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Abstract

This study used the matching technique to explore the impact of financial inclusion on the performance of manufacturing firms in Nigeria. Most studies that have considered financial inclusion have largely focused on household access to the services of financial institutions, but have inadvertently underexplored the impact on the performance of firms, especially in developing countries like Nigeria. On the one hand, financial inclusion is measured using a multidimensional measure, which includes (i) firms having between 20-40 percent of their working capital financed through borrowing from the bank; (ii) firms having an overdraft facility to finance their operation and (iii) firms having a line of credit or loan from a financial institution. On the other hand, firm performance is measured using the lag total annual sales value of the firm in local currency unit. From the matching estimation, we find that whereas firms perform better with the aid of access to bank services, the extent differs in relation to the type of access they have. We interpret these results as showing that financial deepening increases firms' performance only dependent on the type of financial inclusion that is being observed.

JEL Classification: D60; E25; G20; I30; O55
Keywords: Financial inclusion; Manufacturing Firms; Development Nigeria

1. Introduction

Financial inclusion is the effective use of formal financial services by economic agents; in the case of this study, our focus is on firms. We used an impact evaluation technique (precisely the matching technique) to examine the impact of three different measures of financial inclusion on firm performance. The financial inclusion measures include firms having a line of credit or loan from a financial institution, having an overdraft facility from a financial institution and firms currently having 20-40 percent of their working capital financed through bank borrowing.

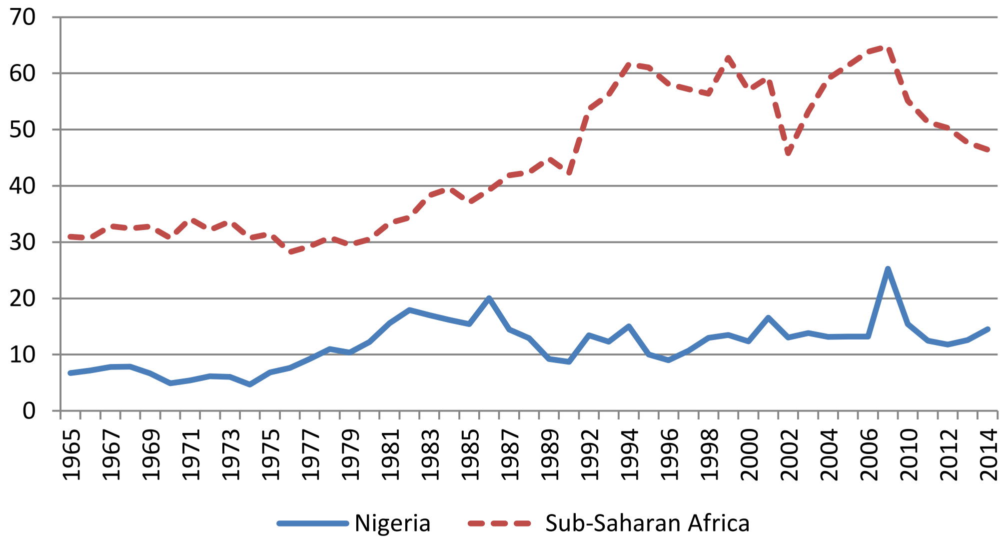
Studies on the impact of financial institution development on firms have concluded on a positive relationship. These studies are largely concentrated in understanding how financial institution development enhances firms' ability to mobilize investment funds and reduce labour costs (Fafchamps and Schundeln, 2013), innovation through the improvement of firms' productivity (Dabla-Norris, Kersting and Verdier, 2010), firms' sales and asset growth, as well as firms' size (Beck et al, 2004; Giannetti and Ongena, 2009; Bas and Berthou, 2012), among others. Although these impacts are not exhaustive, Chauvet and Jacolin (2015) identified three main channels through which the development of financial institutions directly affects firms. These channels include financial markets, traditional financial intermediation and the availability of products and services that reduces transaction costs and efficiently manages risks.

Despite these important benefits of the financial sector to firms' growth and productivity, some evidence suggests that the development of the financial sector may not necessarily lead to a positive growth outcome for firms (Asongu, 2015). For instance, Arellano, Bai and Zhang (2008) observed that in less financially developed economies, small firms grow faster than large firms. Castelli, Dwyer and Hasan (2009) show evidences that Italian firms' performance decreases as the number of bank relationships increases, while Yazdanfar and Ohman (2015) conclude that firms relying on bank credit and debt are less profitable than their counterparts that do not rely on these facilities. Thanh and Ha (2013) found that Vietnamese firms that rely on short-term credit financing relationship with banks are worse off, although the converse is seen for firms that rely on longer term credit. Most of these contrary relationships are generally theorised as caused by financial market imperfections, inadequate information, heightened transaction and contract enforcement cost that are especially prevalent in developing countries (Bigsten et al, 2000; Beck, Demirguc-Kunt and Levine, 2004; Francis, 2016; Tchamyou and Asongu, 2016; Asongu, Nwachukwu and Tchamyou, 2016). In these countries, businesses that lack collaterals, credit histories and interpersonal relationships with the bank could face the challenges of impeded flow of capital, and even when they have access to this finance, the cost may outweigh any future benefit from it. In the light of this emphasis, a growing financial system may not necessarily reflect positive growth externalities for firms.

In the case of Nigeria, the situation is not too different. In 2012, Nigeria ranked 61 out of the 62 countries evaluated by the World Economic Forum for a Financial Development Index. With regards to the improvement of financial intermediation by institutions in this sector, Nigeria was ranked 61 of 61, with an index of 1.79/7[1]. Credit to the real economy is low and does not reflect the proportionate contribution of this sector to the GDP. For instance, Figure 1 displays a seeming trend of domestic credit to private sector as a percentage of GDP for Nigeria and Sub-Saharan Africa (SSA). For Nigeria, credit to private sector never exceeds 20 percent for the entire period of study; this is in contrast with some SSA countries that had over 60 percent credit to private sector as a percentage of GDP. This trend corroborates with Ajakaiye and Tella (2014) that due to the low credit outflow to the private sector, no Nigerian bank could participate in the growing oil and gas industry or provide huge credit to the manufacturing sector. As a matter of fact, for private credit to positively affect output growth studies have recommended a very high credit to private sector as a ratio of GDP (Easterly, Islam, and Stiglitz, 2000;Arcand, Berkes and Panizza, 2015).

[1] The financial intermediation index measures the size of financial institutions, the efficiency of their delivery and the extent of financial information disclosure.

Figure 1: Domestic Credit to the Private Sector



These trends are despite the several reforms experienced in the Nigerian financial sector. Currently, there are about five phases that explain the developmental scenarios of the Nigerian financial sector. For instance[2], the liberalisation of the industry in 1986-1993 was the first phase to ensure substantial private sector participation. The second phase was in 1993-1998 with the aim of re-regulation following the deep financial distress that confronted the sector. The third phase was in 1999 with the return of liberalization and the adoption of the universal banking model. Banking sector consolidation and recapitalisation characterised the fourth phase. This phase was aimed at correcting structural and operational weaknesses that constrained the banks from efficiently playing their financial intermediation role. During this period, the capital base of banks improved by 439.4 per cent, while deposit levels rose by 241.8 per cent. The fifth phase was triggered by the combined impact of the global economic crisis and the huge shock from oil/gas and margin non-performing loans. This phase of reform sought to substantially improve the banking infrastructure and strengthen the regulatory and supervisory framework in order to provide cheap credit to the real sector and financial accommodation for small and medium-scale enterprises (SMEs).

