Analyzing the Degree of Competitiveness in Nigeria and United States Telecom Industries: Eventual Market Structure Outcomes After Deregulation

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Nigeria's telecom industry had been a state owned industry due to its high-fixed cost of operation until it was deregulated in 1999.In the US, AT&T lost its monopoly power in 1996. Deregulating the markets led to entries of new firms and competition in the industries. This study shows how competitiveness of the telecom industry in Nigeria has progressed a little bit similar to that of the U.S after deregulation. Using the Four-firm concentration ratio (CR4) and the Herfindahl-Hirschman Index (HHI), the study finds that there is a slight decline in the CR4 earlier in Nigeria telecom but that the overall concentration ratio of Nigeria's telecom industry remains at high levels comparing to that of the U.S. telecom industry at the same period. However, recent CR4 &CR8 figures of concentration ratios show both US and Nigeria telecom industries' tendencies towards monopolistic competition or oligopoly. These findings help the Nigerian Communication Commission to form a better guideline to prevent powerful operators from abusing their market power. For the US, with the Justice Department interpretation of strong anti-trust laws, Monopoly cannot be tolerated.

Keywords: wireless mobile phone technology, deregulation policy, competition

INTRODUCTION

This paper studies the deregulation of Nigeria telecom industry made possible by the availability of wireless mobile phone technology. It compares progressiveness of competition in Nigeria's telecom industry with that of US after deregulation. The industry was fully deregulated in 1999 in Nigeria and three years (1996) earlier in the US. In Nigeria, this process began in 1992, marked by the establishment of NCC (Nigeria Communication Commission). The enabling law is Decree 75. After the implementation of deregulation policy in Nigeria's telecom industry, it is pertinent to investigate its impact on competitiveness of the sector. It is expected that the policy action will exert positive effects on competition which is one of the hallmarks of market economy. Does competitiveness of the telecom industry in Nigeria after deregulation (1999) show progress that's similar to that of the U.S telecom industry (1996)? What, if different, possibly explains the dissimilar patterns of industry evolution between Nigerian and U.S. telecom industries? This work covered the period of 1999 to 2019.

METHOD AND ANALYSIS

In analyzing the progress of competition in the US (1996) and Nigeria (1999) telecom markets, the criteria for the assessment of the degree of competition in this study are based on the analysis of vital industry data, and application of the Concentration Ratios (CR4 and CR8) and Herfindahl -Hirschman Index to the data. The CR4 and HHI are the most used indicators of competitiveness in the industry.

The *n*-firm concentration ratio (CR) is computed as follows:

$$CR = \sum_{i=1}^{n} ms_i \tag{1}$$

where ms_i is the percentage of the market share of the i[th] firm.

The concentration ratios are mainly different from HHI in the sense that the former uses market shares of the leading firms; example, 4 or 8 to assess competition while the latter uses the market shares of all the firms in the industry. These market shares are squared in the calculation to place more weight on the larger firms.

HHI is computed as follows:

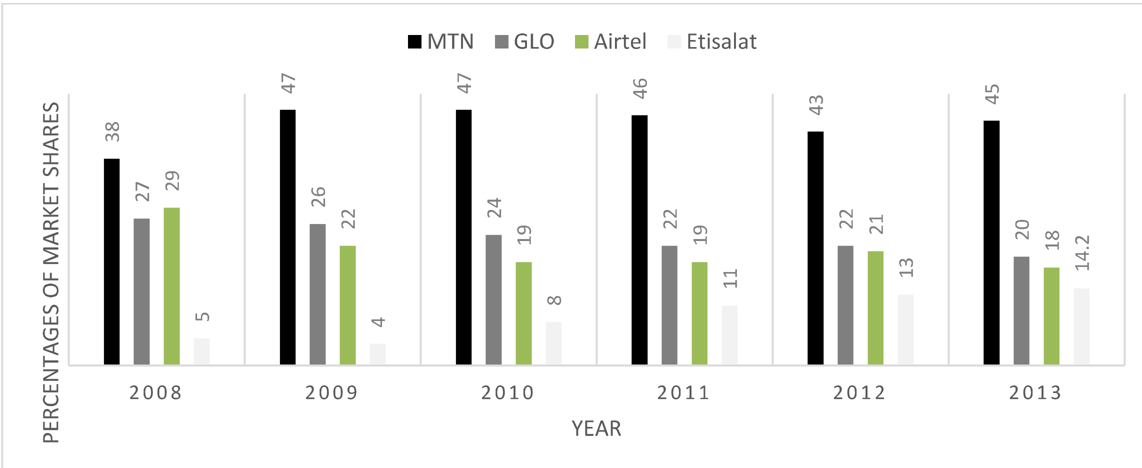
$$HHI = \sum_{i=1}^{N} S_i^2 \tag{2}$$

And S_i is the market share of the ith firm in the market and N is the total number of firms. In other words, it is the total sum of squares of the market shares of all firms in an industry. HHI is read from 1/N to 1 where N stands for the total number of firms operating in an industry. Note, when we express percentages in the form of a whole number, the index ranges up to 100^2 = 10,000. When HHI index is below 0.01 or (100) it means high competition, If HHI index is below 0.15 or (1,500), it connotes un-concentrated index; HHI index between 0.15 to 0.25 (1,500- 2,500) means that concentration is moderate, and if the HHI index is above 0.25 (above (above 2,500), it indicates high concentration. (Source: "Herfindahl-Hirschman Index" USDOJ (US Department of Justice). The Nigerian wireless phone market is not effectively competitive. The mobile phone market has HHI of about 2918 to 3385 (29.18% to 33.85%), which falls in the range of high concentration for the period of study.

The entire telecom market has also a high concentration ratio of CR4 (lying within the range of 80% to 98%) over a period of six years (2004-2013). The USA had consistently low CR4 and CR8 in the range of 0% to 50%, a condition for perfect competition, for the period 1992–2002. The same is applicable to 2007 data with CR4 and CR8 lying within 35.8% to 58.3%. Scholars agree that mergers increase concentration but the 2007 low concentration in the US telecom market after the AT&T and SBC merger in 2005 and also the 2006 Verizon merger with WorldCom proved otherwise. There was also the AT&T Mobility-Cingular Wireless merger and the Sprint-Nextel merger that almost coincided with the year in question. In the overall assessment, the US market is slightly more competitive than the Nigeria telecom market. There are visible reasons for this decline in competition in the Nigeria telecom industry. An example is NCC's inability to wield its disciplinary big stick against the big firms that display anti-competitive behavior in the industry. There are identifiable barriers to entry into Nigeria's telecom industry emanating from the government guidelines set by its agency -- NCC. Investors lack the funding to meet the mandatory 5% percent geographical spread in the first one year plus other administrative barriers emanating from the process of licensing (NCC, 2012). In Nigeria, the number of firms entering the industry slowed down by 2007 but none is leaving. However, ownership has changed a couple of times but there has been no merger. The regulatory body NCC inadvertently gave some conditions for entry which inhibit competition.

In the US, some can only operate efficiently in one locality, thereby controlling that particular market share of the region unlike Nigeria. It is also well known that some telecom firms in the US only operate in some territories (States) depending on their financial strength. This enhances competition because the market share is distributed initially to every firm according to its ability and finally the forces of competition will definitely weed away the weak firms from the industry in the long run (shakeout) and stabilizes it (Gort and Klepper, 1982). The abuse of market power and dominance of the leading firms in Nigeria could also be adduced as the reasons for the low competition. In the past, specifically 2007, telecom firms capitalized on the inefficiencies of NCC and openly violated these rules by arbitrarily raising the market price of phone services. With the later intervention of NCC, however, they could not proceed further with their illegal action. To avoid future reoccurrence, NCC reeled out the actions—considered by it as anti-competition—to the firms as contained in the NCC Act 2003.

