

Full Length Research Paper

Infrastructure deficiencies and investment in manufacturing firms in Nigeria

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The lack of private investment in productive capital is a serious problem in many developing countries, especially in sub-Saharan Africa in general and Nigeria in particular. In the last three decades, the Nigerian Government has spent a huge amount of money on infrastructure, but this has had little impact on efficiency. This study uses microeconomic evidence to show the effects of poor infrastructure services on private investment in Nigeria. Using data from 70 manufacturing firms, the study finds that infrastructure deficiencies, proxied by an unreliable and inadequate power supply, significantly curtails productive investment by firms. As a result of poor public infrastructure, many firms have invested in complementary capital rather than in productive capital. The government therefore needs to channel more resources towards the efficient delivery of public infrastructure services so as to boost private investment in productive capital.

Key words: Infrastructure deficiencies, productive investment, complementary capital, manufacturing firms.

INTRODUCTION

The lack of private investment is a serious problem in many developing countries, especially in sub-Saharan Africa (SSA) in general and Nigeria in particular. Despite structural reforms, the investment response to date has not been encouraging. Although underdeveloped financial systems are found to be associated with poor economic performance in cross-country regressions (King and Levine, 1993), a lack of liquidity constrains investment by households and small enterprises in several African countries (Bigsten et al., 1999). In Nigeria, older firms and firms in computer and office equipment as well as in the agricultural sector are similarly constrained (Adelegan, 2009). Empirical evidence has shown that liquidity constraints can only be part of the explanation; other factors such as poor public capital also affect productive investment by firms (Reinikka and Svensson, 1999). Empirical evidence in the literature has identified macroeconomic policy as a key factor influencing the efficiency and level of investment and growth (Easterly and Rebelo, 1993; Barro, 1991; Fisher, 1993). Many African countries have undertaken macroeconomic reforms, but the private investment response has not been adequate. In the last three decades, the Nigerian

Government has spent a huge amount of money on infrastructure but this has had little impact on its efficiency. Given the drive by the government for a private sector driven economy, a study of the link between infrastructure deficiencies and investment in manufacturing companies in Nigeria will help to point policy reforms in the right direction. However, generally the role of poor infrastructure and deficient public services has received little attention in economic literature. This study uses microeconomic evidence to show the effects of poor infrastructure services on private investment in Nigeria. Using data from 70 manufacturing firms, the study finds that infrastructure deficiencies, proxied by an unreliable and inadequate power supply, significantly curtails productive investment by firms.

MACROECONOMIC ISSUES: AN OVERVIEW

Macroeconomic policies influence the level and efficiency of investment and growth in the growth literature (Easterly and Rebelo, 1993; Barro, 1991; Fischer, 1993). Therefore, macroeconomic stability is necessary for the

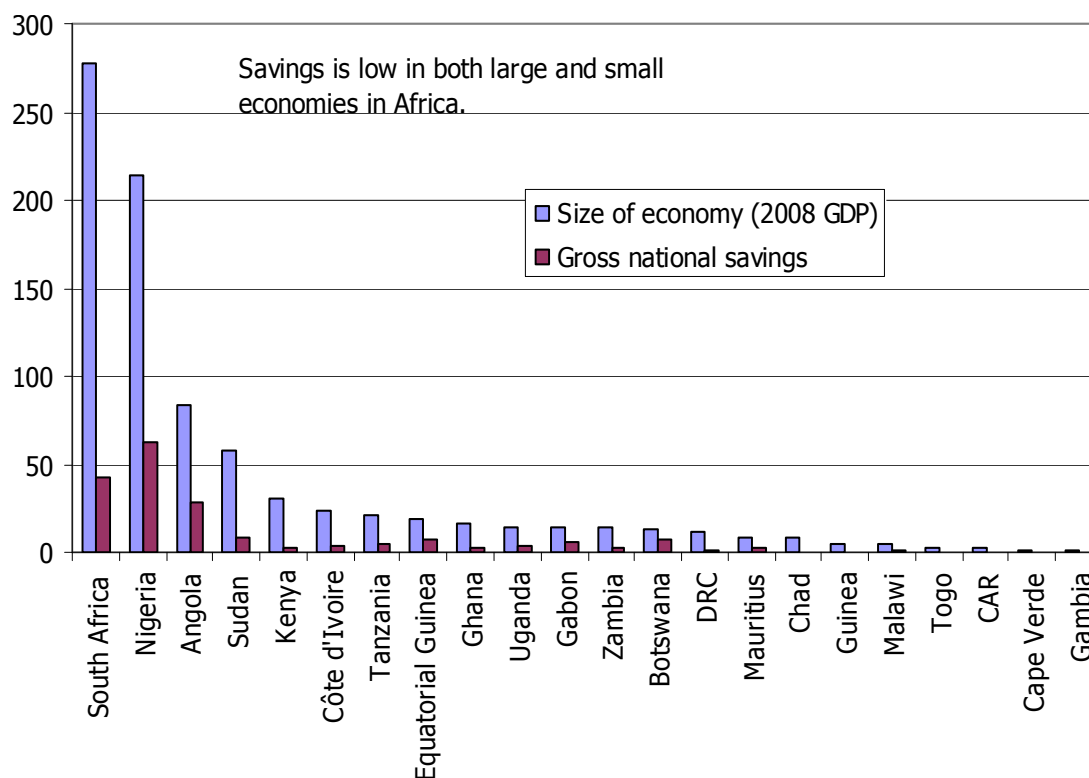


Figure 1. African Countries: GDP and Gross National Savings, 2008.. Source: IMF IFS and the World Bank, WDI databases.

efficient and high level deployment of capital for the public provision of infrastructure services. On the other hand, very low domestic savings is a major constraint to public infrastructure development in African countries, irrespective of whether they are large or small economies (Figure 1).

