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# Does Access to Credit Enable Microenterprises Escape the Poverty Traps? Evidence from West Africa

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#### Abstract

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*Corresponding author* Ibrahim Aminu Jamiu jamiuibrahimaminu@gmail.com Tel+2348069737240 This study investigates how access to credit helps microenterprises in West Africa escape poverty traps. It focuses on firms that report access to credit versus those that view it as a constraint. Using semiparametric, parametric, and non-parametric techniques, the study analyses World Bank Enterprise Survey data to measure the relationship between profits (log of profits) and various factors. The key objective is to determine if credit accessibility and marginal returns to capital help microenterprises to escape poverty. Results show that at low levels of physical capital (10-15%), marginal returns to capital are minimal, especially for firms with financial barriers, suggesting a non-convexity in production technology. The study recommends formalizing microenterprises and promoting their access to formal credit through strengthened financial systems and cooperative credit schemes. Governments in West Africa are urged to develop inclusive financial systems with affordable credit programs to help microenterprises break free from poverty traps.

#### 1. Introduction

Microenterprises are strategic to inclusive growth and development of economies across the globe, especially developing countries as such businesses are known for bridging the gap between upper and lower classes by pushing a great deal number of poor people to middle class (Farhana, 2024). Global economic growth is currently increasingly influenced by the contribution of the Micro, Small, and Medium Enterprises (MSMEs) sector. Because availability of MSMEs remains one of the crucial elements to any economy wishing to progress. In specifics, MSMEs contribute to economic growth through creation of decent jobs, reduced inequality, source of livelihood to the poor, and income generation (IFC; World Bank Group, 2018). Around the world, micro businesses represent the backbone of several economies, including the Americas, Europe and Africa (Chitsimran et al., 2020; Mpuon et al., 2023). According to data from the World Bank, MSMEs employ over 60 percent of the workforce in developing countries and contribute over 40 percent of developing countries' GDP (World Bank 2019).

Empirically, several studies have established that improving financial accessibility can significantly enhance the productivity of Micro, Small, and Medium Enterprises (MSMEs) by enabling them to invest in advanced technologies, expand their operations, and improve overall efficiency and market competitiveness. Furthermore, increased access to financial resources provides MSMEs with the capacity to overcome barriers such as limited inadequate capital, infrastructure, and inefficiencies, which are often constraints to growth (Ferrando & Ruggieri, 2018; Galasso et al., 2018; Giang et al., 2019; Lakuma et al., 2019).

Despite the massive contributions of these enterprises, many policymakers and development practitioners are concerned that the enterprises operate in hostile business environment, particularly in developing countries of Africa and Asia.

The study is motivated by several key factors. For instance, existing literature focuses on poverty traps at the household level, with limited research on poverty traps among microenterprises, especially within West Africa. To my knowledge, none of microenterprises and poverty trap in Sub-Saharan Africa (SSA). Most studies though limited studies are those by McKenzie & Woodruff, (2006) in Mexico, and Banerjee et al., (2024) in India. However, the findings from these studies may not be applicable to West African countries due to the region's distinct economic, geographical, and social characteristics. Another motivation for this study is that West Africa, which largely falls within Sub-Saharan Africa, is the most impoverished region globally by all development indicators. This, combined with its underdeveloped financial system, makes it a natural laboratory for examining the relationship between access to finance and poverty traps among enterprises.

This study addresses these gaps by examining whether access to credit enables microenterprises to escape poverty traps in West Africa by investigating the pattern of access to credit among microenterprises and evaluating how access to credit affects marginal returns of microenterprises' capital. A larger set of data for West African countries was sourced from an extremely detailed survey data on business enterprises collected by World Bank using Semi-Parametric, Parametric and Non-Parametric methods were analysed empirically.

# 2. Literature review

# 2.1 Conceptual Clarification

To provide a clear understanding of the key concepts underpinning this study, this section reviews some relevant terms related to microenterprises, access to credit, and poverty traps.

Microenterprises are small-scale businesses with minimal capital, a limited workforce, and localized operations, often serving as vital sources of income for low-income households (World Bank, 2018). In West Africa, these enterprises dominate the informal sector, engaging in activities such as petty trading, agriculture, and small-scale manufacturing. Despite their importance to local economies, microenterprises face significant challenges, including limited funding, inadequate market access, and low levels of technology adoption, which hinder their growth and sustainability (Farhana, 2024).

Access to credit plays a critical role in addressing these challenges, providing microenterprises with the financial resources needed to invest in productive activities, expand operations, and improve competitiveness. However, many microenterprises in West Africa struggle to obtain credit due to systemic barriers such as high interest rates, lack of collateral, and weak financial infrastructure (Giang, et al. 2019). A poverty trap occurs when enterprises or individuals are unable to overcome structural barriers that prevent them from achieving sustainable growth. Addressing these interrelated issues requires targeted financial interventions and supportive policies to help microenterprises escape poverty traps and contribute more effectively to economic development (Kraay and McKenzie2014).

# 2.2 Theoretical Background

The Study is based on the occupational choice and process of development model as its main theoretical framework., thereby the first part of this section provides a brief description of the of the occupational choice and process of development dynamic model while the next part of the section goes directly to the empirical framework including some key reference to the existing literatures.

