Costing and Pricing Infrastructure Access

Rabat, MOROCCO

9–12 July, 2018

David Rogerson, ITU Expert

Session 1: Convergence in Practice – Trends, Issues and Regulatory Challenges

Agenda

- About this workshop
- The changing face of ICT
- Market trends
- Commercial impacts for traditional telcos
- The rise of over-the-top (OTT) applications
- Regulatory challenges

About this workshop

About this workshop

- A mixture of lectures and practical exercises – learning through doing as well as listening.
- Based on three cost models developed for ITU training purposes: fixed access, fixed core network, mobile network.
- Addresses the emerging regulatory challenges of a converged market – voice, data, internet and video "quadplay"
- All material for the workshop is available on the CRC website - presentations, models, and group worksheets.
- Material is in English but we will provide translation as we go along!

The changing face of ICT

ITU Agenda: The Sustainable Development Goals

ICTs are central to achieving the Sustainable Development Goals

ICTs have become even more multi-sectoral and can be leveraged to achieve SDGs


Emergency


Education


Health


Agriculture


Investment


Applications


Policy & Regulation

Governance


Capacity Building


Transport


IoT, Sensor Networks


Universal Broadband


Green ICT & E-Waste


Measurements


Electricity


Privacy & Security

SMART SOCIETY


Infrastructure Security


Digital Inclusion


Water


Spectrum Management

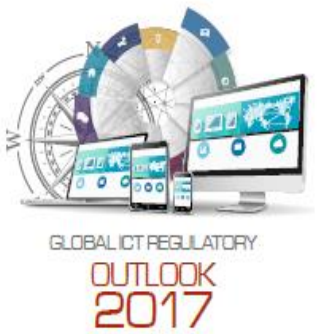

Standards, Conformity & Interoperability


Finance

Source: ITU

Seven major trends in ICT markets

- ICTS move centre stage
- Mobile engine for expanding access
- ICTS less visible but more prevalent
- ICTs enable and disrupt
- The rise of the app economy
- Market concentration
- Cyber threats

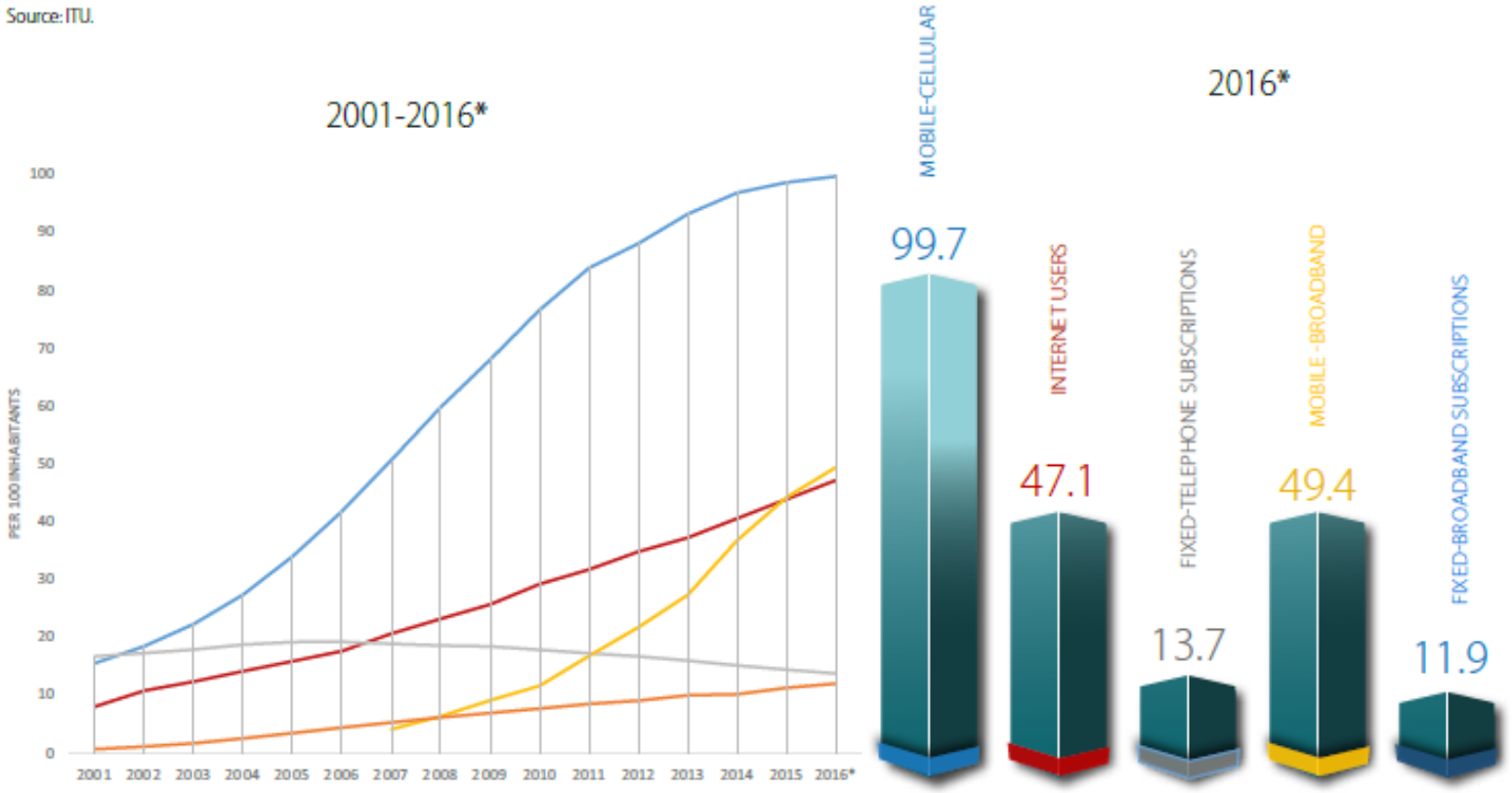


Source: ITU

GLOBAL ICT DEVELOPMENTS WORLDWIDE, PER 100 CAPITA, 2001-2016 AND 2016

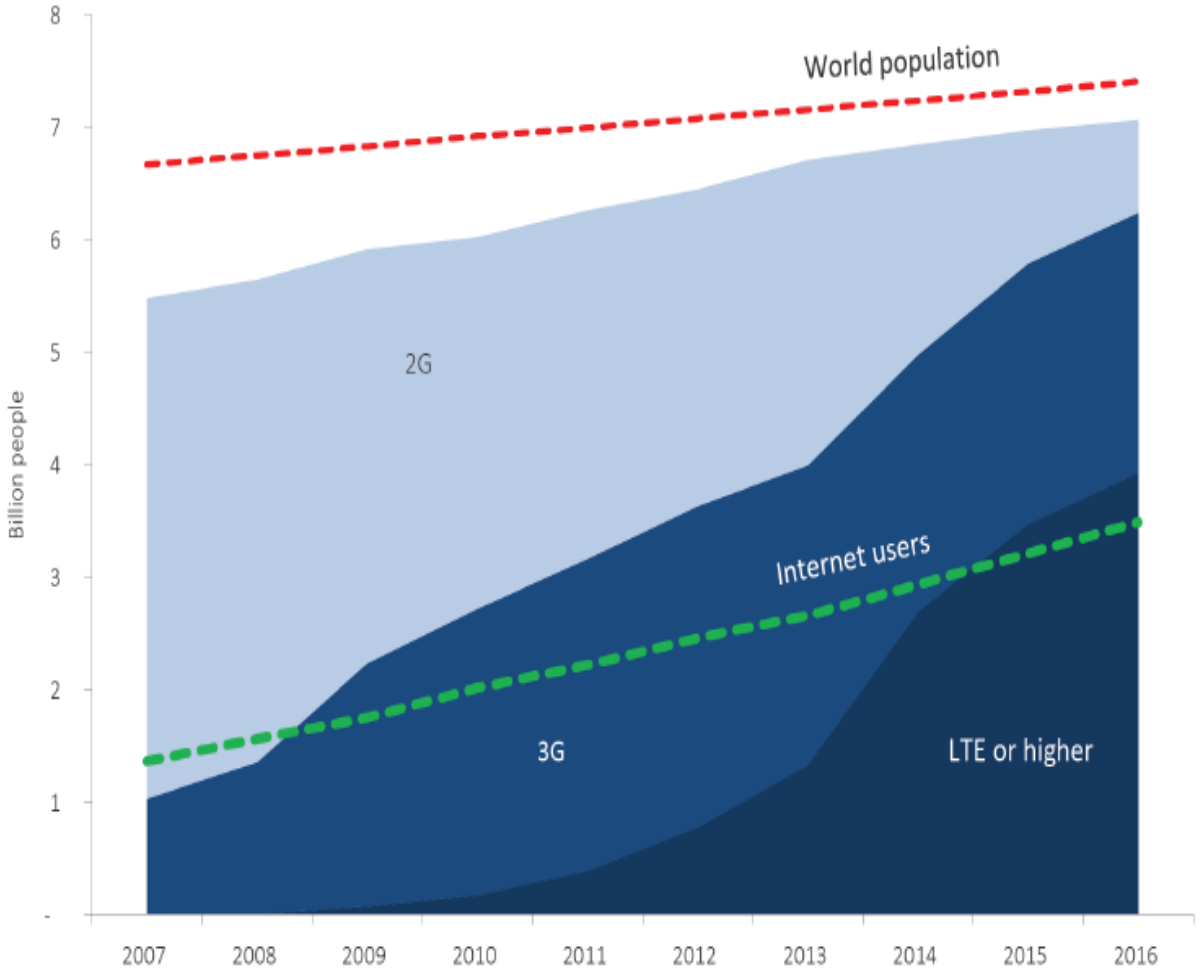
Note: *Estimates.