Currently, the focus of the Nigerian financial sector is to enhance access to a range of bank services especially for bank customers. This is evidenced by the launching of the National

[2]Most of the reforms and information that are cited in this section can be further explored in Anyanwu (2010).

Financial Inclusion Strategy in 2012 by the Central Bank of Nigeria. It is important to note that this strategy has largely targeted households and how to enhance their access to financial services. However, this is largely non-encompassing considering that Nigerian firms may have access to bank accounts as opposed to households, but their access to other bank services may be debarred[3]. Figure 1 clearly supports this claim; Ajakaiye and Tella (2014) even termed this trend as "low credit outflow to the private sector", which connotes that the Nigerian private sector may be financially excluded from bank services. There are several reasons for this exclusion. Some studies claim that it may be as a result of the high interest rate on bank loans, poor collateral from firms to access bank credit, mere bank discrimination against smaller firms, among others (Obamuyi, 2011; Ajakaiye and Tella, 2014). Irrespective of the cause of firms' poor access to some bank services, the cost of such exclusion on the Nigerian economy is high considering the importance of the private sector. First, the private sector is gaining serious policy attention as there is a renaissance to improve industrialisation and diversify the economy from oil dependence to value addition production. As a result, the private sector needs to be attended to in order to ensure sustained growth and more stable economy, especially in the face of crashing oil prices. Second, the growth of the private sector (especially manufacturing) could contribute to increase in household consumption and the demand for intermediate goods, which can lead to change in the main drivers of Nigeria's economic growth (see Gui-Diby and Renard, 2015). Third, an expansion of the private sector can drastically reduce the unemployment crisis that currently confronts Nigeria[4].

Yet, for the private sector in Nigeria to perform optimally would require additional financial resources and ease in accessing capital. Financial resources may reach the private sector through involvement of national and foreign investors or through the mobilisation of government resources (Gui-Diby and Renard, 2015). However, because accessing foreign investment may be strenuous and its volatility cannot be guaranteed in uncertain times, considering the extent to which financial inclusion for firms can be enhanced could be a policy option because financial

[3]For instance, over 70.4 percent of Nigerian manufacturing firms have bank accounts (checking or savings) but only 11.4 percent have access to bank loan/line of credit, 3.4 percent of these firms are able to finance their investments with the aid of bank credit and only 3.9 percent have access to bank services to finance their working capital needs (World Bank Enterprise Survey, 2016).

[4] As at the first quarter of 2016, the unemployment rate was recorded at 12.1 percent, reaching the highest since December 2009 (National Bureau of Statistics, 2016).

institutions have access to a large pool of funds and could provide technical guidance in managing firms' financial resources. In fact, the growth of the East Asian economies and countries like Thailand is traced to the benevolence of the financial institutions in this region to grant credit to the private sector (Beck et al, 2011; Asongu, 2016; Tchamyou, 2016). More so in India, Bas and Berthou (2012) noted that improved financial inclusion in terms of making credit accessible to firms will enhance firms' growth. This study is therefore motivated to evaluate the extent to which firms' access to bank services (financial inclusion) affect their performance. To the best of our knowledge, there are no econometric studies that have analyzed the impact of financial inclusion on firm performance, with a special attention on Nigeria. We believe Nigeria is an interesting and relevant case as it is well known that the financial system of the country has passed through series of developmental phase. In addition, the current financial inclusion drive is entirely focused on households, while neglecting firms.

The remainder of the paper is organised as follows. The second section discusses the data used for the study. The methodological issues are covered in the third section. The fourth section presents the empirical results and corresponding discussion while the fifth section concludes with policy implications.

2. Data

Data for this study are gotten from the 2014 World Bank's Enterprise Survey for Nigeria. The survey contains diverse information for over 2500 firms that are distributed across the different states and regions of Nigeria. This information includes those regarding the management structure, ownership and capital structure, performance and other structural societal factors that may affect the firms' operations either directly or indirectly. Some examples of these factors include the institutional condition in the environment the firms operate in, infrastructure facility, and other government public-private partnership effort that may be initiated by the government to support enterprise development. Manufacturing firms are of interest in this study because the survey generally collects accounting data for this category of firms. Also, manufacturing firms are involved in the real sector and their performance will likely have a sporadic impact on the industrialisation process of countries (Efobi et al, 2016).Therefore, micro-enterprises, informal enterprises and those in the service sector (like hotel services, transport services and Information and Communication Technology provision) are omitted from the analysis as guided by Clarke (2012).

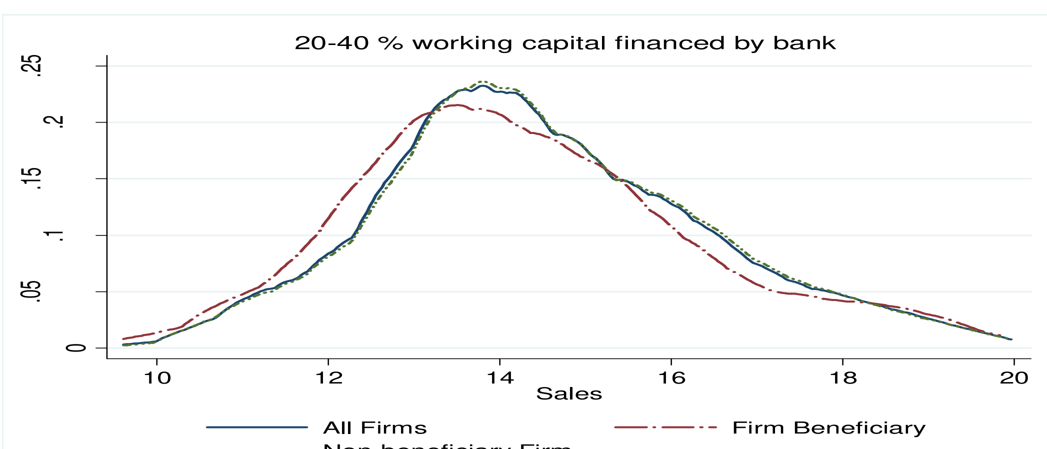
Four variables are of interest from the enterprise survey and for our analysis. They include information about firms' sales value, and the financial inclusion measures (having between 20-40 percent of working capital financed through borrowing from the bank; having an overdraft facility to finance firms operation; having a line of credit or loan from a financial institution).The main outcome variable for this study is the lag sales value, which is an important indicator of firm performance (Almas and Hans, 2008; Coad, Segarra and Teruel, 2013). The lag sales value is preferred since it reduces the risk that the performance of the firm influence financial inclusion; the potential financial inclusion effect plausibly works with a delay – it is first when firms are financially included and has effectively utilised the fund that it is able to translate to improved firm performance. The values are originally recorded in the local currency unit (Naira), but were converted to US Dollars using the prevailing exchange rate as at the period of the survey (i.e. 2014). We deemed this step as reasonable in order to enhance the comparability of the findings from our study.

