Macroeconomic Environment and Firm level Performance in Tanzania

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Abstract
This paper examines the influence of macroeconomic environment on firm level performance. Specifically, it assesses the influence of macro variables of Taxation, corruption, availability of business support, cost of domestic raw materials, inflation, cost of imported raw materials, access to credit, interest rates and insufficient market demand on firm level productivity. The paper attains the empirical analysis via estimating a Cobb Douglas production function. The rich panel data set used enables control for unobserved time invariant firm specific attributes that might be influencing the estimations. Paper findings are that macroeconomic environment has strong impact on observed firm performance. The paper does not find any significant effect of inflation, interest rate and corruption on firm level performance. The results are not statistically significant even after control for unobserved characteristics using panel data estimations techniques of Generalized Methods of Moments. The results lead to a conclusion that to facilitate firm level performance efforts need to focus on reducing tax burden, increased business support, reduced cost of imported raw materials as well as access to credit.

Key words: Firm Performance; Macroeconomic Environment; Generalized Methods of Moments; Tanzania
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1 Introduction

Macroeconomic environment in which firms operate has proven to have great influence on observed performance. The extent to which farm level decisions are made can be limited by the reality on the existing macroeconomic setting and environment. There are evidences that when corruption merges it might be reflecting unconducive environment such as unfair taxation. More specific there are those who might fail to pay bribes and get demoralized to the extent that their productivity falls. Furthermore, encouragement of business growth is functional of the type and quality of operating environment. More efficient firms on the other hands sometimes take the advantage of business environment. Others are cost of domestic raw materials, inflation, cost of imported raw materials, access to credit, interest rates and insufficient market demand.

This paper uses panel data to control for other fixed unmeasured or omitted variables in a firm level performance model to estimate the impact of these macro variables on observed firm level performance. In assessing the influence of firm level performance by the economic environment the paper also takes into account the fact that Tanzania economy has gone through a number of reforms since independence during 1960s till recently in 2000s. One of the remarkable changes was the introduction of state led economy in 1960s followed by the economic reforms of 1990s and most recent globalization and digitalization of the economy. These reforms had significant effects on both the firm level and macro level performance. Prior to the reforms Import substitution and state led production was the predominant strategy of industrialization. Trade and industrial policy instruments were chosen to provide protection to domestic industries. After years of pursuing import substituting and restrictive industrial and trade policy regimes, the 1980s and 1990s have seen a radical shift towards a market economy.

The reforms significantly have influenced the ability to set up a new firm or exit from production by targeting efforts to cut down a number of barriers. To enter or set up a new business. The paper analysis dwell into the fact that such changes might have influenced the operating environment of firms. In sum, the macroeconomic environment that influence Tanzania manufacturing firms indicate three phases of dynamics in political and structural changes that had significant effects on manufacturing activities. These included a time when Tanzania adopted import substitution industrialization strategy in 1964 and Arusha declaration of 1967. The second phase was in 1969 when Tanzania adopted second five years development plans whose major focus was on Basic industrialization strategy and the third phase was in the late 1970s till 1990s when Tanzania economy experienced major economic crisis and series of economic reforms.

The three phases could in summary be described here as follows; In the first phase of import substitution the idea was to encourage local production of most of the cheap products used locally there by expanding market for processed agricultural products reduce imports and make the foreign exchange available. There were efforts by Government to create conducive environment to support local production. In the second phase of implementation of second five years development plans and establishment of basic industrialization further efforts were made to encourage environment that enabled firms to obtain intermediate inputs and raw materials locally. There were efforts to be self sufficient in production of basic goods including fertilizers, petrol related products and alike. The most spectacular change in the business environment was the time of reforms in 1990s. Importation of some goods and services such as computers which was ban in the 1970s was allowed. Trade liberalization encouraged competitive business environment that

necessitated competition for efficiency in production. Government reduced its direct role of production and management of the economy and instead set up regulatory authorities.

The remainder of this paper is organized as follows. While section 2 describes the macroeconomic environment of firms, section 3 reviews an empirical literature and specifies an empirical model to be used in this paper. Section 4 presents and discusses empirical findings. Section 5 provides conclusion and recommendations.

