Nigerian Communications Commission (NCC)
International Termination Rates: Regulatory options and international benchmarks

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Objectives, methodology and hypothesis

The aim of this study is to analyse the pros and cons of regulating ITRs in light of international benchmarks

Objectives of this study:

Consider whether the International Termination Rate (ITR) for Nigeria should be regulated by the Nigeria Communications Commission (NCC) and, if so, on what basis:

- Determine whether the NCC should set different rates for the ITR and MTR
- Present NCC with several options and their respective pros and cons to inform the decision
- Suggest potential regulatory mechanisms to reduce grey market activity
- Benchmark Nigeria's International Termination Rate (ITR) against relevant groups of countries

We have gathered international evidence to assess the current level of ITRs in Nigeria and its industry impact

Mobilisation

- Set objectives for the benchmarking study and impact assessment
- Develop hypotheses to be tested as part of the benchmarking study and impact assessment
- Define data required and identify data sources
- Collect data

ITR benchmarking

Analysis performed:

1. Comparison of Nigeria's ITR with that of countries with similar GDP, population, number of operators and technological readiness[1]:
    - In Africa
    - Outside Africa
2. Comparison of Nigeria's ITR with that of countries which with it makes or receives the most international calls
3. Comparison of Nigeria's ITR with that of selected countries with international best practice regulation

ITR impact assessment

Analysis performed:

1. Evolution of the ITR before October 2016
2. Estimation of net cash outflow/inflow based on international call volumes
3. Impact of the October 2016 ITR setting on international call volumes
4. Identification of market factors and conditions which encourage ITR setting in some countries
5. Approach other countries use when setting ITRs

Options for ITR regulation

- Summarise the main implications from the benchmarking study and impact assessment
- Understand ITR regulatory options and their pros and cons
- Provide NCC with recommendations regarding intervention on the ITR

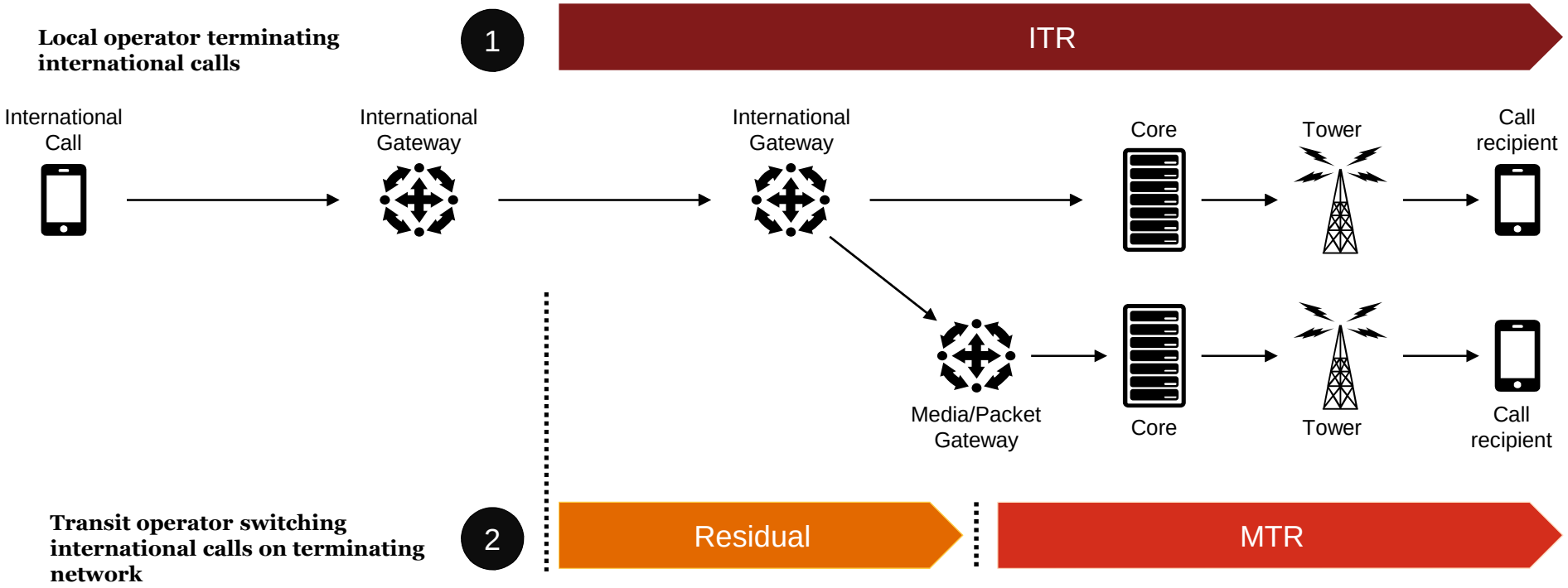
[1] As defined by the Global Competitive Report 2015

We have developed the hypotheses below which are to be tested as part of this study

	Hypotheses
ITR benchmarking	Nigeria's ITR post intervention is below that of countries with similar characteristics to Nigeria
	Nigeria's ITR post intervention is below that of countries with which it makes and receives the most calls
	Following the October 2016 ITR increase, Nigeria's ITR is above that of international best practice regulation countries
ITR impact assessment	In markets where the ITR is not regulated, it will tend to converge to the MTR
	Prior to October 2016, Nigerian operators suffered from the low ITR levels compared to other international operators
	Developing countries with volatile currencies tend to regulate the ITRs to prevent imbalance of payments with international operators
	The setting of the ITR in October 2016 has potentially led to an increase in grey traffic

Background on ITR developments

The ITR is defined as the rate paid to local operators by international operators to terminate calls in Nigeria



1 Operator who owns the international gateway into recipient country, also terminates the call, and charges the ITR to originating operator

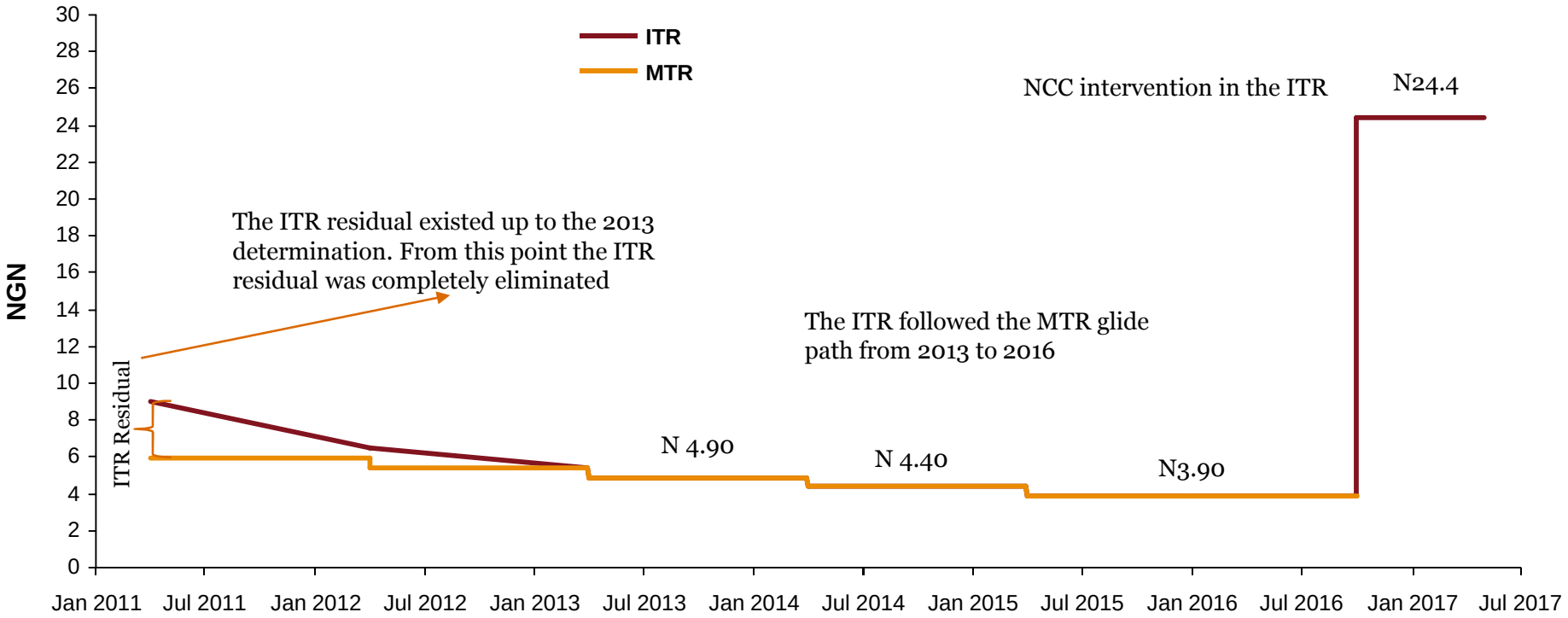
2 Operator which owns the international gateway in the recipient country, acts as a transit operator through switching the call onto the terminating network. The transit operator charges the ITR to the originating operator, however, owes the MTR to the terminating operator