Development economists have proposed various factors as the foundation and reinforcing forces of poverty traps, leading to the creation of formal economic models that explore their causes. One early hypothesis is the "saving-based poverty trap" by Kraay and McKenzie (2014), which suggests that countries or individuals with too little income to save cannot accumulate capital. As a result, their incomes grow only at the rate of total factor productivity growth, leading to stagnation if the productivity growth rate is low or zero. Another related concept is the coordination failure hypothesis, also known as Big-push models. which argues that economically poor countries require significant investment to break the poverty cycle.

Kraay and McKenzie (2014) also highlight the dual nature of developing economies, with modern sectors exhibiting increasing returns to scale and traditional sectors experiencing constant returns. Shifting resources towards the traditional sector leads to wage equalization, while investing more in the modern sector boosts overall income, sparking debates on the effectiveness of foreign aid since the 1950s.

Additionally, Banerjee and Newman (1993) developed a dynamic model examining the interaction between occupational choice and non-convex production technologies. Their model shows that production activities often require significant investment beyond the reach of poor microenterprise owners, trapping them in poverty due to capital market frictions and limited access to credit.

This study gives an insight on a theoretical work that explains interaction between the occupational choice and non-convex production technologies. For example, Banerjee and Newman (1993) built a dynamic model that focused mainly on interaction between the occupational choice and process of development. The models reveal that, production activities require a lumpy investment which exceed the level of the poor in the economy therefore of these microenterprises' owners are being end up in a poverty trap. This is because of capital market frictions where poor agent in the economy cannot have access to credit to finance their business.

#### 2.2 Empirical Review

Although few studies have explored the poverty traps among microenterprises, there has been mixed findings as a result of the region's distinct geographical, economic. and social characteristics. Some studies strongly support access to finance enables microenterprises to escape the poverty traps. Many authors such as (Grimm, et al. (2011); Siba (2015); Wang, 2016; Shamim, 2020; Donal & Ashley 2022; Sundararaju & Theivanayaki, 2024; Banerjee, 2024) support access to finance enable microenterprises to escape the poverty suggesting that more credit should be available to the development of microenterprises for them to escape the poverty trap. While, some studies do not confirm access to finance/credit does not allow microenterprises to escape the poverty to escape the poverty trap in different settings. That further means providing capital to MSMEs may not automatically lead to escape the poverty trap. Simeon and Lara (2005) argue that the growth of micro, small, and medium-sized enterprises (MSMEs) is primarily influenced by the capabilities and opportunities available to them. They emphasize that access to skills, knowledge, and market opportunities can drive the success of these businesses.

Banerjee et al. (2024) examines the impact of microfinance on business growth in Hyderabad, India, focusing on entrepreneurial heterogeneity. Using experimental research methods, the authors distinguish between gung-ho entrepreneurs (GEs) and reluctant entrepreneurs (REs). The study finds that GEs, who were already operating businesses before accessing microfinance, benefit significantly from credit, showing increased profits, assets, and business revenues over six years. Conversely, REs exhibit limited long-term benefits. The research highlights that microfinance crowds in informal borrowing for GEs, helping some escape poverty traps by switching to higher-return technologies. The authors recommend targeted lending practices, larger loans for high-potential entrepreneurs, and differentiated financial products optimize microfinance's to effectiveness.

McKenzie & Woodruff, (2006), employed parametric methods using selected quarterly secondary data from Mexico's National Survey of Microenterprise between 1992 and 1998. A data set of 3684 firms from all industries were purposively selected based on certain criteria such as gender of owners, age, and years of the firm to estimate returns to capitals. The result results revealved that a higher rate of returns between 10-15 percent a month for the small firms those with capital below \$500 a month. However, the result also shows that, for any additional \$100 invested in the business, earnings rise to \$10-15 a month. Similarly, Hill and Kalirijan (1993) investigated the returns to capital among for small businesses using a survey data from Indonesian garment industry using 2250 sample of firms taken from the country's' census of small industry. They found a high rate of return to investment among microenterprises. Guirkinger and Boucher (2007) employed a switching regression to identify constrained and unconstrained farmers in Peru. He found that access to credit would lead to about 26% rise in the value of output per hectare. The result obtained is hypothetical as such suggests the possible benefits in efficiency from expanding access to credit.

Semegn and Bishnoi (2021) investigate the effects of microcredit on the performance of micro and small enterprises (MSEs) in the Amhara National Regional State, Ethiopia. Using data from a survey of 340 randomly selected MSEs, the study employs average sales volume as the performance indicator. Findings reveal that 48.53% of MSEs operate in the manufacturing sector, while 26.76% are involved in urban agriculture. A paired t-test analysis demonstrates significant improvements in sales, assets, employment, and net profit after receiving microcredit. The study concludes that factors such as loan size, savings, and entrepreneurship training significantly boost MSE performance to enable them escape the poverty traps, recommending that microfinance institutions enhance policies to support access to finance and entrepreneurial development.

