“Financial risk and performance of small and medium enterprises in Nigeria”

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FINANCIAL RISK AND PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN NIGERIA

Abstract

Small and medium enterprises (SMEs) are imperative for the growth of a striving economy because they cater for a huge level of manpower and vast resources. Therefore, it is essential that their stability and performance should be ensured in order to promote the economic growth of Nigeria. SMEs are pronged to unsecured financial risk, which can lead to the collapse of the enterprises. Various studies have been done on the small and medium enterprises' contribution to the Nigerian economic growth, but only few have addressed how financial risks affect it. This study aims to investigate how financial risk affects SMEs` performance. In other to achieve this exploratory research design was used and data were sourced from Central Bank of Nigeria (CBN) statistical bulletin from 1986 to 2017. The study uses autoregressive distributed lag (ARDL) techniques as the tool of analysis. It reveals a negative and insignificant relationship between financial risk and SMEs` performance in Nigeria in the long run. However, exchange rate risk, liquidity risk, interest rate risk and inflation risk have a significant, but negative impact on small and medium enterprises in the short run, as well as the long run. Financial risk adversely affects the performance of Nigerian SMEs and, therefore, should be controlled to enhance their performance.

Keywords SMEs' financial risk, SMEs performance, risk management, market risk, exchange rate risk, interest rate risk, inflation risk

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INTRODUCTION

Small and medium enterprises (SMEs) in Nigeria like in every other country play a critical role in output diversification, employment generation, indigenous entrepreneurial development, local technology improvement and further integration with larger firms. Carrying out their operations, SMEs are exposed to various forms of risks. Risk in whatever form is the likelihood of an event or action occurring with the possibility of a negative outcome. However, risk associated with business may be classified as development risk, growth risk, environmental risk, financial risk, manufacturing risk, operational risk, market risk, regulatory and legal risk, etc.

The ability of small and medium enterprises to identify appropriately various forms of risks and to make appropriate decisions in tackling the risks will undoubtedly increase SMEs` profitability and economic growth in the country. SMEs by definition are considered as any company which capital does not exceed NGN 4.5 billion with employee base ranging between 10 and 300 workers (Azende, 2012; Obamuyi, 2013). SMEs are considered globally as agents of industrialization, sustainable economic growth, and development of any nation (Iorpev & Kwanum, 2012). SMEs, according to Azende (2012), despite their size,

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are the foundation for economic stability of a country. As such, it is important for every business, despite its size, to accept the concept of risk management very seriously.

The concept of financial risk involves risks such as interest rate risk, liquidity risk, credit risk, funding risk, exchange rate risk, etc., which both financial and non-financial organizations are exposed to. The basic assumption is that financial risk, if not properly managed by SMEs, can possibly lead to poor SMEs performance. As such, the aim of financial risk management by SMEs is focused on reduction of earnings fluctuations as a result of its exposure to financial risk. According to Goldberg and Drogt (2008), financial risk management assists the business in making profitable forecasts and investments, and ultimately guiding the business against excessive operating costs and financial crises. However, in their efforts to grow and expand their businesses, SMEs have several financing options that expose them to financial risks (interest rate risk, exchange rate risk, liquidity risk, inflation risk), hence, the need to assess the impact of financial risk on performance of SMEs in Nigeria.

In Africa and Nigeria in particular, most of the empirical studies have been on firm's performance and risk with emphasis on the impact of individual financial risk components on larger firm's performance or bank performance. Looking at the various components of financial risk, it was observed that most studies looked at the significance of other components of financial risk without the inclusion of interest rate risk except for the study of Tafri, Hamid, Meera and Omar (2009) in Md-Amin, Sanusi, Kusairi and Abdallah (2014) used interest rate risk to measure the effect of financial risk on firm's profitability, hence, most of the empirical studies dwell on credit, liquidity risk or exchange risk to examine its impact on performance. Therefore, this study considers financial risk (inflation risk, liquidity risk, and interest rate risk) by using the autoregressive distributive lag (ARDL) model in order to evaluate the relationship between financial risk and performance of SMEs in Nigeria.

Despite the requirement for a comprehensive risk management program, SMEs carry out robust risk management and assessment strategies very rarely. The SMEs sector has largely been ignored by researchers in Nigeria with respect to financial risk exposure, despite the crucial role it plays in the economy. However, most SMEs might not be able to accommodate most of these risks in the course of their operations. This inability has direct impact on their performance, as it weakens their ability to achieve employment generation, economic growth, and sustainability. Hence, the aim of this study is to examine financial risk influence on SMEs` performance in Nigeria empirically.

1. LITERATURE REVIEW

The effective management of financial risk by SMEs would increase its chances of achieving a desired level of financial performance, create employment, and drive economic growth. This work is hinged on the neoclassical theory of investment (NTI). Jorgenson (1967) who significantly contributed to the development and understanding of the NTI posited that the marginal rate of return on investment is equal to the cost of funds. Relying on the NTI, the marginal rate of return on investment is equal to or a function of the cost of funds, the optimal capital accumulation by SMEs is measured by the relative costs of production and investment such as exchange rate, inflation, interest rate, etc. Empirically, the NTI establishes the linkage between fluctuations in exchange rate, inflation rate, interest rate, and investment, especially in the private sector, where SMEs is a key player.

