Financial Constraints and Exports: Firm Level Evidence from Nigeria

Musibau Adetunji Babatunde

Department of Economics, University of Ibadan, Ibadan, Nigeria

ABSTRACT

The objective of the study is to analyse the interaction between financial constraints and firms' exporting behaviour in Nigeria. The empirical framework is applied to the 2014 World Bank Enterprise Surveys Indicator Database for Nigeria. The findings revealed that the presence of financial constraints is detrimental to export activity which is measured by the decision to export and the share of exports in total sales. The findings in this research were robust to different measures of financial constraints in the presence of standard control variables predicted by previous empirical and theoretical approaches. The positive effect of better financial stance on the export activity was therefore established. Besides that, this study also identifies credit access as a major factor that contributes to the poor export behaviour of firms' in Nigeria.

Keywords: Financial Constraints, Exports, Firm-Level, Probit, Nigeria.

1. INTRODUCTION

Export is widely believed to reduce financial constraints of firms because export firms are expected to benefit from more stable cash flows given the international diversification of their sales. In addition, the presence of firms' in the international markets is a guarantee of efficiency and competitiveness to domestic investors and creditors in the context of information asymmetries and of financial markets imperfections. Exporting activities is strategic to unlock the access to international financial markets since foreign exchange revenues characterize better collateral to access external funds in foreign financial markets (Silva, 2012). Also, exporters tend to be larger, more efficient, have larger cash flows and therefore may have an easier time getting access to external finance or derive better loan terms than their domestic counterparts (Silva, 2012). However, managers of firms, especially in poor and developing countries have cited financial constraints as the main impediment to their internationalization and growth (Silva, 2012; Wagner, 2012; Babatunde, 2017). The reason is that exporting involves extra costs in order to enter foreign markets (firms need to acquire information about foreign markets, customize products to local tastes, prepare instruction manuals in a foreign language and set up distribution networks, conform to foreign legal rules) that often have to be paid up front (Stiebale, 2009). The extra costs to a large extent are sunk costs and only firms with sufficient liquidity may be able to cover these costs. These attributes therefore render financial markets crucial for firms' export activity. Furthermore, it tends to take considerably more time to complete an export order and to collect payment after shipping compared to a domestic order (Wagner, 2012). This increases exporters' working capital requirement (Wagner, 2012). The higher risk of export activities (such as exchange rate fluctuations and the risk that international contracts are more complex and less enforceable) adds to these liquidity requirements (Fauceglia, 2011; Wagner, 2014).

E-Mail: *tunjiyusuf19@yahoo.com*

According to the World Bank Enterprise Surveys (WBES) conducted between 2002 and 2005 in 102 developing countries, about 30% of the respondent firms report access to finance as a major or very severe obstacle for the growth of their business (Fauceglia, 2011, p.2). Hence, the affordable availability of external funds is a barrier for firms located in developing countries that intend to start, maintain or expand foreign activities. It has implications for the decision of the exporting firms on which foreign markets to enter, how much to export, the number of destinations served and the range of products exported (Tang and Zhang, 2012). Nevertheless, exporting itself may be an important mechanism for firms from developing countries to overcome their financial constraint (constant cash flow, reputation, financing from foreign countries), and become an engine for firm growth (Stiebale, 2009).

However, part of the argument in the literature is whether and how much trade is impeded by financial constraints depends on the distribution of productivity and liquidity across firms (Chaney, 2005; Tang and Zhang, 2012)).[1] According to the heterogeneous theory of the firm based on the Melitz (2003), high productivity firms are more likely to export because they will always generate enough internal funds to overcome the fixed export costs of researching foreign markets and establishing trade networks with foreign buyers. Low productivity firms exporting are therefore assumed not to be able to export because it will not be profitable. Some other research (Chaney, 2005; Manova, 2010) has extended the Melitz model and emphasized the role of financial constraint in determining firm's export status (Tang and Zhang, 2012). With the assumption of imperfect capital market, these theories argue that even high productivity firms may not be able to export if they face financial constraint (Tang and Zhang 2012).

Nigeria provides an ideal environment for understanding the impact of credit constraints on firms' export. The evolving industrial structure consists primarily of small and medium-sized businesses in which deposit money banks are the main source of external finance. For over two decades there has been a strong government pressure for firms to become exporters with the hope that it will generate improvements for these firms and for the economy. One of the policies designed for export promotion focuses on improving the liquidity of domestic firms that engage in exports, by making credit available for trade, setting up guarantee funds and subsidizing bank loans (NEDEP, 2010). For example, Nigeria operates the Export Expansion Grant Fund Scheme (EEG) to increase exports and diversify export products and markets; the Pioneer Status Scheme that provides rebates on corporate income tax to manufacturing companies exporting at least 50% of their turnover and the Export Development Fund (EDF) which assists in financing certain activities of private exporting companies. The Nigerian Export-Import Bank also offers financing, risk-bearing services, and export advisory services to the Nigerian export community, in line with the government trade policy. Nigeria exports around 117 products to 113 countries across the world (NEDEP, 2010). However, despite these incentives, studies (Babatunde, 2017) have shown that the majority of starts up funds for small and medium firms are obtained from personal savings and less than 5 percent of start-up finance is from financial institutions. The current commercial bank lending rates in the country is between 25 percent and 30 percent for small and medium firms due to the deemed high risk of the sector, which is unaffordable for start-up businesses. As a result, the 2012 access to finance survey revealed that less than 1% of the small and medium firms have accessed bank finance in the last three years (NEDEP, 2014). Hence, this raises the question of the role of financial constraints in exporting behaviour. Our findings are particularly important for Nigeria given the myriad of policy efforts to diversify the export base from oil exports to non-oil export activities. The magnitude of the problem is yet to be estimated for Nigeria.