Telecom's industry developments in Nigeria since the 2013 NCC's determination for the MTRs

- In 2013, NCC issued a determination stating that MTR rates are the same, **"irrespective of where the call originated"** but this might have had an incorrect interpretation by international operators:
- This related to the price paid by one operator in Nigeria to another operator in Nigeria for terminating a call in their own network. It was not intended to apply to international operators
- We understand operators abroad construed the 2013 Determination to mean that the ITR should equal the MTR ignoring the international cost portion – i.e. the **residual**
- This seems to have been accepted by operators in Nigeria, apparently due to fears of losing traffic to other operators who had also an international gateway
- This had four effects:
    - ITRs were agreed at MTR level, i.e. at a lower level and without a positive 'residual' to cover the costs of the international leg
    - ITRs continued to decline from there, in line with the MTR glide path
    - ITRs were set in Naira, which had a further downward effect in dollar terms at the time of **currency devaluation**
    - Nigerian operators paid the international operators in dollars to deliver international calls which created an **imbalance of payments** as the ITR in Naira declined

Following a sharp decline in the Naira and ITR, the NCC intervened in October 2016 and set an ITR 24.40 Naira

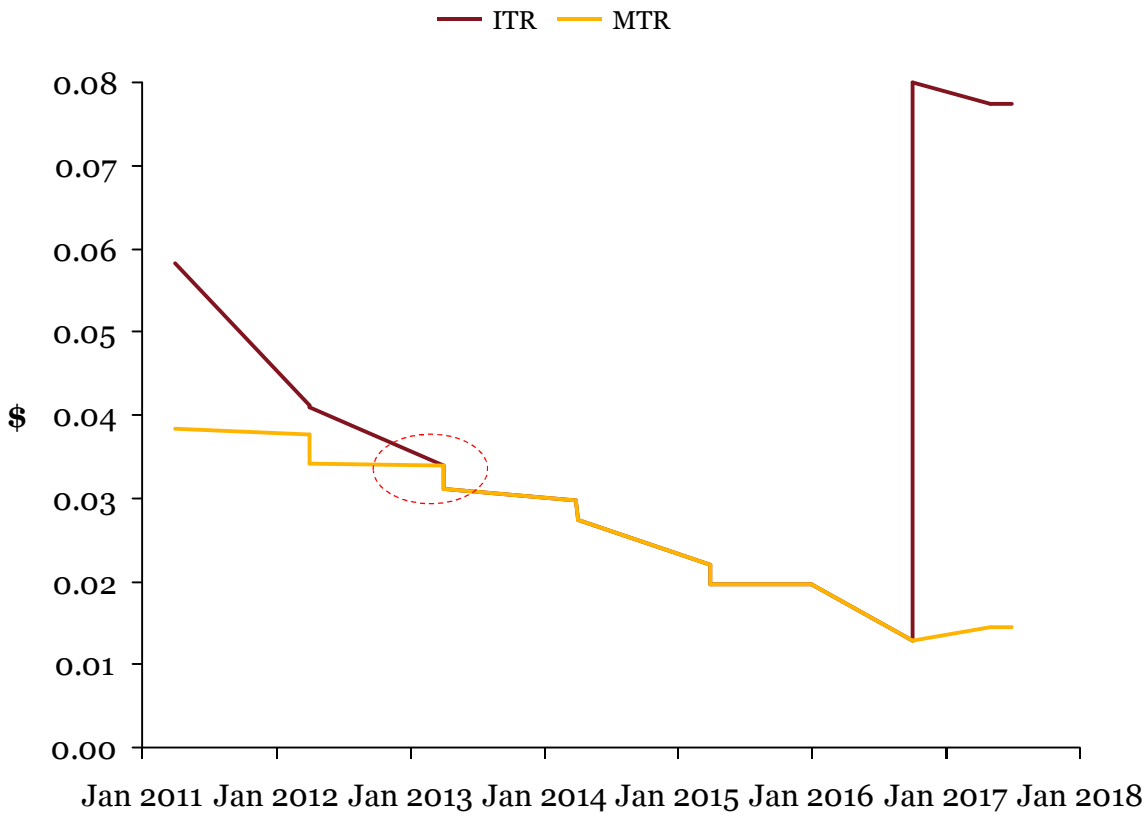
Mobile and International Termination Rate (NGN, 2009-2017)



Sources: NCC

In dollar terms the ITR was set at c. 0.08 USD post intervention while pre intervention it was 0.03 USD

MTR and ITR in USD from 2010 - present



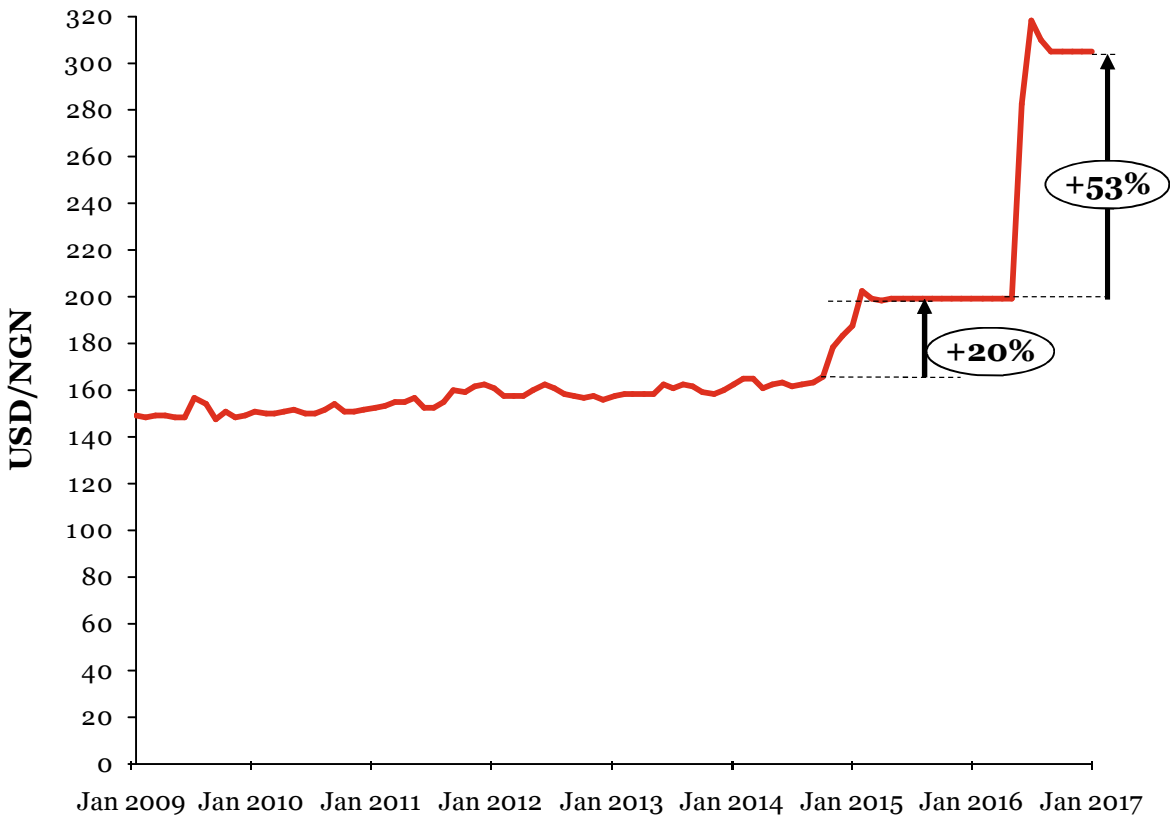
Implications

- The rate at which foreign operators paid to terminate a call in Nigeria decreased in 2011/12, and then was set equal to the MTR in March 2013
- As a result, Nigerian operators were faced with an imbalance of payments with international operators
- Due to the Naira depreciating, this further exacerbated the problem of Nigerian operators receiving less money from terminating international calls
- The NCC in October 2016 decided to increase the ITR to 0.08 USD (24.40 Naira), so as to increase the level of ITRs received by Nigerian operators for terminating international calls in Nigeria

Sources: NCC, Central Bank of Nigeria for 2016 USD/NGN exchange rate of 304.05 ₦/$, (as of 30/12/2016)

However, the depreciating Naira has made it challenging for Telecoms to cover the costs of providing services

Change in Value of 1 USD to NGN



Sources: Bloomberg

Implications

- As a result of economic factors such as the slump in oil prices that Naira depreciated sharply in 2014 and then even more sharply in 2016
- In 2016, Naira declined by 34.6% in relation to USD (or, conversely, USD denominated costs increased by over 50%)
- Nigerian operators' international payments balance was hit as a result
- Some operators who had debt denominated in USD also suffered profitability declines

Benchmarking methodology and results

We have defined 4 categories of countries against which to benchmark Nigeria's ITRs

Unfortunately, there are few counties which exhibit similar characteristics to Nigeria and for which data required for a benchmarking study are publicly available.