Source: ITU.



Source: ITU

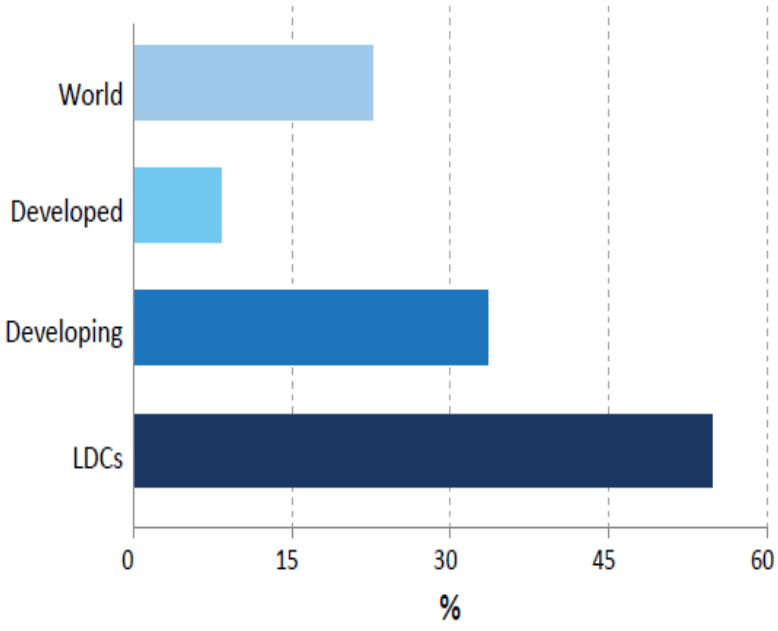
Coverage of mobile-cellular networks and the number of Internet users (2007-2016)



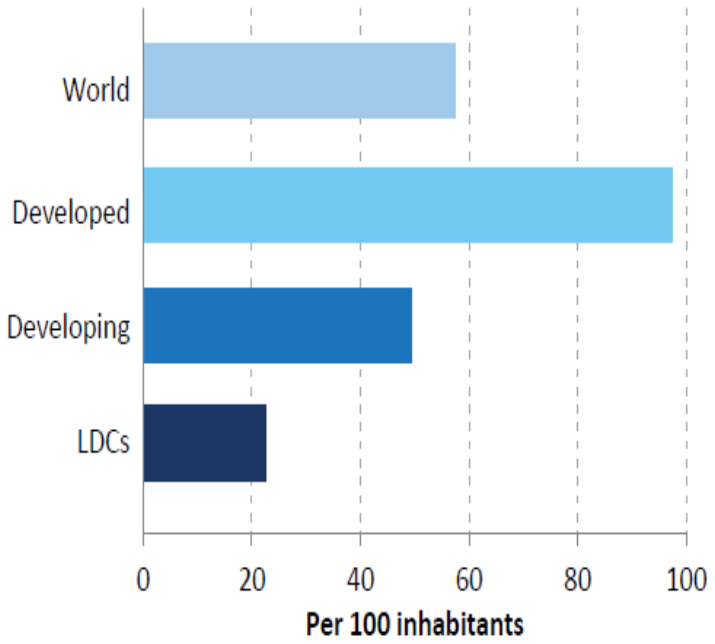
Source: ITU.

Mobile subscriptions

Growth of mobile-broadband subscriptions, CAGR, 2012-2017*



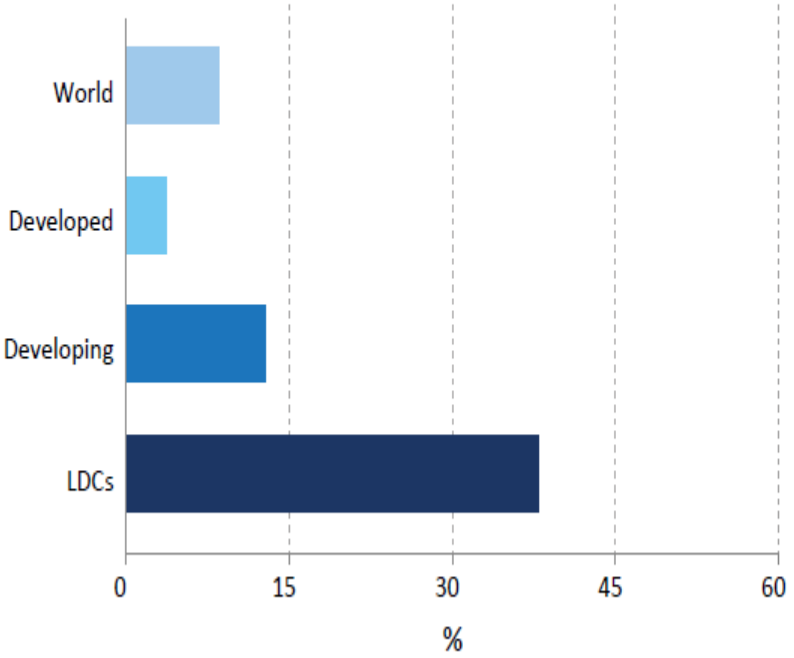
Mobile-broadband subscriptions, 2017*



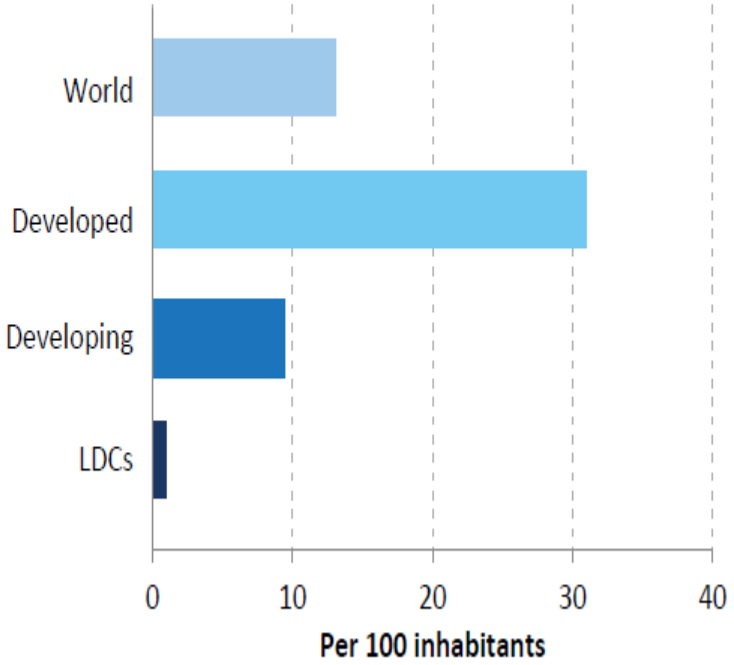
Source: ITU.
Note: *Estimates. CAGR refers to the compound annual growth rate.

Fixed line subscriptions

Growth of fixed-broadband subscriptions, CAGR, 2012-2017*



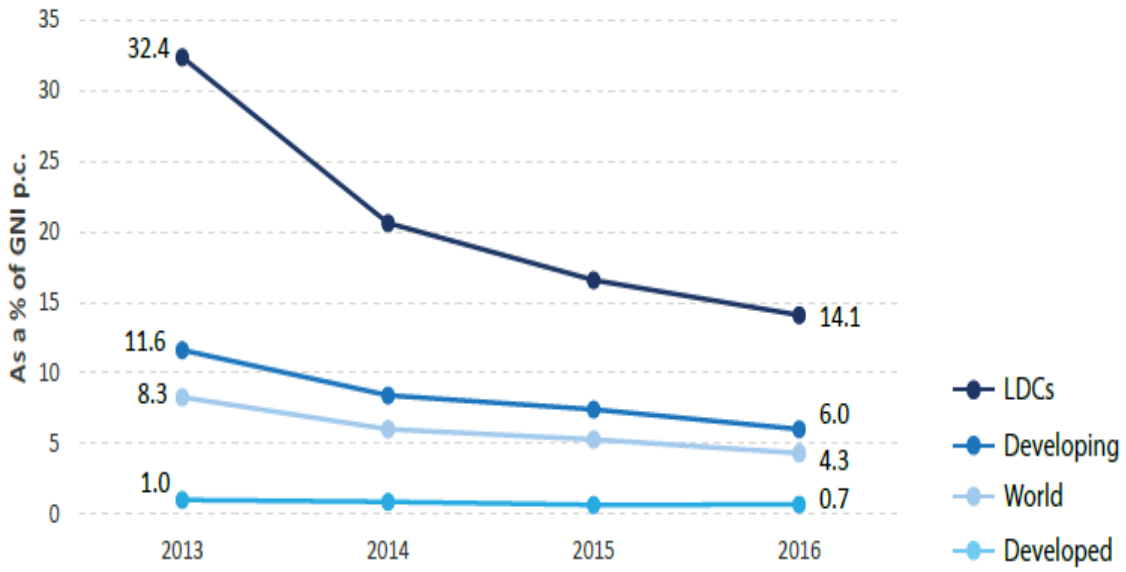
Fixed-broadband subscriptions, 2017*



Source: ITU.
Note: *Estimates. CAGR refers to the compound annual growth rate.