Consequently, this paper analyse whether the financial health reduces credit constraints and thereby facilitates the expansion into export markets (extensive margin). Collectively, these considerations suggest that our analysis constitute an important step in understanding the

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[1] The theoretical approach by Chaney (2005) predicts that financial constraints may affect foreign market entry.

effect of financial constraints on firms' export in Nigeria. To the best of our knowledge, no study has highlighted the impact of financial constraints on the firm's decision to participate in the non-oil export market such as Agro-industries, Chemicals, Electronics, Garments, Machinery & Equipment, Metal industries, Non-metal industries, Textiles etc. in Nigeria. The rest of the study is divided into four sections. Section two present the reviews of related studies while section three discusses the methodology. Section four presents and discusses the empirical results while section five concludes this research.

2. REVIEW OF RELATED STUDIES

The theoretical foundation of the distortionary impact of financial constraints on exports participation stems from the models of international trade with heterogeneous firms of Melitz (2003) in which foreign market participation is determined by productivity. However, the first major empirical attempt of the Melitz model was by Chaney (2005) (Stiebale, 2009). In the Chaney model, it is assumed that foreign market entry involves sunk costs (Kiendrebeogo and Minea, 2016). Firms must incurred large sunk costs such as learning about foreign markets, administrative standards, and establishing distribution networks to access foreign markets. This requires potential exporters to have enough liquidity given the sensitivity of these sunk costs to financial variables (Stiebale, 2009).

In the presence of imperfect capital markets, only those firms that either generate enough liquidity from their domestic sales or have access to external finance are able to export (Bellone, Musso, Nesta and Schiavo, 2009). This implies that only less constrained firms will be able to start exporting (Stiebale, 2009). For the same reasons, Chaney (2005) argued that financial constraints may only be binding for the exporting decision for firms within a certain productivity range (Stiebale, 2009). It is assumed that financial constraints are only binding for firms with intermediate productivity given that exporting is not profitable to low productivity firms. High productivity firms are expected to generate adequate internal funds required to the sunk costs (Wagner, 2012).

The Muuls (2008) model has the same implication – firms are more likely to be exporters if they are less credit-constrained (Wagner, 2012). Muuls extends the Chaney (2005) model with the incorporation of external financing and argued that high productivity and less financially constrained firms will exports successfully (Nagaraj, 2014). In the model, financial constraints seem to be strongly correlated with the extensive margin (increase in exports due to new exporters) but not the intensive margin of trade (increase in exports of continuing exporters) in terms of destinations. Thereafter, Manova (2010) explicitly modelled the financial constraints of firms by highlighting the inter-sectoral differences in terms of liquidity (Kiendrebeogo and Minea, 2012). The study argued that in the presence of credit constraints, the productivity threshold necessary to enter foreign markets is relatively low in financially developed countries (Kiendrebeogo and Minea, 2012). This threshold is argued to be higher in financially constrained sectors within each country (Wagner, 2012).

However, the basic idea that financial constraints matter for the export decision of a firm and the implications of these recent formal theoretical models are taken to the firm level data in a number of micro-econometric studies for developed and developing countries (Wagner, 2012). The trail was blazed by Greenaway, Guariglia and Kneller (2007). The authors employed a large panel of UK manufacturing firms between 1993 and 2003 to explore the links between firms' financial health and their export market participation decisions. They found that exporters exhibit better financial health than non-exporters. However, the result was driven by the firms' financial health after the sample was separated into continuous exporters and starters. Export starters were found to display low liquidity and high leverage, possibly due to the sunk costs which need to be met to enter export markets. Nevertheless, there was no evidence that firms

enjoying better ex-ante financial health are more likely to start exporting. Rather, there is strong evidence that participation in export markets improves firms' financial health since participating to export for longer periods makes enterprises more liquid and less leveraged (Greenaway, Guariglia and Kneller, 2007). Financial health was therefore observed as an outcome rather than a determinant of entry.

