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INVESTMENTS AND SOLID MINERAL DEVELOPMENT IN NIGERIA

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Abstract
Economists and policymakers are constantly worried about growth drivers: understanding growth drivers could tantamount to getting an economy into the desired growth trajectory. One of the identified growth drivers in economic literature is investment and solid minerals. However, there is a scarcity of studies on the linkages between investment, solid minerals and economic growth. Using a multivariate vector autoregressive (VAR) model and annual time series from 1981-2016, this study examined how linkages between investment and solid mineral development in Nigeria. Prior to VAR estimation, the study investigated the time-series properties of the research data using ADF and Ng-Perron test of unit root, Autoregressive Distributed Lag cointegration test and Vector Error Correction Mechanism (VECM). The results obtained revealed that the time series are a realization of stochastic and cointegrated processes. Again, it shows that as the times series move towards their long-run equilibrium path, any disequilibrium is substantially corrected in the current period. The results of the VAR estimation indicate that Domestic investment does not significantly drive solid mineral development in Nigeria while foreign direct investment is positively related to solid mineral development; it has not significantly driven solid mineral development within the period under study. On the other hand, foreign portfolio investment exerts a negative impact on solid mineral development in Nigeria. Based on the findings; the study recommends among other things that the government should embark on reforms that target the improvement of investment guidelines,

operational procedures, and regulatory frameworks, especially in the solid mineral subsector.

Key words: Solid mineral, investment, domestic investment, foreign direct investment, foreign portfolio investment, Nigeria.

1. Introduction

1.1 Introduction to the study

In the process of economic growth of countries, investment plays a crucial role to raise productivity through encouraging technological progress and promotes new techniques of production. Like demand and supply economics, it also plays an enormous role in the long-run capital accumulation since investment increases productive capacity and creates new capital goods.

The theoretical foundation for investment-led growth hypothesis could be traced to the neoclassical and endogenous growth theories which stressed the importance of capital accumulation and technological progress in the process of economic growth and development. Hence, investments are considered as the main conduit through which technology transfers, managerial expertise and production efficiency which provide linkages to external markets are accessed by several developing economies.

However, aside from investments, Bridge (2008) contends that solid minerals can spur economic growth as well as promoting social wellbeing. Though the oil and gas sector continue to dominate, accounting for the large percentage of Nigeria's FDI inflows. This sector, however, is highly vulnerable to commodity price shocks as evidenced by the impact of global oil price shocks.

The world demand for solid mineral has witnessed relative stability since 2010 against that of crude oil. The rapid and sustained economic growth of emerging economies of Brazil, China and India have been the main driver on the demand side that fueled the boom in the world market for solid minerals. The world market prices for minerals have trended up substantially in the last decade compared to the previous decades of the 1980s and 1990s (Iwayemi et al., 2014).

Nigeria is blessed with vast solid minerals distributed extensively across the various parts of the nation. Prior to the crude oil booms of the 70's and 80's, solid minerals such as Columbite, Tin and Coal contributed immensely to Nigeria's economy. For instance, coal was a key source of power for the rail transportation systems as well as the chief source of power generation in the country. In those periods, solid mineral earnings were utilized in developing key infrastructures and industries in the country including the petroleum industry (Olumide, Akongwale & Udefuna, 2013; Maduaka, 2014).

On the other hand, with the establishment of the Mining and Minerals Act of 2007, the Mining and Minerals Regulations of 2011 and the Presidential Retreat on Solid Minerals in August 2013, which brought all the stakeholders in the sector together to harmonize strategies and views on the prospects and challenges to optimal development of the solid

mineral sector in Nigeria, solid minerals sector is touted as a major player in the economy in the coming years, with value-added as much as or even greater than oil and gas, and more importantly (Iwayemi, Adenikinju et al, 2014).
Considering the above, this study beams its spotlight on the linkages between investment and solid minerals development in Nigeria.

1.2. Research Questions
The researcher seeks to provide answers to the following research questions.
I. What is the impact of domestic investment on solid mineral development in Nigeria?
II. How significant is the impact of foreign direct investment on solid mineral development in Nigeria?
III. What is the impact of foreign portfolio investment on solid mineral development in Nigeria?

1.3. Research Objectives
The broad objective of this study is to examine the relationships between investment and solid minerals development in Nigeria. Specifically, the study aims
I. To investigate the impact of the contribution of domestic investment on solid mineral development in Nigeria.
II. To determine the impact of foreign direct investment on solid mineral development in Nigeria
III. To examine the impact of foreign portfolio investment in driving solid mineral development in Nigeria.