Mobile broadband prices

Mobile broadband prices as a percentage of GNI per capita, 2016



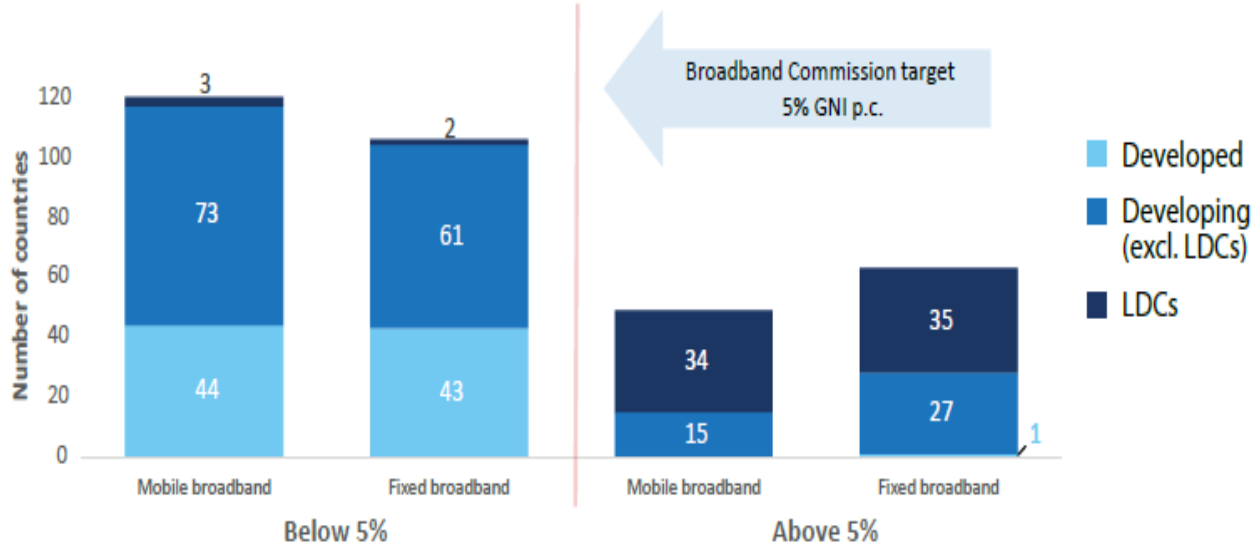
Mobile-broadband prices as a percentage of GNI per capita halved between 2013 and 2016 worldwide.

The steepest decrease ocurred in LDCs, where prices fell from 32.4 to 14.1% of GNI p.c.

Source: ITU.
Note: Based on simple averages including data for 136 countries. Prices are based on entry-level computer-based mobile-broadband plans with a minimum data allowance of 1 GB per month.

Mobile broadband affordability

Broadband prices as a percentage of GNI per capita, 2016

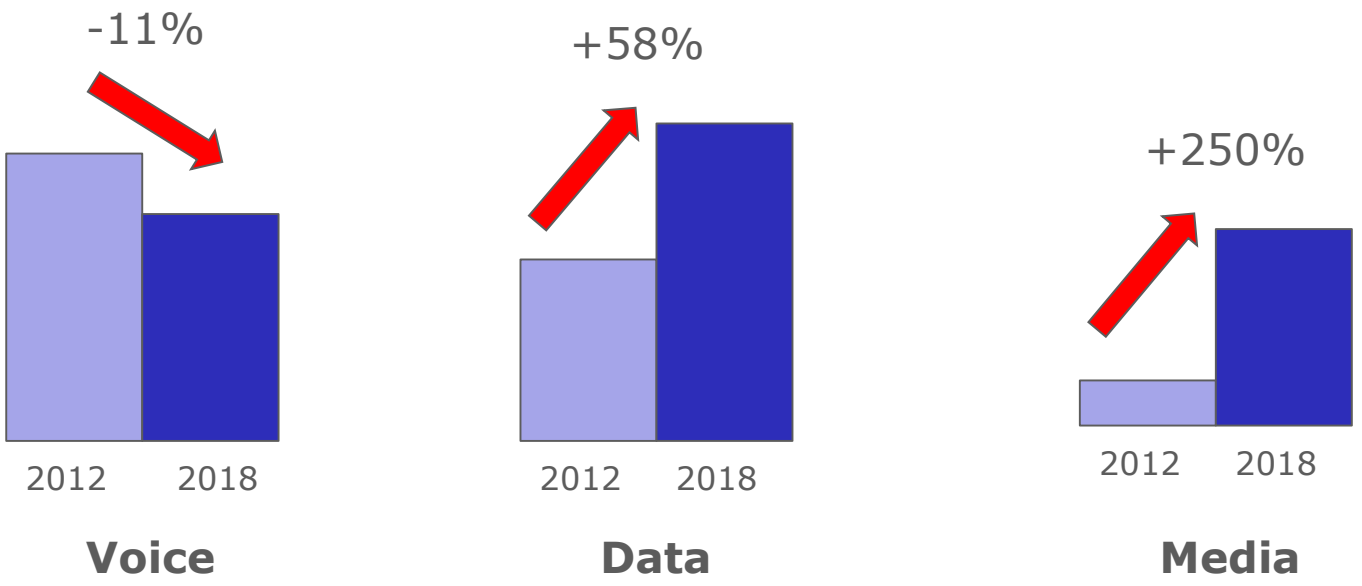


Mobile broadband is more affordable than fixed-broadband services in most developing countries. However, mobile-broadband prices represent more than 5% of GNI per capita in most LDCs and are therefore unaffordable for the large majority of the population.

Source: ITU.
Note: Based on data available for 169 countries. Prices are based on entry-level plans with a minimum data allowance of 1 GB per month.

Market trends

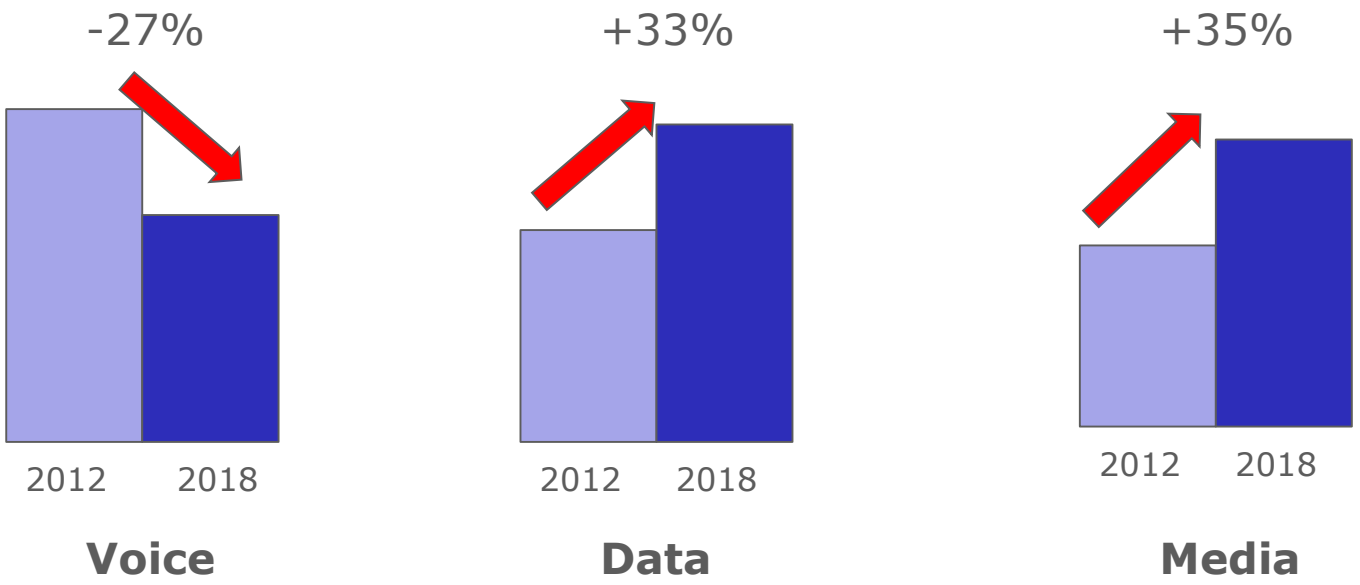
Market trends – mobile networks



Global mobile data and media are growing rapidly

Source: Ovum, global market forecasts

Market trends – fixed networks



While fixed voice continues to fall, data and media are growing

Source: Ovum, global market forecasts

Major impacts of the market trends

- Growth in high-bandwidth applications at expense of low bandwidth
  - e.g. more than 100% CAGR for mobile data traffic in Korea 2010-2014.
- Convergence of all applications on a single network platform:
  - Converged all-IP Core Network (with QoS differentiation)
  - Fibre PON or xDSL in the fixed Access Network (mainly FTTC but FTTH in high density areas)
  - 3G/4G mobile with fibre to cell sites and offloading to wifi where possible
- Service Platform – content delivery network
  - Centralized content delivery for “cold” contents
  - Distributed content delivery for “hot” contents