Similarly, Dhungana and Ranabhat (2022) explore the impact of microcredit on microenterprise development in Gandaki Province, Nepal. With data collected from microfinance clients active for over five years, the study adopts an explanatory research design to assess the role of microfinance in business growth. The regression analysis confirms that microcredit significantly increases investment, revenue, and profits in micro businesses, facilitating business expansion and job creation. The findings emphasize that the proper utilization of microcredit is essential for the long-term success and sustainability of micro-enterprises, underscoring the critical role of microfinance in fostering enterprise development.

Poverty trap is a very wide context in development economics and we cannot conclude whether it exit or not. But its important to know that microenterprises can end up in a poverty trap as a result of credit constraints which of course can limited the credit availability and thereby affects entry to self employment. There are some literature work that provide evidence of poverty traps by investigating changes in household income over some period of time. Some but few are Lokshin and Ravallion (2001) examine changes in household's income for over period of time. The results reveal that there are nonlinearities in income changes but found no evidence of dynamic poverty traps across Hungry and Russia.

Despite extensive research on the relationship between access to credit and poverty traps among microenterprises, significant gaps remain, particularly in the context of West Africa. Existing studies, often conducted in regions like Ethiopia and Nepal, face limitations in applicability due to differences in socioeconomic and institutional settings. Challenges such as inadequate financial infrastructure, political instability, and social inequalities, which are prevalent in West Africa, are often overlooked. Moreover, many studies focus on micro-level or short-term analyses, failing to address the structural barriers and long-term dynamics of credit utilization. This study aims to bridge these gaps by leveraging World Bank data and adopting a longitudinal, multidimensional approach that examines the combined effects of financial and non-financial factors, including market linkages and institutional support. By focusing on West Africa's unique challenges, it seeks to provide tailored insights into how credit access can help microenterprises escape poverty traps.

#### 3. Methodology

#### 3.1 Description of Dataset

The Enterprise Surveys, conducted by the World Bank and its partners, focus on factors that impact the business environment, which can either support or hinder firms. These surveys cover small, medium, and large companies across various regions, as part of the World Bank's goal to foster a business climate that promotes job creation, investment, and sustainable economic growth. The surveys collect both objective data and enterprise perceptions about their operating environments. Conducted since 1998 and centralized within the Enterprise Analysis Unit since 2005-2006, the initiative provides firm-level insights into private-sector experiences. The dataset covers over 130,000 firms in 135 countries and includes detailed information on profits, capital stock, and obstacles like access to finance.

This research uses data from the Enterprise Surveys for 12 ECOWAS countries (Benin, Côte d'Ivoire, The Gambia, Ghana, Guinea, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo) for the periods 2013, 2014, 2016, 2017, and 2018. These countries were chosen for their economic, political, social, and geographical similarities, with 12 out of 15 ECOWAS members included due to data availability.Key variables include profits, physical capital stock, and access to finance. Profits are calculated by subtracting operating expenses from sales, while physical capital stock is derived from the replacement costs of land, buildings, and equipment, accounting for depreciation.

# 3.2 Model Specification and Estimation Techniques

Following McKenzie and Woodruff (2006), this study uses non-convexities in production to measure poverty traps of microenterprises in West Africa. This is because most machines have a minimum efficient scale, and rental markets cannot perfectly substitute for the inefficiencies of the machines below the threshold (where they will be able to adopt production techniques efficiently). Like McKenzie and Woodruff (2006).this study seeks to employ semiparametric techniques in two stages to achieve the research objectives. The first stage deals with estimating McKenzie and Woodruff's (2006) earning functions in equation (1). Equation (1) is estimated using Yatchew's (1997) partial least square with 5 differencing order and the one-step semi-parametric regression models are estimated using Robinson's (1988) double residual methodology.

$$\pi_i = b \left( K_i \right) + X_i^I \beta + \varepsilon_i \qquad 1$$

Where  $\pi_i$  stands for profits of microenterprise, iand profits are computed by subtracting all operating expenses (fuel, electricity, raw and intermediate materials, and labour costs) from microenterprise's sales or turnover.  $K_i$  is the stock of physical capital proxied by replacement costs of land and buildings, and equipment and machineries, to take care of the problem of depreciation. The essence of equation (1) is mainly to obtain parameter vector ( $\beta$ ) of all controlled variables (X) including the firm's age, ownership structure, human capital and so on. To see the influence of access to finance on poverty traps, two models will be estimated for equation (1): model 1 for microenterprise that reports access to finance as not an obstacle to business, and model 2 for the enterprise that reports access to finance as an obstacle to business.

Marginal returns to capital  $\left[\frac{\partial bi}{\partial K} = \frac{\partial b}{\partial K}\right]$  are estimated in the second stage using the nonparametric technique of local linear regression as proposed by Fan (1992). This is specified in equation (2):

$$\pi_i - X_i^I \beta = b (K_i) + + V_i \qquad 2$$

Given the possibility of endogeneity and/or simultaneity bias in the model, Robinson's (1988) double residual estimator is also estimated, and it is defined by taking expected value conditioning on K as shown in equation (3):

$$E(\pi \mid K)_{i} = E\left(X^{i} \mid K\right)_{i} + \beta + b\left(K_{i}\right) + -\underbrace{E(\pi \mid K)_{i}}_{\alpha} \qquad 3$$

# 4. Results and Discussion of Findings

# 4.1 Descriptive Statistics

The summary statistics are presented in Table 1, and exploring the data reveals the state of credit access among microenterprises in West Africa.

