

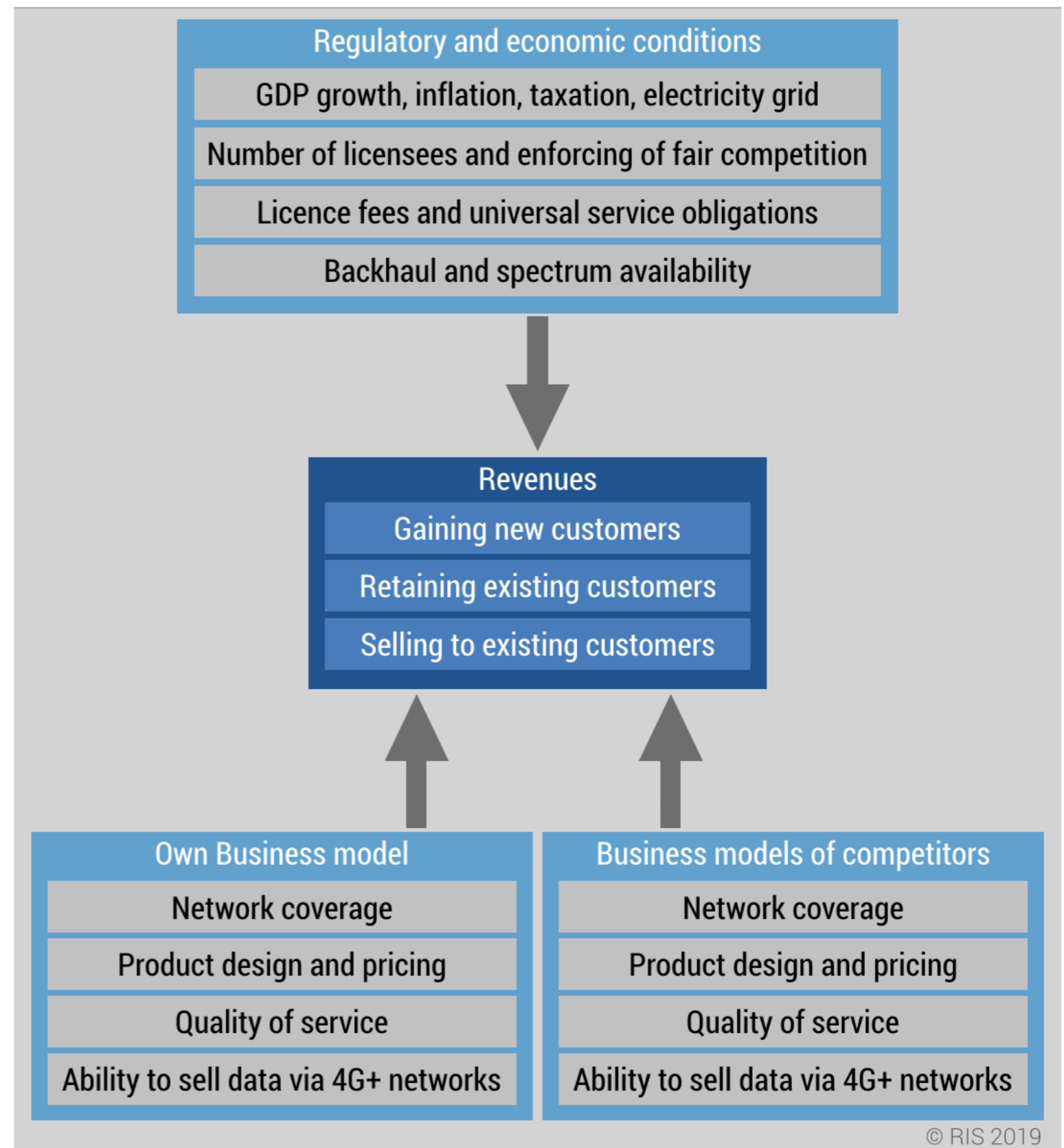
BUSINESS MODELS ARE DRIVEN BY OTT APPLICATIONS

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1st October 2019

MNO Revenues depend on many factors

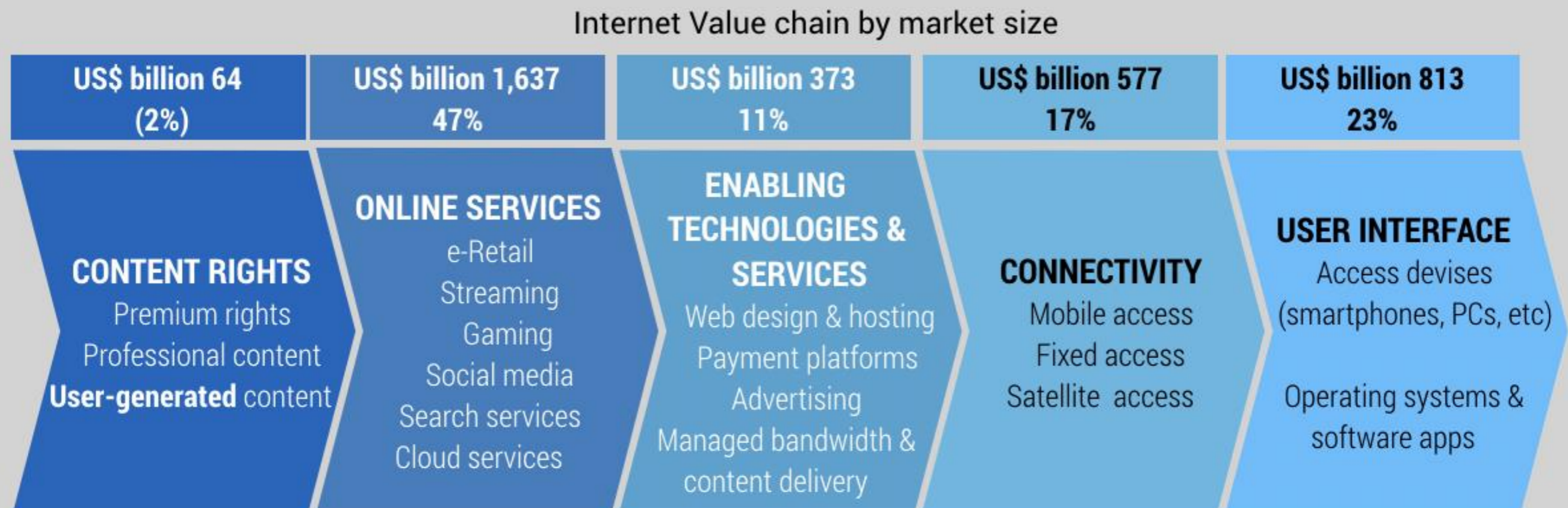
- Economic factors: Demand for mobile services as a function of population, GDP, exchange rates;
- Regulatory environment: Market structure shaped by the number of Mobile Network Operators (MNO), fairness of competition and transparency and predictability of regulations;
- Operator strategies: Product design, response to other operators and own business model.