The financial inclusion variable (the intervention of interest)is measured using three dichotomous indicators that are available in our main data source. The first is the extent to which firms have access to bank borrowing to finance between 20 – 40 percent of their working capital. A dichotomous response of "1" if the firm have such access and "0" otherwise is required in order to efficiently apply the matching technique. A threshold of 20 – 40 percent is taken based on theoretical stance that such threshold will increase the value of the firm (Piper and Weinhold, 1982). More so, an optimal debt capital should not be too much in order to reduce firm risk and it should not be too low since debt is cheaper than equity financing (Berman and Knight, 2009). The second measure of financial inclusion is whether the firm has access to an overdraft facility to finance its operations. This is also a dichotomous variable of "1" if the firm has such access and "0" otherwise. The last variable that captures financial inclusion – whether the firm has access to a line of credit or loan from a financial institution – is also a dichotomous variable as the earlier ones discussed.

As a preliminary examination of the data, the kernel density plot is presented to describe the density of the main intervention variables as they explain the outcome variable (in this case, we used the logarithm value of sales). More so, the density plot sheds some light on questions such as whether the sampled firms will benefit from more financial inclusion; at least, a preliminary explanation of the trend is essential for the econometric analysis. The density plots are presented in Figure 2 and are prepared for the three measures of financial inclusion: the first figure describes the density plot for firms having access to bank borrowing to finance between 20-40 percent of working capital. The graph corresponding to firms that are able to finance their working capital of between 20 – 40 percent and using bank borrowing are biased to the left (meaning lower performance) relative to the one corresponding to their counterparts. This means that firms having access to such finance opportunity may likely have a lower sales value and tend to perform lower than those which do not have access. The difference significant at 10 percent using the Two-sample Kolmogorov-Smirnov test for equality of distribution functions.

For the other two measures of financial inclusion in the last two segments of Figure 2, it is evident that the density curves of firms with access to such bank services are biased to the right. This is contrary to their counterparts that do not have access to such bank services; the density curves of this category of firms are left biased. Of course, this graph portrays that firms having access to bank overdraft and access to a line of credit or loan will likely have a higher sales value and will tend to outperform their counterparts that do not have such access. The difference is significant at 1 percent using the Two-sample Kolmogorov-Smirnov test for equality of distribution functions. The implication of these descriptive evidences is that it is important to carefully consider different components of financial inclusion and not make a blanket assumption that financial inclusion matters for firm performance. This will be rigorously considered in the econometric estimations.

Figure 2: Density of Firm Performance by Access to Categories of Financial Inclusion



The descriptive statistics of the main variables of interest are presented in Table 1, which contains the mean and standard deviations as well as a brief description. From the table, the average sales value of the sampled firms is about 24.8 Million US$, which is higher than the average American business that generates over 1.1 Million US$ sales per annum – based on the 2007 census bureau survey of business owners (Shane, 2011). With regards to the measures of financial inclusion that are included in Table 1, the statistics show that just 11.8 percent of the sampled firms are able to access funds from the bank to finance between 20-40 percent of their working capital. Only 4.8 percent of the firms can access overdraft facility from their banks and 7.9 percent can have access to a line of credit or loan.

Table 1: Summary and Description of Main Variables

Variable	Description	Mean	SD	Obs.
Profitability	Lag of sales in US$ (000, 000)	24.800	27.000	1104
Working capital finance	1 if firm have access to bank borrowing to finance 20-40% of its working capital and 0 otherwise	0.118	0.323	1422
Overdraft facility	1 if firm have access to an overdraft facility from the bank and 0 otherwise	0.048	0.213	1342
Credit or loan facility	1 if the firm have access to a line of credit or loan facility from the bank and 0 otherwise.	0.079	0.270	1342
Firm age	Age of the company since it was legally incorporated (Years)	17.186	12.426	1285
Firm experience	The number of years that the firm has been working in the specific sector (Years)	13.342	9.520	1366
Mgt Education	The number of experience of the top manager, where 1 if a University bachelors degree and above, and 0 otherwise	0.309	0.462	1422
Raw material cost	The cost of raw materials and intermediate goods used in production in last fiscal year US$ (000, 000)	1470	22,700	1029
Capital city	A dummy variable where 1 implies that firm is located in capital city and 0 otherwise.	0.418	0.493	1422
Firm reputation	The reputation of the firm in terms of its international recognition for quality certification, where 1 if recognised and 0 otherwise.	0.099	0.299	1330
Labour	Total number of full time employee in the firm during the last fiscal year	49.859	268.378	1368

Source:Authors' calculations based on the 2014 World Bank Enterprise Survey for Nigeria

3. Methodological Issues

The matching technique – the propensity score matching – is used in this study to estimate the mean effect of firms having better access to bank services on their performance. In the case of this study we term firms that have access to any of the bank services as the "treatment group". To effectively estimate the mean effect we will be required to make an inference about the performance of the firm that would have been observed for the treatment group assuming they had no access to any of the bank services. This empirical strategy is advantageous because it is able to generate a control group[5] that has similar distribution of characteristics as the treatment group. Based on this, we can easily compare the actual effect of having access to bank services (financial inclusion) on the treated groups. Therefore, the mean effect is computed as the difference of the mean outcomes across the two groups.

The matching process can be explained mathematically. We begin by assuming that there are two groups of firms that are indexed by their financial inclusion status (accessing bank services), such that P=0/1, where 1 (0) indicates that the firm has (does not have) access to bank services. The participation is expected to yield an outcome:

Y_i^1 : which is the performance of the firm *i* conditional on whether it is financially included (i.e. P=1) or

$Y_i^{0`}$: which is the performance of the firm *i* if it is financially excluded (do not have access to bank services i.e. P=0).

Therefore the Average Treatment Effect on the Treated (ATT) will be such that:

$$ATT = E(Y_i^1 - Y_i^0 | P_i = 1) \qquad (1)$$

Further exploring this equation will derive:

$$ATT = E(Y_i^1 | P_i = 1) - E(Y_i^0 | P_i = 1) \qquad (2)$$

Where *E*(.) denotes the average effect (or the *expected value*). Equation (2) tends to answer the important question "how much would be the performance of firms that are financially included compared to what they would have experienced if they were financially excluded?" The challenge from our dataset is that we are able to access the data on$E(Y_i^1 | P_i = 1)$, but the equivalent data for $E(Y_i^0 | P_i = 1)$ is not readily available. We will require matching to derive this data and to estimate the ATT on the treatment group assuming they had not been treated (i.e.

[5]Control group include those firms that do not have access to any of the bank services.

they had not accessed the bank services of interest). This approach compares the effect of financial inclusion on firms' performance with those of matched non-participants (i.e. those firms that were financially excluded); the matches are chosen based on the similarity in observed characteristics.

The observed characteristics are plugged into the logistic regression model to estimate the probability of the firm being financially included. Better still, the logistic regression model is estimated to generate the predicted values from which the propensity scores [p(x_i)] will be derived for both the treatment and comparison group. The propensity scores will then be used to match samples from the two groups that are within a common support. This approach was advanced by Rosenbaum and Rubin (1986). The authors proposed the use of the propensity score approach as a reliable technique to derive the equivalent data from the comparison group. Before advancing on the technicality of matching the participants with the comparison group, it is important to devote some space to the logic behind choosing the observed characteristics. Also, the critical issues in deriving relevant observable technique for the matching process and to successfully mitigate potential bias is to consider a wide range of covariates across which treatment and comparison groups may differ (Heinrich, Maffioli and Vazquez, 2010).