Table 1, shows that the total number of microenterprises is 2,191 based on business enterprise surveys of the respective countries. However, there are only 2,137 observations for obstacle in access to finance among the enterprises in the region. The average rate of profit among the microenterprise is about 24.83 percent of profit with standard deviation of 0.02 percent due to little difference between the maximum and minimum rates among the enterprises. This is not farfetched given that the enterprises have common scale of operation of less than or equal to 10 employees. Table 1 also suggests that average rate of physical capital (net book value due to depreciation) is 11.53 percent of profit with standard deviation of 2.36 percent due to relatively not too much divergence between the maximum and minimum rates. Table shows that, the mean age of the firms is 14 years, and this is not implausible as most microenterprises are usually young or newly established and it takes them long period of time to grow to small, medium or large-sized enterprises. Expectedly, the mean years of experience of the general manager (GM) is almost same as the enterprises' mean age, and this could be due to the fact that most of the microenterprises are not actually corporate entity as they are normally either sole proprietorship or partnership.

Thus, the experience of the owner is usually same as the age of the enterprise. Average rate of labour earnings is 10.29 percent of profit with standard deviation of about 3 percent with not that huge divergence between the rate as for the least and highest rates are -4.61 and 20.54 percents respectively.

Variables	Observation	Mean	Std. dev.	Minimum	Maximum
Profit (log)	2,191	24.82575	0.0239921	24.79881	25.92779
Physical Cap (log)	2,191	11.53197	2.36081	-4.60517	18.9803
Firm's age	2,191	14.05267	9.140614	0	90
Firm's age squared	2,191	287.917	451.6623	0	8100
General Manager experience	2,191	14.64666	9.388516	0	64
General Manager experience squared	2,191	306.0076	388.6944	0	4096
Average labor Earnings (log)	2,191	10.29347	2.999693	-4.60517	20.54095
Works hours per week (log)	2,191	3.887721	0.5118957	-4.60517	5.124023
Skilled workers (log)	2,191	1.298014	0.7502154	-2.302585	3.047003
Capacity utilization	2,191	71.47274	14.4069	0	100
Domestic private ownership	2,191	83.93692	33.33868	0	100
Foreign ownership	2,191	4.939108	19.03664	0	100

# Table 1: Descriptive Statistics

Source: World Bank Enterprise Survey Dataset

is shown in Table 1 that mean number of work hours per week is 49 (which is the equivalent of 3.89 in log as shown in table above) implying that the daily work hours should be 7 to 10 hours depending on whether the enterprise works for 5 or 7 days in a week.

Furthermore, Table 1 depicts that the mean number of skilled workers is about 4 exponents of 1.30 (which is the equivalent to log of 1.30 as shown in the table above) and average capacity utilisation of the enterprises is 71.47 percent. This implies that the enterprises are mostly operating close to optimal level of their respective sizes. Finally, about 84 percent are owned by domestic private individuals while 5 percent by foreign individuals.

Table 2 demonstrates that 29 per cent of the enterprises surveyed face severe obstacle in access to finance followed by 21 per cent facing minor obstacle. It is shown that 19 percent of the enterprises are encountering moderate obstacle, 16.3 percent experiencing no obstacle in access to finance whereas 15 percent are very severely facing the obstacle. It could be inferred that major of the enterprises in West Africa are strangulated by insufficient fund to operate fully and materialise their respective potential, though we cannot rule out the problem of inefficiency.

Table 3 reports the results of partial linear regressions on impacts of many variables on microenterprises' profit rate as specified in equation (1) in section 3. Model 1 in Table 3 indicates that when microenterprises face very severe obstacle in access to finance, number of work hours per week is positively significant (at 1 percent) in influencing the profit rate as a 100 percent increase in the number of hours leads to 0.22 percent rise in the profit rate.

Table 2: Degree of Obstacl	e in Microenterprises' Access	to Finance in West Africa
Variables	Frequency	Percentage
Very Severe	313	14.65
Severe	620	29.01
Moderate	407	19.05
Minor	449	21.01
No	348	16.28
Total	2,137	100.00

 Table 2: Degree of Obstacle in Microenterprises' Access to Finance in West Africa

*Source*: World Bank Enterprise Survey Dataset

Similarly, model 1 shows that capacity utilisation is also positively significant (at 10 percent) in determining the profit rate for a 100 percent rise in capacity utilisation brings about 0.03 percent upsurge in the profit rate. Likewise, model 1 signifies that being a shareholding microenterprise is positively significant (at 10 percent) as it leads to 0.002 percent increase in the profit rate of the enterprises when faced with very severe obstacle in access to finance.