According to the neoclassical theory of investment, an increase in stock of capital in an economy is defined by the marginal cost of investment and the user cost of capital, which is also regarded as the real rental cost of funds (Carpentier & Suret, 2006). Marginal product of capital measures the addition to the investment by using an additional unit of capital, while labor and technology remains constant. In order to fill the associated gaps with the accelerator theory, the NTI approach to investment was developed in 1967 by Jorgensen and modified in 1971. This model viewed the value of capital employed by a firm as a function of output level. It, therefore,

means that the amount of funds required depends on the expected output level and the cost of capital (interest rate, inflation, and exchange rate). The NTI regarded the presence of lags in government policies, exchange rate, and interest rate.

SMEs are regarded as engines of economic growth and development in any given economy. According to Ariyo (2005), SMEs are responsible for about 97 percent of all businesses in Nigeria, employing about 50 percent of Nigeria's workforce and accounted for about 50 percent of the industrial outputs in the country. More so, SMEs facilitate, in a more equitable and decentralized manner economic growth distribution, eliminating concentrated populated areas, and facilitating equitable wealth distribution in an emerging economy. According to Ogechukwu (2011), SMEs are the active participants in mobilizing natural resources for businesses and assist in reducing the number of job seekers in the labor market. In any economy, whether developed, developing or underdeveloped, the roles played by SMEs are quite enormous. They include the following:

1. Act as vehicle of employment generation.
2. Creation and training of domestic entrepreneurs.
3. SMEs facilitate an increase level of social and economic development.
4. The citing of SMEs mostly in the rural area has helped in the improvement of critical rural infrastructures and the standard of living of the people.
5. SMEs reduce the over-dependence on government in employment generation.
6. SMEs act as major supplier of domestic raw materials to larger firms.

Kagwathi, Kamau, Muthoni, Stephen, and Kamau (2014) investigated the risk mitigation strategies adopted by SMEs in Kenya using 100 operating SMEs in Nairobi and within. The study acknowledged capital market, global perception, and customer relations and branding risks, amongst others, to be the major risks militating the growth of SMEs in Nairobi. On the core risk mitigation strategies, the use of credit scorecards, insurance, collaborations, and diversification were adopted by about 66 percent of SMEs under study.

Owino, Mwangi, Sejjaaka, Canney, Maina, Kairo, and Mindra (2013) carried out a study on financial constraints and SMEs growth in Kenya. The study revealed such factors as cost of registration, access to adequate capital, high cost of funds, access to adequate information and capital market requirements as hindering the growth of SMEs in Kenya. Relying on the results of the study, the study recommended that funds providers should consider reducing high cost of funds and ease off the collateral requirements for SMEs to access funds.

According to Olawale and Garwe (2010), critical factors that kept most SMEs in their current failure rate are not limited to inadequate knowledge and effective skills in risk identification and management, but their ability to manage their asset portfolios. The alarming rate of failure of SMEs has resulted in banks and investors alike lending to SMEs. Therefore, lending to SMEs is seen as very risky and unprofitable decision, since it will undermine the returns on investment.

The performance of SMEs is critical to the development of every economy. Sidik (2012), in his study of conceptual framework of factors affecting SMEs development, opined that the number of SMEs that successfully meet their set goals and objective are just but a handful. Amongst the successful one, just a few are considered as to have performed extraordinary within the industrial average arising from availability of limited resources and operational dynamics. Therefore, the alertness to overcome the limited performance calls for a firm's strategic orientation as a core decision variable stems from the availability of adequate resources and operational materials. Consequently, Covin and Lumpkin (2011) highlighted some specific aspects of decision-making variable associated with SMEs performance to include innovativeness, pro-activeness, and risk-taking. By pro-activeness, SMEs are seen as gearing aggressively towards sustainable growth and exceptional performance by taking up risky investments against larger enterprises, which makes them vulnerable (Hansen, Deitz, Tokman, Marino, & Weaver, 2011).

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The concept of performance can be viewed as the achievement of set goals. To small and medium enterprises, it connotes the rendering of a service or goods, which is acceptable to their potential customers who are willing to pay the price for such goods or services. The payment for the goods or services translates into survival, growth, and profit for the enterprise in question. In the opinion of Cokins (2004), the primary reason for embarking on performance measurement is to assist business operators to sense business uncertainties early and respond appropriately to them more quickly. However, the concept of performance measure is contextual in relation to enterprise, industry, and sector. The parameter for performance measurement has been a matter of debate amongst several authors. Several authors have developed methods, which includes operations, products or services, sales, employment, customer satisfaction, quality and flexibility, internal process perspective and survival, growth and sustainability in business. Performance measurement, according to Carton and Hofer (2006), is an important variable in business operation and research.