On average, 94% of SSA (44 out of 47 countries) had a negative savings-investment gap between 1991 and 2008¹. Only the resource rich countries, Angola, Botswana, Gabon, Namibia, and Nigeria, experienced positive savings-investment balances in 2008 (Figure 2 and Table 1).

Foreign savings is therefore an important source of development finance for African countries. Thus, African countries run current account deficits as they expand domestic investment beyond the resources available from domestic savers through reliance on foreign savings (Adelegan, 2008). Typically, the savings shortfall pertains to both the public and private sectors, but the savings-investment gap is wider for the public sector (Figure 3 and Table 1) limiting the flow of private savings available for domestic intermediation (Adelegan and Radzewicz-Bak, 2009).

Nigeria has had on average a positive savings-invest-

ment gap since 2004. This can be attributed to robust GDP growth, debt relief from multilateral and bilateral creditors, and higher oil revenue. However, on average, the country has run negative public and private savings-investment gaps between 1991 and 2008 (Figure 3 and Table 2).

A REVIEW OF SELECTED LITERATURE

In the development economics literature, the traditional approach to growth was that investment was constrained by lack of finance, while growth was constrained by lack of investment. Availability of finance will boost investment and ultimately growth (Easterly, 1997).

The growth literature has identified the role of macroeconomic policy as a key policy measure affecting the level and efficiency of investment and growth. Macroeconomic policy has been proxied by budget deficits, black-market premiums, and inflation (Easterly and Rebelo, 1993; Barro, 1991; Fisher, 1993).

Sound macroeconomic policies have been linked with financial sector development, and the latter with growth (Levine, 1997). The absence of macroeconomic stability, mainly where inflation is high, will result in a disincentive to save, and the financial market will make available only

¹The exceptions are Botswana, Gabon, and Namibia.

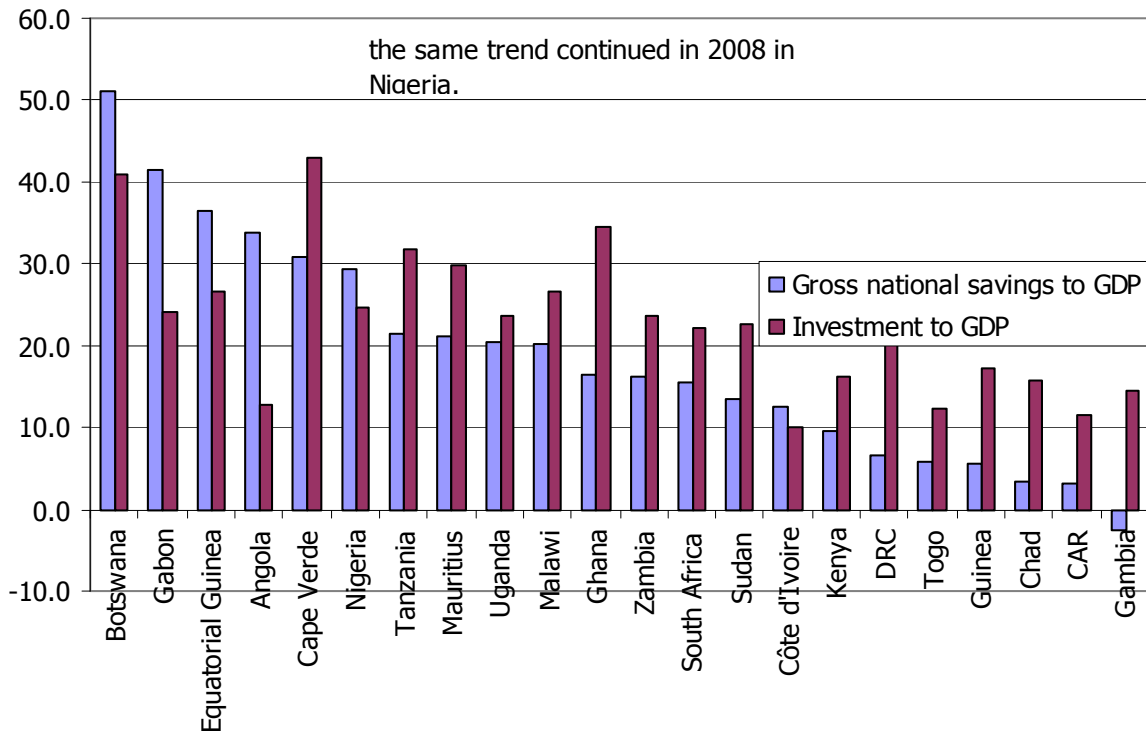
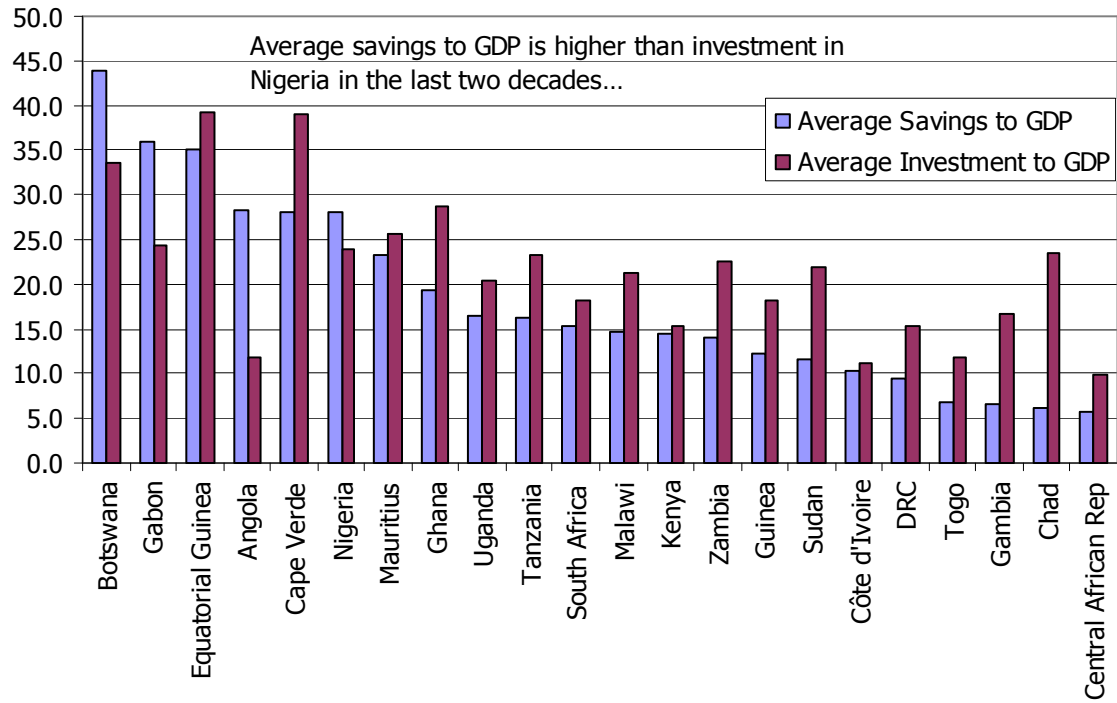


