

The Nigerian Auction of the 2G Spectrum (A)

ANDREW NAHLIK¹
MARK A. JAMISON

Introduction

The Nigerian plan to auction second generation (2G) mobile licenses began in 1999 when the country decided that it wanted to award no more than four licenses for the necessary radio spectrum. At first the Nigerian government tried to award the spectrum by the use of a comparative analysis or “beauty contest,” but corruption plagued the process. The government then decided that instead it would auction the spectrum and offer only three licenses. Could the government conduct credible auctions? Could it act with confidence and transparency so that investors would be willing to bid on the licenses and make investments?

Background

In 1999, a new Nigerian democratic government took control and one of its first stated priorities was the development of the telecommunications sector of the economy. This was in response to the effects of years of corruption in Nigeria that left the telecom

sector severely underdeveloped and in great need of an upgrade. The Nigerian government realized the effect that telecommunications could have on its economy and growth as a whole. The government published its “National Policy on Telecommunications” in October 1999 which called for reform and private investment. This national policy explicitly stated that “there shall not be more than four digital national cellular operators for an initial period of five years” and that “the modalities for appointing the carriers shall be competitive and transparent.”

There are two ways in which most of the spectrum in the world is assigned to service providers. One way is called comparative selection or more informally a “beauty contest.” In this form of assignment, a committee accepts proposals from each firm vying for a certain parcel of radio spectrum and selects a winner based on some criteria that the government sets up. The other way is an auction. The auction is a process where firms bid on each parcel and are committed to buy the parcel if they “win” the auction.

¹The authors are PhD student, University of Florida, Warrington College of Business Administration, Department of Economics, PO Box 117140, Gainesville, Florida 32611-7140, andrew.nahlik@cba.ufl.edu; and Director, Public Utility Research Center, University of Florida, PO Box 117142, Gainesville, Florida 32611-7142, <http://www.purc.ufl.edu>.

In late 1999, the industry independent regulator, the NCC (Nigerian Communications Commission) held a beauty contest and advertised four national GSM (Global System for Mobile Communications) licenses that would sell for US\$100 million. The NCC invited interested parties to express interest in buying one of the licenses then canceled the process when there were allegations about the integrity of the qualification process and the corruptibility inherent in a beauty contest format. The Nigerian government worried that in light of its past history, foreign investment would be stifled if the procedure for awarding licenses was not credible and seen to be plagued with corruption. The government decided that if it could hold a successful spectrum auction, then investors would gain confidence in the country. The auction was scheduled for late 2001.

Nigeria's Pre-Auction Telecom Sector

The main player in the Nigerian telecommunications market in 2001 was the state-owned monopoly Nigerian Telecommunications Limited (NITEL). It was formed as a government agency in 1985 by merging two enterprises: the domestic telecommunications firm, Telecommunications Division of the Department of Post and Telecommunications, and the external communications firm, Nigerian External Telecommunications Limited. The Nigerian government commercialized NITEL in 1992 under pressure from external forces including the World Bank. The government established its strategy for privatizing NITEL in 2000, but by 2001 the privatization had not taken place.

In 2001, NITEL still enjoyed monopoly status as the sole provider of landline services in Nigeria. The landline capacity was only about 700,000 lines of which only 500,000 were connected. This was a small number for a country with 124 million people. This lack of landline capacity caused long waiting lists for service despite high prices. It also caused Nigeria to have one of the lowest teledensities in the world, only 3.8 lines per 1000 population, setting it far behind many other developing countries.

In 2001, the cellular industry was also a monopoly operated by the state-owned Nigerian Mobile Telecommunications Limited (M-Tel). Because of the lack of competition, M-Tel was also deficient in its service. The service only covered three cities and had a capacity of 210,000 lines. Especially telling is that fact that even with a capacity of 210,000 lines, M-Tel had only 40,000 paying subscribers. Telecommunications was so lacking that some large companies constructed their own private radio-communications networks in order to do business.

Formed in 1992, the NCC was the sector regulator. The government charged the NCC with issuing and regulating licenses, assigning frequencies, and regulating service providers. However, the NCC was largely ineffective because the government only allowed the NCC to regulate the privatize sector of the telecommunications industry, which left out NITEL. Both insiders and outside investors in telecommunication companies saw the NCC as ineffective and this stifled competition in the country.