Model 2 in Table 3 signifies further that when the microenterprises are facing severe obstacle in access to finance, firm's age and average labour earnings are positively and significantly (at 5 percent) associated with the profit rate for 100 percent increases in firm's age and average labour earnings cause 0.02 and 0.01 percent rises in the profit rate. In same token, model 2 relates that when there are more than 10 competitors in the main product market, then profit rate will significantly increase by 0.002 percent. Model 3 in Table 3 reports that when microenterprises experience moderate obstacle in access to finance, number of skilled workers are positively and significantly (at 1 percent) related with the profit rate and a 100 percent increase in the number skilled workers results in 1.42 percent upsurge in profit rate.

Additionally, model 4 of Table 3 indicates that when microenterprises are faced with minor obstacle in access to finance, skilled workers and having more than 10 competitors in main product market are positively significant (at 1 percent) in influencing marginal returns of physical capital, in which 100 percent increases in skilled workers and competition make the profit rate to augment by 0.08 and 0.46 percentages correspondingly. Model 4, however, suggests that capacity utilisation is rather negatively significant (at 5 percent) in determining profit rate for 100 percent rise in the capacity utilisation leads 0.018 percent reduction in the profit rate. Finally, model 5 in Table 3 depicts that when microenterprises experienced no obstacle in access to finance, having more than 10 competitors in main product market is important in affecting profit rate as it causes 0.0034 percent increase in the rate. Conversely, model 5 indicates that capacity utilisation is negatively and significantly (10 percent) associated with the profit rate, in which 100 percent rise in the capacity utilisation leads 0.022 percent reduction in the profit rate.

	(1)	(2)	(3)	(4)	(5)
Variables	Very severe	Severe	Moderate	Minor	No obstacle
Firm's Age	-7.14E-06	0.0002**	0.0002	-2.35E-05	-6.81E-05
	-0.00014	-7.87E-05	-0.002	-9.37E-05	-0.00013
Firm's Age-squared	1.14E-06	-1.93E-06	2.35E-06	3.50E-07	1.39E-06
	-2.34E-06	-1.42E-06	-2.17E-05	-1.20E-06	-2.16E-06
GM experience	-3.01E-05	3.11E-05	0.0004	-1.85E-05	1.01E-06
	-8.12E-05	-4.90E-05	-0.0012	-3.69E-05	-5.18E-05
GM experience squared	7.83E-08	-4.09E-07	-1.39E-05	-3.31E-07	4.61E-07
	-1.91E-06	-1.12E-06	-2.87E-05	-8.86E-07	-1.16E-06
Ave. lab earnings (log)	0.00012	0.0001**	0.0005	7.29E-06	7.86E-05
	-7.51E-05	-4.40E-05	-0.00096	-4.05E-05	-4.92E-05
Work hrs per week (log)	0.0022***	0.00013	0.0045	0.0003	0.0001
	-0.0005	-0.00029	-0.0063	-0.00023	-0.00024
Skilled workers (log)	0.0003	-3.76E-06	0.0142***	0.0008***	0.0004
	-0.0003	-0.00017	-0.0051	-0.00015	-0.00028
Competition	0.0013	0.0019***	-0.0167	0.0046***	0.0034***
	-0.00086	-0.00048	-0.0104	-0.00045	-0.00063
Capacity utilization	2.57e-05*	1.07E-05	-0.0003	-1.83e-05**	-2.24e-05*
	-1.50E-05	-8.47E-06	-0.00021	-7.82E-06	-1.34E-05
Shareholding	0.0023*	-0.0007	0.0042	7.93E-05	-0.001
	-0.0012	-0.00064	-0.0152	-0.0006	-0.00078
Sole proprietorship	0.0012	-0.0002	0.0016	-0.0001	-0.0001
	-0.00074	-0.00045	-0.0123	-0.0004	-0.00058
Domestic priv. own	5.91E-06	2.55E-07	7.05E-05	-4.53E-07	-7.04E-06
	-1.00E-05	-4.84E-06	-9.20E-05	-4.09E-06	-5.51E-06
Foreign ownership	-1.80E-05	-5.24E-06	9.30E-05	6.85E-06	3.43E-06
	-1.58E-05	-8.00E-06	-0.00018	-6.94E-06	-9.71E-06
Industrial Eff.	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes
Observations	308	615	402	444	343
R-squared	0.213	0.145	0.034	0.408	0.315

Table 3. Parametric and Non-parametric Results

Note: Parametric Return Regressions of West African Microenterprises Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figures 2 to 6 picture the non-convexities or otherwise of the marginal returns of physical capital of microenterprises in West Africa as they face different degrees of obstacle in access to finance. Figure 2 shows that the marginal return of physical capital is clearly non-convex when the enterprises are faced with very severe obstacle in access to finance. In Figure 2, it is depicted that at low levels of physical capital (between 10 and 15 percent), marginal returns remain very low too until when the level of physical capital reaches 15 percent.





Increase in physical capital begins to result in higher marginal returns. Figure 3 also maintains non-convexity in shape as the microenterprises continue to battle with severe obstacle in access to finance. In Figure 3, marginal return slowly increases with rapid increase in physical capital (between -5 and 10 percent), it fell down at 10 percent level capital and continued to decrease until 15 percent level of physical capital. After 15 percent level of physical capital, marginal returns of physical continue to increase infinitesimally. Figure 4 indicates that when microenterprises are faced with moderate obstacle in access to finance, the marginal return of physical capital curve is also non-convex because as the curve goes down 10 and 10.7 percent levels of physical capital and it later goes up and reached its peak at 11.7 percent level of physical capital. After this point, it continually decreases and finally flattens at 16-8 levels of physical capital.