On the other hand, Bowman in 1979 established a negative relationship between profit and risk based on the fact that firms can increase profits while risk is reduced at the same time. By implication, if SMEs fails to handle its risk exposures, its performance level will drop and vice versa. In the same vein, Boermans (2011) revealed that there existed a significant negative relationship between financial constraints, risk and profits. Similarly, Qin and Pastory (2012) supported the assertion put forward by Boermans (2011).

A study conducted by Yusuf and Dansu (2013) focused on the relationship between business risk and SMEs sustainability in Nigeria. Using primary data from 50 SMEs in Lagos state, they employed the descriptive statistics and Chi-square in testing relevant hypotheses in the study. The findings from the study revealed that the employed standard risk management strategy by SMEs engendered improved sustainability. Based on the findings, the study recommended that SMEs should regard risk management as a critical part of business activity. Furthermore, regulatory bodies should insist on standards of minimum corporate governance for SMEs.

Various factors are seen as necessary to catalyze the growth of SMEs in Nigeria. For instance, movements in interest rates are said to influence financial performance of SMEs by changing the expected net interest income and expenses. The pressure of the variance in foreign exchange risk poses as an uncertainty associated with business transactions denominated in foreign currencies. Possible changes in foreign exchange rates result in variations in the amount of expected cash outflows and inflows. Foreign currency risk is measured by transaction exposure to an organization (Glaum, 2000).

The preference of larger firms over SMEs in the granting of credit facilities has been a major risk factor hindering the expected performance of SMEs in Nigeria. Therefore, the consequence of insufficient liquidity in a firm can further pose a serious problem to developing SMEs. Liquidity risk represents SMEs' ability to manage funding changes on credit financing and investment portfolio by lending institutions (Greuning & Bratanovic, 2009).

More so, Ekwere (2016) revealed the scarcity of studies bothering on risk management for SMEs in spite of their social and economic relevance in a nation. The possibility of failure and informal structures of SMEs in the presence of risks justifies the basis for theoretical and empirical research in this field. Evidence showed that most SMEs are excellent in operational efficiency but lack the basic knowledge to identify the majority of the risk components that have a grave effect on their growth and sustainability. Therefore, if SMEs cannot properly identify and evaluate risks, then, risk management itself would become the greatest risk to the SMEs. As noted by Ekwere (2016), the risk management goals of SMEs is not risk prevention but to adopt and implement appropriate risk management assessments and strategies to mitigate the huge effects of risk on its performance.

The study by Smit and Watkins (2012) revealed that SMEs with deliberate processes of handling risk are found to be well-positioned to exploit and explore available resources profitably Specifically, financial risk centers on the probability of losing profit as a result of the negative financial dynamics in an economy. Financial risk has components

such as interest rate risk, inflation risk, exchange rate risk, credit risk and liquidity risk, which can bring about fluctuations in firms' performance. Theoretically, financial risk and performance are two critical elements with dual effects. Each of the elements is critical to one another in sustaining the business operation of SMEs. Considering the Hawley's risk theory of profit, profit is modeled as having a positive relationship between profit and risk. Accordingly, profit is considered as a positive consequence of risk, hence, the higher the risk exposure, the higher the distributable return for the risk.

The risks rooted in a conventional SMEscomprises of change in price level, exchange rate risk, interest rate risk, liquidity risk, country risk, and legal risks. Evidence abound that many SMEs operators are not proactive in the course of managing the risks they are exposed to. This action is in conformity with the opinion of Servaes and Tamayo (2009) that risk-based thinking as a business strategy is not adopted by SMEs into their regular business routine and operational strategy. Investigating the various aspects of risk management in early stage business enterprises, Kim and Vonortas (2014) concluded that various forms of enterprises across board engage internal strategies in risk mitigation with respect to operational and technological based-risks, while the formal and informal strategic alliances are employed toward the mitigation and management of financial risk. Furthermore, Dickson and Weaver (1997) held that the pervasive influence of SMEs operators and their decision-making abilities enable them to assume relative uniformity between the firm and individual risk exposure. Hacker (1989) revealed that strategies can be regarded as individual plans for actions that would regulate and influence how we are doing things (Hacker, 1989).

Although the concept of risk management is not new, it is not still prevalent among SMEs. SMEs are known as the vehicle that bridges the relationship between the poor and the rich, and deals with the disadvantaged position of the poor (Bolton, 2006). Unfortunately, the untimely failure rate of SMEs in Nigeria is estimated between the first five years of existence. Furthermore, an empirical investigation into the existence of SMEs revealed that the major reasons adduced for this failure are majorly the non-availability of sufficient and affordable capital and poor risk management abilities. This is responsible for why potential investors and fund providers would rate SMEs as highly risky and not fit for financial investment (Rogerson, 2013).

The concept of risk management to both SMEs and larger firms is a process of identifying potential events that may negatively influence its objectives and accommodation such with appropriate assessments and response actions. The failure of SMEs to adequately engage appropriate risk management processes has resulted in low life-span and sustainability of SMEs (Azende, 2012).