FIGURE 1
MARKET SHARES OF THE TOP FOUR FIRMS IN NIGERIA'S TELECOM MARKET



Source of Data: NCC, 2013

A close observation and analysis of figure 1 shows how the leading four wireless phone firms compete in the industry. MTN is the leading telecom firm in Nigeria. It is a South African firm that had been controlling over 38% of the telecom market in Nigeria since 2008. It increased its share of the market in 2009 by 9% which it maintained in 2010. It started losing its market shares by 1% in 2011, 3% in 2012 and gained 2% in 2013. Globacom, an indigenous firm, gained market shares worth 27% in 2008 and ever since began losing its share of the market by an average of 2% until July 2013. Airtel (Econet) gained 29% of the market shares in 2008 but lost 7% of it in 2009. In 2010, it lost 3% of the market share but gained 2% in 2012 which it lost again in 2013 by 3%. Etisalat, the latest entrant in the telecom industry, controlled 5% of the market in 2008 but lost 1% in 2009 but ever since had kept gaining market shares by an average of 2.3%. MTN continues to rule Nigeria's telecom industry. MTN has the largest market share (37%) in this industry as of April 2019. Its mobile phone subscriptions are over 64.7 million active subscribers which excludes the 117 thousand subscribers owned by its sister company Visafone that it bought in 2015 which has 0.08% market share. The industry subscription distribution matrices are as follows: Airtel has 26% market share which is over 45.4 million subscribers and Globacom, which has a 27% market share which accounts for 46.38 million active subscribers (NCC, 2019). 9mobile has a 9% market share with total subscriptions of 16.72million. Record shows that MTN has 50 million mobile internet subscribers and Airtel gained 31 million while Globacom has 28 million number of subscriptions (NCC, 2019).

TABLE 1
MARKET SHARES BY FIRM OF NIGERIA TELECOM INDUSTRY 2019

MTN	37%
Globacom	27%
Airtel	26%
9Mobile	9%
Visa	0.08%

Source: NCC, 2019

TABLE 2
US TELECOM'S MARKET SHARE 2019(Q3)

Verizon	29.2%
AT&T	39.9%
T-Mobile	16.4%
Sprint	13.3%
US Cellular	1.2%

Source: www.statista.com

In 2019, both US and Nigeria telecom industry show high market concentration ratios between 89% - 98% using CR4 and CR8. This sign shows market trend of the industries towards oligopoly or monopolistic competition which are examples of the imperfect competitions. The US Department of Justice is effective in its use of antitrust laws to stop any anti-competitive merger or acquisition. In Nigeria, the opposite is the case. The Judiciary is weak and there are no strong laws.

TABLE 3
CR4 AND CR8 OF THE US TELECOM INDUSTRY

Year	CR4	CR8
1992	47.8	73.1
1997	35.8	58.3
2002	61.7	81.7
2007	35.8	58.3

Sources of data: http://www.census.gov/econ/concentration.html
& http://data.worldbank.org/indicator/IT.CEL.SETS.P2

In table 3, the data on CR 4 and CR8 were extracted from the US Census Bureau and World Bank databases. The market shares in the Census were calculated by the Census Bureau using the number of receipts. The trend showed an existence of a negative correlation between subscription rate and the concentration ratios. As the number of subscribers increased, the dominant 4 firms and 8 firms decrease in their market shares in the years as shown by the available data. The CR4 and CR8 fall within the range of low and medium concentrations for the period 1992 and1997 to 2002, depicting market structure that is competitive (perfect competition) though moving towards oligopoly a bit. In 2007, the US telecom market showed low concentration of CR4 = 35.8% and CR8 = 58.3% showing high competition, an inverse relationship with the subscription rate. This could prove Susan Crawford's assertion wrong as quoted by David Carr, 2013. Susan asserted that "…the 1996 Telecommunications Act, which was meant to lay down track to foster competition in a new age, allowed cable companies and telecoms to simply divide markets and merge their way to monopoly".
(www.nytimes.com/2013/05/20/business/media/telecoms-big-players-hold-back-the-future.html?_r=0).