Figure 5 pictures that when microenterprises are experiencing minor obstacle in access to finance, marginal returns of their physical capital curve are quasi-convex, so to say, because the curve was its least level at 11.6 percent level of physical capital. Thereafter, the curve continued to rise until 14.7 percent level of physical capital, where it dipped until 15.9 percent level of physical capital and beyond which goes up continually. Lastly, Figure 6 shows that when microenterprises are encountering no obstacle in access to finance, curve of marginal returns indicates that physical capital has increasing returns as the curve started at relatively high point, then went down to its lowest point at 13 percent level of physical capital and thereafter the curve continually rose up with minor breaks. It could be deduced from the above analysis that, depending on the gravity, microenterprises facing obstacle in access to finance, exhibit since physical capital has increasing returns as shown in the curve above over a wide range of capital, this signify that, returns to capital are non-convex indicating poverty traps among microentrepreneurs. This implies that enhancing access to finance is critical to breaking the poverty trap.

# 4.3 Semi-parametric Results

This section sought to present and interpret the results of one-step semi-parametric regression models estimated using Robinson's (1988) double residual estimator.

Semi-parametric results in Table 4 shows that (in model 6) that when the enterprises are faced with very severe obstacles in access to finance, average labour earnings, work hours per week and competition are all positively significant (at 1 percent) in affecting the firms' profit rate. Specifically, 100 percent rise in average labour earnings, work hours per week and competition result in 0.02, 0.23 and 0.25 percent increases in the profit rate respectively. Although the findings of model 6 in Table 4 are slightly different from those of model 1 of Table 3; Model 6 has confirmed that number of work hours per week is important in influencing the enterprises' profit rate. As Model 2, Model 7 in Table 4 indicates that average labour earnings positively and significantly associate with the enterprises' profit rate. Unlike Model 3, Model 8 in Table 4 shows that none of the variables is significant.

Like Model 4, Model 9 signifies that competition causes 0.0042 percent upsurge in the enterprises' profit rate. Finally, like Model 5, Model 10 suggests that also that competition brings about 0.0033 percent increase in the profit rate while unlike Model 5, Model 10 shows that 100 percent rise in average labour earnings leads to 0.0001 percent increase in the enterprises' profit rate.

	(6)	(7)	(8)	(9)	(10)
VARIABLES	Very severe	Severe	Moderate	Minor	No obstacle
Firm's Age	-0.00002	-8.61e-06	0.00015	0.000014	0.00002
-	(0.00007)	(0.0000)	(0.0002)	(0.00002)	(0.00004)
Firm's Age-squared	5.44e-07	5.40e-07	3.53e-07	-6.33e-08	-5.67e-07
	(1.48e-06)	(4.33e-07)	(3.37e-06)	(4.43e-07)	(8.00e-07)
GM experience	-0.00007	0.00004	0.0010	-0.000011	5.81e-06
-	(0.0001)	(0.00003)	(0.0010)	(0.000035)	(0.00004)
GM experience squared	8.40e-07	-7.01e-07	-0.00003	-1.97e-07	7.49e-07
	(2.19e-06)	(5.73e-07)	(0.00003)	(9.83e-07)	(7.63e-07)
Ave. lab earnings (log)	0.00016***	0.0001***	0.00087	0.00002	0.00009**
	(0.00006)	(0.00003)	(0.00087)	(0.00004)	(0.00004)
Work hrs per week (log)	0.00231***	-0.00015	0.0031	0.00035	0.00029
	(0.00049)	(0.00027)	(0.0040)	(0.00031)	(0.00029)
Skilled workers (log)	-0.00009	0.00018	0.01522	0.0004	-0.00013
	(0.00047)	(0.00022)	(0.01405)	(0.0003)	(0.00042)
Competition	0.0025***	0.0024	-0.01845	0.00421***	0.00328***
	(0.0008)	(0.00039)	(0.02112)	(0.00049)	(0.0006)
Capacity utilization	-0.000014	9.39e-06	-0.00021	-0.000014	-0.00001
	(0.00002)	(8.13e-06)	(0.00024)	(0.000013)	(0.00002)
Shareholding	0.00074	0.00003	0.00189	0.000035	-0.0013
	(0.00056)	(0.00031)	(0.0045)	(0.00046)	(0.00081)
Sole proprietorship	0.00014	0.00025	0.00315	0.00002	-0.00016
	(0.00043)	(0.00028)	(0.0051)	(0.00039)	(0.00037)
Domestic priv. own	7.38e-06	1.88e-06	0.00005	1.34e-07	-9.66e-06*
	(7.49e-06)	(2.53e-06)	(0.000047)	(2.91e-06)	(5.38e-06)
Foreign ownership	1.15e-07	2.27e-06	0.00006	8.86e-06*	-1.12e-06
	(0.00001)	(4.46e-06)	(0.00006)	(5.06e-06)	(7.92e-06)
Industrial Eff.	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes
Observations	313	620	407	449	348
R-squared	0.217	0.215	0.035	0.374	0.343
Stdized T Stat	1.0868	2.1713*	1.2585	1.4110	1.6044*
	[0.3300]	[0.0100]	[0.1800]	[0.2000]	[0.0800]