Commercial impacts

The commercial imperative of multiplay

Erosion of margins

- Voice is almost dead
- Broadband access is a commodity

Competitive pressures

- Cable company triple- and quad-play offers
- Customers increasingly demand bundled offers
- Response to OTT applications

Network amortization

- Need to recover investment in fibre access and IP core networks

The commercial benefits of multiplay

Reduce churn

- Bundling increases “stickiness” in the market: from >30% to <10%
- Harder for subscribers to defect – maintain usage of fixed wire access

Increase ARPU

- Package tariffs encourage subscribers to use more services
- Reducing single service subscribers improves margins as well as revenue

Lower subscriber acquisition costs

- Cross-sell and up-sell to existing subscribers
- Reduce and share marketing costs across services

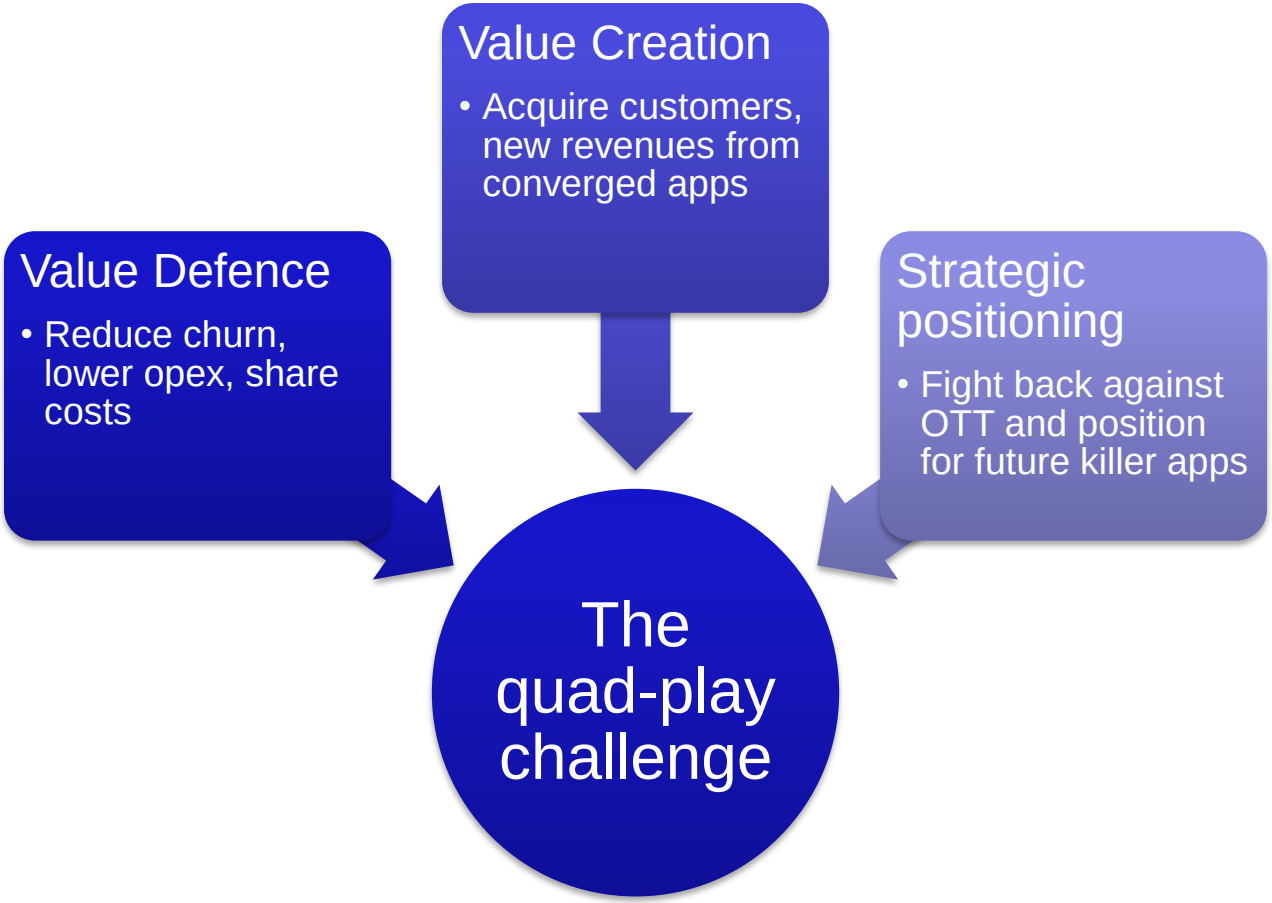
Packaging examples

Table 2. Swisscom LTE mobile broadband service (NATEL)

infinity XS	infinity S	infinity M	infinity L	infinity XL
				+ Saving data via the internet
			+ Uploading HD videos + photo albums	
		+ YouTube + Live TV + Route planner + Streaming music		
	+ SBB[35] + Facebook + News and Weather + E -Mail			
E-Mail without attachment				
Download (up to): 0.2 Mbit/s	Download (up to): 1 Mbit/s	Download (up to): 7.2 Mbit/s	Download (up to): 21 Mbit/s	Download (up to): 100 Mbit/s
Upload (up to): 0.1 Mbit/s	Upload (up to): 0.5 Mbit/s	Upload (up to): 1 Mbit/s	Upload (up to): 2 Mbit/s	Upload (up to): 10 Mbit/s
USD 39.10/month (CHF 59)	USD 49.70/month (CHF 75)	USD 65.60/month (CHF 99)	USD 85.50/ month (CHF 129)	USD 112 /month (CHF 169)

Source: OECD, Swisscom (USD conversion using PPP)

Network operators' 3-pronged approach



Case study: OTT

What is Over-the-Top?

- *Over the Top* is a 1987 movie starring Sylvester Stallone as a champion arm-wrestler (seriously!).
- OTT also describes a service that rides on top of a user's internet connection
  - The user's ISP/telco is not involved in the supply of an OTT service
- OTT services take many forms
  - voice and messaging services more apparent today
  - video and music services increasingly so

Rise of OTT

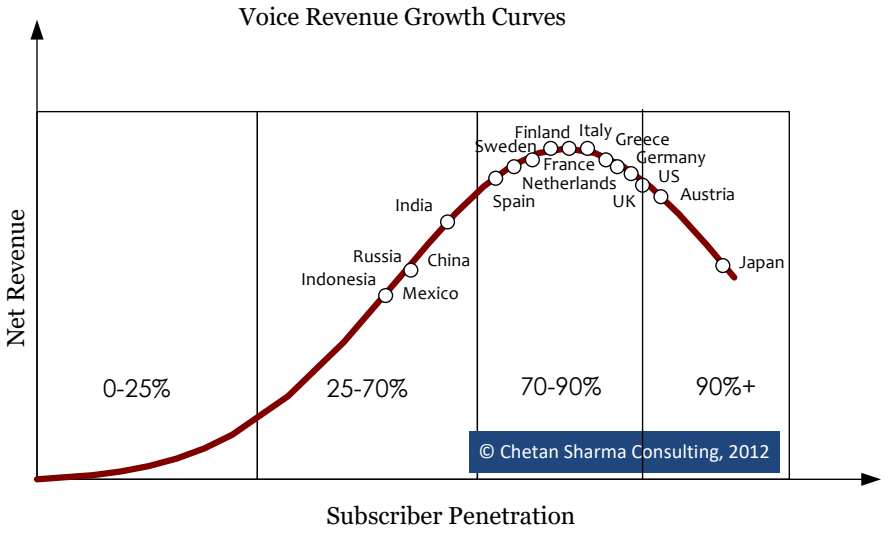
- Term originally used primarily in the context of video services supplied over fixed broadband networks
  - E.g. Netflix vs AT&T's video-on-demand services
- Now applied more generally
  - Voice, messaging, video, music
  - Mobile and fixed networks
- Mobile context enabled by arrival of the smartphone and public wifi
  - Further enabled by the enhanced capabilities of 4G
- Consequences particularly great for mobile networks
  - Displaces supply of voice and messaging
  - risks reducing network connectivity to a commodity
  - third-party providers challenging the mobile operator hegemony