The underlying basis for effective risk management underscores the fact SMEs ought to rely firmly on their ability to expect and prepare for the consequences of market dynamics. The concern with managing and controlling risks is not to completely avoid or eliminate risky ventures, but to ensure that SMEs undertake only risky activities in which they can possibly mitigate and measure (Kanchu & Kumar, 2013). Defining the basic financial risk, Kanchu and Kumar (2013) viewed market risk as a possibility of loss as a result of variability in a market-based dynamics (exchange rate risk, liquidity risk, interest rate risk, etc.)

There is a theoretical and empirical linkage between financial risks and firm's performance. Ironically, it is often said that financial performance failure signifies financial risk. The classified financial risk (exchange rate risk, interest rate risk, liquidity risk, and credit risk) showed that the joint effect of these risks contribute to the variability in SMEs performance (Tafri, Hamid, Meera, & Omar, 2009; Dimitropoulos, Asteriou, & Koumanakos, 2010). The classification of financial risk by these authors spurs the basis for this study in order to reveal how SMEs in Nigeria would perform in the face of the huge finance risk they are exposed to. Prior studies on the influence of financial risk were centred on banks performance (Pyle, 1997; Ruziqa, 2013, Al-Khouri, 2011, Dimitropoulos, Asteriou, & Koumanakos, 2010; Berument & Dincer, 2004) with varying outcomes. Md-Amin, Sanusi, Kusairi, and Abdallah (2014) summarized the findings of their studies by proving that financial risk and financial performance are two inseparable components with a two-way interaction.

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Financial risk comprises of three lesser risks, according to Nocco and Stulz (2006). They are exchange rate risk, interest rate risk, and stock price risk. However, Wachiaya (2011) opined that financial risk emanates from financial instruments and collateral for loans as a result of exposure to volatility in market prices. With the day-to-day price fluctuations, financial risk is subdivided into exchange rate risk, inflation risk, liquidity risk, and interest rate risk. It is, therefore, necessary for SMEs to regularly evaluate the effectiveness of their financial risk management frameworks. Effectiveness is the capability of producing the desired result. One of the bottom line objectives of SMEs is to make profits and have a sustainable financial performance that adds to the wealth of its shareholders. Financial risk can enhance or hinder the financial performance of organizations (SMEs) by helping them reduce/increase their exposure to risks.

The management of financial risk is centered on evaluating and militating the potential risks associated with long-term strategic perspective, which would endanger the growth and sustainability of an enterprise (Culp, 2002; Rochette, 2009; Farrell & Gallagher, 2015). In the opinion of Keizer, Dijkstra, and Halman (2002) in van den Boom (2019), risk management is the technique employed in overcoming operating uncertainties by using financial techniques and methodologies to manage exposure to risk. According to Rejda (2013) in van den Boom (2019), the risk management process is entrenched in the efforts of SMEs operators by assuming ownership of risks faced by the enterprise with a strong and consistent risk culture. Accordingly, risk management is a process of addressing identified risk exposure that most enterprises are exposed to base on that the most appropriate technique for combating potential effect of the various risks that SMEs are exposed to is employed (Rejda, 2011). This culture mandates management staff of SMEs to align their risk behavior with their risk appetite.

Alrashidi and Baakeel (2012) conducted a study on the importance of managing operational risk for Saudi SMEs growth and operational development. Using an online survey, distributed among 15 users, the results showed that management of operational risk positively impacts on the growth and financial development of SMEs in Saudi Arabia.

Henschel (2008) studied the status of risk management approached in German SMEs using postal questionnaires. The findings from the study revealed that risk management in German SMEs is strongly concentrated on owner-manager while a handful of SMEs engaged comprehensive risk management approaches. The study concluded that the relationship between business planning and risk management strategies is not well developed.

SMEs are said to operate in a very challenging environment that would either mitigate or advance their performance. Financial risk poses as a serious obstacle to small and medium enterprises growth. However, various activities would need to be observed in order to enhance their performance. These factors will be examined in this study.

2. METHODOLOGY

The study adopts the exploratory research design. This was to enable the study to compare theoretical prepositions with empirical findings. This study used the secondary data extracted mainly from the Central Bank of Nigeria (CBN) statistical bulletins from 1986 to 2017. The model for this study is specified using the following proxies:

$$SMEPF = F\left(INTR, EXCR, LIQR, INFLR\right).$$

The model in its econometric linear form can be expressed as:

$$\log SMEPF = b_0 + b_1 \log INTR + \\ + b_2 \log EXCR + b_3 \log LIQR + \\ + b_4 \log INFLR + e_t,$$

where $SMEPF$ – SMEs performance, $INTR$ – interest rate risk (standard deviation of interest rate), $EXCR$ – exchange rate risk (standard deviation of exchange rate), $LIQR$ – liquidity ratio risk (ratio of commercial bank credit to SMEs to commercial bank total loans and advances), $INFLR$ – inflation risk (standard deviation of inflation ratio), b_0 – constant parameter, b_1, b_2, b_3, b_4 – coefficient or slope parameters, e_t – error term.

