that an increase of taxes by one unit reduces business fixed spending by 72 % in developing countries. The effect of taxes on business fixed spending decisions has been confirmed by a number of studies both in developing and developed countries (see McBride, 2012; Arnold et al, 2011; Keho, 2010; Hines, 2007; Mihir et al, 2004b Auerbach and Hassett (1991), Cummins et al (1994) Desai and Goolsbee (2004) Engen and Skinner (1992). However the average magnitude was found in the range of 10 percent. The lagged GDP was found to positive and statistically significant at 5 %. The coefficient is 0.53284 indicating that a 1% increase in the GDP will result in 53% increase in private fixed domestic investment. When domestic firms decided to expand the level of productive capacity they consider the size of the market as earlier predicted by Hicks (1951 and Clark (1917). As the economy grows it induces the private sector to increase their output in anticipation of increasing aggregate demand.

A number recent studies in most developing countries have confirmed a positive relationship between GDP and private fixed investment behaviour of firms (for example Nkurikiye and Uwizeyimana (2016), Eddine et al(2014), Atif and Ahmed (2014) Gabriel (2013), Kazeem and Olukena (2012), Bloom et al (2012), Bakare (2011), Harron and Naser (2011) and Buccrossi et al(2011).

The rate of domestic savings was found to be positive and significant at 10% level even though the expected sign was negative. The result is hardly surprising since both the classical and neo-classical growth models postulate that domestic savings are indeed the nucleus for faster private fixed investment growth (Solow-Swan, 1956; Ramsey, 1928; Cass, 1965; Koopmans, 1965; Harrod, 1939; Domar, 1946; Frankel, 1962 and Romer, 1986). The findings are confirmed by a number of recent studies that find the relationship robust and significant (see Sakyi et al, 2016; Kanu and Ozurumba, 2014; Nasiru and Haruna, 2013; Obi et al, 2012; Bakare, 2011; Frimpong and Marbuah, 2010). Business uncertainties proxied by rate of inflation was found to be positive and significant at 5% level. The coefficient is 0.025467 indicating that low business uncertainty are expected to increase private fixed domestic investment by 3% (note according to PCI measure positive figure means low).

Our findings are supported by a number of empirical studies that used inflation as a proxy for uncertainty (for example Aghion et al(2010), Fisher (2009), Khan, et al (2006),Byrne and Davis (2004),Rousseau and Wachtel, (2002), Solimano (1993), Serven and Solimano(1993) and Pindyck and Solimano (1993). Taxation revenue was found to be positive and significant at 10% level. Corruption was found to significant indicating that high levels of corruption affect business fixed spending decisions by acting as a tax on profitability. Corruption increase transaction costs directly and also increase business uncertainties indirectly.However, our findings do not confirm FDI inflows.

5.0 Conclusions and Recommendations

The paper investigated the effect of taxation on business fixed spending decisions on capital equipment for the period 1996 to 2016. We used domestic savings, taxation revenue, and level of public corruption, business uncertainty and foreign direct investment inflows as independent variables. The results suggest that taxation revenue that are channelled to productive public expenditure such as roads, bridges, rail, energy, transport and other communication systems are likely to stimulate the productivity of private fixed domestic investment. Whilst the government reaps vast taxation revenue (almost 95% of GDP), we recommend that a higher corporate tax burden should be matched by well-developed public infrastructure that enhances productivity of private capital. Furthermore policy makers must explicitly target tax relief to certain sectors or activities such as manufacturing and mining that have higher accelerator effects to the broader economy.In addition, the governments must promote the business friendliness of the tax administration especially by improving the transparency and certainty of tax treatment of capital equipment and machinery.

References

- African Forum and Network on Debt and Development, (2011).A critical look at Zimbabwe's Tax system.
- Barro R. J., (1990). Government spending in a simple model of endogenous growth. *J. Pol. Econ.*, 98(5): S103-S125.
- Bustos, A., E. Engel and GaletovicA., (2004). Could Higher Taxes Increase the Long-Run Demand for Capital? Theory and Evidence for Chile. *Journal of DevelopmentEconomics* 73, pp. 675-697.
- Chenery, B., (1952). Overcapacity and Acceleration Principle. *Econometrica*, Vol. 20(1), pp. 1-28
- Chenery, H. B. and Strout A. M., (1966). Foreign Assistance and Economic Development.*American Review*, 56, pp 4-18.
- Chirinko, R; Fazzari, S and Meyer, A., (1999). How responsive is Business capital formation to its User Cost? An exploration with micro data. *Journal of Public Economics*, Vol.74 pp. 53-80.
- Clark, J. M., (1917). Business Acceleration and the Law of Demand: A technical factor in economics Cycles. *Journal of Political Economy*, Vol. 25 pp. 217-235.
- Clark, C., (1941). *The Conditions of Economic Progress*. London: Macmillan.
- Clark, P., (1979). Investment in the 1970s: Theory, Performance and Prediction. *Brookings Papers on Economic Activity* Vol1 pp. 73-113
- Easterly, Wand Rebelo, S., (1993a).Marginal income tax rates and economic growth in developing countries, *European Economic Review*, vol. 37, pp. 409–17.
- Engen, E. and Skinner, J., (1996).Taxation and Economic Growth, *National Tax Journal* 49, 4 (December): 617-42.
- Engen, E. M. and SkinnerJ., (1992).Fiscal Policy and Economic Growth, NBER Working Paper, No. 4223, Cambridge, Mass.: NBER