Figure 2. African Countries: Savings and Investment, 1991-2008. Sources: IMF IFS and the World Bank, WDI databases.

short-term finance at variable rates, which cannot be used to meet infrastructure projects' need of long-term finance at predictable rates (Irving and Manroth, 2009). In

the absence of macroeconomic stability, the impact of financial sector reforms on financial deepening will not be effective (Aryeetey and Nissanke, 1998).

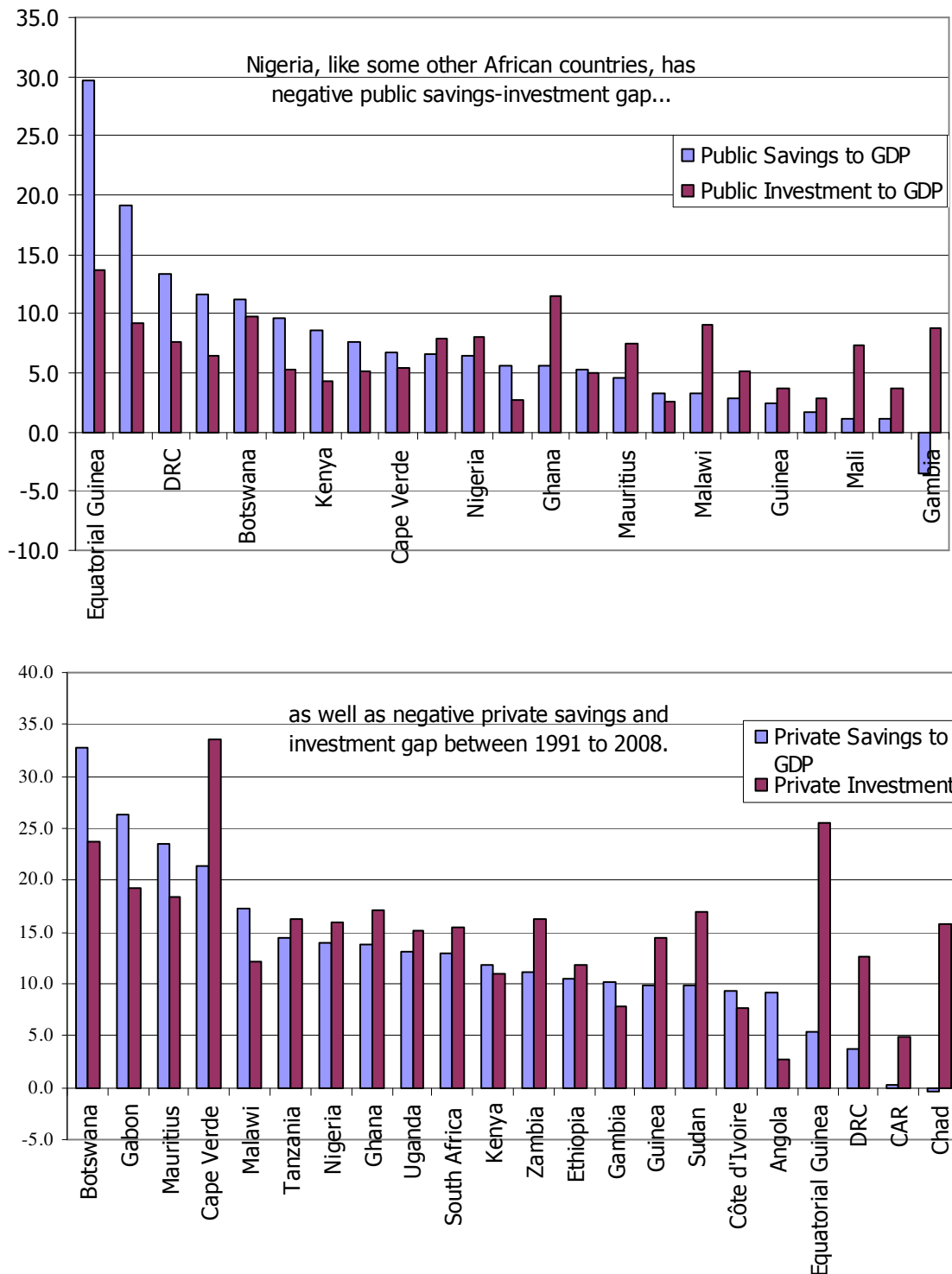


Figure 3. Public and Private Savings and Investment, 1991-2008. Sources: IMF IFS and The World Bank, WDI databases.

Several economists have suggested that financial development is associated with economic growth through better capital allocation (Bagehot, 1873; Goldsmith, 1969;

McKinnon, 1973; Shaw, 1973; Cho, 1988; Greenwood and Jovanovic, 1990; Wurgler, 2000). At the country level, King and Levine (1993), and Levine (1998) found

Table 1. Sub-Saharan Africa: Overall Savings and Investment.