1.4. Research Hypotheses
In order to achieve the stated objectives, the following research hypotheses are formulated to guide this study
I. H_{01}: Domestic investment does not contribute to solid mineral development in Nigeria.
II. H_{02}: Foreign direct investment has no impact on solid mineral development in Nigeria.
III. H_{03}: Foreign portfolio investment does not drive solid mineral development in Nigeria.

This study will serve as an adequate literature on solid mineral development for researchers in the filed of economics, management, entrepreneurship and development.
Operators in solid mineral sector will find this study helpful in understanding how best to maximize the potentials of the sector, especially the international investors. The Nigeria government and policy makers will find this study as a blueprint for implementing processes that will enable the survival and improved performance of domestic and foreign direct investment in Nigeria.

2. Literature Review
2.1. Conceptual Literature Review
This section discusses some major conceptual issues associated with investments and solid mineral development in Nigeria. It is of great importance to define the major concepts in

this study to provide the context in which each of them is being used in order to avoid any ambiguity in interpretation.

Foreign Direct Investment

Foreign direct investment (FDI) is conceptualized as an investment in an enterprise situated in one country but controlled effectively by residents of another country (UNCTAD, 2009). Similarly, FDI is an inflow of foreign resources in the form of capital, technology, management skills and marketing enterprises into the host country (Ndiyo & Ebong, 2003). According to Agosin and Mayer (2000), FDI is valued by developing countries for the assets bundle deployed by MNEs through investments. These assets include advanced technology, improved management proficiency, an enhanced network for international product marketing and enhanced product design, superior quality characteristics and brand names. FDI is a major path through which developing countries can integrate into the global world and is often seen as the driving force behind economic convergence (Dike, 2005). FDI is regarded as an alternative to international trade in order to penetrate markets that are protected by strong barriers (Markusen & Venables, 1999; Dike, 2005).

Foreign Portfolio Investment

Portfolio investment usually involves the movement of capital across national borders and positions involving debt or equity securities, other than those included in direct investment or reserve assets (World Bank, 1996). World Bank (1996) defines portfolio flows to consist of bonds, equity (comprising direct stock market purchases and country funds) and money market instruments such as certificates of deposits and commercial papers. UNCTAD (1996) also defines portfolio flow as a cross border transaction of financial assets securities, a company's assets or through the financial market. Portfolio investment, therefore, includes the transfer of assets by way of investing in securities such as bonds, bank loans, stocks, derivatives and other forms of credit (e.g. pledges and trade).

Foreign portfolio investment (FPI) is stock (share) and/or bond purchases that do not create a lasting interest in or effective management over an enterprise (World Bank, 2014). Investors are more interested in reaping the maximum return on their investment for a given level of risk and FPI normally has a shorter time horizon. FPI, therefore, tends to be volatile in nature. Whiles volatility may create opportunities for arbitrage profit and encourage market efficiency; it can also result in economic disturbance especially, in a boom or bust period.

Domestic Investment

Domestic investment refers to the total investment made by all firms in a year within an economy without making provision for capital consumption. According to Oyedokun and Ajose (2018), domestic investment is an expenditure made to increase the total capital stock in the economy. This is done by acquiring further capital-producing assets and assets that can generate income within the domestic economy. Domestic investment has an important place in the economies of countries because it is very paramount in achieving economic development and its impact on several economic variables and the international

economic reality is proof that the countries of the world are racing to join the international competition (Bakari, 2017).

Solid Minerals

The International Valuation Guidance Note for Extractive Industries (2007) sees Minerals as any naturally occurring material useful to and or having a value placed on it by humankind that is found in or on the earth's crust. Similarly, the Committee on National Policy on Solid Minerals (1995) as cited in Odumodu (2012) views mineral as naturally occurring substances obtained from the earth's crust that are beneficial to man. The committee listed such groups as non-metallic substances, nonferrous and ferrous as examples of minerals. Odumodu (2012) split minerals into two – solid minerals and liquid minerals but still adopted the definitions above. Solid minerals are naturally occurring substances found on or below the ground (Odiase-Aiegimenlen, 2016).