2 Macroeconomic Environments of Firms

An underlying anticipation of firm level operations is having conducive macroeconomic environment for decision on resource allocation in a powerful and efficient way such that all levels of society can benefit. Much as we have witnessed the problems of public sector monopoly, it is equally true that market forces alone have failed to guarantee proper functioning private sector. In principle it is anticipated that the government must establish the operating environment that might support competitive and allocative efficiency which among other things require working rules and regulations that provide a required legal and institutional framework. There are cases where infrastructure such as hospitals, roads, railways ports and airports have been associated with improved business environment that has major influence on firm level operations.

The worse form of market failure is asymmetric information that result into the situation where openness and incorporation of actors in the economy is limited thus reducing legitimacy and credibility of the market related activities. This can take the form of corruption, red tapes and other uncalled for bureaucratic procedures which confront the firms. Any firm to be able to compete needs to have credible information on production, distribution and marketing. There are evidences that the reforms adopted in 1990s among others aimed to support institutional development and capacity building to encourage business support and environment.

Thus, in an attempt to redress the situation and encourage productivity there have been efforts to tale further reforms that ensures attainability of macroeconomic stability, trade reforms and financial sector liberalization. Privatization of rather inefficient public enterprises resulted into further improvement of firm level operations. The availability of business support for firms is very important for manufacturing growth and productivity. This is mainly because smaller scale of production and widespread informality are characteristic of the manufacturing firms. In particular, the current status of the operating environment of firms is one where the sector is diverse consisting of micro, small and medium size enterprise (MSMEs). It is estimated that the informal sector in Tanzania accounts for 60 per cent of GDP and 70 per cent of employment. Furthermore, access to capital and availability are among the major barriers for the private sector development and participation of Tanzania. Large and medium scale private enterprises require big capital outlays that can be accessed when needed. Small scale and informal enterprises require small capital outlays in numerous units. Capital cost has proven to be crucial in examining the extent to which investment could support effective operating environment. There are empirical evidences that inadequate operating environment has been partly responsible for high cost of capital especially those reported in annual reports of easy to do business by the World Bank Business Surveys (various years). Tanzania has on the other hands inserted efforts to minimize such effects using measure to stabilize currency, ensure low inflation and encourage a positive economic

growth while at micro level availability of energy and intermediate inputs are expected to support production and trade policies.

Export market for instance requires constant training in international marketing skills, production skills that produce competitive products and investment in machinery and technology that can produce world class quality products. The economic reforms adopted in the 1990s among other things aimed at encouraging private sector. There has been chamber of commerce as well as a number of private sector forums that support development of private sector. Privatization was followed by introduction of regulatory authorities to manage market forces that could support public expectations. Financial sector reforms aimed at several support such as ensuring availability of credit and lowering borrowing rates along with transaction cost of accessing the financial resources.

Besides there have been aspects of transportation distribution as well as marketing. In particular a small size market domestically is one of the environments that have been targeted for reforms. Tanzania has for instance supported development of roads, railways and recently digitalization as a means to increase further access to the market between the producing units.

3 Empirical Literature, Theoretical Framework and Model Specification

3.1 Empirical Literature

The empirical studies on firm level performance have focused on a range of issues but most significantly measurement of the determinants of productivity has been thoroughly discussed. Two problems are particularly important. The first concerns omitted variable bias. This problem is cited in many previous studies as summarized in Teal and Mans (2002) The specific challenge associated with estimate of OLS in micro level data is the problem of endogeneity. This occurs when there are omitted variables in the key equations that are correlated with the error term as well as the included variables. For instance, such factors might influence the macroeconomic environment in the firm performance model, or the extent of input usage in the production function leading to endogeneity problem. This problem is also faced when estimating the earnings impact of monitoring and pay methods. For example, in many employment relationships a single employer optimally chooses both the level of earnings and supervision. Based on previous studies, finding a convincing solution to these problems has proved difficult. To tackle these problems this paper utilizes the panel dimension of the data and provides three alternative estimates; the within group Estimator, the GMM and the Instrumental Variable (IV) approaches. Estimates obtained from these methods are then compared with the OLS based estimates.