Some other studies (Campa and Shaver, 2002; Bridges and Guariglia, 2008) also provided evidence in support of the Greenaway et al., (2007) conclusion that exporting exert a positive effect on firm financial health due to signalling and diversification effects inherent to being an exporter. For example, Nagaraj (2014) investigated the relation between financial constraints and the export market entry decision for manufacturing firms in India. Using multiple estimators, the results revealed a strong correlation between financial health and export participation. In addition, the intensive margin of exports (increase in exports of continuing exporters) does not depend on the financial health of the firms (Nagaraj, 2014). Nevertheless, the extensive margin of exports (increase in exports due to new exporters) can be increased if financial constraints faced by firms are reduced (Stiebale, 2009). Guariglia and Mateut (2005) argued that firms that operate globally are less likely to face financial constraints than other firms (Bellone, Musso, Nesta and Schiavo, 2009). The argument of these studies were premised on the evidence that exporting improves firm access to financial markets either by reducing informational asymmetries or by reducing exposure to demand-side shocks through diversification (Silva, 2012).

On the contrary, some studies found evidence that export participation have no positive effects on firms´ financial health. Rather, they argued that it is financial health of the firms that leads to exporting. By way of illustration, Bellone, Mussoy, Nestaz and Schiavox (2009) established that only firms enjoying better financial health are more likely to become exporters given that firms starting to export display a significant ex-ante financial advantage compared to their non-exporting counterparts. The reason is that if firms have to incur large sunk costs to enter into export markets, then enterprises unable to secure enough funds may have difficulties to reach foreign customers (Bellone, et al., 2009). In addition, the fact that exporting could improve firm access to external financial funds is because exporting represents a sign of efficiency and a costless way for creditors to assess the potential profitability of an investment (Bellone, et al. 2009). Exporting is likely to open up access to international financial markets as well, at least those pertaining to the destination countries (Bellone et al., 2009). The findings of Bellone et al. (2009) were supported by Tang and Zhang (2012).

Similarly, Wang (2010) found strong empirical support that the probability of exporting and export volume are significantly higher among firms that are not financially constrained (Fauceglia, 2011). Egger and Kesina (2010) established that the positive relationship between a firm's financial health and both export margins holds in a sample of Chinese firms (Fauceglia, 2011; Kiendrebeogo and Minea, 2016). Also, Kiendrebeogo and Minea (2012) showed that unlike financial liquidity, financial constraints reduce the export participation of Egyptian firms between 2003 and 2008. A firm making an entry decision into the export market faces various non-recoverable fixed costs. Consequently, financially constrained firms, unable to make this investment, cannot enter the export market (Kiendrebeogo and Minea, 2012). These findings were also supported by Buch et al. (2010), Feenstra, Li and Yu (2011) and Behrens, Corcos and Mion (2010).

However, it was highlighted in the literature that ownership of firms, activities that firm engages in, productivity threshold, countries where firms are located and nature of firms also matters for the financial health of firms to lead to exporting activities. On the ownership of firms, Tang and Zhang (2012) found that for state-owned and foreign-owned firms, financial constraint reduces firms' probability to start exporting, but there is no such effect for private firms (Tang and Zhang, 2012). In the same vein, Manova et al. (2009) results hints at the

importance of the foreign owner as a provider of liquidity to overcome financing obstacles. Fauceglia (2011) confirmed that the positive effect of firms' liquidity on the export propensity is larger for firms located in financially less developed countries**.** The study also revealed that the negative impact of financing obstacles and the benefits from better access to finance on the exporting decision are particularly strong for firms belonging to sectors intensive in R&D and external finance (Fauceglia, 2011). Hence, the study concluded that financial reform acts primarily through firm selection into export markets on comparative advantage patterns (Stiebale, 2009).

With respect to productivity, Stiebale (2009) noted that exporting is only feasible if a certain productivity threshold is reached. This is because exporting also incorporates higher variable costs than domestic sales due to transport costs, costs of the liability of foreignness and disadvantages compared to local producers because of the limited ability to provide after sales services Stiebale (2009). Hence, it is not clear whether financial constraints matter for those firms that could profitably export otherwise (Muûls, 2008). The major finding of Muûls (2008) is that firms are more likely to be exporting if they enjoy higher productivity levels and lower credit constraints (Muûls, 2008). Also, credit constraints are important in determining the extensive but not the intensive margin of trade in terms of destinations which introduces a pecking order of trade (Kiendrebeogo and Minea, 2016). Nevertheless, with respect to firms' activities, Minetti and Zhu (2011) noted that credit rationing is an obstacle to export especially for firms operating in high-tech industries and in industries that rely heavily on external finance.

On the other hand, there is some other category of studies that did not found any effect of financial health of firms on export participation. Stiebale (2009) reported there is no evidence that financial constraints have a direct impact on foreign market participation or sales in foreign markets, after controlling for the observed and unobserved firm heterogeneity (Stiebale, 2009). This result also holds for subgroups of firms that are more likely to face financial constraints and industries in which financial factors are more important (Kiendrebeogo and Minea, 2016). Moreover, Stiebale (2011) in another study failed to detect statistically significant effects, suggesting that the influence of financial constraints on exports is not as robust as one may have expected (Wagner, 2012). Wagner (2012) noted that although there is a positive link between a better credit rating score of a firm and the probability that the firm is an exporter, the link is not very strong from an economic point of view.