Major minerals produced in Nigeria aside from crude oil are coal, marble, limestone, cassiterite (tin ore), columbite and gas. However, the first five varies from the last because they belong to the solid mineral's category (Anyanwu, Oaikhena, Oyefusi & Dimowo, 1997).

2.2. Empirical Literature Review

Since there is a scarcity of studies on the investment-solid mineral nexus as well as solid minerals-economic growth nexus (as far as we know), most of the studies presented in this section are on investments-economic growth nexus.

Ajie, Okoh, and Ojiya (2019) utilized ordinary least square to estimate the impact of solid mineral development on the performance of the Nigerian economy and the study concludes among other things that solid mineral development influences Nigeria's economic growth. Iduh (2012) focused on the challenges and prospects of solid mineral development in Nigeria. The study concludes that if there are good policies, political stability, and infrastructure, enabling socio-economic environment, high incentives, FDI relates to wealth creation, capital growth and boosting foreign exchange for Nigeria's economy.

The next batch of studies focuses on investment-economic growth nexus. Using time-series annual data over the period 1970-1998, Marwah and Tavakoli (2004) considered the effect of FDI on economic growth in Indonesia, Malaysia, the Philippines, and Thailand. The study revealed that FDI has a positive correlation with economic growth for the countries studied. Li and Liu (2005) used both single and simultaneous equation system approaches to examine the relationship between FDI and economic growth on a panel data of 84 countries from 1970-1999. They reported a positive impact of FDI on economic growth through human capital interaction in developing countries but a negative effect of FDI on growth through the technology gap interaction.

Egbo (2010) analyzed the extent to which FDI affects economic growth in Nigeria and found that a positive relationship between FDI and economic growth in Nigeria which implies that FDI enhances economic growth in Nigeria during the period under study. On the other hand, Chia and Ogbaji (2013) considered the relationship between FDI and

economic growth in Nigeria and their findings revealed that FDI has a positive and insignificant impact on Nigeria's economic growth. Maduka (2014) examined the effect of the interaction between financial deepening and FDI on the economic growth of Nigeria. The study found that the interaction between financial deepening and FDI can lead to faster growth if the supply of the financial assets is big, meaning that the financial sector needs to be developed and deep for the economy to be able to harness positive externalities of FDI.

Ibrahim and Akinbobola (2017) investigated the relationship between foreign portfolio investment, democracy and economic growth in Nigeria from 1986 to 2013. The results revealed that foreign portfolio investment inflow was more stable in democratic periods between 1999 and 2013 than the military periods between 1986 and 1998 and that the correlation between economic growth and foreign portfolio investment is positive and very significant. Furthermore, the result revealed that in the long-run foreign portfolio investment has a positive and significant effect on the economic growth in Nigeria. Gandu and Yusha'u (2017) assessed the impact of FDI on Nigeria's economic growth and their findings reveal that FDI inflow has a significant negative impact on economic growth in both the short-run and the long run. In a similar study, Ovat and Amba (2018) found that FDI positively and significantly impacts economic growth in Nigeria.

Since there is limited evidence (as far as we know) on the linkages between investment and solid mineral development in literature, this study presents the first empirical evidence on the subject matter using multivariate vector autoregressive technique. Furthermore, the global increase in solid mineral commodities exploration and the quest for the Nigerian government to diversify into the other sectors of the economy in other to stimulate economic growth motivates this study.

3. Methodology

3.1. Theoretical Framework

Following Lipset (2006), the theoretical framework is anchored on the Harrod-Domar model. According to Lipset (2006), the Harrod-Domar model is considered apt for investment-domestic study since FDI can function as the foreign saving needed to augment the domestic saving gap.

Following Ugochukwu, Okore and Onoh (2013) and Hove, Mama and Tchana (2012), a first-order, one lag structural VAR model in its compact form can be specified as:

The SVAR model adopted is explicitly specified as follows:

$$sm_t = \alpha_1 + \sum_{p=1}^{p} \gamma_1 sm_{t-p} + \sum_{j=1}^{p} \beta_1 fdi_{t-p} + \sum_{j=1}^{p} \omega_1 rgdpg_{t-p} + \sum_{p=1}^{p} \eta_1 di_{t-p} + \vartheta_1 \sum_{p=1}^{p} \vartheta_1 gcf_{t-p} \sum_{p=1}^{p} \delta_1 fpi_{t-p} + \varepsilon_{t1}$$