There are empirical studies which use human capital theory (see for example Becker (1993)) which suggest that learning has a positive correlation with productive capacity of an employee. This is a reflection of what training does on influencing employee capability to perform his or her duties. The evidences tend to distinguish between general and specific training. In a study by Teal and Mans (2002) the authors demonstrated how human capital investment such as a range of learning variables had a positive correlation with observed productivity of a worker. Wangwe (1980) and Ndulu (1986) further indicated the role of training on the production performance in Tanzania manufacturing. Both authors agreed on one aspect that a mismatch between available technician and the rapid growth in capital with limited capability to handle the machines.

Authors who have used this Tanzania data (see for instance Harding, Soderbom and Teal, 2002) confirmed that the economic reforms in Tanzania have particularly impacted upon the entry and exit in the industrial sector. Using this data, the authors concluded that main determinant of exit in Tanzania manufacturing is firm size, with small firms having much higher rates than large ones. But the same authors found no evidence of productivity impact of firm survival among small firms. In addition, attrition bias was mitigated during the conduct of the Tanzania manufacturing surveys by a systematic replacement of drop- outs, where replacements had similar characteristics (based on size, sector and location) with the drop out. Hence, we do not anticipate significant attrition bias problem.

Related to the attrition is the problem of missing values. In estimating firm level production functions, we simultaneously control for the observed characteristics of firms and workers by matching individual and firm level information. Data requirement for moving from individual level to firm level weighted variables is quite severe. Therefore, to a large extent missing data on a particular variable reported here is neither explained by attrition nor from systematic non- response of the surveyed firms and workers alone but by these joint requirements. However, this situation leaves us with few observations.

3.2. Model Specification

In this section we specify the production functions estimated, and describe the data source and variables used in our estimations. We begin by specifying the model and then describe data available and various variables used in our estimate. Within the production functions the inputs such as human capital, physical capital and labor are used as regressors. The dependent variable is both output and value added. In the models all aspects of economic environment measures are included as some of the regressors. The anticipation is that if they have any bearing on the observed performance at a firm level they will have significant coefficient estimates.

Using such functions, we are able to estimate the effect of macroeconomic environment aspects on observable firm level performance as measured by our production function. Firm level production functions estimated here contain a range of attributes such as ownership, location size, and other unobserved firm specific characteristics, which are potential control for firm specific characteristics. Then the macroeconomic variables enter the equation as repressors. The inclusion of these characteristics in firm level production functions enables their influence on productivity to be examined directly from the level equation. The models are described below.

$$\log V_{jt} = \beta_0 + \beta_1 logK_{jt} + \beta_2 logL_{jt} + \beta_3 Training_{jt} + \beta_4 logOH_{jt} + \beta_5 MAC_{jt} + \mu_j + \epsilon_{jt} \quad (1)$$

Whereby j and t are firm and time subscripts, Log V is natural Logarithm of Value added, LogK is natural Logarithm of physical capital, LogL is natural Logarithm of employment, *Training* is the Variable for Training, OH stands for other human capital variables of weighted averages of schooling, age and tenure, MAC stands for observable macroeconomic environment Taxation, corruption, business support, cost of domestic raw materials, cost of imported raw materials, access to credit, interest rates, insufficient market demand and inflation, μ Stands for Unobserved time invariant effects and; ϵ is the error term

In terms of estimation the real value-added proxy is nothing but a real value of the difference between total output of a manufacturing firm over one year less the indirect cost that are incurred in production during that year, and less raw materials. It will be recalled that during production there are cost incurred such as paying for electricity, purchase of water communication charges and the related cost. In this paper it is assumed that inappropriate macro environment can directly or indirectly increase such cost. The other variable is the Capital stock. This is estimated using the initial observation of company's replacement value of plant and machinery. Which is augmented with the following investments in plant. The training variable is a weighted average of schooling tenure and age in a sampled array of the surveyed companies. The real Gross Output Production function is specified below:

$$\log Y_{jt} = \beta_0 + \beta_1 logK_{jt} + \beta_2 logL_{jt} + \beta_3 Training_{jt} + \beta_4 logOH_{jt} + \beta_5 logRM_{jt} + \beta_6 logIND_{jt} + \beta_7 MAC_{jt} + \mu_j + \epsilon_{jt} \quad (2)$$

Where j and t are stands for individual companies and time invariant subscripts, LogY is natural logarithm of the Goss output, LogL is natural log of Employment, Log RM is natural logarithm of raw materials, LnIND is the natural logarithms of indirect costs. Other variables are as defined in the first equation.