The ARDL model of this study can be expressed as:

$$\Delta LogSMEPF_t = \alpha_0 + \sum_{k=1}^{n} \alpha_1 \Delta LogSMEPF_{t-1} + \\ + \sum_{k=1}^{n} \alpha_2 \Delta LogINTR_t + \sum_{k=1}^{n} \alpha_3 \Delta LogEXCR_{t-1} + \\ + \sum_{k=1}^{n} \alpha_4 \Delta LogLIQR_{t-1} + \sum_{k=1}^{n} \alpha_5 \Delta LogINFLR_{t-1} + \\ + \beta_1 LogSMEPF_{t-k} + \beta_2 LogINTR_{t-k} + \\ + \beta_3 LogEXCR_{t-k} + \beta_4 LogLIQR_{t-k} + \\ + \beta_5 LogINFLR_{t-k} e_t.$$

$$\Delta LogINTR_t = \alpha_0 + \sum_{k=1}^{n} \alpha_1 \Delta LogSMEPF_{t-1} + \\ + \sum_{k=1}^{n} \alpha_2 \Delta LogINTR_t + \sum_{k=1}^{n} \alpha_3 \Delta LogEXCR_{t-1} + \\ + \sum_{k=1}^{n} \alpha_4 \Delta LogLIQR_{t-1} + \sum_{k=1}^{n} \alpha_5 \Delta LogINFLR_{t-1} + \\ + \beta_1 LogSMEPF_{t-k} + \beta_2 LogINTR_{t-k} + \\ + \beta_3 LogEXCR_{t-k} + \beta_4 LogLIQR_{t-k} + \\ + \beta_5 LogINFLR_{t-k} e_t.$$

$$\Delta LogEXCR_t = \alpha_0 + \sum_{k=1}^{n} \alpha_1 \Delta LogSMEPF_{t-1} + \\ + \sum_{k=1}^{n} \alpha_2 \Delta LogINTR_t + \sum_{k=1}^{n} \alpha_3 \Delta LogEXCR_{t-1} + \\ + \sum_{k=1}^{n} \alpha_4 \Delta LogLIQR_{t-1} + \sum_{k=1}^{n} \alpha_5 \Delta LogINFLR_{t-1} + \\ + \beta_1 LogSMEPF_{t-k} + \beta_2 LogINTR_{t-k} + \\ + \beta_3 LogEXCR_{t-k} + \beta_4 LogLIQR_{t-k} + \\ + \beta_5 LogINFLR_{t-k} e_t.$$

$$\Delta LogLIQR_t = \alpha_0 + \sum_{k=1}^{n} \alpha_1 \Delta LogSMEPF_{t-1} + \\ + \sum_{k=1}^{n} \alpha_2 \Delta LogINTR_t + \sum_{k=1}^{n} \alpha_3 \Delta LogEXCR_{t-1} + \\ + \sum_{k=1}^{n} \alpha_4 \Delta LogLIQR_{t-1} + \sum_{k=1}^{n} \alpha_5 \Delta LogINFLR_{t-1} + \\ + \beta_1 LogSMEPF_{t-k} + \beta_2 LogINTR_{t-k} + \\ + \beta_3 LogEXCR_{t-k} + \beta_4 LogLIQR_{t-k} + \\ + \beta_5 LogINFLR_{t-k} e_t.$$

$$\Delta LogINFLR_t = \alpha_0 + \sum_{k=1}^{n} \alpha_1 \Delta LogSMEPF_{t-1} + \\ + \sum_{k=1}^{n} \alpha_2 \Delta LogINTR_t + \sum_{k=1}^{n} \alpha_3 \Delta LogEXCR_{t-1} + \\ + \sum_{k=1}^{n} \alpha_4 \Delta LogLIQR_{t-1} + \sum_{k=1}^{n} \alpha_5 \Delta LogINFLR_{t-1} + \\ + \beta_1 LogSMEPF_{t-k} + \beta_2 LogINTR_{t-k} + \\ + \beta_3 LogEXCR_{t-k} + \beta_4 LogLIQR_{t-k} + \\ + \beta_5 LogINFLR_{t-k} e_t.$$

The ARDL technique will be adopted if all the variables are integrated of order I(0) and I(1). In this regard, long-run relationship of the series would be established using the *F*-statistics (Wald test) when it exceeds the corresponding critical value bands. The independent variables are expected to negatively influence the dependent variable.

3. RESULTS AND DISCUSSION

3.1. Descriptive statistical analysis

The descriptive statistics test is presented in Table 1 and interprets that SMEPF has a mean value of 12469.15 with a standard deviation of 17027.43 having its lowest figure as 67.23000 in 1986 and its highest figure of 56012.23 in 2017. The variable *INTR* has a mean value of 2.425460 with a standard deviation of about 2.287326 having 0.047715 in 2013 as its lowest figure and 8.117586 in 1993 as its highest figure. The mean value of *EXCR* stood at 8.699402 with a standard deviation of 14.30091 ranging from 0.000000 in 1997 to 49.81567 in 1998. *INFLR* has a mean value of 6.403073 with a standard deviation of 9.402503 having its lowest figure as 0.098995 in 1993 and its highest figure of 32.42792 in 1987. Finally, the trends in the variable *LIQR* have an average of 9.660319 with a standard deviation of 9.587855. Its lowest figure was 0.120000 in 2013, while 27.03552 was its highest figure in 1992.