The summary of the foregoing is that the heterogeneous firms' model of international trade with liquidity-constrained firms yields several predictions (whether it is exporting that improves financial health or financial health that allows exporting) on the equilibrium relationships between financial constraints and exports (Muûls, 2008). It is therefore obvious that the impact of financial health on export participation is not fully settled yet given the divergent in the literature. The divergent in the literature can be attributed to the different measures of financial constraints, types of industries selected, country selected (developed or developing), and sources of survey data and econometric methods which differ widely across the studies reviewed. Therefore, results from these studies are not comparable due to the variety of the empirical methods used. Consequently, our study analyses the financial constraints and export behaviour of firms in an oil exporting developing country. The study employed the use of alternative measures of financial constraints in addition to the widely used traditional measures in the literature. The analysis was also conducted for the extensive margin (increase in exports due to new exporters) but not the intensive margin of trade (increase in exports of continuing exporters) given that the literature has focused on either the latter or the former. Nigeria has implemented a wide range of policies to foster the diversification of its economy from crude oil but the effect has been muted. The analysis conducted in this study should shed light on the major factors constraining the policies.

3. METHODOLOGY

3.1 Analytical Framework

In the context of credit market imperfections and credit rationing, financial constraints is assumed to influence the export decision of exporting firms within the framework of the Melitz (2003) model. The Melitz model assumes that heterogeneous firms differ in productivity differentials. Also, there are sunk costs to be covered due to market research and the need to develop a transportation network given their export market entry. Firms must therefore cover the sunk costs with revenue from exporting activities. However, this revenue is conditional on firm-specific productivity and must be high enough to cover sunk costs and to compete with firms in the distant market. The productivity of firms will be enhanced in the context of factors such as the presence of agglomeration economies emerging due to (localized) knowledge spillovers, vertical linkages, (local) demand effects, and scale effects at higher levels of hierarchy. Only the productive firms will be able to export while the less productive ones will only produce for the local market. The conclusion of the model therefore is that within industries, there is probability of some firms entering the export market while others do not (Babatunde, 2017).

Thus, financially constrained firms will have inadequate access to sufficient internal and external liquidity due to their inadequate productivity level (Kiendrebeogo and Minea, 2016). The two basic models in equations (1) and (2) consists of regression analysis of export participation decision and export intensity on the measure of financial constraints and a set of control variables that are important determinants of firms' export decision and its intensity. This procedure, based on the methodology developed by Kiendrebeogo and Minea (2012) compares the performance of exporting and non-exporting firms (Moreno-Badia and Slootmaekers, 2009)

The empirical specification of the equation is:

$$EXP_i = \alpha_i + \beta_1 Finance + \beta_2 \text{Control} + \varepsilon_t \tag{1}$$

$$EXI_i = \alpha_i + \beta_1 Finance + \beta_2 \text{Control} + \varepsilon_t \tag{2}$$

where EXP$_i$ (export participation) stands for a dummy variable equal to 1 if in year t firm i is an exporter and 0 otherwise and EXI$_i$ is export intensity measured as the percentage sales of direct export abroad. Finance captures the financial variables (financial constraints dummy and liquidity score ratio) that measure the financial constraints of the firm while control is a vector of firm characteristics that affect the probability of exporting. Regarding control variables, we focus on the available and most important determinants of the export activity outlined in the related literature for Nigeria and also to ease comparison with the previous studies. These control variables include firm size (SIZE), firm age (AGE) ownership structure, nature of industry, and labour cost. In addition, we estimate equation (1) with export intensity (share of exports in total sales) as the dependent variable in order to explore the effects of financial constraints. The variable definition and measurement is given in Table 1:

Table 1 Variable definition and measurement

Variables	Name	Definition
		Exporting Status variables
Export Intensity	EXI	Percent of sales that is export directly or indirectly (at least 1% of sales)
Export Participation	EXP	Categorical variable that indicates the Export status of a firm. 0= Exporters; 1 = Non-Exporters
		Financial Constraints Variable
Financial Constraint	FIN	Categorical variable that indicates how much of an obstacle access to finance. 1 = No Obstacle; 2 = Minor Obstacle; 3= Moderate Obstacle; 4 = Major Obstacle
Liquidity Ratio Score	LR	The liquidity ratio measure captures the need to use external finance. Index in the range from 1 to 10, 10 being the situation of the most liquid firm
		Productivity Variable
Technical Efficiency	TE	TE is the normal distribution stochastic frontier model that is estimated with the use of STATA, 13.
		Control Variables
Average wage	WAGE	Computed as the firm's total labour cost (to include wages, salaries, Bonuses, etc) divided by the number of full time, seasonal or temporary employees
Firm age	AGE	Number of years since the establishment of the firm.
Firm Size	SIZE	Number of years of full time seasonal or temporary employees employed
Ownership Type	OWT	Categorical variable that indicates the legal Status of firm; Base of dummy variable is sole proprietorship. The measures are - Ownership: Private held, limited company and Ownership: Partnership.
Industry Dummy	IDUM	Dummy variables that take on the value of 1 if the firm is part of the following industries: textiles and garments, chemicals, plastics and rubber, non-metallic mineral, electronics, and other manufacturing. The comparator is other manufacturing.