Therefore, we have designed 4 sets of 5 countries against which to benchmark Nigeria's ITRs, which include African comparators as well as developed EU countries.

The countries we have chosen, together with our rationale for selecting them, are shown in the table on the right.

Group	Aim
African countries similar to Nigeria	Compare Nigeria's ITR to similar countries within Africa
International Best Practice regulation	Understand what best practices look like in more developed telecoms markets
High call volume to/from Nigeria	Understand the impact of ITRs on the international balance of payments between Nigerian and other operators
Similar countries to Nigeria outside Africa	Compare Nigeria's ITR to similar countries across the world

For each category, we have identified specific countries with which to benchmark Nigeria's ITR

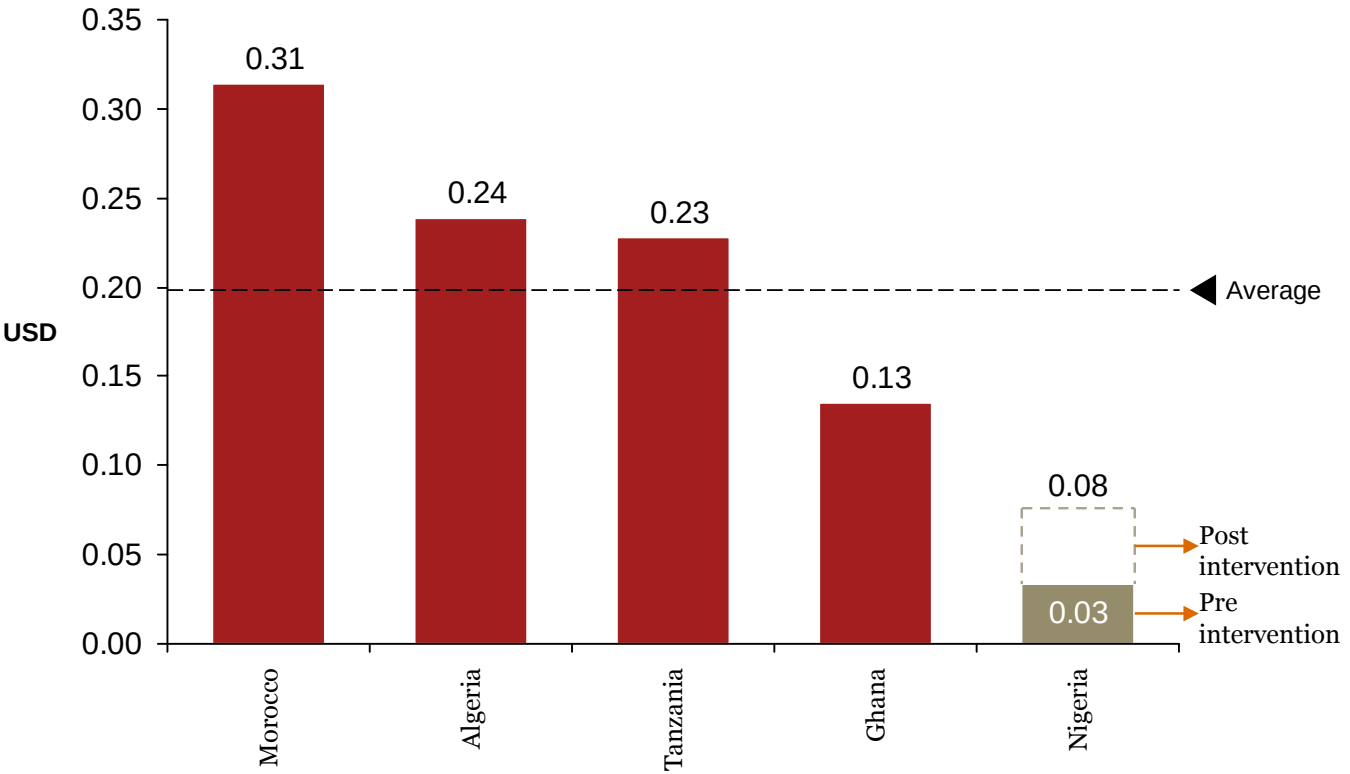
	African countries similar to Nigeria	International Best Practice regulation	High call volume to/from Nigeria	Similar countries to Nigeria outside Africa
Definition	Countries similar to Nigeria based on the following parameters and located in Africa: • GDP per capita • Population • Number of operators • Technological readiness*	Selected economies with best practice telecommunications regulation. Regulators of these countries are typically seen as role models around the world	Countries for which Nigeria has the highest number of inbound and outbound international calls based on aggregated data from all major mobile network operators	Countries similar to Nigeria based on the following parameters and located outside Africa: • GDP per capita • Population • Number of operators • Technological readiness*
Countries	• **Ghana** • **Tanzania** • **Algeria** • **Morocco**	• **United Kingdom** • **Germany** • **Netherlands** • **Sweden** • **Poland**	• **USA** • **United Kingdom** • **Niger** • **India** • **Benin** • **UAE** • **South Africa** • **Saudi Arabia** • **China** • **Canada**	• **Pakistan** • **Vietnam** • **Peru** • **Argentina** • **Colombia**

* As defined by the Global Competitive Report 2015

Nigeria's ITR is below average for similar countries in Africa, both before and after the October 2016 increase

Results: African countries similar to Nigeria

International Termination Rates (2015)



Source: FCC, TeleGeography. The dashed line represents the October 2016 ITR increase