The observable characteristics that will be used in predicting the propensity scores include the age of the firm (year of establishment), the experience of the firm working in the particular sector, level of education of the top management team of the firm, the reputation of the firm in terms of having an internationally recognized certification, the location of the firm (i.e. whether the firm is located in the main business city), size of the firm (in terms of the value of raw material used by the firm in the previous year and the size of the full time employee of the firm). The age, experience, level of education of the top management, reputation of the firm and size are likely to affect the firms' capacity to overcome access barriers to bank services. For instance, older firms, those with more industrial experience, reputation and larger size are more likely to access bank finance because of their working relationship with their financial service provider and are able to provide required collateral to back their lines of credit (Robb and Wolken, 2002; Lee and Denslow, 2004; Makoni, 2014). More so, firms with foreign reputation may be more likely to access bank services since they will be adjudged as having the requisite capacity and track record to better manage the fund. Makoni and Ngcobo (2014) confirmed a similar assumption for Zimbabwean firms.

After the propensity scores are predicted, the matching process will follow based on the following underlining assumptions. The first is the conditional independence assumption, which is based on the assumption that the potential outcomes for the non-treatment group are independent of the participation status of the firm given a set of observable covariates as earlier discussed “X”.

$$i.e.\ Y_i^0 \perp P_i | X \qquad (3)$$

Hence, after adjusting for observable differences, the mean of the potential outcome (i.e. performance of the firm) is the same for both the participating and non-participating group (i.e. P = 1 and P = 0). This condition allows for the use of matched non-participating firms to measure the outcome of participating firms assuming they had not participated in the treatment.

Hence,

$$(E(Y_i^0 \middle| P = 1, X) = E(Y_i^0 \middle| P = 0, X)) \qquad (4)$$

The second assumption is the common support condition. The common support condition is based on the prediction that for each value of the observable characteristics “X”, there is a positive probability of either being treated or untreated. This assumption supports the overlap condition such that the proportion of treated and untreated firms must be greater than “0” for every possible value of the observable characteristics “X”. Hence, there is a sufficient overlap in the characteristics of the treated and untreated firms in order to find adequate match. The treatment assignment is said to be efficient once these two conditions are met (Rosenbaum and Rubin, 1983; Nkhata, Jumbe and Mwabumba, 2014).

There are different matching algorithm techniques that can be applied in the PSM estimation to derive the predicted outcome. The common algorithm includes: the nearest neighbor matching (NNM), the radius matching (RM), the kernel matching (KM), and the stratification method (SM). For this study, we will be applying the NNM,the KM and the RM; the KM algorithm produces more efficient results and is better suitable for dealing with large asymmetrically distributed datasets (Baser, 2006) like it is in our study. The RM and NNM techniques will be included for comparison. The NNM technique focuses on the comparison of the outcome of participant group with the closest and most similar non-participants based on the estimated propensity scores. Firms in the comparison group for which there are no participants with sufficient similar scores are discarded from the sample and vice versa. This approach minimizes the distance between the propensity score of the participant observation (P_i)and that of the non-participant (P_j):

$$i.e.\ min\ ||P_i - P_j|| \qquad (5)$$

In the case of the KM, each observation "i" for the participant group is matched (using the propensity scores) with other control observations with weights that are inversely proportional to the distance between the two groups (i.e. participant and non-participant observations).

$$i.e. \quad w(i,j) = \frac{k(\frac{P_i - P_j}{h})}{\sum_{j=1}^{n0} k(\frac{P_i - P_j}{h})} \qquad (6)$$

Where *h* is the bandwidth (the standard 0.06 bandwidth is applied in this study).

The RM is such that the distance between the treated observation and the control observation should fall within a specified radius (r) called a 'caliper'. This is such that the propensity scores of two sets of observations that are similar and are within the specified radius are matched:

$$\text{i.e. } \|P_i - P_j\| < r$$

Robustness and Sensitivity Tests

Three tests/checks will be performed to check the sensitivity of our results. The first is the application of the Ordinary Least Squares (OLS) regression version to estimate the ATT. The aim of this is to compare the predicted impact from the matching techniques with that of the OLS in order to ascertain the consistency of the matching. To some extent, the OLS ATT can still be relied on as a fair complement of the traditional matching techniques. Studies like Hermann and Grote (2015) and Osabuohien et al (2016) have applied this technique in their evaluation study for Malawi and Tanzania.

The second will be to re-estimate the propensity score by applying direct NNM before estimating the propensity score equation. This approach interestingly estimates the ATT on the performance of the firm by using direct nearest-neighbour matching with one match per firm. The essence is to examine whether the ATT results is consistent or if it changes. In case the result does not change, then it is clear that it is reliable.

The third sensitivity check will be the application of Rosenbaum Bounds test for average treatment effects on the treated. This test checks for the presence of unobserved heterogeneity (hidden bias) between participant and non-participant group. The procedure calculates specific test statistics to produce the bound estimates of significance levels at given levels of hidden bias based on the assumption of either systematic over- or underestimation of treatment effects. This check was favoured in Rosenbaum (2005) and Rath et al (2014).

4. Empirical Results and Discussions

To control for factors affecting financial inclusion (or firm access to bank services), we calculate the propensity scores to be used for the matching process and using a Probit model. As earlier noted, the dependent variables to be used for computing the propensity scores are of binary form. The first one takes the value "1" if the firm has access to bank borrowing to finance between 20-40 percent of its working capital and "0" otherwise. The second one takes the value "1" if the firm has access to overdraft facility to finance its operations and "0" otherwise, while the third one take the value "1" if the firm has access to a line of credit or loan from a financial institution, and "0" otherwise. The independent variables are as earlier discussed and are presented in Table 1. The estimated results from the Probit model are presented in Table 2.

From the table and in the first column, it is evident that the factors that determine the probability of participating (or accessing any of the identified services of financial institutions) vary across the different financial services. For firms that desire to use bank financing to offset 20-40 percent of their working capital, the important features that increase the likelihood of access include: the size of the firm in terms of the cost of their raw materials, age of the firm, the location of the firm and the extent of managers education. Firm size has a negative relationship with the probability of accessing bank finance to fund 20-40 percent of working capital. On the other hand, older firms, those located in the capital city and those with highly educated managers are more likely to access bank funding to finance their working capital. The other variables like the number of employees of the firm (another measure of firm size), firm experience and reputation were not significant in the Probit model.

The second column of Table 2 shows the Probit estimation for the overdraft facility model. The results of the estimation suggest that the cost of raw materials, the age of the firm and firm location are important determinants of the probability of a firm having access to overdraft facility from the bank. The estimation suggests that older firms and those that are located in the capital city do have a higher probability of accessing bank overdraft compared to their counterparts. Other variables like the number of employees of the firm, firm experience and reputation, as well as the management experience did not present a significant impact on the probability of having access to overdraft facility from the bank. The third column of Table 2 presents the Probit estimation for the line of credit model. From the Table, it is apparent that firm experience, the location in capital city and the education of the managers are significant determinants of the firms' probability to have access to lines of credit from a their financial institution. The two measures of the size of the firm, the age and reputation of the firm were not found to have a significant impact on the probability to have access to lines of credit.