Countries	2008		Average	
	Savings	Investment	Savings	Investment
Angola	33.8	12.7	28.3	11.9
Benin	12.4	20.7	12.4	19.2
Botswana	51.0	40.9	43.9	33.4
Burkina Faso	7.1	18.1	10.0	19.0
Burundi	8.7	19.7	4.4	11.9
Cameroon	19.4	19.1	14.9	17.8
Cape Verde	30.7	43.0	28.1	39.0
Central African Rep.	3.0	11.6	5.6	9.9
Chad	3.3	15.7	6.1	23.5
Comoros	4.2	13.5	7.4	11.4
Congo, Dem. Rep. of	6.5	21.9	9.4	15.4
Congo, Republic of	15.2	22.0	16.8	25.5
Côte d'Ivoire	12.6	10.1	10.4	11.3
Djibouti	7.5	46.7	12.0	20.9
Equatorial Guinea	36.5	26.7	35.1	39.2
Eritrea	8.2	10.9	18.3	20.5
Ethiopia	17.8	21.8	16.5	20.3
Gabon	41.5	24.2	35.9	24.4
Gambia, The	-2.5	14.6	6.6	16.7
Ghana	16.4	34.6	19.3	28.6
Guinea	5.5	17.2	12.2	18.2
Guinea-Bissau	10.0	24.8	8.8	32.7
Honduras	23.0	33.9	20.1	29.8
Kenya	9.5	16.2	14.5	15.4
Lesotho	25.2	28.4	24.4	36.8
Madagascar	10.8	35.1	11.9	22.2
Malawi	20.3	26.5	14.7	21.2
Mali	12.4	20.4	15.2	22.1
Mauritania	5.7	21.0	21.1	28.2
Mauritius	21.1	29.8	23.3	25.7
Niger	13.9	26.4	8.7	16.3
Nigeria	29.2	24.7	28.1	23.9
Rwanda	15.5	22.7	14.0	19.4
Senegal	17.9	30.2	15.2	22.4
South Africa	15.4	22.1	15.4	18.2
Sudan	13.5	22.8	11.5	22.0
Swaziland	11.0	17.3	15.7	17.7
Tanzania	21.4	31.8	16.1	23.1
Togo	5.7	12.4	6.8	11.8
Uganda	20.3	23.6	16.4	20.3
Zambia	16.2	23.6	14.1	22.7
Zimbabwe	22.2	23.6	11.1	11.8
Average	18.1	27.3	16.8	22.7
Minimum	-5.5	10.1	4.4	9.9
Maximum	51.0	46.7	43.9	39.2
Median	14.5	22.4	14.8	20.7

Sources: International Financial Statistics, World Economic Outlook, author's calculation.

Table 2. Nigeria: Public and Private Savings-Investment Balances in sub-Saharan Africa, 1991-2008 (in percent of GDP).

Country	Public sector				Private sector			
	2008		Average		2008		Average	
	Savings	Investment	Savings	Investment	Savings	Investment	Savings	Investment
Angola	23.2	10.8	19.1	9.1	10.6	1.9	9.2	2.7
Benin	4.6	4.7	5.2	5.3	7.8	16.0	7.2	13.9
Botswana	10.7	10.6	11.1	9.7	40.2	30.3	32.8	23.7
Burkina Faso	5.7	6.4	4.5	7.6	1.4	11.7	5.5	11.4
Burundi	0.3	10.5	-0.9	7.1	8.4	9.2	5.3	4.8
Cameroon	6.1	4.2	2.7	2.4	13.3	14.9	12.2	15.4
Cape Verde	13.0	6.8	6.7	5.4	17.8	36.2	21.4	33.6
Central African Rep.	2.9	4.5	5.3	5.0	0.1	7.1	0.4	4.9
Chad	14.4	7.5	6.5	7.8	-11.0	8.2	-0.5	15.7
Comoros	1.0	9.3	2.4	6.2	3.2	4.2	5.0	5.2
Congo, Dem. Rep.	7.3	3.7	5.6	2.7	-0.8	18.2	3.8	12.6
Congo, Republic	36.0	9.4	13.3	7.6	-20.8	12.5	3.5	18.0
Côte d'Ivoire	2.6	3.0	1.1	3.7	9.9	7.1	9.3	7.6
Djibouti	2.3	15.9	-0.4	8.3	5.2	30.8	12.4	12.6
Equatorial Guinea	32.1	16.8	29.6	13.7	4.4	9.9	5.4	25.5
Eritrea	-3.1	9.1	-4.8	15.6	11.3	1.7	23.1	4.9
Ethiopia	6.6	6.1	6.0	8.4	11.3	15.7	10.5	11.9
Gabon	17.5	4.5	9.6	5.2	23.9	19.6	26.3	19.2
Gambia, The	-9.9	9.3	-3.5	8.8	7.4	5.2	10.1	7.9
Ghana	3.7	15.6	5.6	11.5	12.7	19.0	13.7	17.1
Guinea	4.1	2.4	2.3	3.7	1.5	14.8	9.9	14.5
Guinea-Bissau	-10.0	12.0	-8.4	13.2	20.1	12.8	17.2	19.5
Honduras		5.1	2.7	5.4		28.8		24.4
Kenya	4.9	3.0	8.6	4.3	4.6	13.2	11.9	11.1
Lesotho	8.1	11.0	9.2	11.2	17.1	17.4	15.8	25.6
Madagascar	7.2	9.5	-2.5	8.5	3.5	25.7	2.7	13.8
Malawi	-4.6	8.5	3.3	9.1	24.8	18.0	17.2	12.2
Mali	3.3	5.3	1.1	7.3	9.0	15.1	11.9	14.8
Mauritania	-4.7	12.2	-0.2	18.6	10.4	8.8	20.0	9.6
Mauritius	2.0	5.0	4.6	7.4	19.1	24.8	23.6	18.4
Niger	11.6	6.7	14.2	6.4	2.3	19.8	4.1	9.9
Nigeria	12.3	6.4	6.5	8.0	16.9	18.3	13.9	15.9
Rwanda	11.4	10.2	7.2	8.0	4.0	12.5	7.5	11.4
Senegal	5.5	10.0	2.4	8.0	12.4	20.2	8.0	14.4
South Africa	3.5	3.7	1.7	2.8	11.9	18.4	13.0	15.4
Sudan	1.7	6.6	7.6	5.1	11.8	16.2	9.8	16.9
Swaziland	9.2	9.3	1.7	7.3	1.8	8.0	8.0	10.4
Tanzania	0.0	10.9	-0.3	6.9	21.4	20.9	14.4	16.3
Togo	2.5	3.5	3.3	2.6	3.2	8.9	7.2	9.2
Uganda	3.3	5.5	2.9	5.2	17.0	18.1	13.1	15.1
Zambia	1.2	3.7	11.7	6.5	15.0	19.9	11.2	16.2
Zimbabwe	23.4	23.6		11.8	-1.2	0.0	-0.6	0.0
Average	8.3	12.2	5.8	8.1	9.8	15.1	11.0	14.5
Minimum	-10.0	2.4	-8.4	2.4	-20.8	0.0	-0.6	0.0
Maximum	36.0	23.6	29.6	18.6	40.2	36.2	26.3	33.6
Median	4.6	7.2	4.5	7.4	9.9	15.4	10.1	14.1