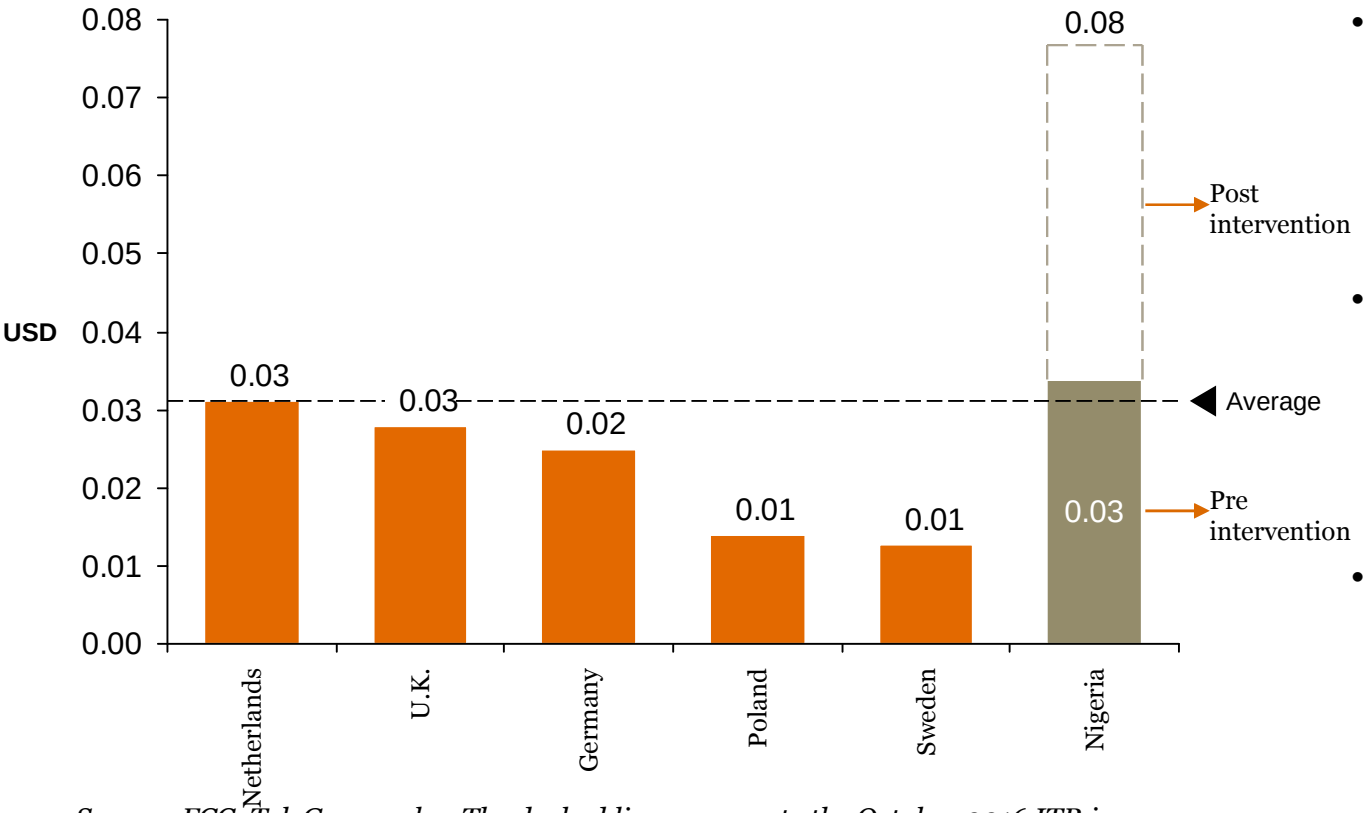
Implications

- Nigeria's ITR pre intervention was significantly below average for countries with similar GDP, population, number of operators and technological readiness. Post intervention, it is still below average for these countries
- However, these countries are not the ones with which Nigeria makes and receives most of its calls, limiting the impact of different ITRs
- Furthermore, the ITRs for some of these countries may not necessarily be cost-oriented, again limiting their use as comparators

Nigeria's pre intervention ITR was higher than that of countries with international best practice regulation

Results: International Best Practice regulation

International Termination Rates (2015)



Source: FCC, TeleGeography. The dashed line represents the October 2016 ITR increase

Implications

- Before intervention, the ITR was slightly higher than average of countries with international best practice regulation, while after the difference become significant
- However, these comparison countries are not the countries with which Nigeria makes and receives most of its calls, potentially limiting the impact of different ITRs
- Also these countries do not experience Nigeria specific factors such as high inflation, and potential currency devaluation

Nigeria's ITR was below average for countries with which it made or received the most international calls

Results: High Call Volume to/from Nigeria

International Termination Rates (2015)

Source: FCC, TeleGeography. The dashed line represents the October 2016 ITR increase

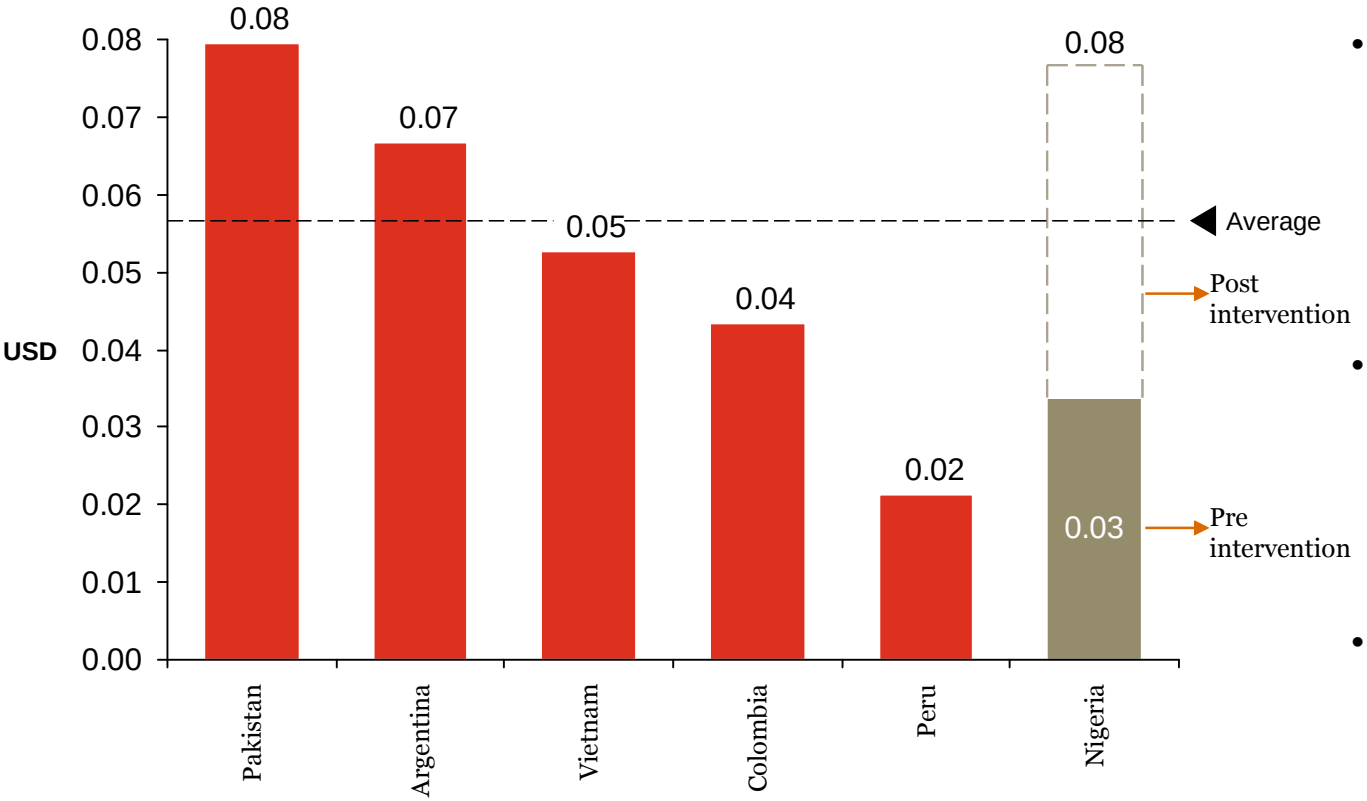
Implications

- Before intervention Nigeria's ITR was significantly below average for countries with which it made or received the most international calls. After intervention the ITR come in line with the average
- This suggests that Nigeria pre intervention could have been paying out more for outgoing international calls than it receives for incoming international calls, subject to call volumes for countries
- The ITRs in these countries are not always set using a cost base approach limiting their use as comparators

Nigeria's ITR was below average for similar countries outside Africa initially but became above average later

Results: Similar countries to Nigeria outside Africa

International Termination Rates (2015)