Factors impacting operator revenues

Internet Value chain

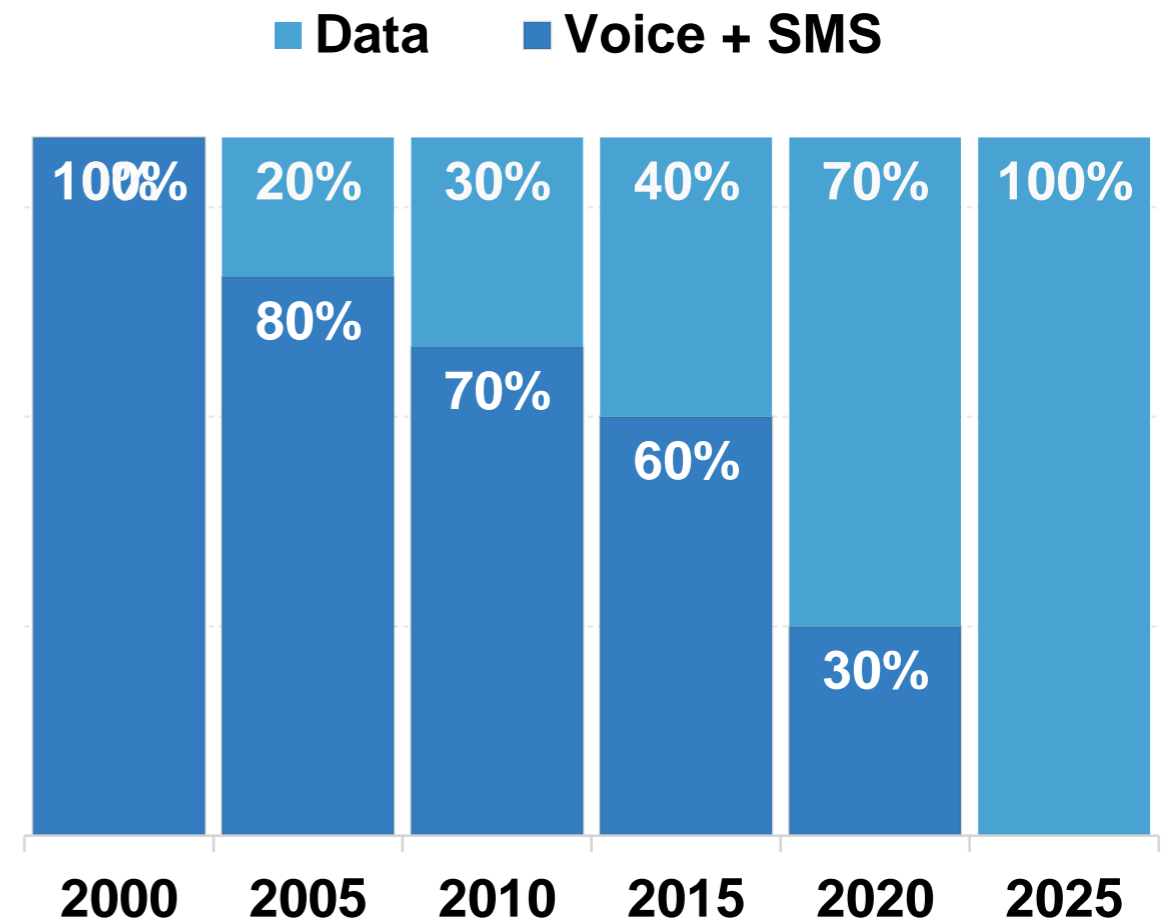
- Social media and OTT use benefits all segments of the Internet Value Chain
- Each segment is subject to own laws, rules and regulations and regulatory bodies
- Each segments also comes with its own risks, investment requirements and profit opportunities