Source: Author's Compilation, 2017

3.2 Data

The study utilizes data from the 2014 World Bank Enterprise Surveys Indicator Database for Nigeria. It represents a comprehensive source of firm-level data in emerging and developing countries. It contains information on various aspects of the business environment such as, access to finance, corruption, workforce characteristics, innovation and technology, and trade. The strata for Enterprise Surveys are firm size, business sector, and geographic region within a country. Firm size levels are 5-19 (small), 20-99 (medium), and 100+ employees (large-sized firms). The survey comprises 2,387 Nigerian manufacturing firms. The sample contained 1926 non-exporters and 461 exporters. Following the approach of Greenaway et al. (2007) and Stiebale (2011), we controlled for the potential influence of outliers and for coding errors by excluding the top and bottom 1% of firms (Kiendrebeogo and Minea, 2012). Also, we eliminate firms for which export variables, financial variables, production accounts, capital and labor were not adequately available. Thus, due to incomplete information for some firms, the sub-sample of 314 SME firms was taken from the survey for the analysis to cover firms that are involved in exporting activities in Nigeria.

3.3 Estimation Technique

The likelihood function for the empirical model can be divided into two parts: (a) a probit model for the analysis of the decision to export; and (b) an ordinary least square (OLS) regression for the export intensity model. Probit regression is used to model *dichotomous or binary outcome* variables. In the probit model, the *inverse standard normal distribution of the probability* is modeled as a linear combination of the predictors. Probit regression is a special type of the *Generalized Linear Models*. The probit model, which employs a probit link function, is most often estimated using the standard maximum likelihood procedure. Suppose a response variable Y is binary, that is it can have only two possible outcomes which we will denote as 1 and 0. For example Y may represent presence/absence of a certain condition. We also have a vector of regressors X, which are assumed to influence the outcome Y. Specifically, we assume that the model takes the form:

$$\Pr(Y = 1 \mid X) = \Phi(X^T \beta) \tag{2}$$

where Pr denotes probability, and Φ is the Cumulative Distribution Function (CDF) of the standard normal distribution. The parameters β are typically estimated by maximum likelihood. It is possible to motivate the probit model as a latent variable model. Suppose there exists an auxiliary random variable:

$$Y^* = X^T \beta + \varepsilon \tag{3}$$

where $\varepsilon \sim N(0, 1)$. Then Y can be viewed as an indicator for whether this latent variable is positive:

$$Y = \begin{cases} =1 \text{ if } Y^* \text{ i.e.} - \varepsilon < X^T \beta, \\ =0 \text{ otherwise} \end{cases}$$

The use of the standard normal distribution causes no loss of generality compared with using an arbitrary mean and standard deviation because adding a fixed amount to the mean can be compensated by subtracting the same amount from the intercept, and multiplying the standard deviation by a fixed amount can be compensated by multiplying the weights by the same amount Hutcheson (2011).

Ordinary least-squares (OLS) regression is a generalized linear modelling technique that may be used to model a single response variable which has been recorded on an interval scale. The technique may be applied to single or multiple explanatory variables and also categorical explanatory variables that have been appropriately coded (Hutcheson, 2011). At a very basic level, the relationship between a continuous response variable *(Y)* and a continuous explanatory variable *(X)* may be represented using a line of best-fit, where *Y* is predicted, at least to some extent, by *X* (Hutcheson, 2011). If this relationship is linear, it may be appropriately represented mathematically using the straight line equation *Y = α + βx* (Hutcheson, 2011).. The relationship between variables *Y* and *X* is described using the equation of the line of best fit with α indicating the value of *Y* when *X* is equal to zero (also known as the intercept) and *β* indicating the slope of the line (also known as the regression coefficient) (Hutcheson, 2011). The regression coefficient *β* describes the change in *Y* that is associated with a unit change in *X* .Given detailed information about the firms, we are able to find various instruments to deal with the potential endogeneity problem.

4. EMPIRICAL ANALYSIS

The sectoral distribution of the firms employed in our sample is presented in Table 2. Regarding the sectoral distribution of firms, most of them belong to the agro allied industries (nearly 1/5). This is not surprising because Nigeria is large an agrarian economy. Agriculture in Nigeria provides employment for about 30% of the population. The sector is currently being transformed by commercialization at the small, medium and large-scale enterprise levels. The distribution of the firms is followed by the metal industries (7.0), the non-metal industries (6.7) and garments industries (6.2). Firms in the electronics sub-sector however are the least represented sectors (Column 1 of Table 2). It is therefore not surprising that close to one out of four agro based firm is an exporter, but only one out of thirteen non-metal firms export (column 2 of Table 2). On the average, income from exports is around 11% of total output, but it can climb to as high as 1/5 for agro based firms (column 3 of Table 2). On the whole, Table 2 highlights important heterogeneities among sectors, which may reflect differences in sectoral input costs on the export market, in productivity, in capital intensity, in the possibility of achieving economies of scale and in the transport costs.