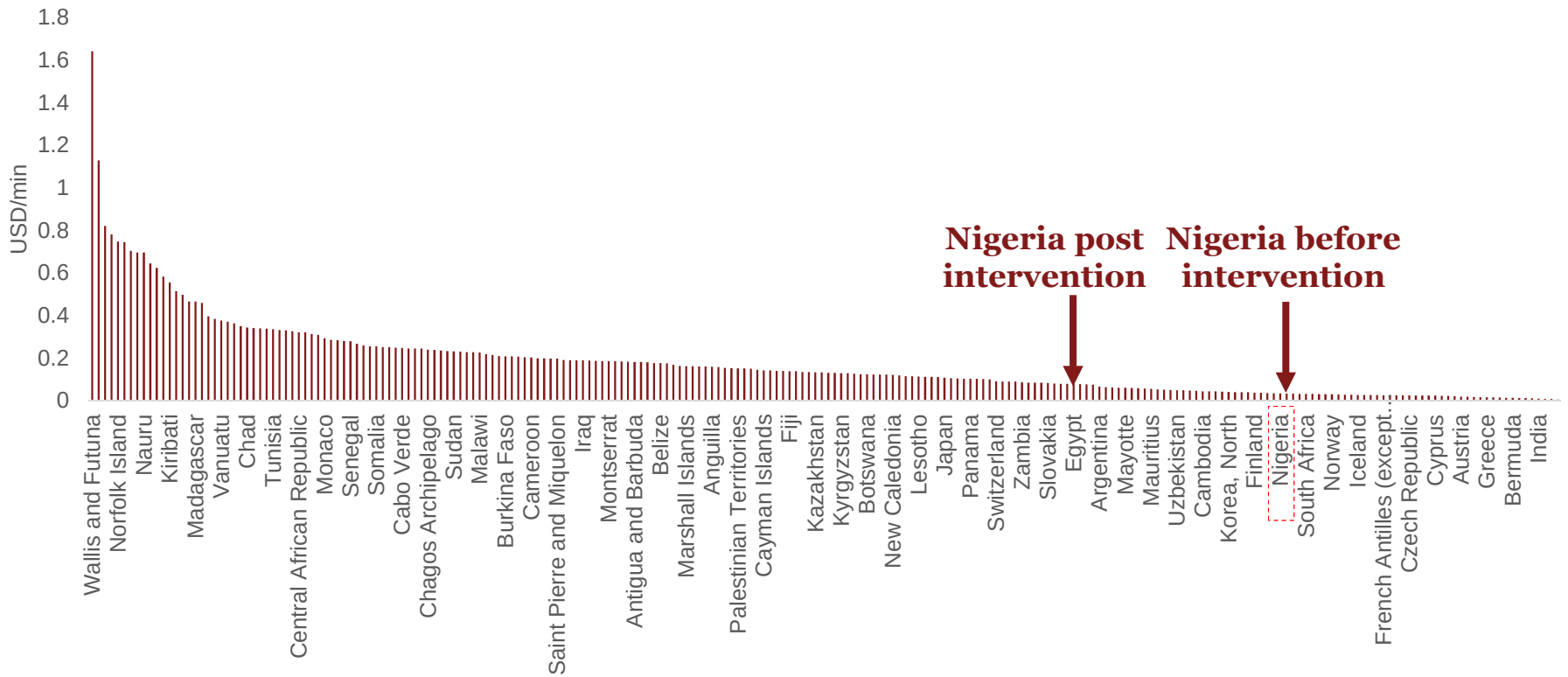
Source: FCC, TeleGeography. Dashed line is for after October 2016 ITR increase.

Implications

- Before the ITR increase, Nigeria's ITR was below average for similar countries to Nigeria outside Africa. However, it became above average after the October 2016 ITR increase
- However, these comparators are not countries with which Nigeria makes and receives most of its calls, potentially limiting the impact of these different ITRs
- Furthermore, the ITRs for some of these countries may not necessarily be cost-oriented, again limiting their use as comparators

Even following intervention Nigeria's ITR is on the low side compared to world countries with an ITR of $0.08

International Termination Rates (2015) – Countries around the world

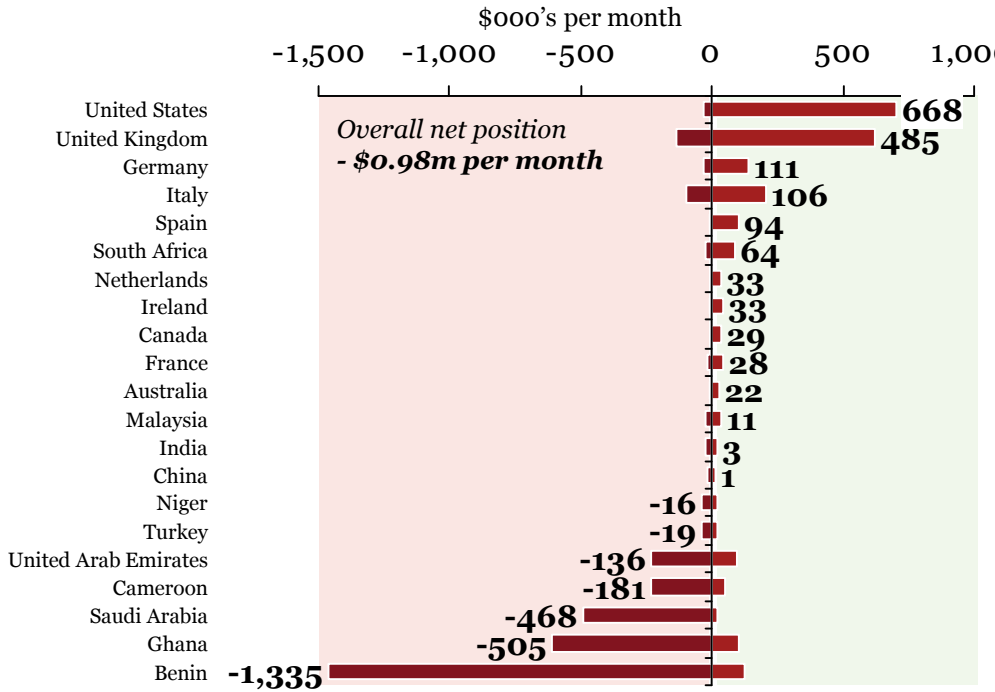


Sources: FCC, TeleGeography

ITR impact assessment

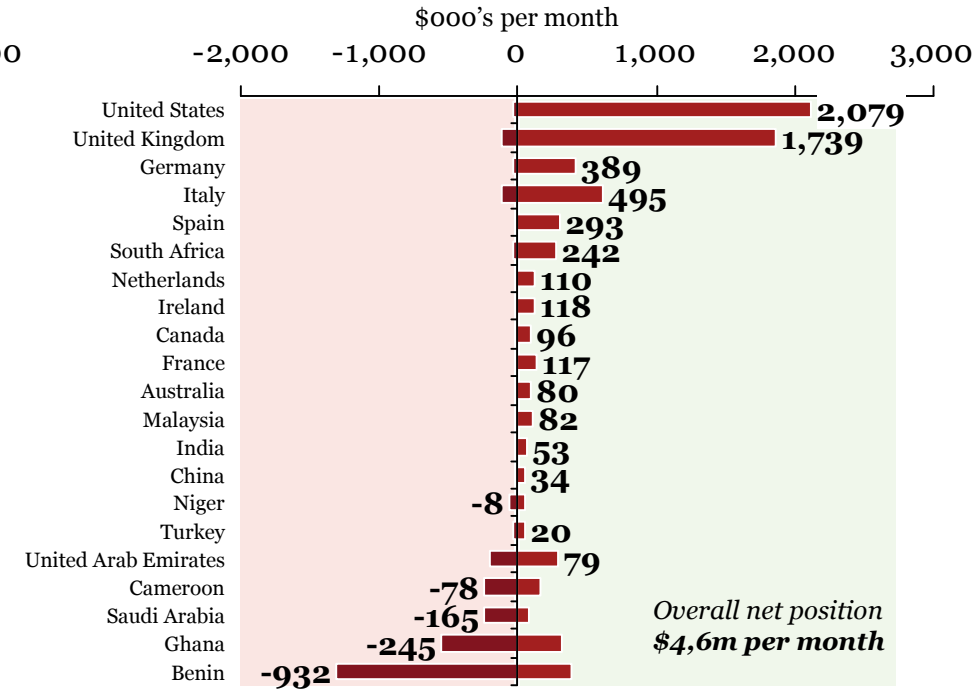
Following the ITR intervention in October 2016, there was a net cash inflow of international call receipts

Before October 2016 ITR increase[1]



- Before the October 2016 ITR increase, Nigeria had a net cash outflow of international call payments, driven by high net cash outflows for EMEA countries
- The average 2016 ITR for Top 30 countries with most traffic to and from Nigeria is **$0.1 per minute**[2]