The measure of skewness of the variables revealed that variables (*SMEPF*, *EXCR* and *INFLR*) are rightward skewed, while *INTR* and *LIQR* were leftward skewed. The Kurtosis coefficients of the parameters indicate that INTR and *LIQR* were

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Table 1. Descriptive statistics test

Statistics \ Variables	*SMEPF*	*EXCR*	*INFLR*	*INTR*	*LIQR*
Mean	12469.15	8.699402	6.403073	2.425460	9.660319
Median	3972.315	2.496087	2.319310	1.432623	7.534976
Maximum	56012.23	49.81567	32.42792	8.117586	27.03552
Minimum	67.23000	0.000000	0.098995	0.047715	0.120000
Std. dev.	17027.43	14.30091	9.402503	2.287326	9.587855
Skewness	1.467964	1.846558	1.879394	0.993409	0.523112
Kurtosis	3.899136	4.932021	5.250034	2.922960	1.828674
Jarque-Bera	12.57082	23.16242	25.58819	5.271172	3.288786
Probability	0.001863	0.000009	0.000003	0.071677	0.193130
Sum	399012.8	278.3809	204.8983	77.61473	309.1302
Sum sq. dev.	8.99E+09	6340.000	2740.619	162.1877	2849.736
Observations	32	32	32	32	32

found to be platykurtic or flat (below 3.000000) relative to the normal, while variables such as *SMEPF*, *EXCR* and *INFLR* leptokurtic or peaked. The Jarque-Bera (JB) values of 12.57082 (*SMEPF*), 23.16242 (*EXCR*) and 25.58819 (*INFLR*) reveal that the series are normally distributed and its outcome from further analysis would be suitable for generalization.

3.2. Augmented Dickey-Fuller unit root test

Table 2, which is the excerpts of the ADF unit root test, revealed that *INTR* and *INFLR* were found to be stationary at levels. However, *SMEPF*, *EXCR* and *LIQR* were non-stationary at their levels, but the variables were found to be stationary when differenced at first level at five percent significance level.

Table 2. Augmented Dickey-Fuller (ADF) unit root test

Variables	At 5% level	At 1st difference	Order of integration
SMEPF	–2.2611	–4.4798**	I(1)
INTR	–3.7188**	–	I(0)
EXCR	–1.2787	–3.5322**	I(1)
LIQR	–1.0758	–5.0409**	I(1)
INFLR	–4.8062**	–	I(0)

Note: ** significance at 5% level.

3.3. ARDL F-bound testing approach

This test was conducted so as to ascertain the joint significance of the coefficients of the variables in the model by imposing restrictions on the long-run estimates of financial risk (*INTR*, *EXCR*, *LIQR*, *INFLR*) and the performance of small and medium scale enterprises in Nigeria (*SMEPF*). The result that calculated F-statistic is 19.30 at five per cent significance level was found to be greater than the corresponding ARDL lower (2.56) and upper (3.49) critical bound values, thus, confirming that financial risk variables are jointly co-integrated with the dependent variable, further personifying the existence of long-run relationship.

Table 3. ARDL F-bound test

***F*-bounds test**				
Test statistic	**Value**	**Signif.**	**Null hypothesis: no levels relationship**	
			I(0)	**I(1)**
			Asymptotic: *n* = 1000	
F-statistic	19.30699	10%	2.2	3.09
	4	5%	2.56	3.49
K	–	2.5%	2.88	3.87
	–	1%	3.29	4.37
	28	–	Finite sample: *n* = 35	
	–	10%	2.46	3.46
	–	5%	2.947	4.088
	–	1%	4.093	5.532
Actual sample size	–		Finite sample: *n* = 30	
	–	10%	2.525	3.56
	–	5%	3.058	4.223
	–	1%	4.28	5.84

3.4. ARDL long-run form estimates

From the ARDL long-run model in Table 4, the long-run estimates revealed that the independent variables (*INTR*, *EXCR*, *LIQR*, *INFLR*) have a joint insignificant negative effect on SMEs performance in the long run. By implication, an increase

in these variables will have an insignificant negative long-run effect on performance of SMEs in Nigeria. All things being equal, the performance of SMEs in Nigeria will decrease by 3.38 percent as a result of increase in financial risk variables (*INTR*, *EXCR*, *LIQR*, *INFLR*) in the long run, ceteris paribus.