4 Empirical Findings

Key findings of the paper are presented in this section taking into account the analysis of the effect of macroeconomic variables on firm level performance. It will be recalled that macroeconomic variables assessed in the data used are whether companies in manufacturing enterprises see these variables as obstacle to their performance. For the purpose of this paper the question addressed is 'How has the underlying macroeconomic environment influenced observed company performance measured by productivity? To answer this question, the paper does present estimates of both value added and gross output production we estimate our gross output and value-added production functions controlling for time trend and other firm performance variables, then most importantly the macroeconomic variables effect are measured.

In Table 1 we present our firm level gross output estimation of our Conn Douglas Functions. The first column shows estimates obtained using Conn Douglas Production function in which inputs used in production as well as time aspects of the production system are estimated. The usual approach is to start by ascertaining the degree of returns to scale in our model. Findings of these tests are presented below. In sum based on the presented results we cannot reject constant returns to scale at 5 per cent critical value (p-value is 0.24). Apart from capital stock, all inputs are statistically significant. The labour coefficient is 0.26 implying that a one percent increases in labour results into 0.26 percent increase in output. Based on the results, the estimated coefficient on log of raw materials is 0.561. It is statistically significant implying that a one percent increase in raw materials raises gross output by 0.56 percent. The estimated coefficient on log of indirect cost is 0.32 and highly significant at one percent level. It implies that a one percent increase in indirect cost raises gross output by 0.32 percent.

In moving between columns [2-4] we are interested in checking the robustness of the gross output production function estimates. In column [2] we add export and firm age variables. In Column [3]

we add more firm characteristics of location, ownership and sector and lastly we control for unobserved time invariant firm specific characteristics in column [4]. The tests for constant returns to scale suggest that we cannot reject constant returns to scale in any of the specifications. The other findings in column 2 are that adding export and firm age variables has little effect on the coefficient estimates of input variables presented in the first column. We also find that both variables are not statistically significant.

Since we accept the hypothesis of constant returns to scale, our discussion now will focus on the results of gross output per employee production function in Table 2 in which constant returns to scale are imposed. We begin by estimating the effect of capital per employee, raw materials and indirect cost per employee on productivity measured by gross output per employee. We then sequentially allow for various controls in columns [2-4]. The results in column [1] indicate a positive effect of log of raw materials per employee, log of indirect costs and log of capital per employee. Consistent with constant returns to scale assumption, the coefficient estimates on inputs are close to what we found in table 1.

Table 1: Estimated Results of the Production Based on Gross Output.

	OLS1 [1]	OLS2 [2]	OLS3 [3]	FE (Within) [4]
Log of capital	0.003	0.005	0.012	0.003
	(0.43)	(0.66)	(1.41)	(0.14)
Log of labour	0.126	0.127	0.128	0.118
	(7.17)** *	(7.24)***	(6.98)** *	(3.32)***
Log of raw materials	0.561	0.562	0.551	0.548
	(24.07)***	(24.15)***	(22.96)***	(25.05)***
Log of intermediate inputs	0.319	0.315	0.314	0.280
	(13.23)***	(13.12)***	(13.01)***	(10.79)***
Exports		0.025	0.034	0.021
		(0.56)	(0.74)	(0.26)
Firm age		-0.001	-0.001	0.003
		(1.36)	(1.39)	(0.82)
Taxation		-0.091	-0.100	-0.002
		(3.26)***	(3.14)**	(1.18)
Corruption		-0.221	-0.224	-0.005
		(3.72)** *	(3.21)** *	(1.20)
Business support		-0.151	-0.150	-0.891
		(4.23)***	(4.11)**	(3.88)***
Cost of Domestic Raw Materials		-0.071	-0.110	-0.09
		(1.75)*	(1.70)*	(2.22)**
Cost of imported Materials		-0.074	-0.106	-0.104
		(1.43)	(1.62)*	(2.28)**
Access to credit		0.181	0.180	0.160
		(7.66)***	(7.60)***	(7.50)***
Insufficient market		-0.25	-0.22	-0.153
		(3.11)***	(3.10)***	(3.05)***
Interest rate		-0.095	-0.130	-0.122
		(3.68)***	(3.22)***	(3.14)***
Inflation		-0.211	-0.224	-0.125
		(1.14)	(1.01)	(1.00)
CONTROL VARIABLES				
Location	NO	NO	YES	YES
Ownership	NO	NO	YES	YES
Sector	NO	NO	YES	YES
Firm Fixed Effect	NO	NO	NO	YES
Observations	542	542	542	542
R-squared	0.98	0.98	0.98	0.80
CRS[1]test $\Sigma ßi=1$(p-value)	0.24	0.23	0.39	0.17