Table 2 Exports and sectoral distribution of exporting firms

	Sectoral distribution of firms	exporters (%)	Average export intensity (%)
Agro industries	19.6	23.32	22.99
Chemicals	1.3	1.26	1.42
Electronics	0.4	0.21	0.11
Garments	6.2	5.04	4.26
Machinery & Equipment	0.7	0.63	0.27
Metal industries	7.0	6.09	5.25
Non metal industries	6.7	7.77	7.61
Textiles	1.7	0.84	0.91
Other industries	56.3	54.83	57.19
Total	100.0	20.52	11.11

Source: Author's Computation

In order to exploring the impact of financial constraints on export behaviour, this study separate exporting firms from non-exporting firms and assumed no exporting status for firms that do not report their status of exporting., We undertake the descriptive analysis to get a sense of the basic features of data. In particular, there is a need to inspect the distribution of the dependent (export propensity and intensity) and the independent variables (wage rate, age of firm, size of firm, technical efficiency, etc) to learn about the characteristics of the population being studied. Typically, we examine the features of the distribution such as the mean, standard deviation, minimum and maximum observation in order to assess where the average or typical values lie and how spread out they are, in addition to whether the distribution is skewed and whether there are atypical values. The summary descriptive statistics in Table 2.1 indicate that average (mean) for export intensity is 57.7 while mean age of the firms in the sample is around 14 years. The average wage is around $2,397.5 dollars.

Table 3 Summary of descriptive statistics of the variables used in the regression analysis

Variable	Obs	Mean	Std. Dev.	Min.	Max.	Unit of measurement
EXI	314	57.764	28.964	5	100	Percentage
EXP	314	0.787	0.410	0	1	Dummy
WAGE	314	2397.558	4822.543	4375	17500	Ratio
AGE	314	14.621	9.691	1	62	Integer
SIZE	314	2.227	2.819	0	15	Integer
FIN	314	1.315	1.026	0	4	Dummy
LR	314	2.857	2.747	-714285.7	3.417	Index
TE	314	0.022	0.029	0	0.062	Index
OWT	314	0.850	0.356	0	1	Dummy
IDUM	314	0.187	0.390	0	1	Dummy

Source: Author's Computation

The simple correlation between financial constraint and export is thereafter presented in Table 4. The decision to export is inversely and significantly correlated with the variable measuring financial constraints. In addition, the strong and robust correlation between export intensity and financial constraints can be seen in the Table. With respect to the correlation, the degree of liquidity of the firm is positively and significantly correlated with the decision to export. Also, the correlation is strongly correlated with export intensity. This confirms the presence of the link between export and financial variables especially for export intensity.

Table 4 Correlations between financial constraints and exports

	Financial constraint	Liquidity Score
Decision to export (Export Propensity)	-0.527*	0.613**
Export Intensity	-0.799*	0.627***

Note: ***,**, and * represent statistical significance at 1%, 5%, and 10% respectively

Given these theoretical results, we estimate in the standard model the influence of financial constraints on the firm's decision to export and the intensity of exports, while controlling for several key determinants of the decision to export. The results are presented in Table 5. According to the regression on the decision to export in Table 5, performed using a standard probit model, firm age and firm size fosters the probability to export. In addition, the analysis revealed that the type of industry in which a firm operates (IDUM) and the type of ownership structure encourages the likelihood of export in Nigeria. Conversely, the study found the average wage and technical efficiency as insignificant to the decision to export. This implies that high labour cost and technical efficiency of firms are not strong enough to penalize the decision of firms to export in Nigeria. This could be due to the dominance of agricultural exports and agro-allied firms in the sample that we adopted.

Financially constrained firms present a significantly lower probability of exporting given the negative sign of the coefficients on the financial constraint variable. The measure of financial constraint variable was found to be statistically significant at the 10% level of significance. This implies that financial constraint is a factor that affects firms in their decision to move into the export market. Similarly, the liquidity score ratio has a positive and significant effect on the probability of exporting. This implies that the financial health of firms is a significant factor that influences the decision of firms to export in Nigeria. The bulk of the small and medium enterprises in Nigeria have the challenges of accessing credit from financial institutions in

Nigeria. This is because these firms are considered by creditors and investors as high risk borrowers due to insufficient assets and low capitalization, vulnerability to market fluctuations and high mortality rates (UNCTAD, 2001).

In addition, other factors include the existence of information irregularity arising from the enterprises lack of accounting records, inadequate financial statements or business plans that makes it difficult for creditors and investors to assess the creditworthiness of the potential MSMEs proposal; and high administrative/ transaction costs of lending (Awoyemi, Olayoriju and Kashim, n.d). The analysis nevertheless revealed that firm size and firm age are also important factors that increase the decision of firms to export. This is based on the positive relationships of the variables with dependent variable (export propensity). In addition, the type of industry the firm is operating and the ownership structure of firms are important determinants of exports propensity in Nigeria. Average wage and technical efficiency were found to be insignificant. Our results are in line with and Behrens, Corcos and Mion (2010) as well as Kiendrebeogo and Minea (2012) which found that financial constraints reduce the export participation of Egyptian firms between 2003 and 2008.