Sources: International Financial Statistics, World Economic Outlook, author's calculation.

that financial development drives growth.

Lynch (1995) and Raja and Applegate (2002) found a positive relationship between the stock market variable and the mobility of investment funds to projects with higher than average profit. Henry (2000) also found that the stock market matters for investment. Wurgler (2000) found that countries with a developed financial sector increase investment more in their growing sectors and decrease investment more in their declining sectors. Using a panel of 12 developing countries, Garlindo et al. (2003) found that financial reform leads to an increase in the efficiency with which investment funds are allocated. Garcia and Liu (1999) found that macroeconomic stability with adequate national income and savings are necessary for capital markets in developing economies.

There are several empirical studies on the link between investment efficiency and financial development in relation to liberalization in Africa. Agrawal (1994) studied the link between stock market development and growth, using data on 9 African countries between 1992 and 1997. His results suggest a positive relationship between several indicators of stock market performance and economic growth. Ndikumana (2000) focused on the financial determinants of domestic investment in SSA from 1970 to 1995 and found positive linkage between financial development and investment in SSA, focusing on bank development indicators.

Ndebbio (2004) analyzed the link between financial deepening, economic growth and development in SSA countries and concluded that the growth rate of per capita real and nominal money balances and the degree of financial intermediation do not positively affect the growth of per capita output. Misati (2007) in a cross country study of the link between stock markets and investment efficiency in African economies found that investment efficiency matters for both northern and Southern Africa. It has been argued in the literature that variations in the incremental capital output ratio and marginal cost of capital are controversial (Wurgler, 2000) and do not necessarily represent the quality of capital investment (Easterly, 2003).

Empirical findings from a study of four African countries showed that lack of liquidity typically only constrains the capital accumulation of households and small enterprises, but on average not that of larger firms (Bigsten et al., 1999). However, irrespective of macroeconomic reforms in many developing countries, the private investment response has not been adequate (Reinikka and Svensson, 1999).

PUBLIC INFRASTRUCTURE DEFICIENCIES IN NIGERIA: VIEWS OF FIRMS' MANAGERS

Data were gathered from a firm survey (2007) to obtain information on infrastructure services and private investment in Nigeria. The survey, which covered a total of 100 manufacturing firms for the period 2004 to 2007,

was carried out between May and December, 2007. A total of 100 firms were interviewed in Lagos State (Lagos) and Oyo State (Ibadan) in Nigeria. The study collected information on costs, sales and investment from 70 firms. As a result of poor public infrastructure provision, many firms invested in complementary capital. Complementary capital is capital that provides support services necessary for the operation of productive private capital. This includes transport infrastructure such as roads, railways, and ports; or utilities such as electricity, water, and telephone. Public infrastructure is normally publicly provided, and firms in low-income countries can substitute for deficient public services by investing privately in complementary capital such as power generators, water or waste disposal. However, some public infrastructure cannot be easily or adequately substituted by private firms' complementary capital. It is costly for firms to provide complementary capital. Moreover, complementary capital crowds out private productive investments (Reinikka and Svensson, 1998)

The quantitative information obtained showed that most of the managers ranked poor and unreliable utility services as the greatest constraint to investment. Although all the firms are connected to the public grid, they all, irrespective of their sector, age or size, saw electricity supply as the most binding constraint and a major obstacle to investment.

Managers also perceive (1) lack of finance and, high interest rates; and (2) the cost of raw materials as major constraints (Figure 4).

On average, the firms surveyed did not receive electricity from the public grid for 120 operating days a year (median is 104 days). Therefore many of the firms (85%) have invested in an electricity generator as a back-up. Anecdotal information shows that it costs about 5 times more to run a generator than to buy power from the public grid when it is available. On average, billing errors by the national electricity power holding authority occurred 6 months per year. Billing errors result in office visits of firm personnel to the electricity power holding authority for bill reconciliation with the attendant loss of productive man hour.

Firm average disguises considerable variation across firms in terms of days without electricity supply (Figure 5). The variation in supply of electricity depends on the number of lines to which a firm is connected, so that it can switch from one line to the other during a period of power shedding. It also depends on whether the firm is connected to "priority" lines.² Firms connected to priority lines will tend to have a more reliable electricity supply. All the firms (100%) invested in mobile phones and office land lines run by private services because the public service was inefficient. Furthermore, all the firms use

² Electricity lines for important military facilities, government reserved areas, top political office holders, or top national electricity supply personnel.