**Table 4: Semi-parametric Return Regressions of West African Microenterprises** 

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 and Prob. Values are box brackets

Figures 7 to 10 show different shapes of marginal returns of physical capital curves as the microenterprises face different gravities of obstacles in access to finance. For instance, Figure 7 shows that when the enterprises are dealing with very severe obstacle, the curve is non-convex. In fact, Figures 8, 9 and 10 show that the curves are non-convex. However, Figure 11 signifies when the enterprises are dealing with no obstacle in access to finance, the curve seems to be convex as it was little high at the beginning but fell down and remain flat from 13 percent up to 16 percent level of physical capital. After that 16 percent level of physical capital, the curve rose up and reached its peak at 17.5 percent level of capital, and beyond that point the curve went down again.



#### 5. Conclusion and Policy Recommendations

The poverty trap is a broad concept in development economics, and while its existence is debated, it is clear that credit constraints can trap microenterprises, limiting their access to finance and self-employment opportunities. Business size has been identified as a key factor, with smaller firms facing more significant barriers to obtaining credit. Kuntchev et al. (2012) found a strong correlation between firm size and access to

credit, with small businesses struggling to secure loans for survival. This study focuses on access to credit for micro-enterprises in West Africa, highlighting that better access could help these businesses escape poverty traps. Using semi-parametric, parametric, and nonparametric techniques, the study analyses data from world bank enterprise survey, the findings showed that microenterprises with limited access to finance experience diminishing returns on capital, reinforcing the poverty trap because at low levels of physical capital (10-15%), marginal returns to capital are minimal, especially for firms with financial barriers, suggesting a non-convexity in production technology. These findings are in-line with (Bryan et al. 2023; Bari et al. 2024; Barnarjee et al. 2024). Their results further confirmed the non-convexities of marginal returns of physical capital of microenterprises that are dealing with different degrees of obstacle in access to finance.

The recommendation therefore is that concerted effort must be made to strengthen and formalise microenterprises in West African region in order to enhance their business potentials in accessing formal and reliable credit from financial institutions. Finally, the Study emphasis that, national government across the West African region should focus on strengthen and enhancing a highly development and efficient financial system that makes a wide range of access to credit by microenterprises and deseing credit scheme programs that can cater the need of these micro business which is pivot for them to escape the poverty traps.

# References

- Banerjee, A., Breza, E., Duflo, E., & Kinnan C., (2024) Can Microfinance Unlock a Poverty Trap for Some Entrepreneurs? *NBER Working Paper No. 26346* October 2019, Revised July 2024.
- Banerjee A. V. & Duflo E. (2005). Growth Theory through the Lens of Development Economics. In *Handbook of Economic Growth* (Vol. 1a, pp. 473-552).
- Banerjee, A. V. & Andrew F. N. (1993). Occupational Choice and the Process of Development. *The Journal of Political Economy*, 101(2), 274-298.
- Bari, F., Malik, K., Meki, M., & Quinn, S. (2024): Asset-based microfinance for microenterprises: Evidence from Pakistan, *American Economic Review*, 114, 534–574
- Bryan, G., Osman, A. &Karlan D. (2023) Big loans to small businesses: predicting winners and losers in an entrepreneurial

lending experiment, American Economic Review.

- Chitsimran, P. M., Kumar, K., Goyal, P., & Manish, N. H. (2020). MSME sector: A multifaceted African Journal of Economics and Sustainable Development, 6(3), 89-112.
- Donald O. E., & Ashley T. M. (2022). Influence of access to finance on the competitive growth of SMEs in Lesotho. *Journal of Innovation and Entrepreneurship*,11(1), 1-20.
- Dhungana, B. R., & Ranabhat, D. (2022). Impact of microcredit on micro-enterprise development: A case of Gandaki province of Nepal. *Journal of Emerging Financial Markets and Policy*, 1(1), 26-42.
- Easterly, W. (2006). Reliving the 1950s: The big push, poverty traps, and take-offs in economic development. *Journal of Economic Growth11*(4), 289-318.
- Fan, J. (1992). Design-adaptive nonparametric regression, *Journal of the American Statistical Association* 87(420), 998–1004.
- Farhana, A. (2024) Microenterprise-Imperatives, Issues and Interventions. Academic Journal on Business Administration, Innovation & Sustainability (AJBAIS), Volume 4, Issue 1, 33-36.
- Ferrando, A. & Ruggieri, A. (2018) Financial constraints and productivity: Evidence from Euro area companies. *International Journal of Finance and Economics, 23*, 257–282.
- Fombang, M.S.&Adjasi, C.K. (2018). Access to finance and firm innovation. *Journal of Financial Economic Policy*, 10 (1). 73-94. <u>https://doi.org/10.1108/JFEP-10-2016-</u> 0070
- Galasso, A., Gerotto, F., Infantino, G., Nucci, F. & Ricchi, O. (2018) Does access to finance improve productivity? The case of Italian manufacturing. *In Getting Globalization Right: Sustainability and Inclusive Growth in the Post* Brexit Age; Paganetto, L., Ed.; Springer: Cham, Switzerland, 197–208.

