Relationship Between FDI and Telecommunication Growth in Nigeria

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Abstract Telecommunication sector is one of the fastest growing industries in Nigerian economy, with the help of the Nigeria Communication Commission (NCC) which has attracted more investors to participate in the industry. This study investigates the empirical relationship between Foreign Direct Investment (FDI) and telecommunication growth in Nigeria. The panels of data used in the study were sourced from the Central Bank of Nigeria statistical bulletin, Nigeria Communication Commission, World Bank's World Development Indicators of 2008. The period of analysis was 2001-2008. An ordinary least squares method was used to ascertain the relationship between FDI and telecommunication growth in Nigeria. The result shows that with the exception of GDP all the other variables such as consumer subscribers, private investment and technology have a positive and significant relationship with FDI. It is recommended that government should improve more infrastructural facilities to generate more FDI into Nigeria.
Key words Foreign Direct Investment (FDI); Nigerian telecommunication; NITEL

1 Introduction

Some decades ago, Telecommunication industry was one of the sectors that suffered serious setback in Nigeria. The problem could be traced to the fact that the sector was operated single handedly by government owned company Nigeria Telecommunication Limited (NITEL) which monopolized the telecommunication services in Nigeria. With the establishment of National Communications Commission (NCC) in the year 1992, the agency was given a mandate to issue license to private companies wishing to operate in the industry which pave the way for the foreign companies to participate in telecommunication business in Nigeria. Following this new development, the Government gradually withdrew from direct conduct of commercial activity to embrace a private sector-led growth strategy. Foreign investors are therefore fully welcome to participate in the process. Although their response has so far been most evident in the utilities sector, the industry is now considered as one of the fastest growing industry in Nigeria with the highest number of subscribers in Africa.

The objective of this paper is to investigate the relationship between the Foreign Direct Investment (FDI) and telecommunication growth, bearing in mind that more than 70% of investment in the sector came from Foreign Direct Investment (FDI).

This paper is divided into six sections starting with review of some literature in section 2. Section 3 contains issues in telecommunication sector in Nigeria while Section 4 includes the methodology used Section 5 entails result and discussion, after that it was summed up with conclusion in section 6.

2 Literature Review

Renewed research interest in FDI stems from the change of perspectives among policy makers from "hostility" to "conscious encouragement", especially among developing countries .FDI had been as "parasitic" and retarding as the development of domestic industries for export promotion until recently. However, (Bende-Nabende and Ford 1998) submit that the wide externalities in respect of technology transfer, the development of human capital and the opening up of the economy to international forces, have served to change the former image. (Borensztein et al. 1998) see FDI as an important vehicle for the transfer of technology, contributing to growth in larger measure than domestic investment. (Findlay 1978) postulates that FDI increases the rate of technical progress in the host country through a "contagion" effect from the more advanced technology, management practices, etc. , used by foreign firms.

On the basis of these assertions government have often provide special incentives to foreign firms to set up companies in their countries. (Carkovic and Levine 2002) note that the economic rationale for offering special incentives to attract FDI frequently derives from the belief that foreign investment produces externalities in the form of technology transfers and spillovers.

Curiously, the empirical evidence of these benefits both at the firm level and at the national level remains ambiguous. (De Gregorio 2003), while contributing to the debate on the importance of FDI,

notes that FDI may allow a country to bring in technologies and knowledge that are not readily available to domestic investors, and in this way increases productivity growth throughout the economy. FDI may also bring in expertise that the country does not possess, and the foreign investors may have access to global markets. In fact, he found that FDI is three times more efficient than domestic investment.