Some comparisons

	Telco	OTT
Access to customer	• Via own network • QOS guaranteed	• Via someone else's network • Unlikely to guarantee QoS
Potential customers	• Those within the footprint of the telco's network	• Any person anywhere in the world
Business model	• Subscription based	• App sales, freemium, advertising, partnerships, or "yet to be determined"
Platform	• Open standards • Interoperability	• Proprietary • Not interoperable • Walled gardens

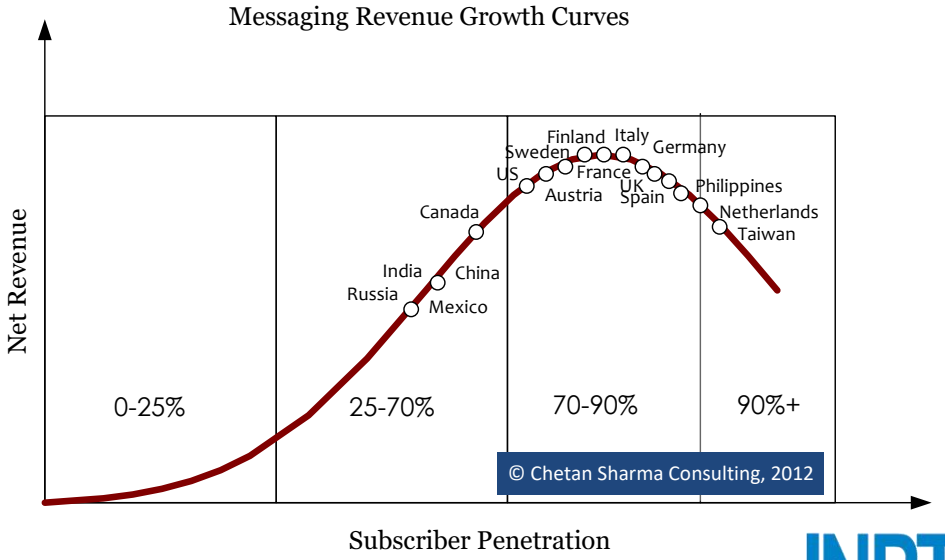
Key OTT battleground #1 – mobile voice

- Mobile voice revenues have peaked in many developed markets and are now in decline
  - Developing markets are still on the rise but they too will soon peak
- Mobile VOIP making inroads but hampered by:
  - need for widespread indoor wireless broadband
  - lack of interoperable apps
  - Smartphone battery life



Key OTT battleground #2 – mobile messaging

- Mobile messaging revenues have also either peaked or are peaking
- The battle against OTT messaging has effectively been lost!
  - Instant messaging, social networks, P2P messaging
  - It was good was it lasted—and now the high margins will be difficult to replace



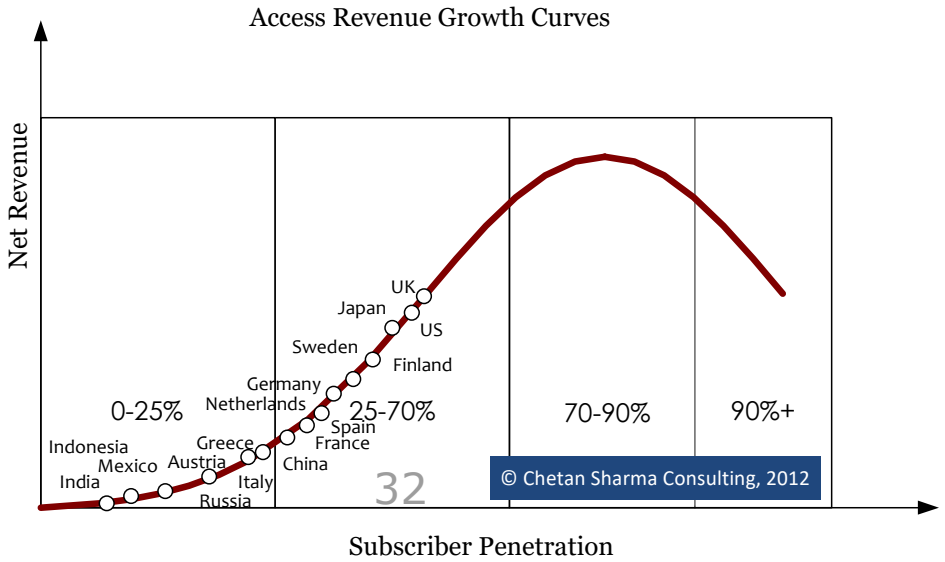
Factors pushing messaging to OTT alternatives

- The key drivers that tip a market towards OTT:
  - Technology readiness—3G+ networks and high penetration of smartphones foster wide distribution of OTT apps
  - Cost incentives—high prices of SMS encourage a switch to the cheaper (even free) OTT applications
  - Network effects—in particular youth aged 13–24 years tend to be the leading indicators of a more widespread uptake
  - The strength of the OTT alternative—markets with high penetration of a single OTT app, or where a single OS platform is highly concentrated, are at the greatest risk
    - e.g. KakaoTalk has 100% presence on smartphones in Korea (40m users)

Source: McKinsey (2013)

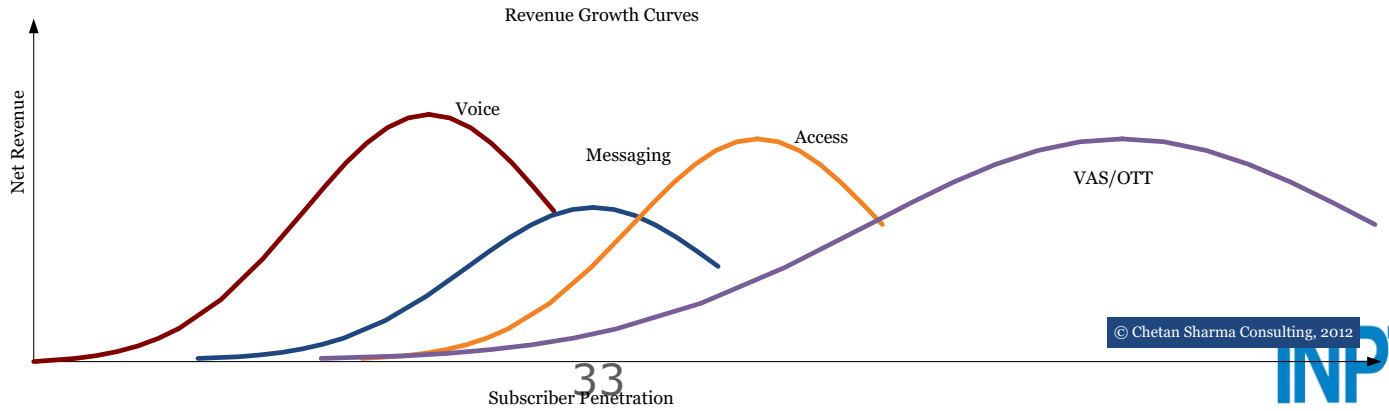
Mobile revenues increasingly dependent upon data access

- Mobile access revenues are still growing
  - Smartphone penetration (which is a proxy for high-data usage) is still below 50% in most developed markets
- Access revenue growth has helped compensate for the declining revenues from voice and messaging
  - What will happen once we crest the wave and access revenues begin to decline too?