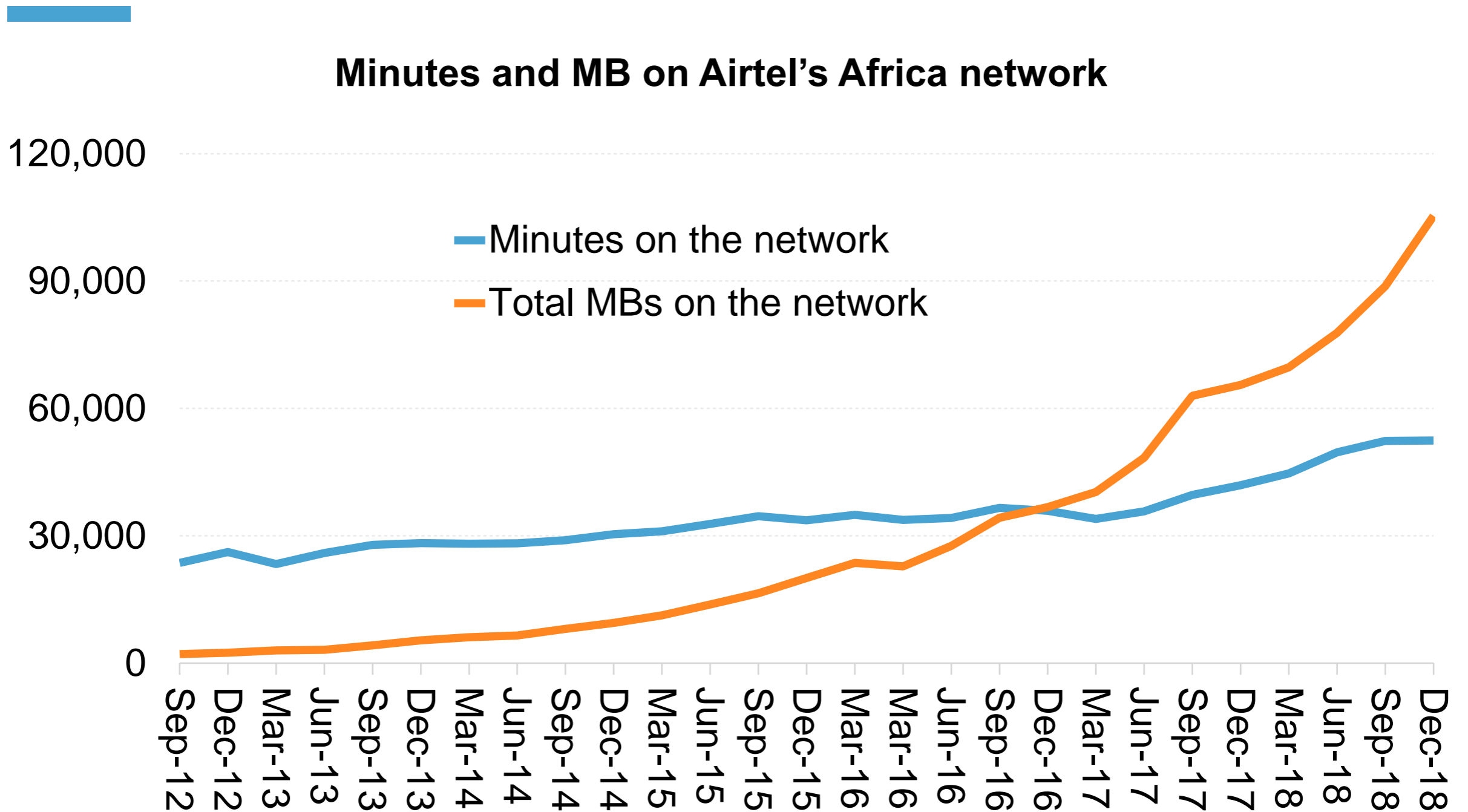
Evolving Business Models

- The transition from a voice and SMS to mobile Internet access-business model is inevitable
- MNOs will
 - become mobile Internet access providers
 - no longer charge for Voice and SMS
 - have simplified billing and branding
- Not only because of revenue trends but also because this is where the last decade of mobile network investment has gone into
- 2.5G, 3G, 4G, 5G is all about data not voice and SMS