2.1 FDI effects on economic growth

A lot of research interests have been shown on the relationship between FDI and economic growth, although most of such works are not situated in Africa. The focus of the research work on FDI and economic growth can be broadly classified into two. First, FDI is considered to have direct impact on trade through which the growth process is assured (Markussen and Vernables, 1998). Second, FDI is assumed to augment domestic capital thereby stimulating the productivity of domestic investments (Borensztein et al., 1998; Driffeld, 2001). These two arguments are in conformity with endogenous growth theories (Romer, 1990) and across country models on industrialization (Chenery et al., 1986) in which both the quantity and quality of factors of production as well as the transformation of the production process are ingredients in developing a competitive advantage. FDI has empirically been found to stimulate economic growth by a number of researchers (Borensztein et al., 1998; Glass and Saggi, 1999). (Blomstrom et al. 1994) report that FDI exerts a positive effect on economic growth, but that there seems to be a threshold level of income above which FDI has positive effect on economic growth and below which it does not. The explanation was that only those countries that have reached a certain income level can absorb new technologies and benefit from technology diffusion, and thus reap the extra advantages that FDI can offer. In summary, (UNCTAD 1999) submits that FDI has either a positive or negative impact on output depending on the variables that are entered alongside it in the test equation. These variables include the initial per capita GDP, education attainment, domestic investment ratio, political instability, terms of trade, black market exchange rate premiums, and the state of financial development. Examining other variables that could explain the interaction between FDI and growth, (Olofsdotter 1998) submits that the beneficiary effects of FDI are stronger in those countries with a higher level of institutional capability. He therefore emphasized the importance of bureaucratic efficiency in enabling FDI effects.

The neoclassical economists argue that FDI influences economic growth by increasing the amount of capital per person. However, because of diminishing returns to capital, it does not influence long-run economic growth.

2.2 Development of telecommunication

The positive relationship between economic growth and telecommunication is evident given the various studies that abound. For instance, (Jorgenson 2001) study of the United State showed that investment in information technology (IT) contributed more than one-half of the recent increase in the US economic growth. His study was collaborated by Kraemer and (Dedrick 2001) who, using data from 43 countries, upheld the view that the growth in IT investment is correlated with productivity growth. (Oulton 2001) study of the United Kingdom showed that in the beginning and later part of 1990s, Information and communication Technology's (ICT) contribution to GDP growth was 0.36% and 0.57% respectively. For Beligium, Kegels, van Overbeke and van (Zandweghe, 2002) found that the accumulation of ICT capital has a significant impact on output growth and average labor productivity growth. (CEPII 2003) study on France showed that in the early 1990s to the mid 1990s, ICT's contribution to capital growth in increase from 0.25% to 0.45%. (Cronin et. al. 1991) used the Granger, Sims and modified Sims tests to confirm the existence of feedback process in the economic activity and growth stimulates demands for telecommunication services. They believe that as the economy grows, more telecommunications facilities are needed to conduct the increased business transactions. Roller and (Waverman 2001), using data for OECD countries, were the first to use simultaneous approach to incorporate both effects in the economic model in order to validate the hypothesis of reverse causality. Overall, (Gupta, 2000) submitted an estimate that 1% growth in telecommunication services generates 3% growth in the economy.

3 Telecommunication Sector in Nigeria

3.1 Brief history

Telecommunication facilities in Nigeria were first established in 1886 by the colonial administration. At independence in 1960, with a population of roughly 40 million people, the country only had about 18,724 phone lines for use. This translated to a teledensity of about 0.5 telephone lines per 1,000 people. The telephone network consisted of 121 exchanges of which 116 were of the manual (magneto) type and

only 5 were automatic.

Between 1960 and 1985, the telecommunication sector consisted of the Department of Posts and Telecommunications (P&T) in charge of the internal network and a limited liability company, the Nigerian External Telecommunication (NET) Limited, responsible for the external telecommunications services. NET provided the gateway to the outside world. At this time, the telephone system was unreliable, congested, expensive and customer unfriendly. Government-held parastatal the Nigeria Telecommunication Ltd. (NITEL) was established in 1985, and held a monopoly in the market for more than a decade. The company's ascendancy was marked by a long wait times for connections well as poorly maintained and scanty infrastructure. The main objective of establishing NITEL was to harmonize the planning and co-ordination of the internal and external telecommunications services, rationalize investments in telecommunications development and provide accessible, efficient and affordable services.

The government, in November 1992, established an independent regulator the Nigeria Communications Commission (NCC) that oversees the telecoms sector, but it was the inauguration of the current board of the NCC under Ernest Ndukwe in 2000 that saw the NCC begins to fulfill its promise as a dynamic actor in the sector. In 2003, the Nigerian Communication Act gave powers previously residing with the Ministry of Information and Communication to the NCC, reducing the role of Ministry to policy-making and giving the NCC a free hand in regulating the industry. The NCC introduced a new licensing framework in the sector in 2006, with the introduction of technology-neutral Unified Access Service Licenses (UASL), which allow providers to offer fixed, mobile and data services using the technology of their choice.