Table 2: Probit Model for Computing the Propensity Scores

	20-40% working capital finance	Overdraft facility	Line of credit
Number of employees	0.048 (0.549)	0.134 (0.647)	0.055 (0.510)
Cost of raw materials	-0.052* (0.005)	-0.112** (0.018)	-0.017 (0.410)
Firm age	0.014*** (0.100)	0.036*** (0.080)	-0.003 (0.756)
Firm experience	0.003 (0.745)	-0.011 (0.624)	0.021* (0.036)
Firm reputation	0.052 (0.840)	-0.435 (0.689)	0.307 (0.223)
Firm located in capital city	0.306** (0.047)	1.007** (0.018)	0.011** (0.048)
Mgt education	0.294*** (0.087)	-0.143 (0.821)	0.464* (0.009)
Constant	-1.180* (0.000)	-1.767** (0.031)	-1.732 (0.000)
Pseudo R^2	0.065	0.247	0.055
Log Likelihood	-171.639	-24.398	-152.154
LR $\chi^2(6)$	23.69*	16.01**	17.58*

Probability values are in parenthesis $^{*}p< 0.1$, $^{**}p< 0.05$, $^{***}p< 0.01$.
The values in parenthesis are the robust standard errors.

The main intention for estimating the Probit model is, however, to balance the differences in the observable characteristics between the two groups of firms (those with access to financial services and those without such access). This is such that the propensity score is derived and from which the matching process will be performed by applying the appropriate matching algorithm. This process is intended to select and weigh the groups such that the difference in their characteristics before the matching process is balanced after the matching process. From this, an appropriate counterfactual is derived to estimate the impact as set out in this study. Of course the matching process is expected to be for propensity scores that are within the common support region.

Figure 3 (a - c) therefore compares the predicted propensity scores, which are across the three different interventions (i.e. measures of financial inclusion). From the Figures, the common support area includes most of the participating firms, which is important for the matching process to be representative of the initial sample (Blundell and Dias, 2008). To further ascertain the efficiency of the balancing process, Table 3 compares differences between beneficiary and non-beneficiary firms in terms of the overall covariance distribution based on mean and median bias as well as the fitness of the model (such as pseudo R^2 and LR test) before and after the matching process across the different algorithms. For all the interventions in the different segment of Table 3, the differences between the two groups of firms prior to the matching process are significantly reduced after the matching. As expected, the Pseudo R^2after the matching is lower across the different matching algorithms and indicates that the characteristics of beneficiary firms and the non-beneficiaries are balanced. The relatively low LR test and its probability, as well as the mean and median biases also show that the differences in the covariates between the beneficiaries and non-beneficiaries are also significantly reduced. This suggests that an adequate counterfactual can be derived to estimate the average treatment effect.

Figure 3: Histogram of Propensity Score

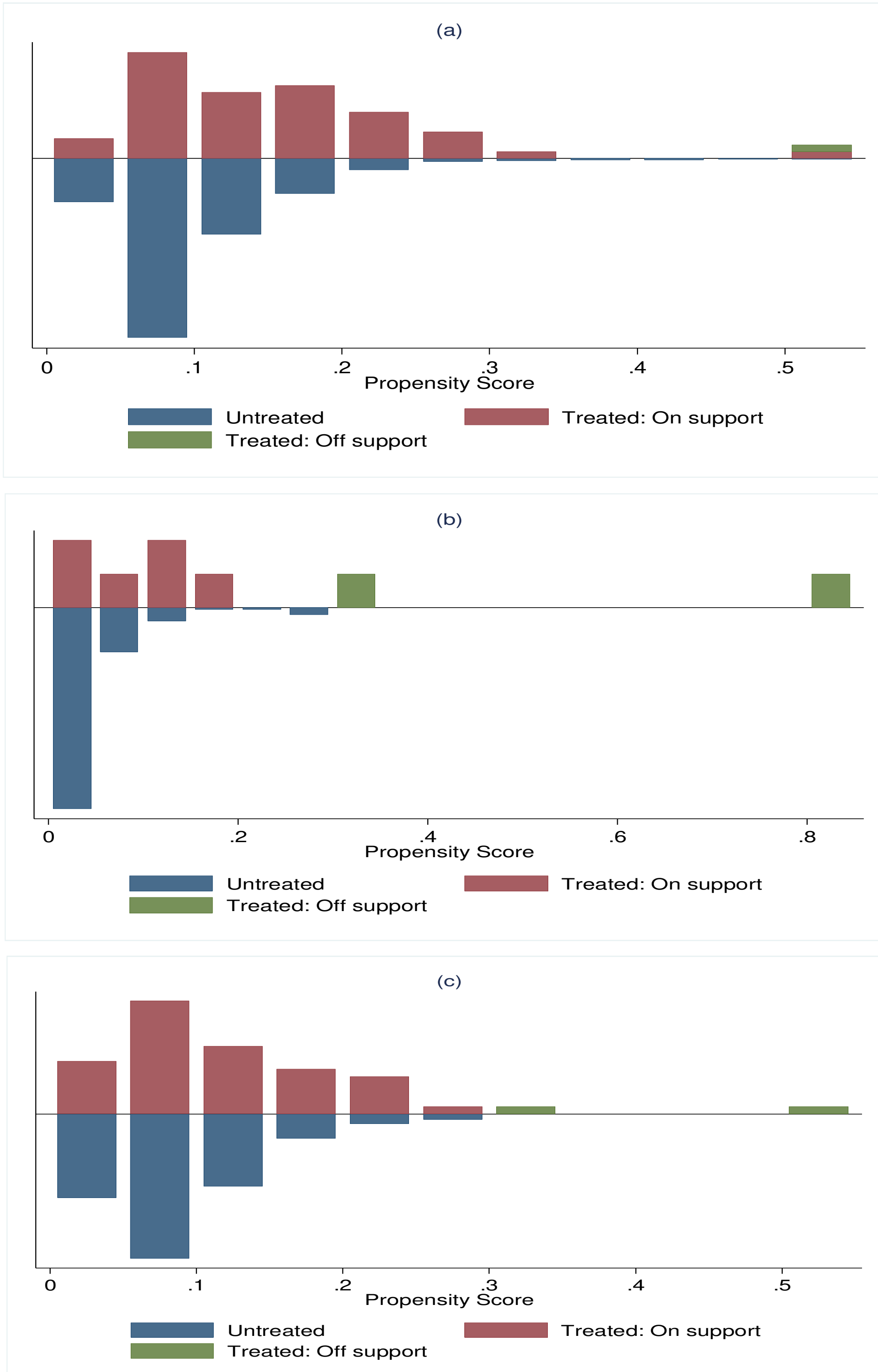


Table 3: Matching Quality

Matching Algorithms	Outcome	Sample	Pseudo R2	LR chi2	p>Chi2	Mean Bias	Med. Bias
Have Access 20-40% Working Capital Finance							
5 Nearest Neighbour Matching	Performance	Unmatched	0.070	23.98	0.001	26.7	29.6
		Matched	0.009	1.33	0.988	7.2	8.0
Kernel Matching (KM)	Performance	Unmatched	0.070	23.98	0.001	26.7	29.6
		Matched	0.007	0.98	0.995	5.6	4.5
Radius Matching (RM)	Performance	Unmatched	0.070	23.98	0.001	26.7	29.6
		Matched	0.017	2.45	0.931	12.1	8.8
Have Access Overdraft Facility							
5 Nearest Neighbour Matching	Performance	Unmatched	0.258	16.55	0.021	37.4	24.0
		Matched	0.159	2.64	0.852	25.6	19.4
Kernel Matching (KM)	Performance	Unmatched	0.258	16.55	0.021	37.4	24.0
		Matched	0.057	0.93	0.988	19.3	18.0
Radius Matching	Performance	Unmatched	0.258	16.55	0.021	37.4	24.0
		Matched	(0.099)	1.60	0.953	21.9	16.9
Have Access a Line of Credit							
5 Nearest Neighbour Matching	Performance	Unmatched	0.052	15.71	0.028	24.8	24.6
		Matched	0.012	1.41	0.985	8.0	6.0
Kernel Matching (KM)	Performance	Unmatched	0.052	15.71	0.028	24.8	24.6
		Matched	0.004	0.46	0.999	4.9	5.2
Radius Matching	Performance	Unmatched	0.052	15.71	0.028	24.8	24.6
		Matched	0.017	2.07	0.956	9.6	6.5