Absolute values of t-statistics are in parentheses. Significance at the 1 per cent, 5 per cent and 10 per sent level is indicated by ***, ** and * respectively. CRS test is an F-test for constant returns to scale that the coefficients on inputs sums to unity.

Based on findings represented here the estimated coefficient on log of raw materials is 0.561. It is statistically significant implying that a one percent increase in raw materials per employee raises gross output per employee by 0.56 percent. The estimated coefficient on log of indirect cost is 0.32 and highly significant at one percent level. It implies that a one percent increase in indirect cost

per employee raises gross output per employee by 0.32 percent. However, the coefficient on log of capital per employee is not statistically significant.

Macroeconomic effects on firm performance are indicated by the variables below the table 2. In the first column taxation, access to credit, business support and interest rates appears to have strong influence on firm level performance. The signs of their coefficient estimates suggest that taxation has a negative impact on firm level performance so is corruption and lack of business support. Other macroeconomic environment variables with adverse effect on firm level performance are interest rate access to credit and insufficient market. Almost similar results are observed in the second column where more firm attributes such as location ar introduced. The results in the third column which controls for more firm attributes reveal that taxation, corruption and inflation have weak impact on firm level performance and in fact are not statistically significant. This suggest that there are firm specific effects which are correlated with these macroeconomic variables that tend to self select into the observed effect in column 1 and 2. Therefore based on these results macro economic variables of taxation, inflation and corruption have no significant impact on firm level performance.

The results add knowledge to a debate on economics of corruption, rent seeking and taxation. In case of corruption, it has for a long time been debated on what the corruption real does in the economy? Does it facilitate or stifle economic growth? There are some peculiar cases where a positive impact between corruption and performance has been discovered. This has been a case where Government failure is rampant. For taxation corporate literature has always proven that for a serious company taxation cannot be a negative element because it is factored in within the sale and other revenue flows projected before and after tax. Macro economic variables that appear to have strong effects on firm level performance are interest rates, access to credit, business support and market sufficiency. It will be recalled that literature on this area has pointed out severe measurement errors and in particular endogeneity when estimating a Cob Douglas production function. The nature of the panel data used in this study allows controls for unobserved factors that could be influencing the OLS estimated reported in table 2. Therefore we introduce GMM estimations in table 3.

Table 2: Estimates Productivity Using Gross Real Output per Employee

	OLS1	OLS2	OLS3	FE (Within)
Column	[1]	[2]	[3]	[4]
Log of capital per employee	0.006	0.008	0.012	0.016
	(0.70)	(0.86)	(1.38)	(0.77)
Log of raw materials per employee	0.561	0.562	0.553	0.550
	(38.05)***	(38.08)***	(36.91)***	(25.21)***
Log of indirect costs per employee	0.321	0.316	0.316	0.287
	(17.48)***	(16.96)***	(16.80)***	(11.22)***
Exports		0.037	0.040	0.016
		(1.02)	(1.08)	(0.19)
Firm Age		-0.001	-0.001	0.002
		(1.23)	(1.29)	(0.72)
Taxation		-0.091	-0.100	-0.002
		(3.26)***	(3.14)**	(1.18)
Corruption		-0.221	-0.224	-0.005
		(3.72)** *	(3.21)** *	(1.20)
Business support		-0.151	-0.150	-0.891
		(4.23)***	(4.11)**	(3.88)***
Cost of Domestic Raw Materials		-0.071	-0.110	-0.09
		(1.75)*	(1.70)*	(2.22)**
Cost of imported Materials		-0.074	-0.106	-0.104
		(1.43)	(1.62)*	(2.28)**
Access to credit		0.181	0.180	0.160
		(7.66)***	(7.60)***	(7.50)***
Insufficient market		-0.25	-0.22	-0.153
		(3.11)***	(3.10)***	(3.05)***
Interest rate		-0.095	-0.130	-0.122
		(3.68)***	(3.22)***	(3.14)***
Inflation		-0.211	-0.224	-0.125
		(1.14)	(1.01)	(1.00)
CONTROL VARIABLE				
Location		NO	YES	YES
Ownership		NO	YES	YES
Sector		NO	YES	YES
Firm Fixed Effect		NO	NO	YES
Observations		542	542	542
R-squared		0.94	0.94	0.79