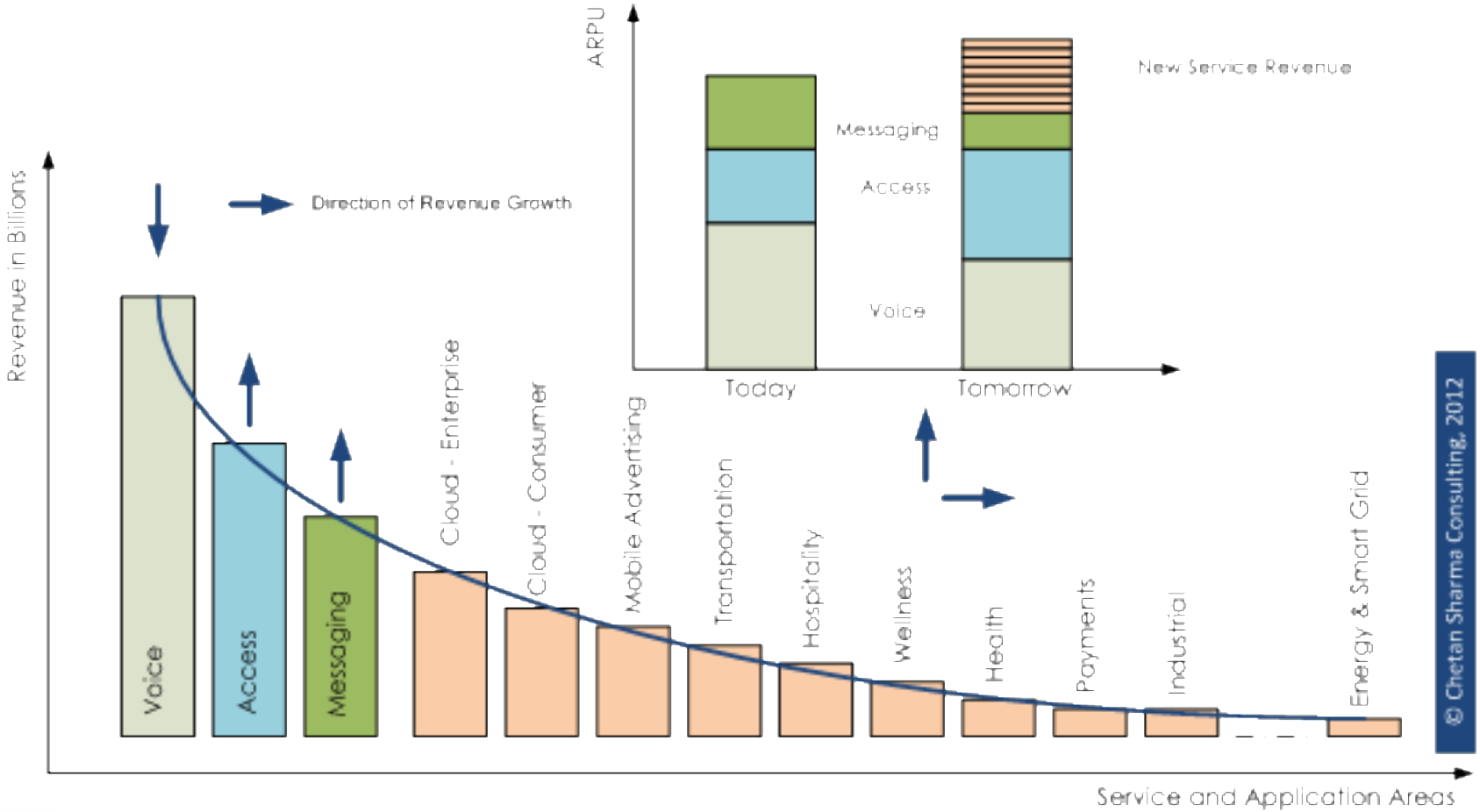


OTT as the saviour for mobile operators?

- Could OTT be the next major source of revenue for mobile operators and replace the traditional cash cows of voice and messaging?
- OTT as a portfolio of services
  - Not a single functional block like voice or messaging
  - Made up of dozens of new applications
- Mobile operator as an enabler or an OTT service provider?
  - OTT service provision would require a different skill-set in the mobile operator



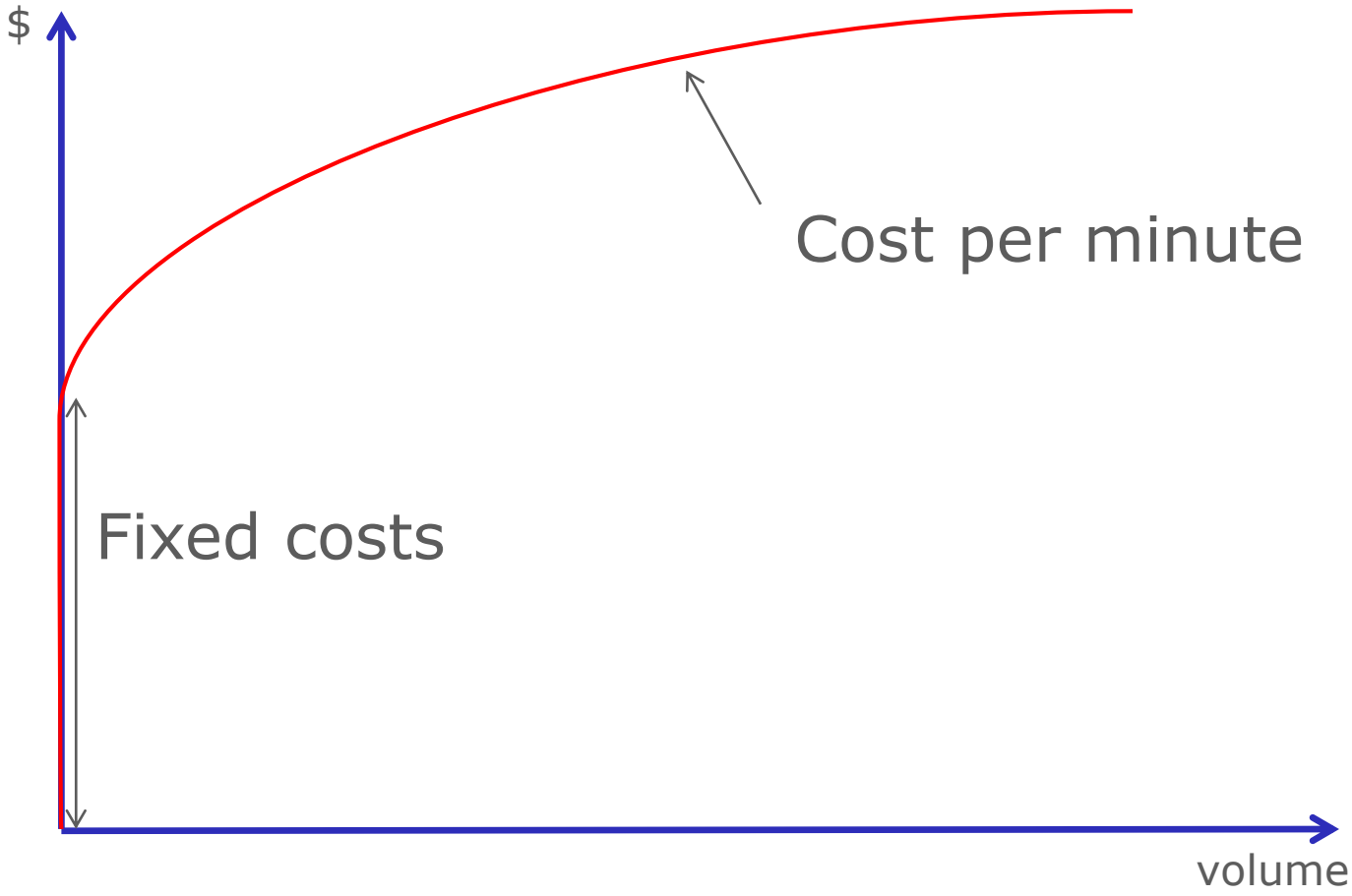
The make-up of future mobile revenues?