Source: Authors' Computation

Performance Outcome Differences: Regressions and Matching Insights

Based on the propensity scores computed from the Probit model, the matching results are presented in Table 4, including the different PSM specifications as sensitivity test. The standard errors of the PSM estimation are obtained by bootstrapping with 300 replications. To further compare the results with PSM estimations, the OLS regression form of the ATT was also included; this estimation could not control for sample selection bias but provides a rudimentary overview of the result to increase the checks on the main estimates.

For the first intervention (i.e. firms having 20-40 percent of working capital financed by a bank credit), the sign of the ATT for the OLS results are similar to all the PSM algorithms, yet with some differences in the size of the ATTs. From Table 4, the models predict positive ATTs for the firm performance between 14.5 Million to 35.9 Million US$, which are between 20.16 to 52.77 percent increase respectively of over the performance of the firm assuming they did not have access to such bank service. It is important to provide a clear description of the implication of this intervention: bank financing up to 20-40 percent of the working capital of the firm implies that the firm is able to access bank financing to offset basic demands of production (such as raw materials) to boost its productivity and sales volumes. Therefore it is expected that if the banks are able to support these firms and grant them some finance support, their performances will be improved by over 20 percent. This is an interesting increase considering that on the average; manufacturing firms in Nigeria are confronted with harsh business environment that may have an adverse impact on firm performance. Chete et al (2016) provide a clear and astute narrative of some of these challenges, especially in relation to contemporary industrialisation in Nigeria.

For the second intervention variable in Table 4, the sign across the different PSM algorithm estimations of the ATT and the OLS check suggest that a negative impact exist for firms that may have access to this kind of bank finance. It is evident that this intervention has a huge negative impact on firms' performance: it results in over 90% lower than the average of the computed performance across firm beneficiaries. The result suggest that firms benefiting from this type of financial access are estimated to lose between 0.119 million and 2.388 million US$ compared to what they would have earned assuming they had not accessed this bank service. The sign of the result is consistent across the different matching algorithm and the OLS estimation. This result makes some meaning when considering the impact of bank overdraft on firms' performance: bank overdraft can be riskier than other forms of bank finance in that it may not be renewed at the end of the term or may be renewed but with competing interest rate fluctuations. The risk for this type of short-term borrowing is higher considering the volatility of interest rates in the short-term and such risk may be compounded with overdraft facility (Watson and Head, 2007).More so, the charges on bank overdraft in Nigeria are much higher when benchmarked against other forms of bank financing. For instance, overdraft facility attracts a maximum of 3 percent charges per month, compared to other bank facility (such as bank lending) that attract about 16.5 percent charges per annum (Central Bank of Nigeria, 2016a and b). Therefore considering the aggregate charge on bank overdraft, it is less profitable for a firm to depend on this type of finance, especially in the long-run. This may explain the consistent negative impact it exhibits in our econometric estimation.

For the third intervention variable in Table 4, we find some support for the banks to improve firms' access to lines of credit. For the entire PSM algorithm and consistent with the OLS estimates, the result suggest a positive impact on firm performance. Firms with access to lines of credit from their financial institution tend to perform better compared to if they had no line of credit. This performance is between 34.47 to 147.58 percent sales value over and above their performance assuming they had no support from a financial institution. The monetary equivalence of this performance is between 7.450 million to 61.400 million US$. This result is consistent with most other studies attempting to quantify the impact of firms' access to line of credit from a financial institution. Kuntchev et al (2013) finds a significant positive impact of access to credit and firms' productivity in developing countries in general. Asiedu et al (2013) reached similar conclusion for firms in Sub-Saharan Africa.

The findings from this study support some indigenous policies that advocates for better financial service access to firms in order to enable them address medium- and long-term financial constraints (Allen et al., 2011; Asongu, 2012, 2014; Triki and Gajigo, 2014).However from this study, it is evident that attention should be given to careful analysis of the kind of financial access that is being advocated for. For instance, special attention should be given to creating lines of credit for firms as well as funding between 20-40 percent of the firms working capital. However, when considering overdraft facility, careful taught should be given to its effect on firm performance as it was found to have an adverse effect. We could consider the result in terms of the length of the financing option: financing working capital and line of credit tends to have a longer duration compared to overdraft facility. Overdraft facility has a shorter term compared to the other financing options. Therefore, the narrative from the result could also suggest that firms will benefit more from a financing option that has a longer term compared to those with shorter terms. This may also suggest the negative impact experienced by firms when considering overdraft facility. The study therefore advocates for financial inclusion that relates to firms' line of credit and financing of working capital since they have longer term and a positive impact on firms' performance.

Table 4: Estimated Average Treatment Effect

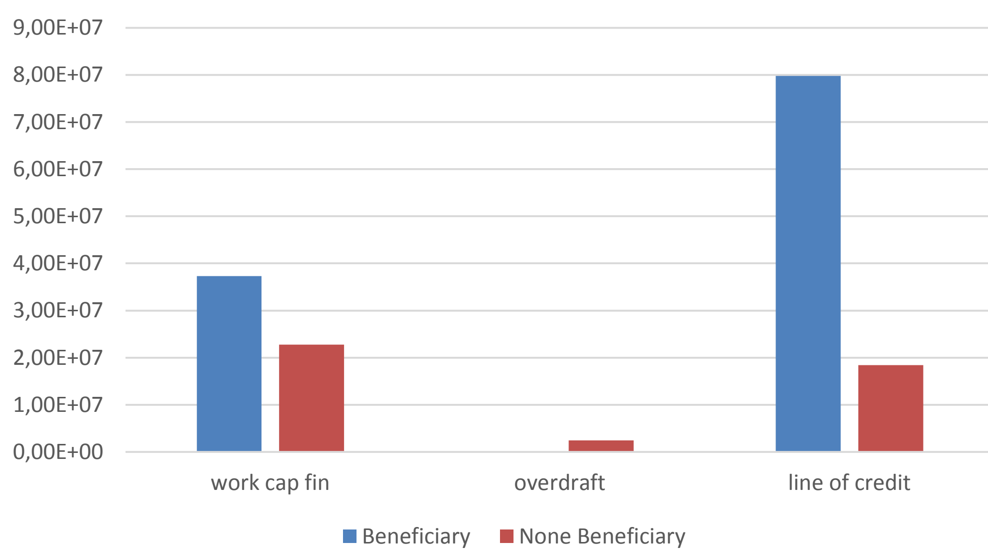
	OLS (000, 000)	diff	NNM (000, 000)	diff	KM (000, 000)	diff	RM (000, 000)	Diff
20-40% Working Capital Finance	14.5*** (0.055)	41.53%	35.900*** (0.094)	52.77%	30.700* (0.004)	23.79%	29.800*** (0.062)	20.16%
Overdraft Facility	-2.388*** (0.096)	-90.37%	-0.119*** (0.089)	-99.49%	-0.274*** (0.075)	-98.90%	-0.131** (0.046)	-99.47%
Line of Credit	61.400*** (0.068)	147.58%	15.400*** (0.077)	34.47%	8.782** (0.027)	64.59%	7.450** (0.012)	69.96