Table 5 Probit estimation of financial constraints and the export market participation decision

Variable	Coefficient	Z- statistic	P-value
Financial Constraint (FIN)	-0.0697*	-1.78	0.095
Liquidity Ratio Score (LR)	0.0361*	1.69	0.107
Firm Age (AGE)	0.1823*	1.84	0.084
Firm Size (SIZE)	0.0025**	1.98	0.048
Average Wage (WAGE)	-0.0008	-0.41	0.679
Technical Efficiency (TE)	-0.8901	1.12	0.543
Industries dummy (IDUM)	0.1488**	2.02	0.044
Ownership dummy (OWT)	0.7569***	5.47	0.000
Constant	-0.8388***	-12.83	0.000

Diagnostics
LR chi2(4)   =   39.40
Prob > chi2   =   0.0000
Log likelihood = -1141.6561
Number of obs   =   2198

Note: ***,**, and * represent statistical significance at 1%, 5%, and 10% respectively

The results for the export intensity regressions are shown in Table 6. Similar to the export propensity result, the study found out that firm age and size have a positive and statistically significant effect on export intensity in Nigeria. This implies that bigger and older firms will continue to export in the international market. This is because older firms are more experienced (i.e. they have accumulated learning and information over the past) and have had more time to improve their transportation network.[4] They could adapt and adopt easier, manage better, adjust faster, and respond to the global challenges better. The older firms are therefore more likely to export and have higher export–sales ratios (Love and Mansury 2009; Brunow and Grunwald 2014.). On the contrary, smaller firms may behave in a more risk-averse manner, due to a lack of information and the relatively greater impact of failure, than larger firms (Verwaal and Bas Donkers, 2001). Also, with increasing numbers of employees, lower levels of average costs can be achieved; accordingly, larger firms become more competitive in foreign markets because they can compensate for the additional costs of exporting (Babatunde, 2017).

In addition, the estimation revealed that financially constrained firms present a significantly lower share of export income. For example, a 1% reduction in financial constraint will increase the firms export by 4.72%. This implies that a better access to finance is expected to stimulate export intensity. In addition, the coefficient of liquidity score has a positive and significant effect, confirming that firms with better financial health will continue to export in Nigeria. The adequate provision of finance has the tendency of promoting innovation and the opening of new markets, which, in turn, have an impact on a company's ability to trade overseas. Our results corroborate the work of Wang (2010), Buch et al. (2010), and Feenstra, Li and Yu (2011).

This result is plausible because of some of the incentives offered by Government such as the Export Expansion Grant (EEG), Export Development Fund (EDF), and the Export Adjustment Scheme Fund (EASF) among others. For example, the EEG is a grant issued to non-oil exporters to reduce production, distribution and logistics (Production) costs which will enable them compete effectively in the international market since production expenses will naturally impact product price (PwC, 2017). It was expected that goods from other countries with cheaper production costs would ordinarily sell cheaper than those exported from Nigeria(PwC, 2017). The grant ranges from 10 per cent to 30 per cent of the Freight On Board value of the products being exported with a confirmation that the export proceeds have been repatriated (PwC, 2017). The amount received by the exporter also depends on the categorization of the exporter among others.

Prior to the 1999 fiscal year, the EEG was paid to beneficiaries in cash (PwC, 2017). However, from 1999, the grant came in form of Negotiable Duty Credit Certificates (NDCCs) issued by the NCS(PwC, 2017). The NDCC is a negotiable instrument that can be used to settle or reduce import and Excise Duties. Accordingly, it enhances the ability of such exporters to reduce overhead costs given the potential to reduce or eliminate incidence of import duties on products used by such exporters in their production; use of the NDCC as security to obtain loan from banks and its transferability from the original beneficiary to third parties (up to a maximum of three transfers).Thus, where the exporter has no import duties payable, it could still benefit from the NDCC (PwC, 2017). This has partly supported the exporters in Nigeria. The programme was however discontinued in the last five years before it was recently re-introduced. The limitations must be removed for it to work effectively.

Wage rate and technical efficiency were still found to be insignificant determinant of export intensity in Nigeria. This finding is in sharp contrast with the work of Munch and Skaksen (2006) and Perroni and Suverato (2017) which reported a positive relationship between export and wage rate. Perroni and Suverato (2017) argued that the relative scarcity of skill types determines the wage firms pay to employ workers with a given skill type. The scarcer a skill type, the higher the wage the firm pays for it and the higher price the firm charges for goods that are produced using that skill type. Nigeria is a labour abundant country with the attendant problem of unemployment. Consequently, the labour is ready to accept employment at any wage rate regardless of trade intensity. This could be responsible for the insignificance of the variable in our estimation. However, our result on the insignificance of the technical efficiency is in line with the study of Uğur (2004). The insignificance of the result could be due to the fact that the industries in our sample have not experienced much technical changes which could have pushed the production frontier in these sectors. This perhaps highlights the relative inefficiency of the exporting firms in Nigeria.

Furthermore, the analysis also revealed that the type of industry in which a firm operates (IDUM) and the type of ownership structure promotes the intensity of export in Nigeria. Our finding corroborates the results of Tang and Zhang (2012), Manova et al. (2009) and Fauceglia (2011) that ownership of firms influences export intensity.