Existing Licenses

Complicating the licensing process in Nigeria was the fact that the military government had issued nine spectrum licenses that covered part of the spectrum that the NCC wanted to auction off. Although the licensees had the spectrum, they were not using it. They had failed to build out necessary infrastructure or offer any commercial service. In effect, these companies were squatting on the spectrum to try to sell it to the highest bidder. In order to free up the spectrum, the NCC declared that these companies had not met their obligations to build out infrastructure and offer service and revoked their licenses. The NCC returned the companies' application fees, but this made the licenses issued by the military government worthless. One company, Motophone, returned its application fee to the NCC and refused to give up its license. Motophone took its grievance to court to demand that the company be allowed to retain its license. The Nigerian High Court sided with the NCC.

Auction Setup

The NCC set up the auction to take place in four distinct stages: invitation, pre-qualification, auction, and grant. The auction was to be a combination of an ascending bid auction and a sealed bid auction termed an "Anglo-Dutch Hybrid." To be qualified for the auction stage, the NCC required potential bidders to provide a deposit of US\$20 million to weed out any non-serious or speculative bidders. This also ensured that the government could enact some sort of punishment if the bidders did not comply with the rules. Five bidders applied, and all ended up qualifying for the auction. Exhibit 2

describes the bidders.

The auction itself was for three identical licenses and a fourth that the NCC would issue to NITEL. The winning bidders would obtain rights to 2x5 MHz in the 900 MHz range and 2x15 MHz in the 1800 MHz range, for a total of 40 MHz each, to deliver mobile telephone. There were also certain requirements in the form of rollout targets, license fees related to net revenues, and a prohibition on collusion. Although the entire spectrum was for identical amounts of spectrum, within the specified ranges, there existed a slight variation in the spectrum depending on where it fell within a range. So to keep the auction identical for all parties and also determine which winning firm would get which chunk of the spectrum, the NCC decided to do a random draw after the auction was completed to see which bidder got which specific piece of the spectrum.

The NCC described the auction to all potential bidders in the beginning as an ascending clock/sealed bid hybrid auction. In an ascending clock auction, the auctioneer announces a price at specified time intervals, and the firm either states it is willing to pay this price, or it is not willing to pay this price. A sealed bid auction is one in which each firm submits a sealed bid for the license with the highest bids winning the auction. If the number of bidders was equal to four, the government would hold a standard sealed bid auction. In the case that the number of bidders was five or more, the auction would be an ascending clock auction.

The NCC decided to seal off bidders from outside contact during the auction to protect against corruption. Also, to ensure that each

team had enough time to deliberate, there were some limits established on how much a price could increase. From round to round, the price could not increase by more than 10%, and the price in a day could not increase more than 50%. Each firm, after the NCC announced a price, either could signal its willingness to pay that price for a license in a Yes/No form or could use one of its three waivers. If the firm signaled that it was not willing to pay that price, it would drop out of the auction. The auction would finish when only three firms signified their willingness to pay at a certain price. Accordingly, the price to which all three last said “Yes” would be the price that all three pay.

If an ascending bid round ended with two or fewer active bidders, the auction would enter the sealed bid phase, and the NCC would divide bidders into three subsets. All bidders who bid “Yes” in the final round proceeded directly to the grant stage of the auction (i.e., a license was reserved for them—at a price to be determined—and they were excluded from bidding in the sealed bid phase). The NCC would permit bidders who bid “Waive” or “No” in the final round of the ascending bid phase to bid in the sealed bid phase, and each would compete for the remaining licenses. Bidders who had bid “No” in a round prior to the final round would not be eligible to bid in the sealed bid phase and could not win a license.

The NCC would require each eligible bidder in the sealed bid phase to submit a final bid of at least that amount which it last bid “Yes” to in the ascending phase, and at most, the final announced price from the ascending phase. Although the NCC would not make the minimum and maximum bid amounts public,

each bid team could figure this out by keeping track of the publicly announced results during the ascending bid phase.

To determine the winners and final price, the NCC would order sealed bids from highest to lowest, and the NCC would define the final license price as the lowest successful sealed bid amount. For example, if there were two licenses available in the sealed bid phase, the final price would be the second highest sealed bid. Each successful bidder, including those bidders who proceeded directly to the grant stage, was to pay the same final price. In the event of a tie during the sealed bid phase, the NCC would determine the successful bidders by the toss of a coin. After the NCC announced the winners, the winning bidders would have 14 days to pay the specified price to the NCC. If they did not pay this price, they would forfeit the license.