Source: Authors' Computation

To further support the findings, we present a brief stylised bar graph in Figure 4 that shows the distribution of the firms' performance across their financial inclusion status. The graph is aimed at showing the average firm performance for those that benefited from any of the bank services of interest and those that did not benefit. From the graph, the length of the bars for firms that benefit from either of bank financing between 20-40 percent of the working capital or of a line of credit, shows that there is a large gap between firms that benefit from bank services and those that do not benefit from these services. Evidently, firms that benefit from either of these two services outperform their non-beneficiary counterparts. The most striking result from Figure 4 is the bars of firms within the category of bank overdraft. Apart from the bars being different from other categories of firms (in terms of size), the size of the bar for the non-beneficiary firms evidently outperform their beneficiary counterparts. This confirms the position that bank overdraft may not have a potential positive impact on firms' performance.

Figure 4 also confirms the results in our evaluation and further emphasises the need to consider more access to lines of bank credit and having 20-40 percent of firms' working capital being financed by banks. It is important to note that the result presented in Table 4 is not driven by the size of the sample across the categories of financial inclusion being examined. Clearly, the sample size for non-beneficiary firm was more than 6 times that of the beneficiary in all the categories.

Figure 4: Firm Performance across Categories of Financial Inclusion



5. Concluding Remarks and Future Research Direction

Financial inclusion is an important issue in development finance and it entails effective use of formal financial services by economic agents (including individuals and firms). Studies have largely focused on individual access to financial services, which is an important area of study. However, this study takes a different direction by considering firms' access to some financial services that may be of importance to their capital structure. This study uses an impact evaluation technique (precisely the matching technique) to examine the impact of three different measures of financial inclusion on firm performance. The financial inclusion measures of interest include firms having a line of credit or loan from a financial institution, having an overdraft facility from a financial institution and firms currently having 20-40 percent of their working capital financed through bank borrowing.

The study is motivated by the ongoing drive of the Nigerian apex bank to enhance financial inclusion among households, while there are increasing numbers of firms that do not have access to bank services as a result of some factors that have been highlighted in other studies. This study has investigated the treatment effect of having access to bank services on firms' performance. We have found that whereas firms perform better with the aid of access to bank services, the extent differs in relation to the type of access they have. We interpret these results as showing that financial deepening increases firms' performance only dependent on the type of financial inclusion that is being observed. Precisely, having line of credit and banks financing 20-40 percent of working capital will be a viable option for firm performance. Overdraft facility may not have a positive effect.

A possible future direction stemming from this study is the need to consider other bank services that may be of interest to firms and then consider the impact of firms' access to such services on their performance. For instance, some other financial and non-financial services like advisory services that banks offer to corporate customers are not included in this study, which can be incorporated in future research. One important point to note when engaging this kind of enquiry is the paucity of data. There are no readily available data to aid further this kind of enquiry and it will be necessary for researchers to consider complementing the World Bank enterprise survey with field survey data. Another important consideration for future research is the need to include other measures of firm performance as an explained variable. Although we have confidence in our variables, some other measures that could be considered are some accounting ratios like return on asset of the firm, or even investment ratios to measure the performance of the firm.

References

Ajakaiye, O., Tella, S., (2014), Financial Regulation in Low Income Countries: Balancing Inclusive Growth with Financial Stability, the Nigeria Case, Overseas Development Institute Working Paper 409. Retrieved from https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9277.pdf

Allen, F., Otchere, I., and Senbet, L. W., (2011). African financial systems: a review, Review of Development Finance, 1(2): 79-113.

Almas, H., and Hans, L., (2008). Investment and Performance of Firms: Correlation or Causality? Corporate Ownership and Control, 6(2): 268-282.

Anyanwu, C.M., (2010). An Overview of Current Banking Sector Reforms and the Real Sector of the Nigerian Economy, Economic and Financial Review, 48(4): 31-56.

Arcand, J.L., Berkes, E., and Panizza, U., (2015). Too Much Finance? Journal of Economic Growth, 20(2): 105-148.

Arellano, C., Bai, Y., and Zhang, J., (2008). Firm Dynamics and Financial Development, Retrieved from http://crei.cat/activities/crei_seminar/08-09/arellano.pdf

Asiedu, E., Kalonda-Kanyama, I., Ndikumana, L., and Nti-Addae, A., (2013), Access to Credit by Firms in Sub-Saharan Africa: How Relevant is Gender? American Economic Review: Papers and Proceedings 103(3): 293-297.

Asongu, S. A. (2012). Government Quality Determinant of Stock Market Performance in African Countries, Journal of African Business, 13 (3): 183- 199.

Asongu, S. A., (2014). Financial development dynamic thresholds of financialglobalisation: evidence from Africa, Journal of Economics Studies, 41(2): 166-195.

Asongu, S. A., (2015). Finance and Growth: New Evidence on Meta Analysis, Managerial Finance, 41(6): 615-639.

Asongu, S. A., (2016). Knowledge Economy Gaps, Policy Syndromes, and Catch-Up Strategies: Fresh South Korean Lessons to Africa, Journal of the Knowledge Economy, DOI: 10.1007/s13132-015-0321-0.

Asongu, S. A., Nwachukwu, J. C. and Tchamyou, V. S., (2016). Information Asymmetry and Financial Development Dynamics in Africa, Review of Development Finance, DOI: 10.1016/j.rdf.2016.09.001.

Bas, P.M., and Berthou, A., (2012). Financial Development in India and Firm's Growth, CEPII: Paris. Retrieved from http://www.cepii.fr/blog/bi/post.asp?IDcommunique=143

Beck, T., Demirguc-Kunt, A., and Levine, R., (2004). Finance, Inequality, and Poverty: Cross-Country Evidence, NBER Working Paper No. 10979.

Beck, T., Demirguc-Kunt, A., Laeven, L., and Levine, R., (2004), Finance, Firm Size, and Growth, NBER Working Paper No. 10983.

Berman, K., and Knight, J., (2009), When is Debt Good? Harvard Business Review. Retrieved from https://hbr.org/2009/07/when-is-debt-good.