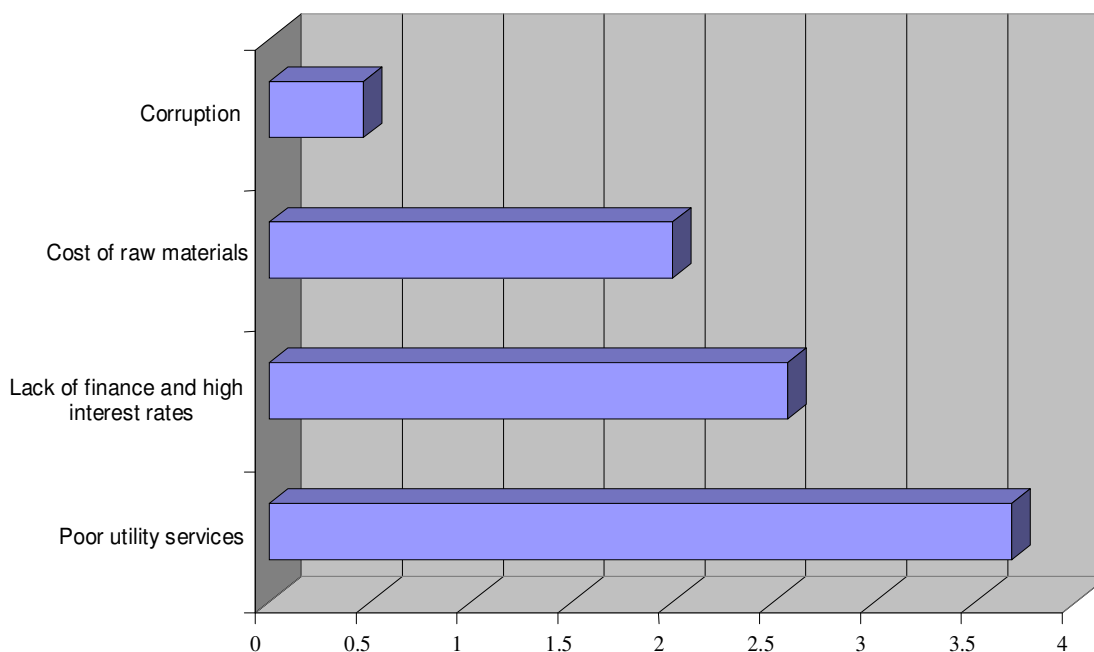


Figure 4. Nigeria, major constraints to investment, 2007. 1 = no problem, and 4 = major problem. Source: Author's calculations.

private providers to dispose of their waste because the public waste disposal services are inefficient and unreliable. Firms report an inadequate water supply for 117 days in an operating year (median of 156 days). Firms rely on alternative sources of water by sinking boreholes or wells, or by buying water from tankers. Postal services are also inefficient; it takes an average of two weeks to deliver letters through the post office and many of the firms rely on courier services, and emails to get their mail delivered.

The summary statistics show that the inefficient supply of public infrastructure is high and can have adverse consequences on firms' investment decisions. The methodology and an empirical analysis is presented subsequently.

METHODOLOGY AND EMPIRICAL ANALYSIS

Model specification and data

Data were obtained from a firm survey (2007) of information on infrastructure services and private investment in Nigeria. The survey, which covered a total of 100 manufacturing firms for the period 2004 to 2007, was carried out between May and December 2007. A total of 100 firm were interviewed in Lagos State (Lagos) and Oyo State (Ibadan) in Nigeria. The study was able to collect information on costs, sales and investment from 70 firms. Thirty-seven percent of the final data used was obtained from the firm survey in Lagos and 63% from Ibadan.

The study adopted the model in Reinikka and Svensson (1999). The dependent variable is the investment rate measured as

investment in plant and equipment in 2007, excluding investment generators, as a share of the previous year's capital stock (Ik). The model can be written as:

$$Ik_i = \alpha_i + \beta_1 GN_i + \beta_2 LD_i + \beta_3 GN_i * LD_i + \beta_4 \chi_i + \epsilon_i \dots \dots \dots (1)$$

where, GN is complementary capital proxied by installed electric power generators. This is a dummy variable that takes the value of 1 if the firm owned a generator, and zero otherwise.

LD is lost days, proxied by the reported number of days in 2007 that the firm did not have power supply from the public grid.

χ is a vector of age, size and profit. Age is a dummy variable of 1 for old firms and 0 for newer firms. Size is a proxied by total employment, and profit is proxied as retained earnings measured as sales less operating costs and interest payments. The size and profit variables are divided by the previous period's capital stock to minimize the heteroscedasticity problem.

Equation 1 was estimated using an ordinary least square (OLS) estimator. The OLS estimator has a large number of desirable properties, making it the overwhelming choice for the optimal estimator when the estimating problem is characterized by the classical linear regression model.

RESULTS

Table 3 presents the summary statistics for the sample of 70 firms covering 156 firm years. 85% of the firms owned a generator by the end of the sample period.