Regulatory challenges

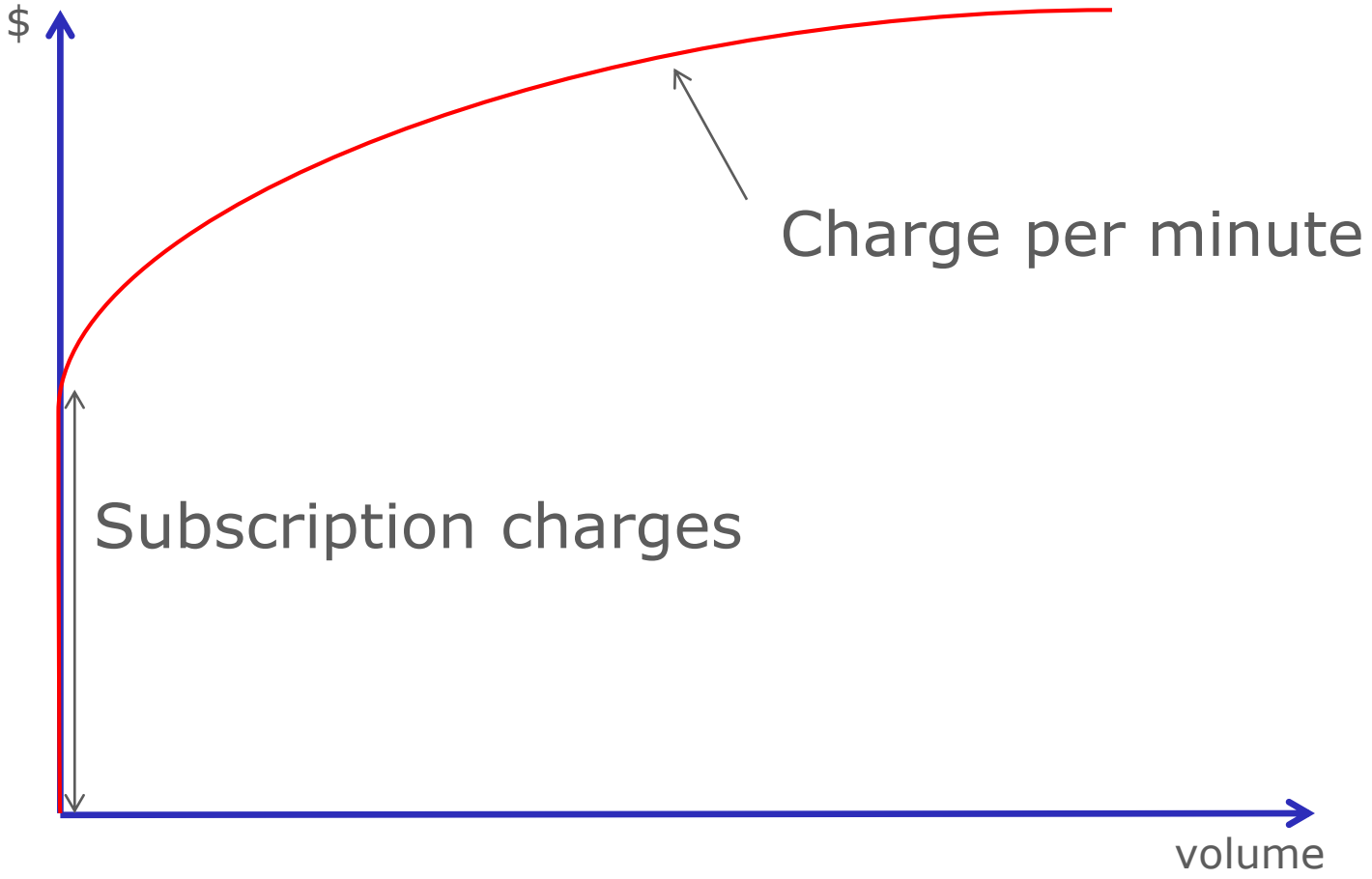
Costs and prices in telecoms

A. HOW COSTS USED TO BE



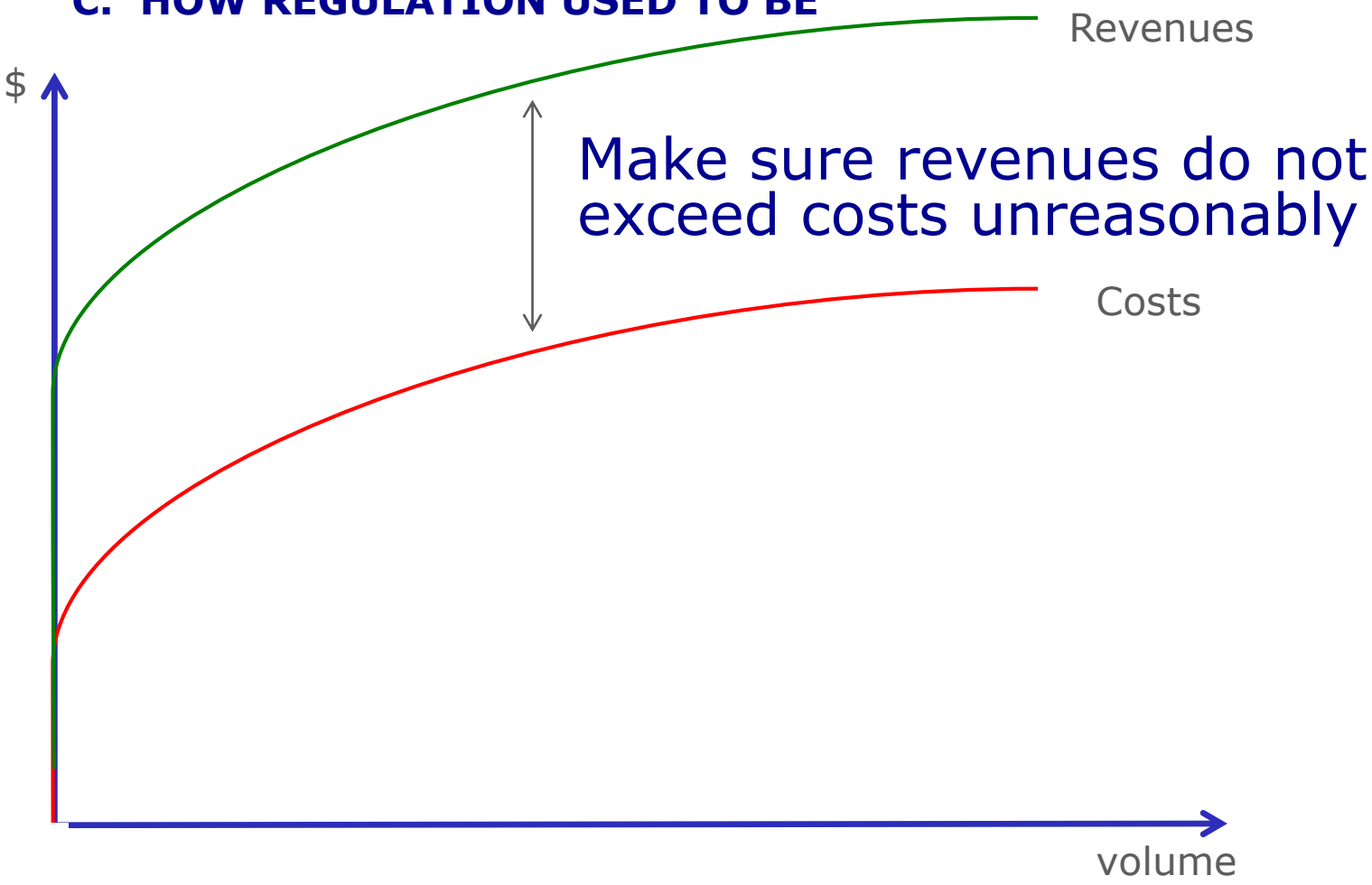
Costs and prices in telecoms

B. HOW PRICES USED TO BE



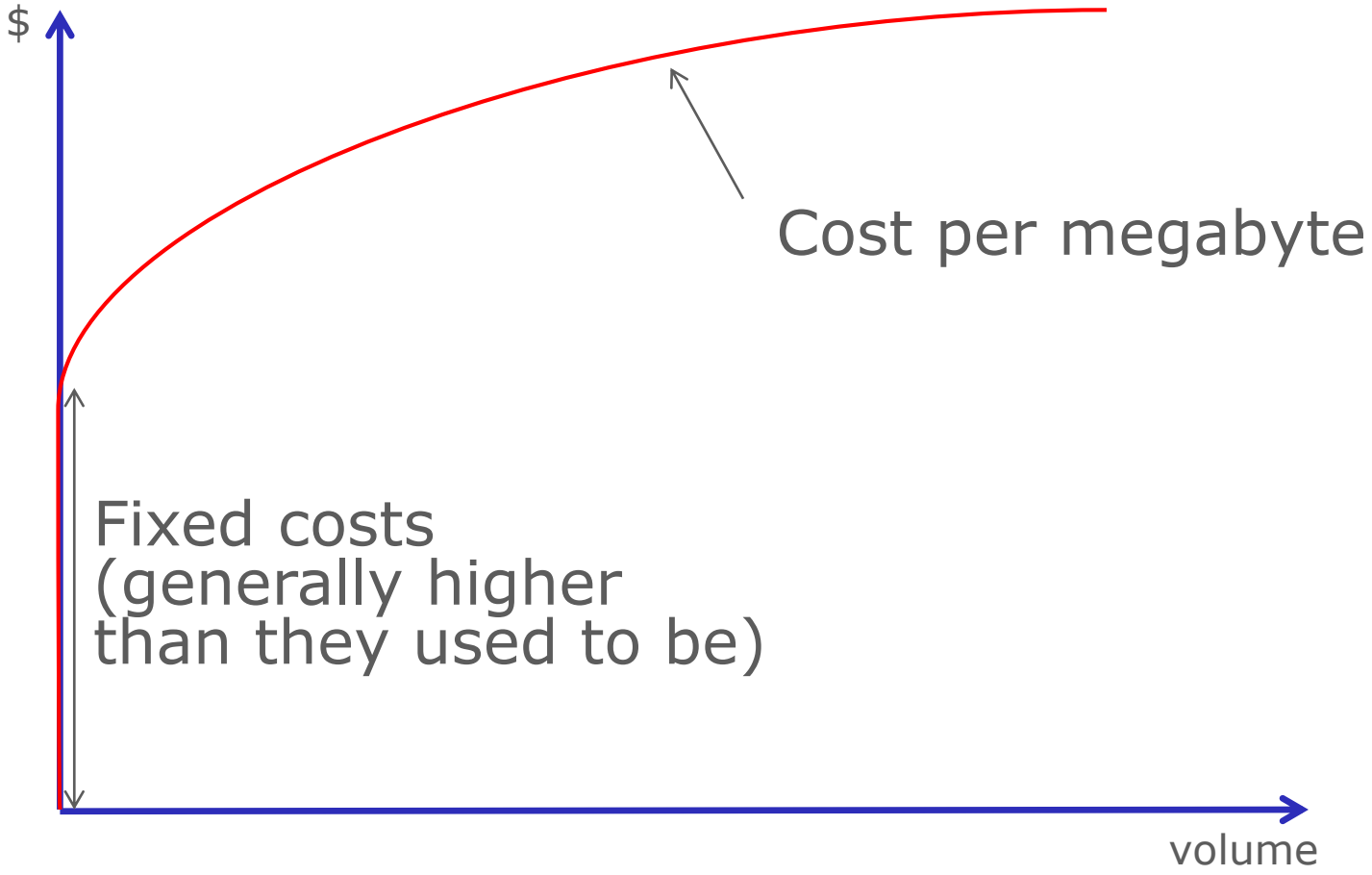