Table 4. ARDL long-run form

Dependent variable: D(LSMEPF)				
Selected model: ARDL(1, 4, 4, 4, 4)				
Variable	**Coefficient**	**Std. error**	***t*-statistic**	**Prob.**
LINTR	–9.171351	18.08238	–0.507198	0.6301
LEXCR	–0.756672	1.579826	–0.478959	0.6489
LLIQR	0.986095	2.505254	0.393611	0.7075
LINFLR	–0.345527	2.735280	–0.126322	0.9036
C	3.381942	13.88845	0.243507	0.8157
EC = *LSMEPF* – (–9.1714**LINTR* –0.7567**LEXCR* + 0.9861**LLIQR* –0.3455**LINFLR* + 3.3819)				

3.5. ARDL short-run estimates

The ARDL short-run estimates shown in Table 5 revealed that the value of the intercept which is –0.1136 revealed that small and medium enterprises performance in Nigeria will experience 0.1136 percent decrease when all other variables are held constant. The analysis further revealed that the R^2 (*R*-squared) of 99.92 percent confirmed that the model has a high goodness-of-fit. This indicates that the independent variables (*INTR*, *EXCR*, *INFLR*, and *LIQR*) accounted for about 99.9 percent variation in the independent variable (*SMEPF*).

Similarly, the high value of F-statistics (398.8853) showed that the model of the study is statistically significant. The significance of the entire ARDL short-run model means that the series in the model were statistically significant in explaining the changes in the performance of SMEs.

Further examination of the ARDL short-run dynamics revealed that variations in the current period and three period lag of *INTR* had a negative effect on SMEs performance in Nigeria. The implication is that, a percentage increase in interest rate risk will decrease the performance of SMES in Nigeria. Accordingly, in the short run, all things being equal. On the other hand, the previous lagged period were found to have a positive effect on the performance of SMEs in Nigeria.

Further examination of the ARDL short-run dynamics revealed that variations in the current period, previous lagged period, the previous two lagged periods and the previous three lagged periods of *INFLR* had a negative effect on SMEs performance in Nigeria. The implication is that a percentage increase in inflation risk will decrease SMEs performance in Nigeria accordingly in the short run.

Further analysis of ARDL revealed that variations in the previous lagged up to four lagged period of *LIQR* have a negative effect on the performance of SMEs in Nigeria in the short run. The implication is that a percentage increase in *LIQR* will decrease the performance of SMEs in Nigeria, ceteris paribus.

Table 5. ARDL short-run dynamics result

Dependent variable: LSMEPF				
Selected model: ARDL(1, 4, 4, 4, 4)				
Variable	**Coefficient**	**Std. error**	***t*-statistic**	**Prob.***
LSMEPF(–1)	1.033618	0.073504	14.06203	0.0000
LINTR	0.064955	0.029181	2.225909	0.0676
LINTR(–1)	–0.017307	0.029674	–0.583238	0.5810
LINTR(–2)	–0.071880	0.037563	1.913601	0.1042
LINTR(–3)	–0.070868	0.047729	1.484808	0.1881
LINTR(–4)	–0.117928	0.041286	2.856389	0.0289
LEXCR	–0.008930	0.016404	0.544386	0.6058
LEXCR(–1)	–0.018409	0.015653	–1.176120	0.2841
LEXCR(–2)	–0.016480	0.017901	0.920595	0.3928
LEXCR(–3)	–0.003292	0.016798	0.195944	0.8511
LEXCR(–4)	0.015145	0.013505	1.121493	0.3049
LLIQR	0.088485	0.062296	1.420407	0.2053
LLIQR(–1)	–0.161098	0.086059	–1.871946	0.1104
LLIQR(–2)	–0.068501	0.088526	0.773796	0.4684
LLIQR(–3)	–0.083906	0.081217	1.033120	0.3414
LLIQR(–4)	–0.112945	0.060836	–1.856555	0.1128
LINFLR	–0.021234	0.020613	–1.030160	0.3427
LINFLR(–1)	–0.007082	0.023171	–0.305632	0.7702
LINFLR(–2)	–0.019527	0.030329	–0.643851	0.5435
LINFLR(–3)	–0.022127	0.036960	0.598669	0.5713
LINFLR(–4)	0.037333	0.036522	1.022215	0.3461
C	–0.113694	0.714893	–0.159037	0.8789
R-squared	0.999284	Mean dependent var		8.506484
Adjusted *R*-squared	0.996779	S.D. dependent var		1.758604
S.E. of regression	0.099807	Akaike info criterion		–1.740175
Sum squared resid	0.059769	Schwarz criterion		–0.693443
Log likelihood	46.36245	Hannan–Quinn criter.		–1.420178
F-statistic	398.8853	Durbin–Watson stat		2.467185
Prob(*F*-statistic)	0.000000			

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3.6. ARDL error correction term (ECT)

The result for the variables shows that the expected negative sign of error correction term (ECT) and was found to be highly significant. The highly significant ECT establishes the presence of a stable and significant long-run relationship. This confirms the existence of the long-run significant association between financial risk and the performance of SMEs in Nigeria at different lag periods. The coefficient of ECT (–0.5336) as shown in Table 6 revealed that deviation away from the long-run financial risk is deemed corrected by 53.36 percent by the following year, all things being equal.