The market was transformed by the government decision to issue GSM licenses. Awarded in an open auction, the licenses were given to NITEL, operating as M-Tel, South African telecoms company MTN and consortium led by Zimbabwe's Econet wireless. Consumers immediately flocked to the new technology which provided away to leapfrog the limited fixed-line infrastructure, and within a year, there were over 1.5 million mobile subscribers in the country, as compared to just 702,000 fixed-line subscriber. By August 2008, Nigeria had 64,296,117 mobile subscribers as compared to 1,152,517 fixed line subscribers. Currently the major players in the Nigeria mobile market are MTN, Globacom, Zain Nigeria (celtel, then Econet wireless Nigeria and later Vmobile), Etisalat and MTEL.

Nitel's dominance of the fixed-line market came under siege in 2002, when the government awarded a second National Operator license to Globacom, which also received a GSM license. To protect the national fixed-line operator the government embarked on privatizing the parastatal. The first effort in this direction involved the firm Pentascope, partly funded by the consortium of Nigeria banks, which acquired 51% of Nitel in 2003. But the company was unable to stop Nitel shedding customers to the mobile operators, and even as other mobile networks boomed, Nitel's mobile arm lost market share. So, the government turned to Transnational Corporation of Nigeria (Transcorp), which acquired 51% of Nitel in 2006. But Transcrop's tenure at the helm of the national operator has been no more successful- the company has continued to lose customers, its infrastructure had decayed further and its workers have gone unpaid. The government has decided to have another try at the privatization process- Transcorp is to cede 29% of its holding , with the government given up 22% of its current 49% share to make a majority stockholding of 51% to be offered to a new investor in February 2009. Among those said to be interested in taking on the national operator are Russian telecoms operator Altimo, UK Company Vodafone, South African operator Vodacom and Indian Conglomerate Bharti Airtel.

3.2 Overall sector growth

The telecommunications sector is undergoing very rapid change and explosive growth. Waiting lists for telephone lines have disappeared, while telephone tariffs for local, national and international calls are gradually ranking amongst the lowest in Africa. The liberalization of the sector and the resulting competition by private operators is bringing about very substantial benefits to subscribers in terms of much lower prices and enhanced choice. Recently, the introduction of mobile telephony to Nigeria in 2001 radically altered the country's communications landscape from a base of 0.73% teledensity in 2001, the country as of August 2008 had reached 39.45% teledensity, calculated on the basis of active subscribers. This phenomenal growth was driven by mobile telephony in August 2008; Nigeria had 64,296,117 active mobile subscriptions, as compared to just 1,152,517 active fixed line subscriptions. In 2007, the country passed out South Africa as the continent's largest mobile phone market. Nigeria mobile subscriber base is projected to rise to 79.8 million by 2010.(NCC 2004-2008)````````` Despite this enormous increase, the demand for more lines still persists in Nigeria, though there is a quest not just for lines but also for good quality services from the operators. This strong growth is due mainly to

competition to sign up new users by the GSM operators and their fixed counterparts.

In spite of the extraordinary growth in the sub-sector notwithstanding, quality of services provided and telecommunication operation has remained unimpressive, owing to poor interconnectivity between the different networks. The problem of constant call droppings, message and call failures and overloaded billings have not been effectively addressed despite numerous complaints from the consuming public, the industry is still plagued with some problems. Which includes: Poor public power supply; poor security such that infrastructure are often vandalized; high operational cost.

3.3 Contribution of telecommunication towards economic growth

The telecommunication sector is usually referred to as an infrastructure of infrastructure because an investment in the sector is capable of generating activities and having a multiplier effects on the other sector of the economy, The sector currently accounts for about 6% of the country's total Gross domestic Product (GDP), with room for growth, according to a survey by Pyramid Research, a United Kingdom based telecommunication research firm, and it well within the range that we see in places like Europe, Africa and elsewhere within the developing markets. The impact of the telecommunication sector on the Nigeria GDP can be seen from various points. The most transparent item is the investment, secondly the revenue it generated on annual basis.

3.4 FDI and telecommunication industries in Nigeria

FDI has had a notable impact on the expansion of mobile telephone in Nigeria since the launch of Global System for Mobile (GSM) licensing in January 2001. Two of the three licenses issued went to foreign companies –MTN of South Africa and Econet Wireless (at the time a Zimbabwean-South Africa firm and now Celtel Nigeria, further to the entry in 2006 of the Zain Group Kuwait) – for $285 million each. Within two years, Econet and MTN had signed up 2.2 million subscribers. MTN alone claims to have invested more than $3 billion to date in Nigeria and the Zain Group has pledged another $2 billion investment.