Absolute values of t-statistics are in parentheses. Significance at the 1 per cent, 5 per cent and 10 per sent level is indicated by ***, ** and * respectively.

Table 3.GMM and IV Results of the Estimates of Learning Effect on Gross Real Output per Employee

Column	GMM [1]	GMM [2]	GMM [3]
Log of Capital Per Employee	-0.014	0.034	0.072
	(0.21)	(0.46)	(1.00)
Log of Raw Materials per Employee	0.578	0.576	0.556
	(6.85)***	(6.72)***	(5.76)***
Log of Indirect cost Per Employee	0.322	0.255	0.284
	(3.44)***	(2.38)**	(2.55)**
Weighted Average Past Training	0.035	0.012	0.045
	(0.36)	(0.11)	(0.32)
Weighted Average Current Training	-0.370	-0.312	-0.351
	(2.23)**	(1.84)*	(1.37)
Average Years of Education	0.004	0.004	0.004
	(0.34)	(0.36)	(0.23)
Average Years of Tenure	0.005	0.005	0.003
	(0.92)	(0.91)	(0.53)
Average Years of Experience	0.007	0.008	0.007
	(1.73)*	(1.94)*	(1.55)*
Exports	0.055	0.112	0.054
	(0.64)	(1.27)	(0.62)
Taxation	-0.041	-0.050	-0.001
	(1.01)	(1.00)	(1.00)
Corruption	-0.101	-0.111	-0.005
	(1.21)	(1.00)	(1.20)
Business support	-0.130	-0.100	-0.911
	(3.10)***	(3.10)**	(3.27)***
Access to credit	0.160	0.150	0.150
	(5.14)***	(4.51)***	(4.53)***
Insufficient market	-0.17	-0.13	-0.13
	(3.07)***	(3.07)***	(3.05)***
Interest rate	-0.125	-0.110	-0.11
	(4.11)***	(4.00)***	(4.00)***
Inflation	-0.001	-0.001	-0.000
	(1.00)	(1.00)	(1.00)
CONTROL VARIABLE			
Location	YES	NO	YES
Ownership	YES	NO	YES
Sector	YES	NO	YES
Firm Fixed Effect	NO	NO	NO
Observations	198	198	198
R-squared	0.95	0.95	0.96
J-Hansen Statistics (P-values of Overid-Test)	0.37	0.39	0.10

Absolute values of t-statistics are in parentheses. Significance at the 1 per cent, 5 per cent and 10 per sent level is indicated by ***, ** and * respectively. . [a] Average training is the weighted average of the proportion of workers who either attended any job training in the past or are currently attending on the job training. [b] Average education in years is the weighted average of education derived from firm level about individual highest level of education completed. [c] Average Tenure in Years is the weighted average of length of tenure derived from firm level information about the number of years spent in the current firm. [d] Average Experience in Years is the weighted average of years of work experience derived from firm level about the number of years that a worker has been in the labour market.