After October 2016 ITR increase

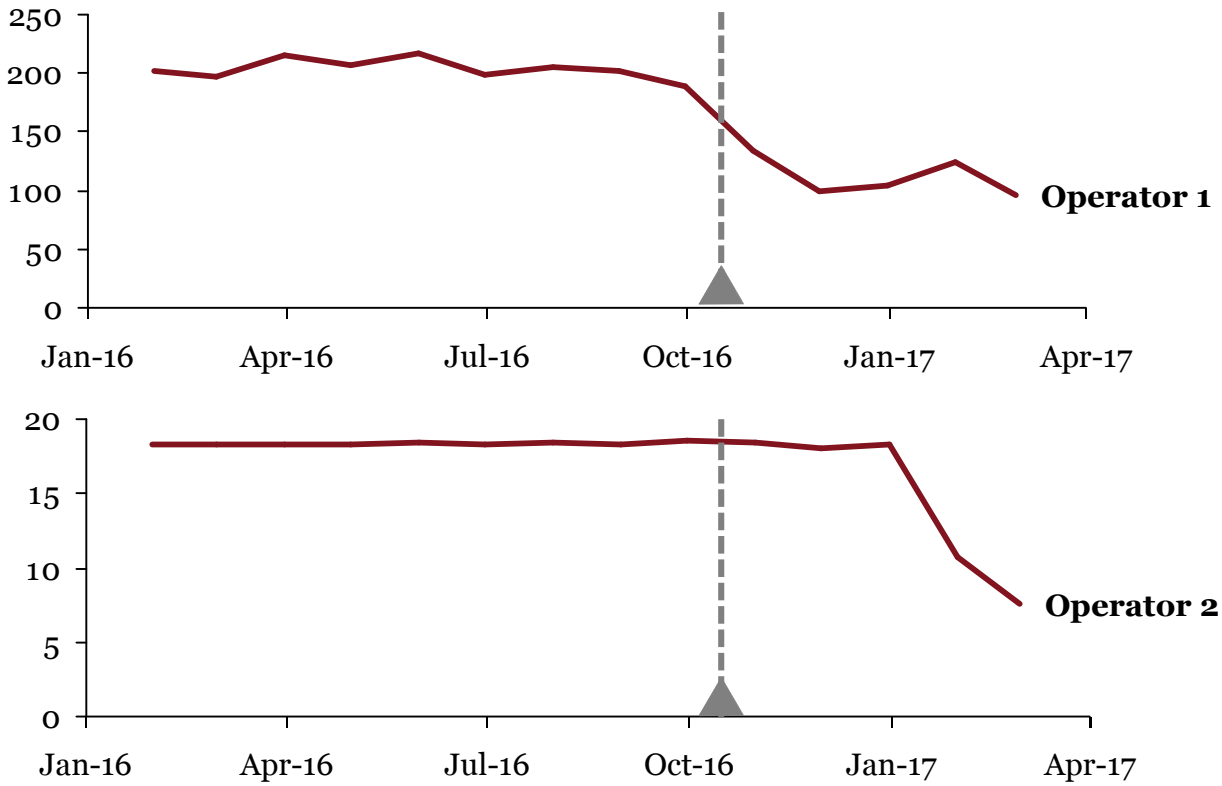


After the October 2016 ITR increase, Nigeria's overall net cash flow position became positive, driven by larger net cash inflows for the US and European countries

[1] Analysis based on data from 4 months before and after October 2016
[2] Analysis based on data of Top 30 countries from a large operator - data constitutes 89% of overall international traffic

The ITR intervention might have led to an increase in grey traffic activity, however more analysis is required

Incoming international call volumes in Nigeria (Jan. 2016 – Feb. 2017, millions of minutes)



Sources: Operators' data

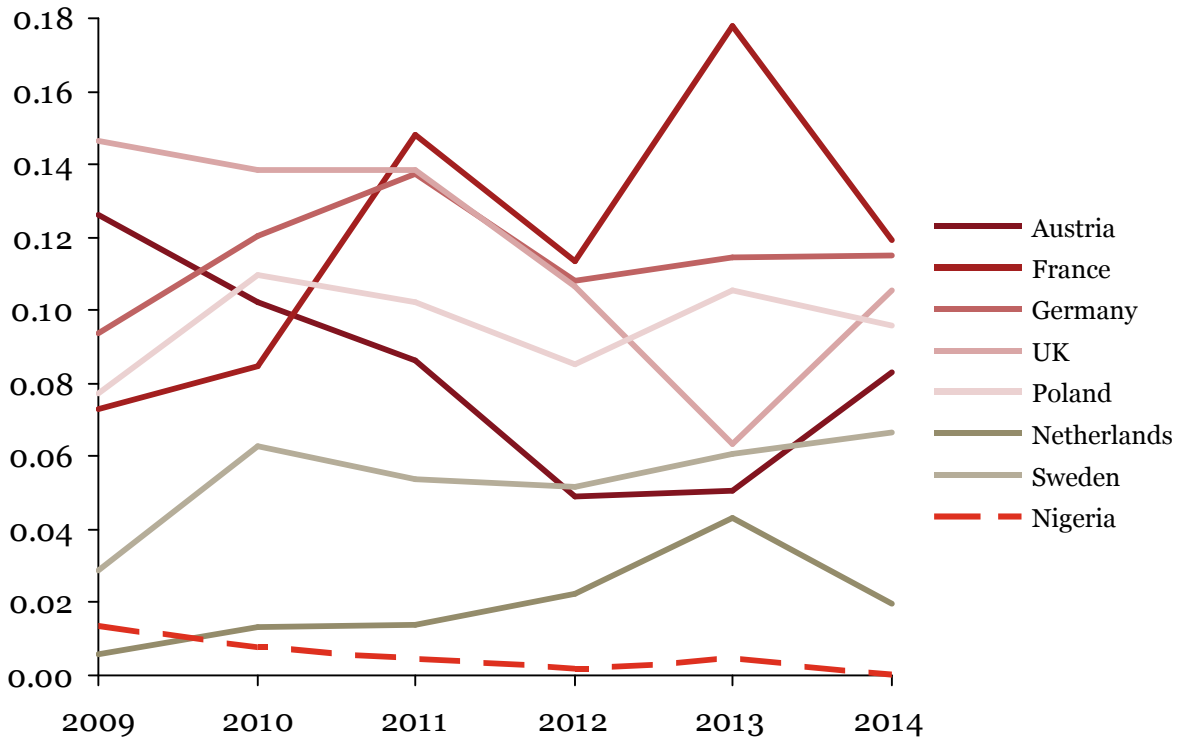
Implications

- For operator 1, there was a steep decline in incoming international call volumes after October 2016, the month in which the NCC set the ITR to N24.40
- This decline suggest that a degree of call masking or call re-routing may have occurred from October 2016
- In February 2017, there were a 51% and 59% year-on-year decrease in incoming international call volumes for Operator 1 and 2 respectively
- More detailed data from a broader set of operators needs to be analyse to derive robust conclusions on grey traffic

In a sample of EU markets where ITRs aren't regulated, the ITR has not converged to the MTR level over time

Non-exhaustive analysis

ITR and MTR price differential (USD, 2009-2014)



Sources: FCC, OECD, NCC.

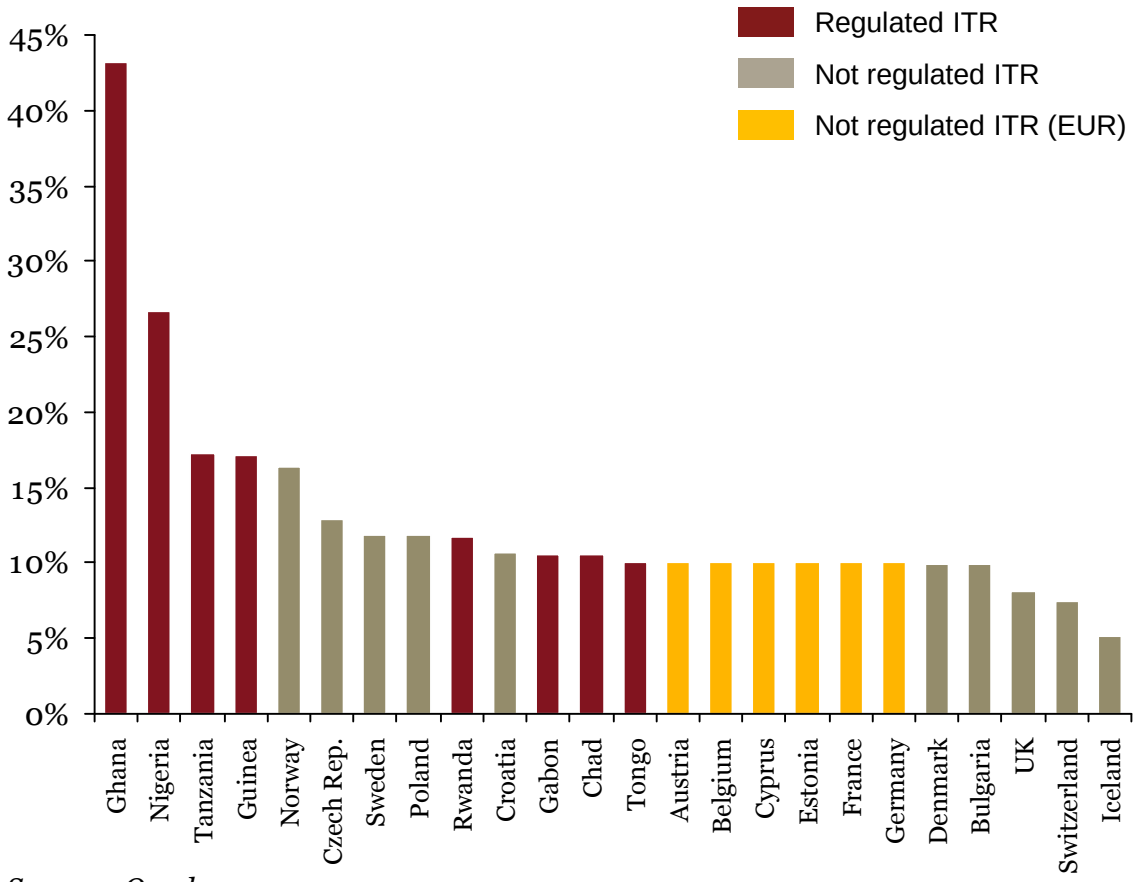
[1] (e.g. https://transition.fcc.gov/ib/sand/mniab/traffic/files12/CREPOR12.PDF)