The impact of FDI under competitive conditions in mobile telephone has been remarkable. In the sector as a whole, subscriber numbers have grown from 35,000 to over 19 million by September 2005, while prices are being driven below those in comparator countries.

Competition in the fixed-line sector is provided by nationally owned Globacom, was issued the second national operator license in 2002. After various failed attempts to privatize the State-owned operator, 51% of Nigeria Telecommunications Limited (NITEL) was eventually acquired by Transnational Corporation (Transcorp) of Nigeria, a local company, in November 2006. However, the Government reversed the privatization in February 2008, on grounds that Transcorp failed to achieve the objectives of the privatization guidelines, and is now looking for a new core investor.

4 Methodology

In other to achieve the stated objectives of this study, the secondary data was sourced and utilized. Data set relating to total Foreign Direct Investment (FDI) and the Gross Domestic Product (GDP) were sourced from Central Bank of Nigeria Statistic Bulletin and the World Bank's World Development Indicator of 2008. In addition pertaining Number of Subscribes, Private Investment and the value of Technology were extracted from Nigeria Communication Commission (NCC) website. The period covered by this study is 2001-2008. The choice of period is informed by the development of telecommunication industry in Nigeria.

Specifically, to analyze the relationship between FDI and telecommunication growth in Nigeria, Four variables were considered as a proxy to communication growth thereby used as independent variables while FDI values are considered as dependent variable. The statistical formulation of the model can therefore be presented as follows:

$$FDI=\beta 1+\beta 2\ PIT+\beta 3\ GDP\ (TT)+\beta 4\ SC+\mu$$

Where:

FDI= Foreign Direct Investment (FDI) in Telecommunication Industry.

PIT= Private Investment in Telecommunication

GDP (TT) = Total Value of Telecommunication Technology

SC= Number of combined subscribers in Telecommunication

μ = Error term

Ordinary least squares using E-Views was employed to analyze the relationship between the dependent variable FDI and independent variable, telecommunication grows proxy by the four variables. It is interesting to note that greater percentage of the telecommunication investment in Nigeria are

financed through FDI hence it is assumed that significant relationship exist between influx of FDI and telecommunication growth in Nigeria.

5 Empirical Result and Analysis

Table 1 The Growth of Telecommunication from 2001-2008

Years	Cs	PIT in Millions $	GDP in Millions $	Technology	FDI
2001	866782	1200	2398.70	0.00	161441.60
2002	2271050	2100	2983.10	0.00	166631.60
2003	4021945	4000	3785.50	0.00	178478.60
2004	10201728	6080	6015.90	0.00	249220.60
2005	19519145	7500	7851.70	314.07	324656.70
2006	33603761	8500	10567.90	348.74	481239.10
2007	41975275	11500	14225.40	483.68	552498.60
2008	64296117	12500	19156.20	593.84	586309.60

Source: Nigeria Communication Commission (NCC), World Bank's World Development Indicator of 2008 Central Bank of Nigeria statistic bulletin.

Table 1 below depicts the value of consumer subscribers, private investment, technology, Gross Domestic Product (GDP) and Foreign Direct Investment (FDI) from 2001-2008 which shows a remarkable increase of FDI from 2001-2008 representing 72.5% increase.

Figure 1 illustrates the trend of FDI inflow and consumer subscriber growth in Nigeria from 2001-2008, the figure clearly shows the rate at which the consumer subscriber is growing, which made it the highest subscriber base in Africa.