Auction Logistics

Because of the real threat in Nigeria of power outages and communications failures, the NCC decided that the auction would take place on one site rather than by fax or with some other form of off-site communication as was done in other countries. The regulator would sequester each team in its own room and enforce strict restrictions. The NCC would randomly assign rooms each day, and any person choosing to leave the room before the end of that day was not allowed to return. Two independent NCC observers remained in each room to make sure all bidders followed the rules and to allow communication with the auctioneer. The NCC would verify all communications using signatures and approved passwords. Bidders also had to

submit two copies of the bid form each round, which they returned in separate envelopes. The NCC would open one envelope to see their bid and would open the other envelope only in case of a dispute.

One major goal of the government was to make sure that this process was as transparent as possible. As a result, at the end of each day after bidders would be debriefed, the NCC would issue a press release and post the results on the Internet.

To make sure all the rules were clear and that all bidders were fully informed, the last official business to happen before the auction was a mock auction held the day before the real auction started. In this mock auction, the NCC gave each set of bidders a random artificial valuation and a Nigerian city name to remain anonymous. The NCC held the mock auction, and they considered it a success.

Auction Concerns

Shortly before the auction date, the bidders

brought up the concern about the possibility of a coin toss to determine ties. This method was extremely unsettling to the bidders. They were very concerned that a loss of a coin toss would be the worst possible outcome for them. The participants stated that it would not be justifiable to their boards and shareholders that they missed out on a block of spectrum because they lost a coin toss. The participants made this clear to the auction organizers and stated that they would like to see this resolved.

This posed a dilemma to the organizers. They faced the questions of having to alter the rules less than a week before the auction, and they also faced the challenge of perhaps having to compromise their stated objectives. The organizers wanted to ensure that (1) no successful bidder should have to pay more than it explicitly said it was willing to (either by bidding “Yes” in the ascending clock phase or through a sealed bid), and (2) all successful bidders should pay the same price for a license. The way that the organizers changed or did not change the rules could compromise the stated objectives.

□

Questions

- What steps have the organizers taken to provide potential bidders confidence that the auction would be fair and open?
- Should the organizers change the rules at the last minute? If the rules are changed, what objective could the NCC negotiate to alleviate concerns about the coin toss? What rules should be changed?
- If the NCC changed the rules, could it justify them so there were no concerns over corruption of the process?

References

Doyle, Chris, and Paul McShane. 2003. “On the Design and Implementation of the GSM Auction

in Nigeria - The World's First Ascending Clock Spectrum Auction." *Telecommunications Policy*, 27(5-6): 383-405.

Lee, Darin. 2003. "Lessons from the Nigerian GSM Auction." *Telecommunications Policy*, 27(5-6): 407-416.

Nigeria Business Info.Com. 2007. "Nigerian Communications Commission." <http://www.nigeriabusinessinfo.com/ncc.htm> (accessed August 10, 2007).

NITEL. 2007. Nigerian Telecommunications Limited. <http://www.nitelnet.com>. (accessed August 8, 2007).

Onwumechili, Chuka. 2003. *Reform, Organizational Players, and Technological Developments in African Telecommunications - An Update*. Lewiston: The Edwin Mellen Press.

Exhibit 1. Key Facts about Nigeria (Doyle and McShane, 2003)

Population	124 million
Population of Lagos	13.4 million
Population Density	136 per sq. km
Population Annual Growth, Percentage	2.6
Number of Households	22 million
Adult Population	60 million
Percentage of Population 15-24 Years Old	19.2
Median Age, Years	17.4
GDP per Capita USD	473
Percentage of National Income Held by Richest 10% of the Population	40.8
Teledensity: Main Lines per 100 Population	0.38

Exhibit 2. Qualified Bidders (Doyle and McShane, 2003)

Qualified Bidder	Brief Description
Communication Investments Limited	Nigerian-led consortium with Dr. Mike Adenuga Jr. as main shareholder and German consulting firm Detecon GmbH as technical adviser.
Econet Wireless Nigeria Limited	Consortium led jointly by Econet Wireless International Limited (listed on the Zimbabwe stock exchange) and First Independent Networks Limited (a consortium of Nigerian investors). Econet operates cellular services in several subsaharan African countries.
MSI-Celtel Nigeria Limited	Consortium led by MSI Cellular Inv (Nigeria) BV, wholly owned by the Dutch group MSI Cellular Investments Holdings BV. MSI operates mobile services in several African countries.
MTN Nigeria Communications Limited	Consortium led by MTN International Limited, ultimately owned by M-Cell listed on the Johannesburg stock exchange. A major player in South African mobile telecoms.
United Networks Mobile Limited	Consortium led by Orascom Telecom, a major telecommunications operator in Egypt and North Africa.