Implications

- For a selection of EU countries which do not regulate ITRs, the ITR is typically above the MTR, over the period analysed
- In Nigeria, up to 2013 the ITR was above the MTR, however following the 2013 MTR determination it converged to the MTR
- The MTRs data comes from country regulators data and the ITRs have been calculated based on FCC reports[1]
- ITRs are derived based on the total number of international minutes originated from US operators and the international settlement charges that US operators had to pay to international operators

Evidence from other countries suggests a relationship between currency volatility and regulation of ITRs

Currency volatility against USD 2009 - 2016



Sources: Oanda

Implications

- Countries with volatile currencies tend to regulate ITRs, in order to prevent a balance of payments deficit between domestic operators and international operators
- Regulated ITRs prevent this through allowing domestic operators to charge a higher termination rate than the MTR to international operators
- This allows domestic operators to typically charge a higher rate for received calls than the rate they pay to send calls internationally

Options for ITR regulation

The significant changes to Nigerian ITRs raised the question whether, and if so how, NCC should intervene

In this context a number of considerations need to be analysed:

1. Operators in Nigeria would like to **cover their international termination costs**
2. A steep fall in ITR has **affected** operators' **commercial results**; hence, the ability to serve the Nigerian market efficiently
3. Unregulated ITRs in 2015 may have been too low given equity considerations. Do foreign operators receive higher ITRs, and do they receive a 'free ride' – not paying the residual amount to Nigerian operators, when it comes to terminating calls in Nigeria?
4. However, setting a rate above the costs will have a number of repercussions:
   - **Elasticity effect** – An emergence of elasticity effect in the market due to an increasing of the retail price by international mobile operators
   - **Consumer shift to online channels** – Increasing growth of calls made though IP based technologies, such as Skype or WhatsApp because of high international call prices
   - **Growing grey market activity** – Potential increase in grey market* activity, driven by Nigerian operators charging MTR, rather than ITR cost to their local counterparts. Nigerian operators are incentivised to retain the highest level of revenue possible
5. **Volatility** caused by the **currency fluctuations**, that would be hard to forecast or account for

* Grey market is defined as an illegal activity performed by an entity to mask international traffic by changing the CNI to imply that the call is originating in Nigeria instead of originated abroad

The NCC has several options to regulate ITRs. Best practice is cost based to support operators' negotiation

5 options on how to set ITRs

1 **Refrain from regulating**	To leave the current ITR to bilateral negotiations
2 **Current ITR**	To keep the currently existing ITR rate
3 **Benchmark based ITR**	To adjust current level of ITR based on international benchmarks, bring ITR levels in line with international levels
4 **Economically efficient ITR**	To develop an economically efficient ITR (essentially cost based for the residual part)
5 **Economically efficient ITR as floor and operator negotiation**	Use a cost base approach as a floor, and clarify the determination to allow operators to negotiate for compensation of the residual portion of the ITR

Implications

- NCC has a number of options on how to set the ITRs
- All of the options have individual pros and cons that could lead to a variety of different effects in the Nigerian market
- The NCC's choice will depend on the weight placed on the competing objectives of economic efficiency and allowing operators to generate revenues, respectively

Recommended option

There are number or pros and cons for the options suggested

	Option 1 Refrain from regulation	*Option 2* Current ITR	*Option 3* Benchmark based ITR	*Option 4* Economically Efficient ITR	Option 5 Economically efficient ITR as floor and operator negotiation
Pros	• Market forces tend to lead to good outcomes • Operators could work directly with each other to achieve the best possible outcome for them	• NCC does not need to change the current regulation • International operators are benefiting from ITRs set in Naira	• Information is easily accessible • Satisfies the need of hard currency inflow • Could be based on a group of regional or comparable countries	• Economically efficient ITRs (set at cost base levels) would maximise economic benefit • Less vulnerable to bypass • No incentives for grey market • Lesser elasticity effect	• If set slightly above costs based on operators' negotiation, balances the need to receive hard currency inflows and also maintaining cost effective rates
Cons	• Might lead to more volatility in the market • Nigerian operators might not be able to agree on mutually beneficial ITR terms for them • Could take ITR level back to 2016 low levels	• Currently grey market, elasticity, and consumer shift to other channels could continue to increase • Mobile operator revenues would continue to be affected	• Could not necessarily address unique Nigerian market issues • No underlying economic rationale, only a comparison to similar but still different countries	• Requires quantification of the costs of the international links • Potential decrease of unit revenue from current levels	• Developing complex cost models is time consuming and requires qualified resources • Setting weightings between the two objectives will be subjective

Recommendations

Findings suggest that post intervention ITR is lower than countries comparable to Nigeria

	Hypotheses	*Findings*
ITR benchmarking	Nigeria's ITR post intervention is below that of countries with similar characteristics to Nigeria	Nigeria's ITR was below average for countries (in Africa) with similar GDP, population, number of operators and technological readiness[1]. Following the October 2006 intervention the ITR is still below average for these countries
	Nigeria's ITR post intervention is below that of countries with which it makes and receives the most calls	Nigeria's ITR was below average for countries which with it made or received the most international calls. After the October 2016 intervention the ITR come in line with the average for these countries
	Following the October 2016 ITR increase, Nigeria's ITR is above that of international best practice regulation countries	Nigeria's ITR was slightly higher than that of countries with international best practice regulation. After the October 2016 ITR increase these difference become significant
ITR impact assessment	In markets where the ITR is not regulated, it will tend to converge to the MTR	In international EU markets, where the ITR was not regulated, the ITR did not converge to MTR overtime and was above the MTR during the period analysed
	Prior to October 2016, Nigerian operators suffered from the low ITR levels compared to other international operators	Following the ITR increase in October 2016, Nigeria experienced a net cash inflow of international call receipts, driven by high net cash inflows from the US and European countries
	Developing countries with volatile currencies tend to regulate the ITRs to prevent imbalance of payments with international operators	A number of developing countries with low MTRs, which suffer from currency fluctuations, regulate the ITR to avoid its convergence to the MTR and therefore an imbalance of payments with international operators
	The setting of the ITR in October 2016 has potentially led to an increase in grey traffic	The fall in international call volumes since the ITR was set above the MTR in October 2016 could be related to a potential increase in grey traffic activity

[1] As defined by the Global Competitive Report 2015

The recommended action for NCC is to set a cost based floor and leave room for negotiation between operators

Key Themes Identified in the Nigerian market

Economic Efficiency

Operators' need to maintain cost-based operational efficiency, which could be understood as MTR plus the cost of the international leg/sub sea cable.

Displacement

Growing consumer switch to digital IP based technologies as a way of communication as a result of growing retail costs

Equity considerations

Operators' need to address their company's finance ability and stability in the long term

Need for hard currency inflows

A need for strongg, stable currency inflows into the Nigerian economy

Operator revenue

Operators' need to maximise their revenue

Grey Market

Growth in illegal operators' activities due to high ITR.