TABLE 4
REGRESSION REPORT OF NIGERIAN CR4 AND SUBSCRIPTION RATE PER 100 PEOPLE

CR4=C (1) +C (2) * Subscription Rate + Residual

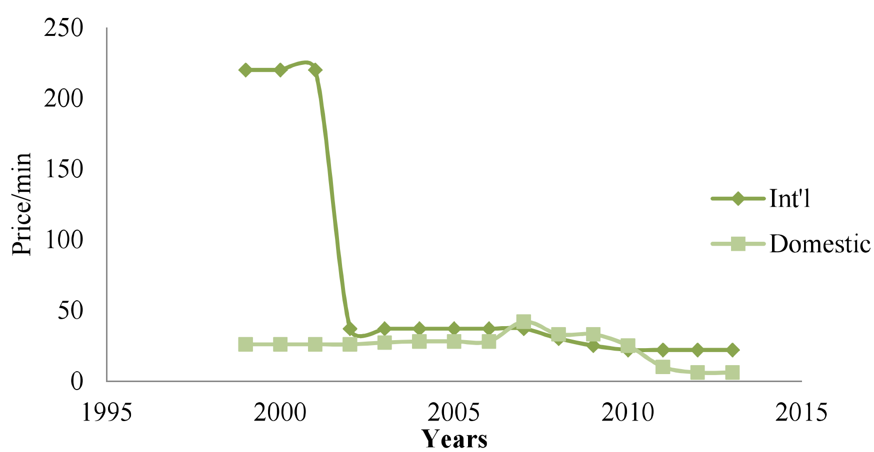
Parameters	Coefficients	Standard Error	t-statistic	Prob.
C(1)	71.64619	7.034213	10.18539	0.0000
C(2)	0.458442	0.188814	2.428012	0.0356
R-squared	0.370881			

The coefficients are positive depicting positive relationship between the two variables - CR4 and Subscription Rate. A 0.5 positive change in subscription rate will bring same change in the market shares of firms. At 95% level of confidence, the C (1) intercept is significant with probability of zero, while the slope of subscription rate C (2) is significant with a probability of approximately 0.04 but not significant at 99%.

CONCLUSION

The Nigeria telecom industry prior to the implementation of the deregulation policy had only NITEL, a government monopoly, as the only firm operating in the industry which up till 1999 could give Nigeria, a country of about 200 million people, 450,000 telephone lines but with deregulation, Nigeria can boast of 172 million mobile subscribers (NCC, 2018) with penetration rate of about 88%. Deregulation enhances competition. It brought private investors both domestic and international investors with enormous capital into the industry in Nigeria. The number of carriers goes up. The cost of production went down as a result of availability of mobile phone technology and more firms entered the industry. This fall in the cost of production led to fall in product price. With more firms' entry, competition ensued and this led to increase in the industry-wide supply. This hence reduces the product price. The Nigerian data showed that before the deregulation, it was costing about 25naira/min to make a domestic call within a city, 150naira/min inter-Nigerian states and 250naira/min or more internationally but post deregulation data showed a drastic reduction in the domestic and international billing rates. According to the data, it now costs less than 4naira/min for domestic calls and less than 20naira/min for international calls.

FIGURE 2
PHONE CALLS BILLING



Source of Data: NCC, 2016

In comparison to the USA telecoms market, the data set for the industry's CR4 and CR8 for the period 1992, 1997 to 2002 showed trends of perfect competition (0%-50%) which was never witnessed in the Nigeria's telecoms industry since implementation of deregulation policy. In addition, the 2007 CR4 and CR8 figures of the range 35.8% and 58.3% showed that the USA telecom industry is still competitive despite all the mergers.

In summary, it can be stressed that stringent rules in form of conditions to be met before entry by the telecoms regulatory body in Nigeria (NCC), market power and market dominance by a few firms slowed down competition in the industry unlike the USA that display traits of perfect competition over the years compared above. In recent years, there is increasing concentration ratio in telecom industries in US and Nigeria based on the data displayed in table 2 and 3 above. However, strong anti-trust laws in US will always enhance and promote competition but this cannot be said of Nigeria. It can be concluded based on 2019 CR4 and CR8 figures that both are sliding towards imperfect competition like Monopolistic competition or oligopoly.

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