- Feldstein M., Green J. R. and Sheshinski E., (1978). Inflation and Taxes in a Growing Economy with Debt and Equity Finance. *Journal of Political Economy* 86(2) pp. 53-70.
- Fisher, I., (1930). *The Theory of Interest*, MacMillan, New York.
- Fischer, S. (1993). The Role of Macroeconomic Factors in Growth. *Journal of Monetary Economics* 32 (3), pp. 485-512.
- Fisher, I and Frandlin M., (1969). The Existence of Aggregate Production Functions. *Econometrica*, vol. 37, no. 4 pp. 553-77.
- Gareth M., (2000). Taxation and Economic Growth, *Fiscal Studies* vol. 21, no. 1, pp. 141-168
- George, H., (1879). *Progress and Poverty*, New York: Robert Schalkenbach Foundation
- Ghura H. (1998). Tax revenue in sub-Saharan Africa: Effects of economic policies and corruption. WP/98/135 Washington D.C.: International Monetary Fund.
- Greene, W.H., (2003). *Econometric Analysis* 5th Ed., Upper Saddle River, NJ: Prentice Hall.
- Gujarati, D. N., (2004). *Basic Econometrics*, 4th, McGraw-Hill Companies, London
- Harberger, A., (1964). The Measurement of Waste, *American Economic Review*, 44, pp. 77-87
- Hartman, D. G., (1984). Tax policy and foreign direct investment. *Journal of Public Economics* 116
- Herfindahl, O. C., (1957). Tax policy for stability and growth, *The American Economic Review*, vol. 47, no. 2, pp. 139-144
- Hines J.R., (1999). Taxes and the location of foreign direct investment in America. *American Economic Review* 86, 1076-1094
- Hsieh, C., and Parker J., (2002). Taxes and Growth in a Financially Underdeveloped Country: Evidence from the Chilean Investment Boom, unpublished manuscript, Princeton University
- Karras G., Furceri D., (2009). Taxes and growth in Europe, *South-Eastern Europe Journal of Economics*, 2
- Keho Y., (2010). Estimating the growth-maximizing tax rate for Cote d'Ivoire: Evidence and implications, *Journal of Economics and International Finance*, Vol. 2(9)
- Kormendi R. C., Koester R. B., (1989). Taxation, Aggregate Activity and Economic Growth *International Trade from Economic and Policy Perspective* 26, 107-121.
- Leibfritz, W., Thornton, J. and Bibbee, A., (1997). Taxation and economic performance, *Organisation for Economic Co-operation and Development*, Working Paper no. 176.
- Jesse Edgerton. Investment incentives and corporate tax asymmetries. *Journal of Public Economics*, 94(11-12):936-952, 2010.
- Leibfritz, W, J. Thornton and Bibee A., (1997). Taxation and Economic Performance *OECD Economics Department Working Paper*, No. 176
- Lucas, R. E. (1990), and Supply-side economics: an analytical review, *Oxford Economic Papers*, vol. 42, pp. 293-316.
- Marire, J. and Sunde, T., (2012). Economic growth and tax structure in Zimbabwe: 1984-2009, *Int. J. Economic Policy in Emerging Economies*, Vol. 5, No. 2, and pp.105-123.
- Marsden, K., (1983). Links between Taxes and Economic Growth: Some Empirical Evidence, *World Bank Working Paper*, No. 605.
- Mendoza G. M. Milesi-Ferretti and Asea P., (1995). Do Taxes Matter for Long-Run Growth? Harberger's Superneutrality Conjecture. *IMF Working Paper*, No. 79, Washington D.C.: IMF
- Mullen, K. John, and Williams M., (1994). Marginal Tax Rates and State Economic Growth, *Regional Science and Urban Economics* 24, 6 (December):687-705.
- Mumvuma, T., Mujajati, C., Mufute, B., (2009), *Understanding Reform: The Case of Zimbabwe*
- Munongo, S., (2012). Effectiveness of Fiscal Policy in Economic Growth: The Case of Zimbabwe, *Int. Journal of Economic. Research*, vol 36: 93-99
- Poulson B. W., Kaplan J.G., (2008). State Income Taxes and Economic Growth, *Cato Journal* 28(1): 1-15.
- Reynolds, A., (1985). Some International Comparisons of Supply-Side Tax Policy, *Cato Journal*, fall: 12, 543-69.
- Saint-Paul, G., (1992). Fiscal policy in an endogenous growth model, *The Quarterly Journal of Economics*, vol. 107, no. 4, pp. 1243-1259.
- Skinner, J., (1987). Taxation and Output Growth: Evidence from African Countries, *NBER Working Paper* No. 2335, and p.42-56.
- Smith R., (1990). Factors affecting saving, policy tools, and tax reform. *International Monetary Fund Staff Papers* 37, 1-70
- Tanzi, V. and Zee, H. H. (1997). Fiscal policy and long-run growth, *Staff Papers - International Monetary Fund*, vol. 44, no. 2, pp. 179-209.
- Vergara, R., (2003). Reform, Growth and Slowdown: Lessons from Chile." In G. W. Kolodko editor, *Emerging Market Economies: Globalization and Development*. Ashgate Publishing Company, Great Britain, pp. 143-165.
- Wang, P. and Yip, C.K., (1992). Taxation and economic growth: the Case of Taiwan, *American Journal of Economics and Sociology*, Vol. 51, No. 3, pp.317-331.
- Wanniski, J., (1987). Tax, Revenue and "Laffer Curve". *A new look at Taxation* 1, 3-16.