Illustrative revenue trend

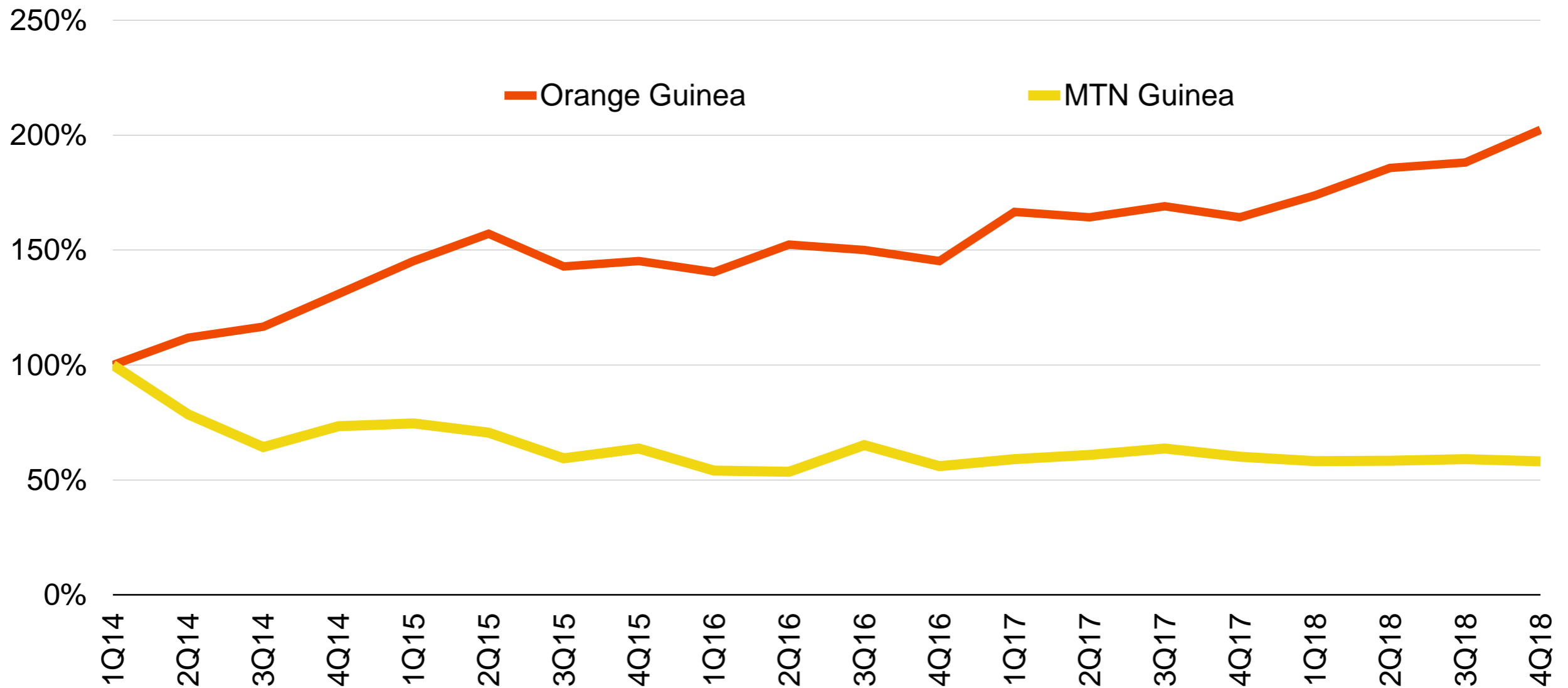


Voice traffic s still growing



MNO revenues reflects a companies ability to seize opportunities and mitigate risk

Revenue developments of MTN and Orange Guinea in percent of Q1 2014 revenues



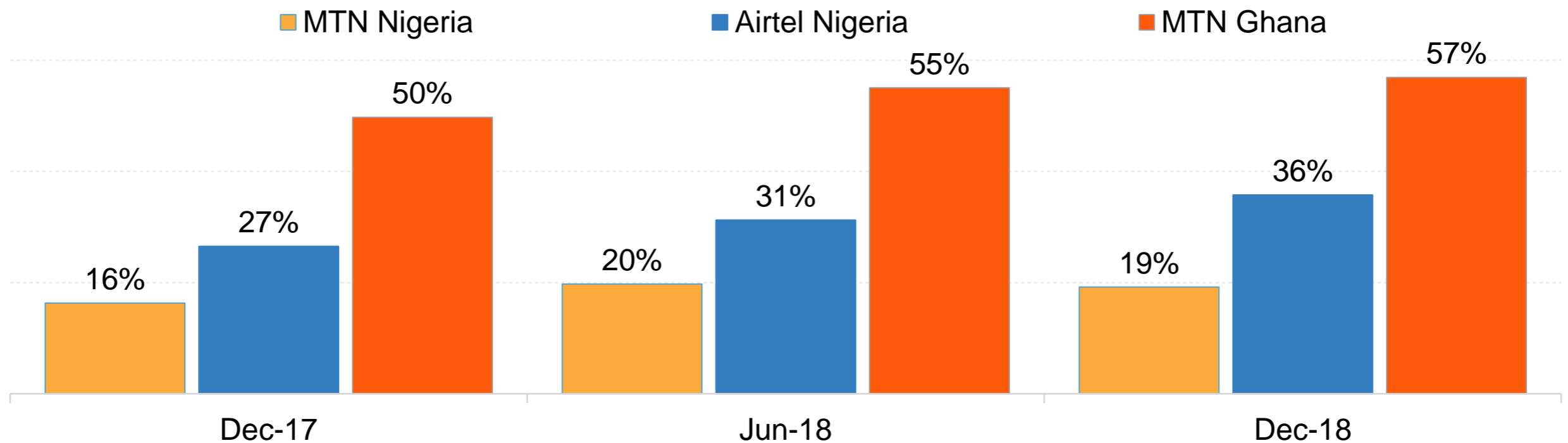
Initial gold rush is over:

EBITDA margins will be more similar to other sectors

| MTN | 1H14 | 2H14 | 1H15 | 2H15 | 1H16 | 2H16 | 1H17 | 2H17 | 1H18 | 2H18 | |
|-------------------|------------|------------|------|------|------|------|------|------|------|------------|-------------------|
| Benin | 43% | 40% | 41% | 31% | 29% | 23% | 28% | 10% | 25% | 23% | Regulatory impact |
| Botswana | 55% | 63% | 55% | 59% | 43% | 51% | 54% | 48% | 62% | 55% | Stable |
| Cameroon | 42% | 43% | 38% | 35% | 38% | 28% | 31% | 18% | 19% | 0% | |
| Congo Brazzaville | 42% | 45% | 44% | 43% | 46% | 38% | 40% | 26% | 34% | 47% | |
| Ghana | 39% | 36% | 40% | 41% | 39% | 43% | 37% | 43% | 39% | 36% | Up |
| Guinea | 26% | 2% | 10% | -1% | -15% | -18% | -1% | 9% | 5% | 10% | |
| Guinea-Bissau | 24% | 32% | 37% | 29% | 28% | 30% | 35% | 31% | 34% | 26% | |
| Ivory Coast | 38% | 40% | 37% | 32% | 36% | 29% | 35% | 28% | 27% | 18% | |
| Liberia | 34% | 14% | 29% | 17% | 23% | 8% | -16% | -2% | 4% | -25% | |
| Nigeria | 60% | 57% | 57% | 49% | 50% | 41% | 38% | 40% | 43% | 44% | Regulatory impact |
| Rwanda | 29% | 28% | 33% | 29% | 27% | 30% | 8% | 10% | 26% | 32% | |
| South Africa | 33% | 31% | 36% | 31% | 31% | 36% | 35% | 34% | 35% | 35% | Stable |
| Sudan | 34% | 34% | 33% | 36% | 35% | 29% | 33% | 37% | 31% | 39% | Up |
| Swaziland | 50% | 58% | 54% | 52% | 54% | 54% | 52% | 46% | 45% | 41% | Competition |
| Uganda | 38% | 39% | 37% | 35% | 35% | 29% | 32% | 36% | 32% | 38% | Stable |
| Zambia | 38% | 42% | 39% | 36% | 32% | 32% | 28% | 36% | 31% | 31% | Stable |

Unintended consequences of regulatory interventions: MTN invested less in broadband infrastructure in Nigeria

Data as % of voice revenues



- **2016:** Fine of 330 billion Naira (USD 1.67 billion)
- **December 2016 - June 2017:** MTN lost 8.8 million subscribers (SIM registration)
- **2015-2017:** Central Bank alleges improper repatriation by MTN Nigeria of USD 8.1 billion

Conclusion

- Revenue trends are positive despite or because of OTTs
- Revenues and profitability are mainly the results of an operators ability to seize revenue opportunities and mitigate risk
- OTTs stimulate broadband demand and network investment
- Policy-makers and regulators should be more concerned with stimulating network investment into 3G+ and less with attempting to protect out-dated business models of operators

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