$$rgdpg_t = \alpha_2 + \sum_{p=1}^{p} \gamma_1 rgdpg_{t-p} + \sum_{j=1}^{p} \beta_1 sm_{t-p} + \sum_{j=1}^{p} \omega_1 fdi_{t-p} + \sum_{p=1}^{p} \eta_1 di_{t-p} + \vartheta_1 \sum_{p=1}^{p} gcf_{t-p} \sum_{p=1}^{p} \delta_1 fpi_{t-p} + \varepsilon_{t3}$$

$$fdi_t = \alpha_3 + \sum_{p=1}^{p} \gamma_1 fdi_{t-p} + \sum_{j=1}^{p} \beta_1 sm_{t-p} + \sum_{j=1}^{p} \omega_1 rgdpg_{t-p} + \sum_{p=1}^{p} \eta_1 di_{t-p} + \vartheta_1 \sum_{p=1}^{p} gcf_{t-p} \sum_{p=1}^{p} \delta_1 fpi_{t-p} + \varepsilon_{t2}$$

$$di_t = \alpha_4 + \sum_{p=1}^{p} \gamma_1 di_{t-p} + \sum_{j=1}^{p} \beta_1 sm_{t-p} + \sum_{j=1}^{p} \omega_1 rgdpg_{t-p} + \sum_{p=1}^{p} \eta_1 fdi_{t-p} + \vartheta_1 \sum_{p=1}^{p} gcf_{t-p} \sum_{p=1}^{p} \delta_1 fpi_{t-p} + \varepsilon_{t4}$$

$$gcf_t = \alpha_5 + \sum_{p=1}^{p} \gamma_1 gcf_{t-p} + \sum_{j=1}^{p} \beta_1 fdi_{t-p} + \sum_{j=1}^{p} \omega_1 rgdpg_{t-p} + \sum_{p=1}^{p} \eta_1 di_{t-p} + \vartheta_1 \sum_{p=1}^{p} sm_{t-p} \sum_{p=1}^{p} \delta_1 fpi_{t-p} + \varepsilon_{t5}$$

$$fpi_t = \alpha_6 + \sum_{p=1}^{p} \gamma_1 fpi_{t-p} + \sum_{j=1}^{p} \beta_1 fdi_{t-p} + \sum_{j=1}^{p} \omega_1 rgdpg_{t-p} + \sum_{p=1}^{p} \eta_1 di_{t-p} + \vartheta_1 \sum_{p=1}^{p} gcf_{t-p} \sum_{p=1}^{p} \delta_1 sm_{t-p} + \varepsilon_{t6}$$

3.2 Study Variables

Solid Mineral (SM): It is the primary dependent variable in the study. The proxy for solid mineral in this study is solid mineral rent.

Foreign Direct Investment (FDI): Refers to investment concerning transfer of huge set of assets such as better management practices, advanced technology, and know-how, financial capital etc. conducted in Nigeria by an entity (an individual or firm) from foreign countries, involving a significant equity stake in, or effective control of management.

Real Gross Domestic Product Growth Rate (RGDPG): This is utilized as the proxy for measuring solid mineral development through its impact on Nigeria's Economic growth.

This is computed as $rgdpr = (\frac{rgdp_t - rgdp_{t-1}}{rgdp_{t-1}}) * 100$. It is the annualized percentage change in RGDP.

Domestic Investment (DI): This is the total investment made by all firms in a year within an economy without making provision for capital consumption. It is utilized as a proxy for indigenous efforts towards the development of solid minerals.

Foreign Portfolio Investment (FPI): FPI consists of securities and other financial assets passively held by foreign investors. Thus, all investments by foreigners below 10% will be treated as FPI. We utilized net FPI in this study. The use of net FPI was purely a data availability issue.

Thus, on *a priori* (based on economic postulation), we expect $\gamma_i, \beta_i, \omega_i, \eta_i, \vartheta_i$ $\varphi_i, \psi_i, \delta_i, \lambda_i > 0$

VAR model was adopted because it captures the effect of variation in one variable on the others across section and period domain. According to Ciccarelli and Canova (2013) VAR is appropriate in addressing issues that are currently at the center stage of discussions in policy and academic arena; as they are capable of (i) capturing both dynamic and static interdependencies (ii) treating the relationships across units in an unlimited fashion (iii) easily including time variations in the coefficients and in the variance of the shocks, and (iv) explaining cross-sectional dynamic heterogeneities.