- Giang, M. H., Trung, B. H., Yoshida, Y., Xuan, T. D. & Que, M. T. (2019). The Causal effect of access to finance on productivity of small and medium enterprises in Vietnam. *Sustainability* 11(5451), 1-19 doi:10.3390/su11195451
- Grimm, M., Kruger, J. & Lay, J. (2011). Barriers to entry and returns to capital in informal activities: Evidence from Sub-Saharan Africa . *Review of Income and Wealth*, 57, S27-S53.
- Guirkinger C.& Boucher S. (2007). Credit Constraints and Productivity in Peruvian Agriculture. *Agriculture and Resource Economic Working Papers*, 1-42.
- Hill, H.,& Kalirajan, K.P. (1993). Small Enterprise and Firm-Level Technical Efficiency in the Indonesian Garment Industry. *Applied Economics*, 25(9), 1137-1144.
- Hussam, R., Rigol, N., & Roth, B. N. (2022): "Targeting high ability entrepreneurs using community information: Mechanism design in the field," *American Economic Review*,112, 861–898.
- Kraay, A. & McKenzie, (2014). Do poverty traps exist? Assessing the evidence. *Journal of Economic Perspectives*, 28(3),127–148.
- Kuntchev V., Rita R., Jorge R.M., & Judy S. Y. (2013). What Have Welearned from the Enterprise. *Policy Research Working Paper 6670*.
- Lakuma, C.P., Marty, R. & Muhumuza, F. (2019) Financial inclusion and micro, small, and medium enterprises (MSMEs) growth in Uganda. *Journal Innovation and Entrepreneurship8*(15).
- Lokshin M.& Ravallion M. (2001). Household Income Dynamics in Two Transition Countries. . *The World Bank, Washington, D.C.*
- McKenzie, D. & Woodruff, C. (2008). Experimental Evidence on Returns to Capital and Access to Finance in Mexico. *The World Bank Economic Review*, 22(3), 457-482.
- McKenzie, D. J., & Woodruff, C. (2006). Do Entry Costs Provide an Empirical Basis for

Poverty Traps? *Economic development* and cultural change, 55(1), 3-42.

- Mel, S. D., Mckenzie, D. & Woodruff, C. (2008). Returns to Capital In Microenterprises: Evidence from a Field Experiment. *The Quarterly Journal Of Economics*, 123(4), 1329-1372.
- Mpuon, J. A., Odigbo, B. E., Etim, G. S., Etuk, I. U., & Usoro, A. A. (2023). Impact of system integration of automation and autonomation supply chain strategies in operational performance of manufacturing firms. *International Journal of Value Chain Management*, 14(2), 195-219.
- Phan, C. T., Vo, T. T., & Vo, D. T. H. (2023). Can microcredit reduce vulnerability to poverty? Evidence from rural Vietnam. *Review of Development Economics*, 27(1), 608-629.
- Priya, B. (2006). Improving Access to Finance for for India's rural poor. Washington, D.C.: The World Bank.
- Shamim, M.M., Shavarebi, K. & Raihan, M., (2020). Planning of Information and Communication Technologies Training Project and Its Impact: A Case Study of Bangladesh. ELK ASIA PACIFIC JOURNAL OF PROJECT MANAGEMENT AND CONTROL, 5(1).
- Semegn, A. A., & Bishnoi, N. K. (2021). Analysis of effect of microfinance on the performance of MSEs in Amhara National Regional State, Ethiopia. *The Journal of Entrepreneurship*, 30(1), 153-178.
- Siba, E. (2015). Returns to physical capital in Ethiopia: Comparative analysis of formal and informal firms. *World Development*, 68, 215-229.
- Sundararaju, A., & Theivanayaki, M. (2024). Role of microfinance institutions in enhancing street vending business in India. *Multidisciplinary Reviews*, 7(3), 2024052-2024052
- Verardi, V. & Debarsy, N. (2012). Robinson's square root of N consistent semiparametric regression estimator in Stata. *Stata Journal*, 12(4), 726–735.

- Yatchew, A. (1997). An elementary estimator of the partial linear model, *Economics Letters* 57, 135–43
- Wang, Y. (2016). What are the biggest obstacles to growth of SMEs in developing countries? Empirical evidence from anenterprise survey. *Borsa Istanbul Review*, 16(3), 167–176.
- World Bank (2018) Improving Access to Finance for SMEs: Opportunities through Credit Reporting, Secured Lending and

Insolvency Practices. Washington D. C.: The World BankGroup. Improving access to finance for SMES:opportunities through credit reporting, secured lending, and insolvency practices (worldbank.org)

World Bank (2019) Micro, Small and Medium Enterprises - Economic Indicators (MSME -EI) Analysis Note. Washington D. C.: The World Bank Group World Bank Document