Table 4 presents the regression results of the model in Equation 1. There is a positive statistically significant relationship between profit rates and size of the firm

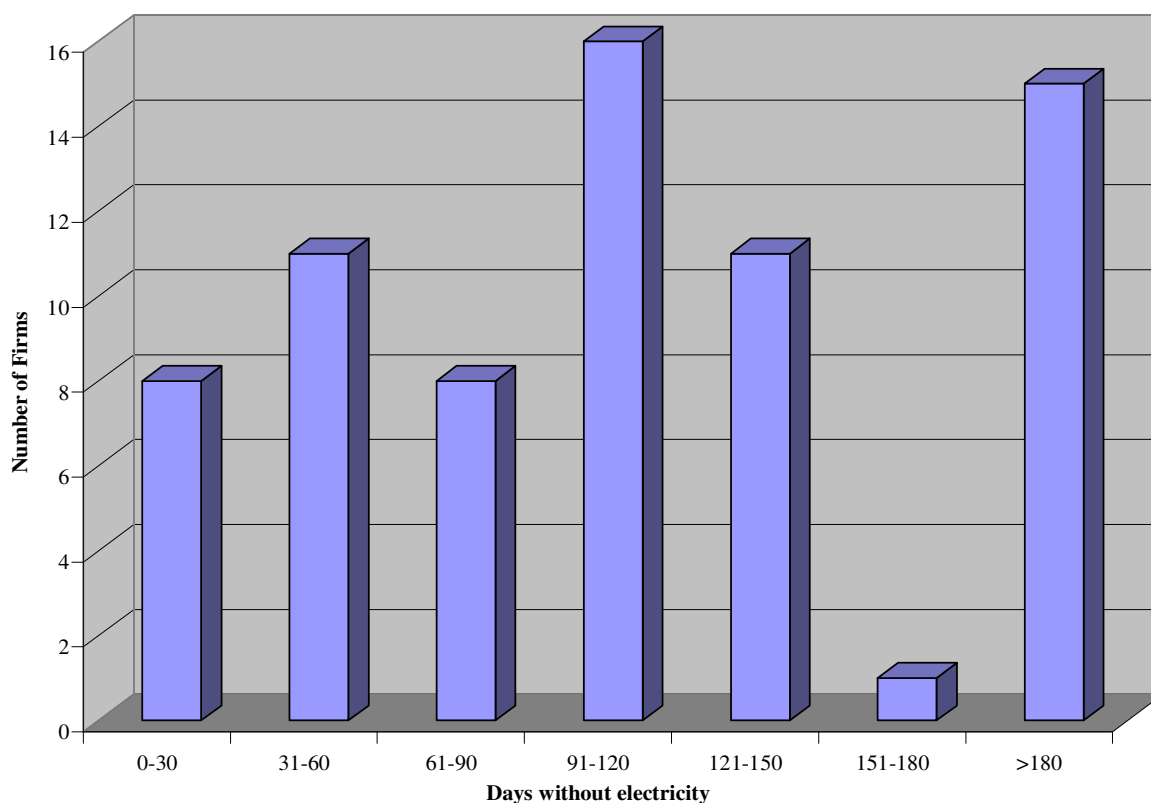


Figure 5. Nigeria: Distribution of firms according to days without electricity supply, 2007. Source: Author's calculations.

Table 3. Summary statistics.

Variable	Mean	Min.	Max.	Std dev.
Employment	355	4	8000	890.2
Log (employment)	3.75	1.01	8.99	2.16
Age	14.48	1	63	14.54
profit rate	12.19	8.44	13.8	4.25
lost days	85.25	0	169	44.77
Sales(millions of naira)	4.4	4	85	8.16
observations	156			

Source: Authors' computation using Stata version 10.

(proxied by employment), and firms' investment in plant and equipment. This implies that bigger firms with a higher profit rate invest more in plant and equipment.

All the three variables of interest (number of lost days, generator ownership and the interactive term of lost days and investment in generators) have statistically significant parameter estimates. There is a negative statistically significant relationship between investment in complementary capital (proxied by generator ownership) and the interactive term of lost days and investment in generators, and a positive statistically significant relation-

ship between the number of lost days and firm level investment. Firms that have experienced lost days invest more in productive capital than those that have not. On the other hand, firms that have installed complementary capital invest less in productive capital than firms that have not. This supports the assertion that private substitutes in the form of complementary capital crowd out productive capital, because, as a result of the high costs of complementary private substitute capital, the resources that could be used for productive public capital will be used instead to finance private substitutes.

Table 4. Regression results of investment in plant and equipments and infrastructural deficiencies.

Dependant variable is investment in plant and equipment to previous period's capital stock		
	1	2
Profit	0.0011(6.54)*	0.005 (1.55)
log(employment)	0.185(4.17)*	0.183(4.66)*
Age	-0.011(0.2)	-0.02(-0.48)
log(lostdays)	11.59(4.70)*	27.01(2.65)***
log(lostdays)*generator	-0.109(4.55)*	-0.259(2.61)***
Generator	-42.44(4.71)*	-10.01(2.63)***
Change in sales		2.49(1.55)
Constant	2.01(4.25)*	3.63(3.22)*
F-Stat	14.83(0.01)	16.62(0.01)
adjusted R2	88.3	90.9

Absolute value of z-statistics in parentheses. *, ** and *** represent significance at 1, 5 and 10%, respectively. Source: Authors' computation using Stata version 10.

This confirms findings in Reinikka and Svensson (1999).

The study checked for the robustness of the results by adding changes in sales. The accelerator model of investment predicts that investment is positively dependent on changes in demand. However, the parameter estimate for changes in sales is not statistically significant. This implies that sales have no significant impact on firms' investment in productive capital.

CONCLUSION AND RECOMMENDATIONS

Lack of private investment is a serious problem in many developing countries, especially in SSA in general and Nigeria in particular. In the last three decades, the Nigerian government has spent a huge amount of money on infrastructure, but this has had little impact on efficiency. Given the drive by the government for a private sector driven economy, a study of the link between infrastructure deficiencies and investment by manufacturing companies in Nigeria will help to point policy reforms in the right direction. However, the role of poor infrastructure and deficient public services has received little attention in economic literature.

This study has used microeconomic evidence to show the effects of poor infrastructure services on private investment in Nigeria. Using data from 70 manufacturing firms, the study has found that infrastructure deficiencies, proxied by an unreliable and inadequate power supply, significantly curtail productive investment by firms. As a result of poor public infrastructure provision, many firms have invested in complementary capital. On average, the firms surveyed did not receive electricity from the public grid for 120 operating days a year (median is 104 days). Therefore many of the firms (85%) invest in electricity generators as a back-up. The implication of the invest-

ment in complementary capital is the trade-off against more investment in productive capital.