Table 6. ARDL error correction term result

ECM Term				
Case 2. Restricted constant and no trend				
Variable	Coefficient	Std. error	*t*-statistic	Prob.
D(*LINTR*)	0.064955	0.014017	4.633856	0.0036
D(*LINTR*(–1))	–0.260675	0.021528	–12.10840	0.0000
D(*LINTR*(–2))	–0.188795	0.020812	–9.071483	0.0001
D(*LINTR*(–3))	–0.117928	0.015459	–7.628384	0.0003
D(*LEXCR*)	0.008930	0.007356	1.214103	0.2703
D(*LEXCR*(–1))	–0.034917	0.008735	–3.997118	0.0071
D(*LEXCR*(–2))	–0.018437	0.008529	–2.161805	0.0739
D(*LEXCR*(–3))	–0.015145	0.007873	–1.923684	0.1027
D(*LLIQR*)	0.088485	0.036849	2.401262	0.0532
D(*LLIQR*(–1))	–0.039462	0.041970	–0.940243	0.3834
D(*LLIQR*(–2))	–0.029039	0.040468	0.717577	0.5000
D(*LLIQR*(–3))	0.112945	0.040869	2.763595	0.0327
D(*LINFLR*)	–0.021234	0.012628	–1.681552	0.1437
D(*LINFLR*(–1))	–0.039932	0.014776	–2.702466	0.0355
D(*LINFLR*(–2))	–0.059460	0.016313	–3.644986	0.0108
D(*LINFLR*(–3))	–0.037333	0.012864	–2.902032	0.0273
CointEq(–1)*	–0.533618	0.002307	14.57316	0.0000

3.7. Breusch-Godfrey serial correlation LM test

This test was employed to check if serial correlation was absent in the model of the study. Given the result of the test as presented in Table 7, it is shown that F-stat (0.79) and Obs*R-squared (0.22) probabilities are greater 0.05, hence, the null hypothesis of no serial correlation in the ARDL model was accepted. The result implies that model has no first order and/or second order serial correlation.

Table 7. Breusch-Godfrey serial correlation LM test

Breusch-Godfrey serial correlation LM test			
F-statistic	0.236615	Prob. *F*(2,4)	0.7996
Obs**R*-squared	2.962162	Prob. Chi-square(2)	0.2274

In summary, the study examined the extent to which volatility in financial risk variables impacts on SMEs performance in Nigeria. The findings revealed a negative impact of exchange rate risk on the performance of the SMEs in Nigeria in the short run and in the long run. Theoretically, it is the expected economic postulations that exchange rate volatility would impact negatively on the performance of a firm. The results from this study are in agreement with Aliyu (2009) whose study revealed a negative impact of exchange rate volatility on economic sector performance.

The short-run, as well as the long-run effect of inflationary fluctuations on the performance of SMEs in Nigeria, was found to be negative at various lagged periods. This result confirms the position Oleka, Maduagwu, and Igwenagu (2014) who also had examined the effect of macroeconomic variables and the productivity on manufacturing sector in Nigeria. The impact of interest rate risk on SMEs performance in Nigeria in the short run and long run was found to be negative. The magnitude of the coefficients showed that interest rate risk is statistically significant in the determination of the performance of SMEs in Nigeria at various lagged periods. This is in agreement with Obamuyi (2013), Aremu and Adeyemi (2011), and Aigboduwa and Oisamoje (2013) who all agreed that interest rate risk impacts on the performance of a firm negatively.

CONCLUSION

The objective of the work was to establish the effects of financial risk on small and medium enterprises' performance in Nigeria. The findings revealed that financial risk negatively impacts small and medium enterprises` performance in Nigeria at various lags in the short run and has hindered the survival and profitability of SMEs, hence, their inability to contribute meaningfully to the growth of the Nigerian

economy. Financial risk variables (both in the short and long run) had negative and insignificant relationship with the small and medium enterprises performance in Nigeria at various lags. This assumes that SMEs in Nigeria are exposed to the adverse effect of financial risk, which of course will ultimately lead to their collapse and failure. To stem the problem of financial risk, SMEs are, however, encouraged to perform regular business risk analysis, as well as avoid excessive overhead loans.

The significant negative effect of interest rate risk on SMEs` performance demands that government and banks should sustain their efforts in reducing the cost of funding drastically by charging a stable single lending rate to SMEs sector. Also, significant negative effect of exchange rate risk on the performance of SMEs can be stem through a stable and favorable exchange rate that would reduce the cost of imported raw materials and operations of SMEs, since most of the equipment and raw materials are sourced externally. Government should create more incentive such as loans subsidy to the small and medium enterprises as a measure of bridging the existed funding gap between funds providers and the SMEs sector. Lastly, a single-digit inflation rate should be the target of regulatory bodies in order to aid the profitable existence of SMEs in the economy. The study concluded that beyond the impact of financial risk on SMEs performance, enterprise risk and other forms of risk could also impact SMEs` performance; hence, further scientific research could be carried out to ascertain the effect (positive or negative) of enterprise risk or other forms of risk on SMEs` performance in Nigeria.

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