Other statistical and econometric analysis tools used are, Stationarity test conducted to investigate the time-series properties of the research data using Augmented Dickey-Fuller (ADF) and Philip-Perron test of unit root, Autoregressive Distributed Lag cointegration test to ensure that there is meaningful long-run association among series that are being

studied and Vector Error Correction Model(VECM) to account for short-run dynamics between the dependent and the explanatory variables.

3.3. Test of Research Hypotheses

The hypothesis was tested at 5 percent significance level. The null hypothesis was rejected if the probability at which the t-value is significant is less than the chosen significance level, otherwise, we accept the alternative hypothesis. In other words,

If the probability (Sig) > 0.05, the null hypothesis will be accepted while the alternative hypothesis is rejected.

If the probability (Sig) ≤ 0.05, the alternative hypothesis will be accepted while rejecting the null hypothesis

3.4. Nature and Sources of Data

The study utilized secondary data spanning from 1981 to 2016. The data was sourced from the Central Bank of Nigeria (CBN) publications like CBN statistical bulletin, CBN statements of Accounts and annual reports, the National Bureau of Statistics and World Development Indicators.

4. Data and Result Analysis

For the stationarity test, results of both ADF and PP show that all the time series are integrated of order one. These findings support Kim and Schmidt (1993) assertion that time series is the realization of stochastic processes.

Table 4.1a: Summary of Unit Root Test

Augmented-Dickey Fuller (ADF) Test

	Level		First difference	
Variables	No Trend	With Trend	No Trend	With Trend
RGDPG	-0.861991	-1.280392	-5.126099	-5.131169
FDI	-1.239821	1.4008934	-4.4886723	-4.900782
DI	-2.615776	-2.587639	-7.784956	-8.930168
SM	-2.011807	-1.949317	-8.575112	-8.833410
FPI	-0.845969	-1.357832	-6.575739	-6.592060
GCF	-0.257138	-0.552729	-4.937083	-5.218791
Critical Values				
1%	-3.610453	-4.211868	-3.615588	-4.219126
5%	-2.938987	-3.529758	-2.941145	-3.533083
10%	-2.607932	-3.196411	-2.609066	-3.198312

Table 4.1b: Summary of Unit Root Test Cont'd

Philip-Perron Test				
	LEVEL		First Difference	
Variables	No Trend	With Trend	No Trend	With Trend
RGDPG	-0.861891	-0.991673	-5.130655	-5.131169
FDI	-1.108975	-1.490127	-4.811290	-5.291784
DI	-2.660481	-2.587639	-7.570407	-7.623679
SM	-2.212311	-1.186363	-8.455988	-8.577109
FPI	-0.899487	-1.397327	-6.575739	-6.590009
GCF	0.533478	0.552729	-4.937083	-5.271227
Critical Value				
1%	-3.610453	-4.211868	-3.615588	-4.226815
5%	-2.938987	-3.529758	-2.941145	-3.536601
10%	-2.607932	-3.196411	-2.609066	-3.200320

Source: Regression Result obtained from E VIEW 10.1

For the cointegration test, the result shown in table 4.2 indicates that the time series are cointegrated given that f-statistics, 14.2 is greater than the upper bound critical value of .35 at 5% significance level. Hence, we conclude that there is a long-run relationship between the hypothesized variables of this study.

Table 4.2: Summary of ARDL bound test

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	14.168760	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Result of ARDL Bound test estimated using E VIEW 10.1

. As shown in Table 4.3, the error correction term for SM and RGDPG equations is -0.43 and -0.89 respectively. Both error correction terms are negative and significant. This implies that the short-run disequilibrium among the variables is substantially corrected within the period of such disequilibrium.

Table 4.3: Error correction process

Error Correction		
Differenced variables	D(RGDPG)	D(SM)
ECM(-1)	-0.428470**	-0.886590***
D(DI(-1))	-0.013220	0.016967
D(DI(-2))	-0.605620	-0.016072
D(FDI(-1))	0.078538	0.035955
D(FDI(-2))	0.118596	0.004339
D(FPI(-1))	-0.070810	0.010105
D(FPI(-2))	0.046508	0.005318
D(GCF(-1))	0.339432	0.051258
D(GCF(-2))	0.845591***	0.366624**
D(RGDPG(-1))	-0.116227	0.011950
D(RGDPG(-2))	0.173634	-0.028642
D(SM(-1))	-2.920327	0.461063
D(SM(-2))	1.052954	0.185323
C	0.192476	0.016535