Bigsten, A., Collier, P., Dercon, S., Fafchamps, M., Gauthier, B., Gunning, J.W., Soderbom, M., and Oduro, A., Oostendorp, R., Patillo, C., Teal, F., Zeufack., A., (2000), Credit Constraint in Manufacturing Enterprises in Africa, CSAE Working Paper WPS/2000.24. Retrieved from http://www.csae.ox.ac.uk/workingpapers/pdfs/20-24text.pdf

Castelli, A., Dwyer, G.P., and Hasan, I., (2009). Bank Relationships and Firms' Financial Performance: the Italian Experience, Bank of Finland Research Discussion Papers 36. Retrieved from http://www.suomenpankki.fi/pdf/165390.pdf

Central Bank of Nigeria (2016a), Exposure Draft on the Guide to Charges for Banks and Other Financial Institutions in Nigeria, Abuja: Central Bank of Nigeria. Retrieved from https://www.cbn.gov.ng/Out/2016/FPRD/GUIDE%20TO%20CHARGES%20FOR%20BANKS.pdf

Central Bank of Nigeria (2016b), Data and Statistics, Abuja: Central Bank of Nigeria. Retrieved from https://www.cbn.gov.ng/rates/mnymktind.asp

Chauvet, L., and Jacolin, L., (2015), Financial Inclusion and Firm Performance, Foundation for Studies and Research on International Development Working Paper. Retrieved from http://www.ferdi.fr/sites/www.ferdi.fr/files/evenements/presentations/2015_05_26_seminar_bdf_ferdi_financial_inclusion.pdf

Chete, L.N., Adeoti, J.O., Adeyinka, F.M., and Ogundele, O., (2016), Industrial Development and Growth in Nigeria: lessons and Challenges, Learning to Compete Working Paper No.8. Retrieved from https://www.brookings.edu/wp-content/uploads/2016/07/L2C_WP8_Chete-et-al-1.pdf

Clarke, G. (2012). Manufacturing Firms in Africa: Some Stylized Facts about Wages and Productivity, In Dinh, H.T., and Clarke, G.R.G., (Eds.), Performance of Manufacturing Firms in Africa: An Empirical Analysis: 47-83, Washington: World Bank.

Coad, A., Segarra, A., and Teruel, M., (2013), Like Milk or Wine: Does Firm Performance Improve with Age? Structural Change and Economic Dynamics, 24(1): 173-189.

Dabla-Norris, E., Kersting, E., and Verdier, G., (2010). Firm Productivity, Innovation, and Financial Development, IMF Working Paper WP/10/49. Retrieved from https://www.imf.org/external/pubs/ft/wp/2010/wp1049.pdf

Easterly, W., Islam, R., and Stiglitz, J. (2000), Shaken and Stirred, Explaining Growth Volatility, Annual Bank Conference on Development Economics. World Bank, Washington D.C.

Efobi, U.R., Tanankem, V. B., and Beecroft, I., (2016), Incentives and Firms' Productivity: Exploring Multidimensional Fiscal Incentives in a Developing Country, OCP Policy Center Research Paper RP-16/03.

Fafchamps, M., and Schundeln, M., (2013). Local Financial Development and Firm Performance: Evidence from Morocco, Journal of Development Economics, 103: 15-28.

Francis, D.R., (2016), Financial Development Helps the Poor in Poor Countries, NBER. Retrieved from http://www.nber.org/digest/jul05/w10979.html

Giannetti, M., and Ongena, S., (2009), Financial Integration and Firm Performance: Evidence from Foreign Bank Entry in Emerging Markets, Review of Finance, 13: 181-223.

Gui-Diby, S.R., and Renard, M. (2015).Foreign Direct Investment Inflows and the Industrialization of African Countries, World Development, 74: 43-57.

Heinrich, C., Maffioli, A., and Vazquez, G., (2010), A Primer for Applying Propensity-Score Matching, Inter-American Development Bank, Impact Evaluation Guidelines and Technical Notes, No. IDB-TN-161.

Herrmann, R., and U. Grote (2015).Large-scale Agro-Industrial Investments and Rural Poverty: Evidence from Sugarcane in Malawi. *Journal of African Economies, 24*(5): 645-676.

Kuntchev, V., Ramalho, R., Rodriguez-Meza, J., and Yang, J.S., (2013), What have we Learned from the Enterprise Surveys Regarding Access to Credit by SMEs? World Bank Policy Research Working Paper WPS6670. Retrieved from http://www19.iadb.org/intal/intalcdi/PE/2014/13785.pdf.#

Lee, S., and Denslow, D., (2004). A study on the major problems of women-owned small businesses, Journal of Small Business Strategy, 15 (2), pp. 77-89.

Makoni, P.L. and Ngcobo, L. (2014). Finance and Firm Characteristics in Zimbabwe, Journal of Corporate Ownership and Control, 11 (2), pp. 465-472.

Makoni, P.L., (2014), Finance and Firm Characteristics in Tanzania, Banks and Bank Systems, 9(4): 92-98.

National Bureau of Statistics (2016), Official Website of the Bureau, Retrieved from http://www.nigerianstat.gov.ng/.

Nkhata, R., Jumbe, C., and Mwabumba, M., (2014).Does irrigation have an impact on food security and poverty? *IFPRI Working Paper,* 04/June.

Obamuyi, T.M., (2011). Comparative Loan Performance in Banks and Micro-Credit Institutions Nigeria: A Case Study of Ondo State, Global Journal of Management and Business Research, 11(4): 60-68.

Osabuohien, E., Herrmann, R., Efobi, U., and Gitau, C.M., (2016), Female Labour Outcomes and Large-scale Land Investments in Tanzania, IFPRI-AGRODEP Working Paper Series (Forthcoming).

Piper, T.R., and Weinhold, W.A., (1982), How Much Debt is Right for your Company? Harvard Business Review, Retrieved from https://hbr.org/1982/07/how-much-debt-is-right-for-your-company

Rath, V., Hing, V., Phann, D., and Sum, S., (2014), Estimating the Economic Effects of Remittances on the Left-behind in Cambodia, Partnership for Economic Policy (PEP) Research Paper12-2014

Robb, A., and Wolken, J., (2002). Firm, Owner and Financing Characteristics: Differences between female and male owned small businesses, Finance and Economics Discussion Series. Retrieved from https://www.federalreserve.gov/pubs/feds/2002/200218/200218pap.pdf

Rosenbaum, P.R. (2005) Sensitivity Analysis in Observational Studies, in Everitt, B.S. and D.C. Howell (eds.) Encyclopedia of Statistics in Behavioral Science. New York: John Wiley & Sons, 1809-14.

Rosenbaum, P.R. and D.B. Rubin (1983). The central role of the propensity score in observational studies for causal effects.*Biometrika*, *70* (1),41-55.

Shane, S., (2011), What Does the Average American Business Look Like, *Small Business Trends.* Retrieved from http://smallbiztrends.com/2011/01/what-does-the-average-american-business-look-like.html

Tchamyou, V. A., (2016). The Role of Knowledge Economy in African Business. Journal of the Knowledge Economy, DOI: 10.1007/s13132-016-0417-1

Tchamyou, V. S., and Asongu, S. A. (2016). Information Sharing and Financial Sector Development in Africa, Journal of African Business. DOI: 10.1080/15228916.2016.1216233.

Thanh, V.H., and Ha, N.M., (2013), The Effect of Banking Relationship on Firm Performance in Vietnam, International Journal of Economics and Finance, 5(5): 148-158

Triki, T., and Gajigo, O., (2014). Credit Bureaus and Registries and Access to Finance: New Evidence from 42 African Countries, Journal of African Development, 16(2): 73-101.

Watson, D., and Head, A., (2007), Corporate Finance: Principles and Practice, England: Pearson Education Limited.

World Bank Enterprise Survey (2016), Enterprise Survey-Nigeria. Retrieved from http://www.enterprisesurveys.org/data/exploreeconomies/2014/nigeria#finance

Yazdanfar, D., and Öhman, P., (2015). Debt Financing and Firm Performance: an Empirical Study Based on Swedish Data, *The Journal of Risk Finance*, 16(1): 102 – 118