As indicated above the problem of omitted variable bias might have influenced the observed estimations in table 1 and 2 where Ordinary Least Square and Fixed effect models were reported. At least for the fixed effects estimation the problem of omitted variable time invariant characteristics was contained. In table 3 results we report estimation of the production function estimates that use generalized method of moments to control for unobserved time invariant attributes that might be influencing the macroeconomic environment that influence firm level productivity. The estimates takes further expansion of the estimate by considering the level of human capital at firm level that might be influencing productivity. Findings are that except for on the-job training, the hypothesis that companies with more educated and experienced workers are more productive than companies with less educated and less experienced workers is strongly supported by our data. In sum, the important evidence from our results in tables 1 and 2 is that, even after controlling for the endogeneity, firm fixed effects and other characteristics establishments with higher average years of experience of the workforce have relative higher productivity than their peers. This observation is taken as evidence that there are positive effects on all workers' productivity from the average increase in work experience of the workers in a firm. Findings for the macroeconomic environment variables are also presented. Still macro economic variables of inflation corruption and inflation are not statistically significant. This is strong evidence that even when we control for firm specific time invariant characteristics as well as unobserved or omitted variables these macroeconomic variables do not affect firm level performance. This is important for Government revenue collection that unless they have reached the limit they should ensure tax compliance for all eligible tax payers and perhaps there might be gains from other mechanisms such as improved infrastructure and other services. The other important support of the results are that even when we control for omitted variable bias, business support, access to credit, insufficient market and interest rates appears to have robust impact on observed firm level performance. This is a strong evidence that to support development of small medium and large enterprises in an economy like Tanzania there must be efforts to lower interest rates, to improve access to credit, business support and access to market facilitations.

5 Conclusion and Recommendations

This paper sets out to examine the influence of macroeconomic environment on firm level performance. To do so it looked at the influence of macro variables of taxation, corruption, availability of business support, cost of domestic raw materials, inflation, cost of imported raw materials, access to credit, interest rates and insufficient market demand and firm level productivity. The working hypothesis was that macroeconomic environment in which firms operate has great influence on observed performance. The paper attains the empirical analysis via estimating a Cobb Douglas Firm level function. The rich panel data set enables control for unobserved time invariant firm specific attributes that might be influencing the estimations. Paper findings are that macroeconomic environment has strong impact on observed firm performance. The paper does not find any significant effect of *inflation, interest rate and corruption* on firm level performance. The results are not statistically significant even after control for unobserved characteristics using panel data estimations techniques of Generalized Methods of Moments [GMM].

The results leads to a conclusion that to facilitate firm level performance efforts need to focus on reducing tax burden, increased business support, reduced cost of imported raw materials, access to credit. The paper estimated production functions in which macro economic variables enter as

some of the regressors. As indicated the macroeconomic effects on firm performance Taxation, access to credit, business support and interest rates appears to have strong influence on firm level performance. OLS based estimates of the production function revealed that signs of their coefficient estimates suggest that taxation has a negative impact on firm level performance so is corruption and lack of business support. Other macroeconomic environment variables with adverse effect on firm level performance are interest rate access to credit and insufficient market. The results do not change even when observed firm attributes are introduced. This indicates that that taxation, corruption and inflation have weak impact on firm level performance and in fact are not statistically significant.

This suggest that there are firm specific effects which are correlated with these macroeconomic variables that tend to self select into the observed effect Therefore based on these results macro economic variables of taxation, inflation and corruption have no significant impact on firm level performance. The results add knowledge to a debate on economics of corruption, rent seeking and taxation. Some empirical findings elsewhere are those in studies such as Mans and Teal (2002), Darious Mans (1994) and the World Bank (1998). .In case of corruption it has for a long time been debated on what corruption really does in the economy? Does it facilitate or stifle economic growth. There are some peculiar cases where a positive impact between corruption and performance has been discovered. This has been a case where Government failure is rampant. For taxation corporate literature has always proven that for a serious company taxation cannot be a negative element because it is factored in within the sale and other revenue flows projected before and after tax. Macro economic variables that appear to have strong effects on firm level performance are interest rates, access to credit, business support and market efficiencyIt will be recalled that literature on this area has pointed out severe measurement errors and in particular endogeneity when estimating a Cob Douglas production function. Even when endogeneity is controlled for using GMM still macro economic variables of inflation corruption and inflation are not statistically significant.

This is strong evidence that even when we control for firm specific time invariant characteristics as well as unobserved or omitted variables these macroeconomic variables do not affect firm level performance. This is important for Government revenue collection that unless they have reached the limit they should ensure tax compliance for all eligible tax payers and perhaps there might be gains from other mechanisms such as improved infrastructure and other services. The other important support of the results are that even when we control for omitted variable bias, business support, access to credit, insufficient market and interest rates appears to have robust impact on observed firm level performance. This is a strong evidence that to support development of small medium and large enterprises in an economy like Tanzania there must be efforts to lower interest rates, to improve access to credit, business support and access to market facilitations.

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