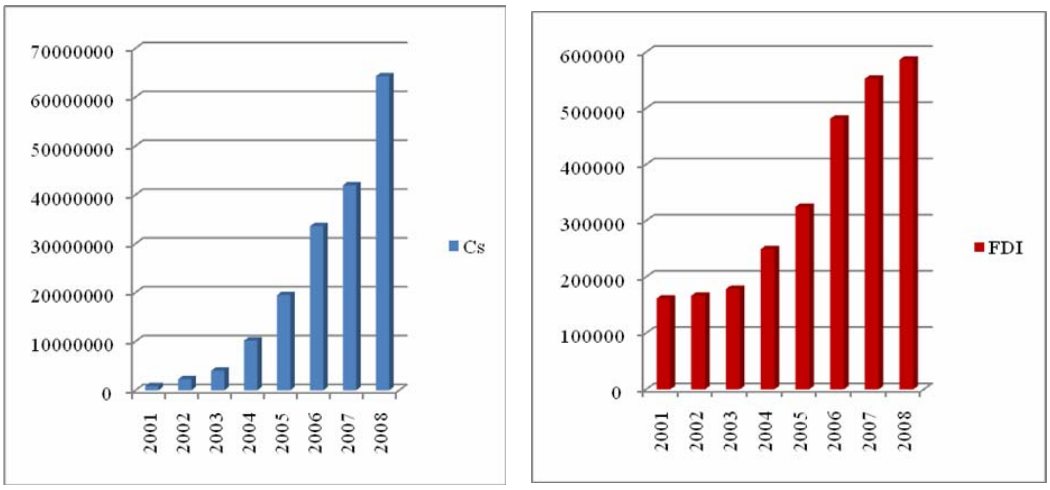

Figure 1 Graphical Presentation of FDI Inflow and Consumer Subscriber Growth in Nigeria 2001-2008

Table 2 Data Analysis

Dependent Variable: FDI Method: Least squares observations:8				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CS	0.012478	0.012487	0.999288	0.3913
GDP	-44.0046	53.52223	-0.822173	0.4712
PI	29.83661	22.09952	1.350102	0.2698
Tech	135.809	286.6225	0.473825	0.668
C	201680.3	99573.03	2.025451	0.1359

R-squared 0.97235, Adjusted R-squared 0.935491 ,S.E. of regression 45254.74, Sum squared resid 6.14E+09, Log likelihood -93.1887, Durbin-Watson 2.2899, Mean dependent var 337559.6, S.D. dependent var 178177.3, Akaike info criterion 24.54717, Schwarz criterion24.59682, F-statistic 26.37782, Prob (F-statistic) 0.011302.

The above table depicts least squares regression result describing the relationship between Foreign Direct Investment (FDI) as dependent variable and telecommunication growth which is provided by number of telecommunication subscribers, telecommunication contribution to GDP, private investment

into telecommunication industry and total value of technology of the industry. The result shows that all the variables except GDP have a positive relationship with FDI meaning every increase of FDI influx is associated with increase in the investment in telecommunication industry and value of technology or machinery used in the industry. Similarly, increase in FDI facilitates increase in number of telecommunication subscribers even though the relationship is meager. But when having a cursory look at the industry it has been deduced that Nigeria has the highest telecommunication subscribers in Africa totaling 70million as at 2009. However one important thing to notice is that based on the Nigeria population which stands at 150million it means more than half of Nigerian populations are non-telecommunication subscribers indicating huge gap that needs to be filled.

The result equally shows negative relationship between FDI and GDP meaning increase in FDI is associated with the decrease of GDP possibly this could happen in the short term period but in the longer period the relationship may change more again, because the industry is still at it infant stage it requires substantial capital outlay which might eventually take longer period before reaping the total economic benefit of the investment. Nevertheless the rate at which the industry is growing symbolizes the success of the telecommunication sector and paves way for sustainable economic growth in Nigeria.

The overall result showcase significant value of R^2=0.97 showing that the more dependent variable account for the 97% variation of the FDI with only 3% accounted by the error-term, this confirms the validity of the variables as a proxy of telecommunication growth and clearly indicates the model capacity to predict the relationship between dependent variables (FDI) and other independent variables. The adjusted R^2 of 0.94 is close to R^2 value of 0.97, this means the model is fit for making generalization.

Furthermore the F-value of 26.38 obtained is high than the critical F-value of 5.59 confirming the significance of the entire variables combined together in the model. Lastly, the Durbin-Watson value of 2.2 is closer to 2 which mean there is absence of autocorrelation problem meaning the model is fit and reliable.

6 Conclusion

It is imperative to note that no country can develop without FDI inflow particularly developing country like Nigeria. The study clearly shows that FDI influx has tremendously boost the telecommunication sector, where foreign companies invested heavily to gain the advantages of substantial communication market in Nigeria. Government should improve on the standard of infrastructure and provide relevant social amenities to attract more FDI to promote the overall economic development in the country as the industry is growing. Also, the government should design a blue print architecture that will accommodate future technologies and encourage expansion. Finally, the government should maintain a stable regulatory policy that will encourage investors' confidence to boost the industry.

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