Sources: NCC

Recommendations

We recommend the NCC to set an ITR floor at an economically efficient level based on costs (including the costs of international transmission) and still leave room for operators to negotiate with international carriers the total compensation for the international termination:

- This would enable Nigerian operators to maximise their revenue, and their customers' marginal utility rate
- This would also enable NCC to minimise grey market, as it would remove cost-driven incentive for the activity
- The approach rationale is to ensure Nigerian operators are compensated for international transmission and enable them to strike the right balance between higher revenue per minute and higher risk of grey traffic (illegal bypass)

Appendix – Benchmark approach

How we collected the data and made adjustments

1 Objectives

Our goal: to benchmark Nigeria's International Termination Rate (ITR), which is the regulated international wholesale cost for an operator originating an international call.

2 Approach

Difficulties in sourcing data: However, in many countries, international wholesale costs are not regulated so no published International Termination Rate exists.

Moreover, commercially negotiated international wholesale costs often vary across originating operators, terminating operators and countries, and individual data points are sometimes commercially confidential.

Solution: Therefore, we have used international wholesale cost data from TeleGeography for this analysis, which averages out costs across originating operators and terminating operators, providing a single data point per destination country in a common currency (USD at market exchange rates).

3 Summary Output

Country of destination	International wholesale cost (USD/min)
Algeria	0.30
Ghana	0.21
Tanzania	0.31
Kenya	0.11
Uganda	0.25
Congo (DRC)	0.46
Zambia	0.14
Egypt	0.09
Niger	0.27
Benin	0.17
Togo	0.31
Cameroon	0.28
Côte d'Ivoire	0.24
Sudan	0.15
Guinea	0.33
...	...

Sources: TeleGeography

Our methodology for selecting which countries to benchmark

1 Objectives

Our objective: select the country sample is to find the operators which give the most objective test of Nigeria's performance. Due to the operational and country characteristics of Nigeria, and lack of detailed data, is it not possible or sensible to compare and adjust a small set of comparable countries.

2 Approach

Difficulties in comparing countries: Unfortunately, there are few counties which exhibit similar characteristics to Nigeria and for which data required for a benchmarking study are publicly available. For example, most European fixed operators are required to produce extremely detailed financial and regulatory accounts, but are so much larger than Nigeria that comparisons are likely to be invalid.

Solution: Therefore, we have designed 4 bespoke sets of 5 countries with which to benchmark Nigeria's ITRs, which include African comparators as well as developed EU countries. The countries we have chosen, together with our rationale for selecting them, are shown on the next page

3 Summary Output

Country	Similarity to Nigeria score
Algeria	4.50
Ghana	4.50
Tanzania	4.50
Morocco	4.25
Kenya	4.50
Uganda	4.50
Congo (DRC)	4.33
Zambia	4.25

Definitions: African countries similar to Nigeria

Metric	Date	Source	Definition
GDP	2015	World Bank	GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in current U.S. dollars
Population	2015	World Bank	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates
Number of Operators	2017	GSMA	Number of live operators GSMA receive data from
Technological Readiness	2015	World Economic Forum – Global Competitive Index	This metric ranks countries based on the below criteria; • Availability of latest technologies • Firm-level technology absorption • FDI and technology transfer • Internet users • Fixed-broadband Internet subscriptions • Internet bandwidth • Mobile-broadband subscriptions

Country Selection: African countries similar to Nigeria

Country	GDP (2015 $)	Population Actuals (2015)	Number of Operators (2017)	Global Competitive Index: Technological readiness (2015)	Average Score
Nigeria	**481,066,152,870**	**182,201,962**	**8**	**3.03**	**-**
Algeria	166,838,617,797	39,666,519	3	2.63	4.50
Ghana	37,543,361,204	27,409,893	9	3.24	4.50
Tanzania	45,628,247,290	53,470,420	8	2.46	4.50
Morocco	100,593,283,697	34,377,511	3	3.62	4.25
Kenya	63,398,041,540	46,050,302	3	3.30	4.50
Uganda	27,529,249,701	39,032,383	8	2.80	4.50
Congo (DRC)	35,237,742,278	77,266,814	6	no data	4.33
Zambia	21,154,394,546	16,211,767	4	3.00	4.25

Key
Wholesale International Rates available from TG
Data not available from TG

Definitions: More economically developed countries

Metric	Date	Source	Definition
GDP	2015	World Bank	GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in current U.S. dollars
Population	2015	World Bank	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates
Number of Operators	2017	GSMA	Number of live operators GSMA receive data from
Technological Readiness	2015	World Economic Forum – Global Competitive Index	This metric ranks countries based on the below criteria; • Availability of latest technologies • Firm-level technology absorption • FDI and technology transfer • Internet users • Fixed-broadband Internet subscriptions • Internet bandwidth • Mobile-broadband subscriptions

Country Selection: More economically developed countries

Country	GDP (2015 $)	Population Actuals (2015)	Number of Operators (2017)	Global Competitive Index: Technological readiness (2015)	Average Score
Nigeria	**481,066,152,870**	**182,201,962**	**8**	**3.03**	
Poland	477,066,454,437	37,999,494	4	4.78	4.25
Czech Republic	185,156,359,571	10,551,219	4	5.43	4.00
Romania	177,954,489,852	19,832,389	4	4.63	4.00
Netherlands	750,283,908,173	16,936,520	4	6.10	3.75
Sweden	495,623,697,305	9,798,871	5	6.24	3.75
United Kingdom	2,858,003,087,966	65,138,232	5	6.30	3.00
Germany	3,363,446,822,668	81,413,145	3	6.01	2.75
United States	18,036,648,000,000	321,418,820	105	5.85	2.00
Greece	194,851,319,175	10,823,732	3	4.92	3.75

Key
Wholesale International Rates available from TG
Data not available from TG

Definitions: High call volume to/from Nigeria

Metric	Date	Source	Definition
GDP	2015	World Bank	GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in current U.S. dollars
Population	2015	World Bank	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates
Number of Operators	2017	GSMA	Number of live operators GSMA receive data from
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Country Selection: High call volume to/from Nigeria

Country	GDP (2015 $)	Population Actuals (2015)	Number of Operators (2017)	Global Competitive Index: Technological readiness (2015)	Average Score
Nigeria	**481,066,152,870**	**182,201,962**	**8**	**3.03**	
Egypt	330,778,550,717	91508084	3	3.19	4.75
South Africa	14,571,945,857	54956920	4	4.56	4.25
France	2,418,835,532,882	66808385	4	5.88	3
India	2,095,398,349,096	1311050527	12	2.73	3
China	11,007,720,594,139	1371220000	3	3.70	2.25

Key
Wholesale International Rates available from TG
Data not available from TG

Definitions: Similar countries to Nigeria outside Africa

Metric	Date	Source	Definition
GDP	2015	World Bank	GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in current U.S. dollars
Population	2015	World Bank	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates
Number of Operators	2017	GSMA	Number of live operators GSMA receive data from
Technological Readiness	2015	World Economic Forum – Global Competitive Index	This metric ranks countries based on the below criteria; • Availability of latest technologies • Firm-level technology absorption • FDI and technology transfer • Internet users • Fixed-broadband Internet subscriptions • Internet bandwidth • Mobile-broadband subscriptions

Country Selection: Similar countries to Nigeria outside Africa

Country	GDP (2015 $)	Population Actuals (2015)	Number of Operators (2017)	Global Competitive Index: Technological readiness (2015)	Average Score
Nigeria	**481,066,152,870**	**182,201,962**	**8**	**3.03**	
Pakistan	271,049,886,673	188,924,874	8	2.88	5.00
Vietnam	193,599,379,095	91,703,800	5	3.32	5.00
Peru	189,111,139,010	31,376,670	4	3.40	4.75
Argentina	583,168,571,071	43,416,755	4	3.86	4.50
Colombia	292,080,155,633	48,228,704	5	3.82	4.50
Indonesia	861,933,968,740	257,563,815	7	3.49	4.50
Sri Lanka	82,316,172,384	20,966,000	5	3.31	4.50
Thailand	395,168,025,882	67,959,359	6	4.24	4.50
Iran	no data	79,109,272	6	3.17	5.00
Iraq	180,068,537,409	36,423,395	5	no data	5.00
Bangladesh	195,078,665,828	160,995,642	8	2.62	4.75
Uzbekistan	66,732,736,498	31,299,500	5	no data	4.67
Venezuela	no data	31,108,083	3	3.14	4.67

Key
Wholesale International Rates available from TG
Data not available from TG