Table 6 OLS estimation of financial constraints and the export intensity

Variable	Coefficient	t- statistic	P-value
Financial Constraint (FIN)	-4.7286***	-4.71	0.000
Liquidity Ratio Score (LR)	0.1385**	1.97	0.047
Firm Age (Age)	0.1476*	1.91	0.064
Firm Size (SIZE)	0.0015*	1.82	0.076
Average Wage (WAGE)	0.0014	-1.18	0.239
Technical Efficiency (TE)	-0.2951	1.12	0.643
Industries dummy	1.68456*	1.79	0.100
Ownership dummy	14.65389***	6.71	0.000
Constant	10.92844***	11.81	0.000

Diagnostics
R-squared   = 0.5306
Adj R-squared = 0.0284
F(5, 2268) = 14.30
Prob > F   = 0.0000
Number of obs =   2198

Note: ***,**, and * represent statistical significance at 1%, 5%, and 10% respectively

Apart from the analysis in the benchmark model, we also consider alternative measures of the financial stance, namely credit access dummy (Dummy variable equal to 1 if the firm currently have a loan from a financial institution, and 0 otherwise), credit value (The value of the last loan obtained by the firm from a financial institution, in Nigerian currency), and a dummy for bank overdraft access (Dummy variable equal to 1 if the firm currently have an overdraft facility or line of credit, and 0 otherwise). The robustness test is carried out for firms' export participation (the extensive margin) and on trade volume (the intensive margin). Table 7 reports exclusively the coefficient of the variable of interest, i.e. the measure of the financial stance.

Our results showed that the value of credit and access to bank overdraft significantly increases the probability of a firm to become an exporter. In addition, export intensity was found to be increasing for firms with adequate access to a consistent line of credit from financial institutions and bank overdraft. On the whole, these results confirm and extend our findings in the benchmark model based on financial constraints dummy and the liquidity ratio as measures of the financial stance of the firm. The upshot of the foregoing is that financial constraints strongly influence the extensive margin (increase in exports due to new exporters) and the intensive margin of trade (increase in exports of continuing exporters).

Table 7 Alternative measures of financial factors and exports

Dependent Variable	Decision to export	Export intensity
	(1)	(2)
Credit access (CA)	-0.3500	-9.2131***
	(0.4021)	(9.4827)
Overdraft (OD)	0.0003**	-0.2464
	(0.0349)	(0.7051)
Credit value (CV)	0.0020***	0.0030**
	(0.000)	(0.0000)
Constant	-0.3489	18.1817***
	(0.3869)	(9.259412)

Note: ***, ** and * represent statistical significance at 1%, 5%, and 10% respectively. Robust standard errors are reported in parentheses.

Consequently, the access of Nigerian enterprises to credit should be promoted. Some of the firms are unable to access credit due to some structural constraints in the Nigeria banking system. Perhaps the Nigerian Export Promotion Council (NEPC), in addition to the EEG, as a matter of urgency should embarked on a number of programmes to address the credit and financing bottlenecks. For example, commercial banks should be advised to reduce the requirements and documentation for a loan application to exporting firms. Also, strengthening the development of financial institutions should be a priority for policy reform as these institutions are crucial to improving trade flows. It is therefore obvious that given the diversity of the financial stance issues that influence export propensity and intensity, a one-size-fits-all approach to increase the probability of exporting and export intensity for firms may fail to address the purpose of stimulating exports.

5. CONCLUDING REMARKS

There is subsisting arguments in the literature that financial factors can be an important determinant of trade. Adopting the 2014 World Bank Enterprise Surveys Indicator Database for Nigeria, this paper analyzes the impact of financial constraints on export participation and sales in foreign markets. In line with the results from previous studies (Behrens, et al., 2010; Wang, 2010; Buch et al., 2010; and Feenstra, et al. 2011; Kiendrebeogo and Minea, 2012) on financial constraints and export behaviour, the empirical analysis in this paper revealed that the presence of financial constraints is detrimental to the export activity, measured by the decision to export and the share of exports in total sales. The robustness of the results was confirmed in the presence of standard control variables such as age of the firm, firm size, type of industry a firm belong and the ownership structure. In addition, the study revealed that higher liquidity ratio increases the probability of being an exporter and continuous sales in foreign markets, while also confirming the negative effect of financial constraints on the probability of being an exporter and export intensity. In addition, the positive effect of better financial stance on the export activity was established.

These results therefore identify a mechanism that contributes to the persistence of financial and private-sector underdevelopment in Nigeria. Moreover, these financial constraints could lead to a reduction of international trade, which is a key engine for the progress of developing countries particularly in the context of the current recession crisis in Nigeria. In the Nigerian context, exports play a critical role in driving the economic growth. Our results suggest that in addition to productivity, financial constraint matters in an important way for firm exports. Nigerian government policies that target export promotion should pay more attention to financial factors. Many high productivity firms cannot export simply because they do not have funds to pay the upfront fixed export costs. Hence, this calls upon the re-examination of the roles of the banks and other financial intermediaries in supporting exporting firms.

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