Source: Result of VEC estimated using E VIEW 10.1

From a representation of the research objectives in equation form as shown below,

$$sm = \underset{(0.83)}{-0.84} + \underset{(0.34)}{0.56}\,fdi + \underset{(0.01)}{0.02}di + \underset{(0.11)}{0.89}rgdpg + \underset{(0.32)}{0.70}gcf + \underset{(0.05)}{0.93}sm - \underset{(0.09)}{0.27}\,fpi$$

apart from foreign portfolio investment, other explanatory variables are positively related to solid mineral. The result shows that a 1 unit rise in FDI may raise solid mineral with 0.56 units. In the same vein, solid mineral may rise by 0.02 units, 0.89 units and 0.70 units following 1 unit increase in domestic investment, RGDP growth and gross capital formation respectively. On the other hand, foreign portfolio investment may exert a negative influence on the solid mineral. The result shows that 1 unit rise in foreign portfolio investment may lead to 0.27-unit decline in solid mineral.

Tests of Hypotheses

For the test of the research hypotheses, a point estimate approach using the t-test was employed. All tests of hypotheses were implemented at a 5% significance level. The null hypotheses are hereby summarily restated as follows:

The impact of investments (FDI, FPI, DI) on solid mineral development in Nigeria is not statistically significant.

Decision: For deciding whether the null hypothesis can be rejected or accepted, we compared the reported t-statistic ($t^{R}_{0.05}(n, n-k)$) with the critical ($t^{C}_{0.05}(n, n-k)$). Following Woodridge (1995), the null hypothesis can only be rejected if $t^{R}_{0.05}(n, n-k) \geq t^{C}_{0.05}(n, n-k)$ otherwise accept it. From the table of critical values as provided by Woodridge (1995), $t^{C}_{0.05}(36,36-6)$ = 2.042 for a two-tail test.

Table 4.4: Summary of Confidence interval of selected estimates

Hypotheses	Variable	Estimate (t-statistic)	Outcome	Decision
Hypothesis I-III [Solid Mineral Equation]	Foreign Direct Investment	0.56 (1.67)	$t^{R}_{0.05}(n, n-k) <$ $t^{C}_{0.05}(n, n-k)$	Do not reject H0
	Foreign Portfolio Investment	-0.27 (-2.93)	$t^{R}_{0.05}(n, n-k) >$ $t^{C}_{0.05}(n, n-k)$	Reject H0
	Domestic Investment	0.02 (1.12)	$t^{R}_{0.05}(n, n-k <$ $t^{C}_{0.05}(n, n-k)$	Do not reject Ho

I. Source: Estimates obtained from VAR result (see appendix)

From the decisions in the summary of the test of hypotheses, we conclude that, Investment has not significantly driven solid mineral development in Nigeria. Specifically, although FDI and DI could drive solid mineral development, the result obtained show that FDI and DI has not significantly impacted solid mineral development. On the other hand, FPI exerts a significant negative impact on solid mineral development.

5.0. Conclusion and Recommendation

Conclusion

The main objective of this study is to ascertain the relationship between investment (DI, FDI and FPI) and solid mineral development in Nigeria. Based on available evidence, we conclude as follows. First, solid mineral is a key growth driver in a resource-endowed economy. Second, although FDI matters for solid mineral development, it has not been sufficiently directed towards solid mineral development in Nigeria. Third, although domestic investment could accelerate development in the solid mineral subsector, current investment is grossly insufficient to generate substantial development in the subsector.

Finally, given that the solid mineral subsector is characterized by weak institutions and regulatory framework, FPI could pose countervailing risk to the subsector.

Recommendation

One of the key findings of this study is that investments (both domestic and foreign direct) in the solid mineral sector is sub-optimal. Investment decisions are driven by optimization objectives. In other words, investors usually want to maximize returns while minimizing costs and constraints. Available international investment rating indicates that the ease-to-do-business index in Nigeria is one of the world's lowest. This suggests that constraints to and costs of investments could be unacceptably high. Thus, the government should embark on reforms that target the improvement of investment guidelines, operational procedures, and regulatory frameworks, especially in the solid mineral subsector. This will make a solid mineral an attractive and inviting investment destination. It will also create investment certainty and a healthy business climate that will guarantee long term rather than short term inflows that are characterized by sudden stops and reversals.

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