Suggested areas for further research

Further research can examine the link between capital structure, liquidity and corporate investment behaviors; the role of debt and liquid assets on corporate investment; and the effects of financing constraints on inventory investments.

POLICIES

A number of policies can be considered by the government to address this problem of poor infrastructure and deficient public services.

Efficient provision of public infrastructure

Since public infrastructure can be provided more efficiently by the government, the government needs to channel more resources toward the efficient delivery of public services. By addressing poor infrastructure and deficient public services, the government will be able to boost private investment in productive capital.

Improvement in the public sector's performance

A substantial share of firms' investment is attributable to providing inefficient complementary capital for alternatives to deficient and poor public infrastructure. Although macroeconomic stability is necessary for sustainable improvement in the private sector, macroeconomic policy

reforms need to be accompanied by an improvement in public sector performance to achieve sustained growth and private productive investment.

Sound and stable macroeconomic policies

Macroeconomic stability should be pursued by government to provide the platform for long-term financing that can meet the needs of infrastructure projects. This should also include fiscal policies aimed at preventing the crowding out of private productive investment by complementary capital that is an inefficient substitute to inadequate public infrastructure.

Fiscal policy measures

Fiscal policy measures can be used to correct the public sector's negative current account balances, as well as the imbalance between savings and investment in the private sector. A useful policy is the introduction of savings incentives, such as an interest rate policy, that will encourage savings. Private savings can be mobilized through increases in interest rates.

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REFERENCES

- Adelegan OJ (2009). Investment, Financial Factors and Cash flow from Nigerian Panel Data. *J. Afr. Dev.* Spring, 11(1): 77-108. (New York, USA).
- Adelegan OJ (2008). Can Regional Cross-listings Accelerate Stock market Development? Empirical Evidence from sub-Saharan Africa, IMF Working Paper 08/281, (Washington: International Monetary Fund).
- Adelegan OJ, Radzewicz-Bak BE (2009). What determines bond market development in sub-Saharan Africa? IMF Working Paper, 09/213, (Washington: International Monetary Fund, USA), pp. 1-32.
- Aryeetey E, Nissanke M (1998). Financial Integration and Development, Liberalization and Reform in Sub-Saharan Africa. London. Routledge.
- Bagehot W (1873). *Lombard Street: A Description of the Money Market* (1992 ed.). Irwin, Homewood, IL.
- Barro R (1991). Economic Growth in a cross section of countries, *Q. J. Econ.*, 106(2): 407-443.
- Bigsten A, Collier P, Dercon S, Gauthier B, Gunning, JW, Isaksson A, Oduro A, Oostendorp R, Pattillo C, Soderbom M, Sylvain M, Teal F, Zeufack A (1999). Investment in Africa's Manufacturing Sector: A four Country Panel Data Analysis, *Oxf. Bull. Econ. Stat.*, 61(44): 89-512.
- Cho Y (1988). The Effect of Financial Liberalization on the Efficiency of Credit Allocation: Evidence from Korea, *J. Dev. Econ.*, 29, pp. 101-110.
- Easterly W (2003). Can Foreign Aid Buy Growth? *J. Econ. Perspect.*, 17(3): 23-48.
- Easterly W (1997). The Ghost of Financing Gap: How the Harrod-Domar Growth Model still Haunts Development Economics', Policy Research Working Paper 1800, The World Bank.
- Easterly W, Robelo S (1993). Fiscal Policy and Economic Growth: an empirical investigation, *J. Monet. Econ.*, 32(2): 1203-1250.
- Fisher S (1993). The role of macroeconomic factors in growth. *J. Monet. Econ.*, 32(3): 417-458.
- Garlindo A, Schiantarelli F, Weiss A (2003). Does Financial Liberalization Improve the Allocation of Investment? Micro Evidence from Developing Countries, Boston College Working paper 503.
- Henry PB (2000). Do Stock Market Liberalizations Cause Investment Booms? *J. Finan. Econ.*, 58: 301-334.
- Irving J, Manroth A (2009). Local Sources of Financing for infrastructure in Africa A Cross-Country Analysis, Policy Research Working Paper 4878, The World Bank.
- King R, Levine R (1993). Finance and Growth: Schumpeter might be right. *Q. J. Econ.*, 108: 717-737.
- Levine R (1997). Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature*, 35: 688-726.
- Lynch D (1995). Does Financial Sector Development Matter to Investment? *Savings and Development*, p.1.
- Mckinnon R (1973). *Money and Capital in Economic Development*, Brookings, Washington DC.
- Misati RN (2007). Liberalization, Stock Market Development and Investment Efficiency in Africa, paper presented at the at the Center for the Studies of African Economies, St. Catherine's College, Oxford, United Kingdom, at the "Economic Development for Africa Conference", March 18-20, 2007.
- Ndebbio JE (2004). Financial deepening, Economic Growth and Development: Evidence from Selected Sub-Saharan African Countries, AERC Res. Paper, p. 142.
- Ndikumana L (2000). Financial Determinants of Domestic Investment in sub-Saharan Africa: Evidence from Panel Data, *World Development*, 28(2): 381-400.
- Raja MA, Applegate M (2002). Does the Stock Market Make a Difference? Institute of Diplomatic Studies, Riyadh, Saudi Arabia.
- Reinikka R, Svensson J (1999). How Inadequate Provision of Public Infrastructure and Services Affects Private Investment, Policy Research Working Paper 2262, The World Bank.
- Shaw E (1973). *Financial Deepening in Economic Development*, Brookings, Washington, DC.
- Wurgler J (2000). Financial Markets and the Allocation of Capital, *J. Finan. Econ.*, 58: 187-214.