Costs and prices in telecoms

C. HOW REGULATION USED TO BE



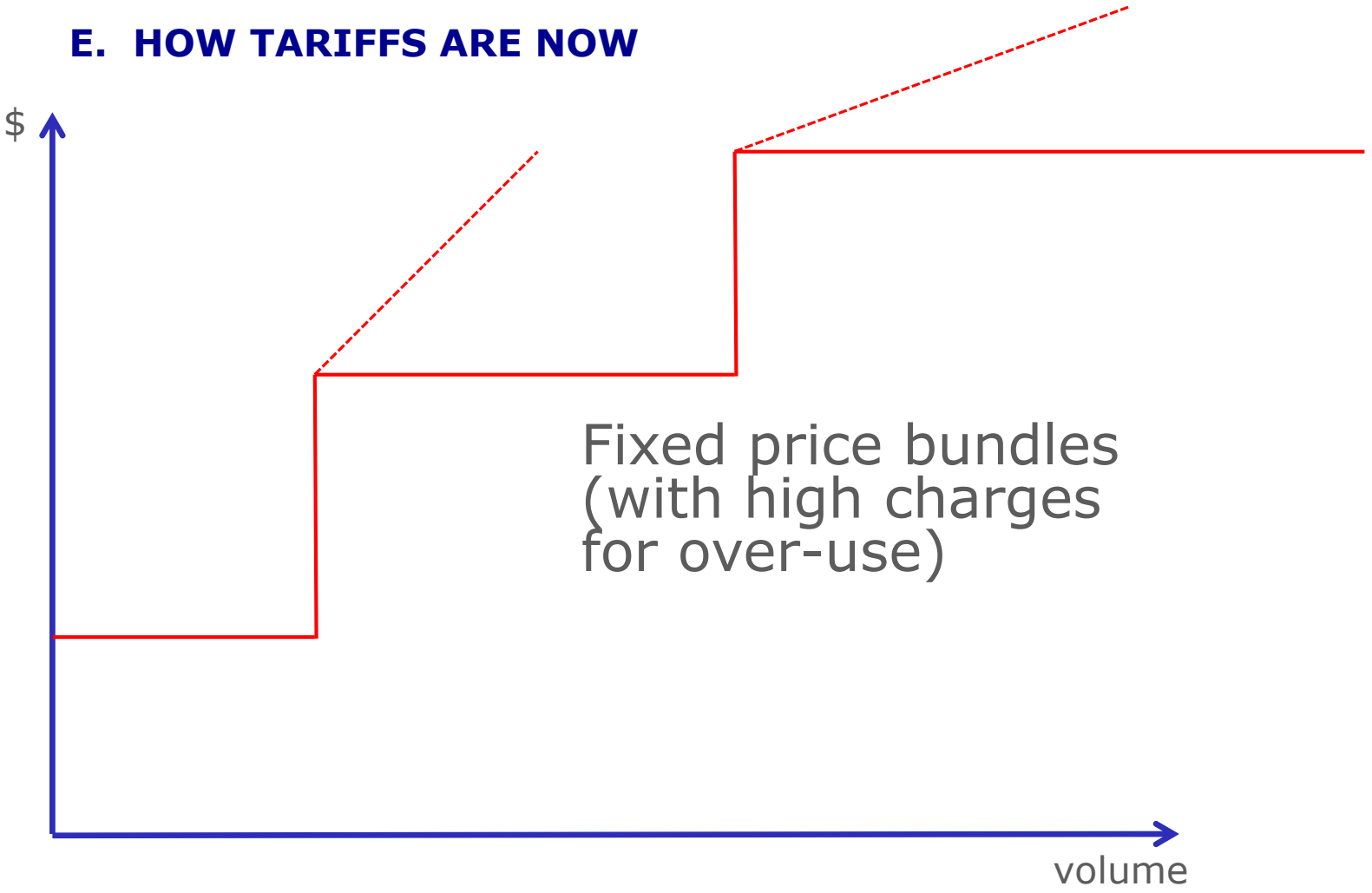
Costs and prices in telecoms

D. HOW COSTS ARE NOW



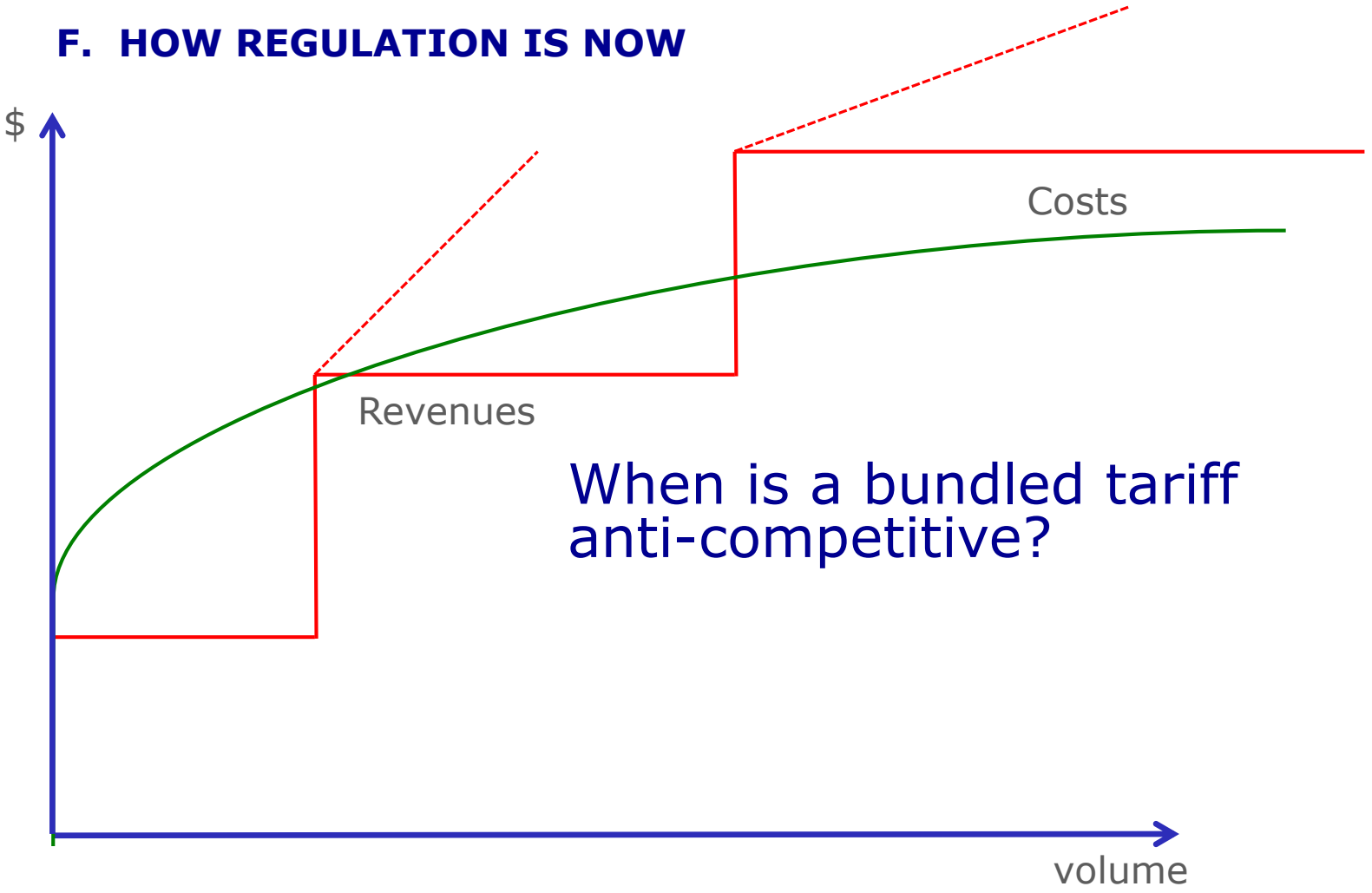
Costs and prices in telecoms

E. HOW TARIFFS ARE NOW



Costs and prices in telecoms

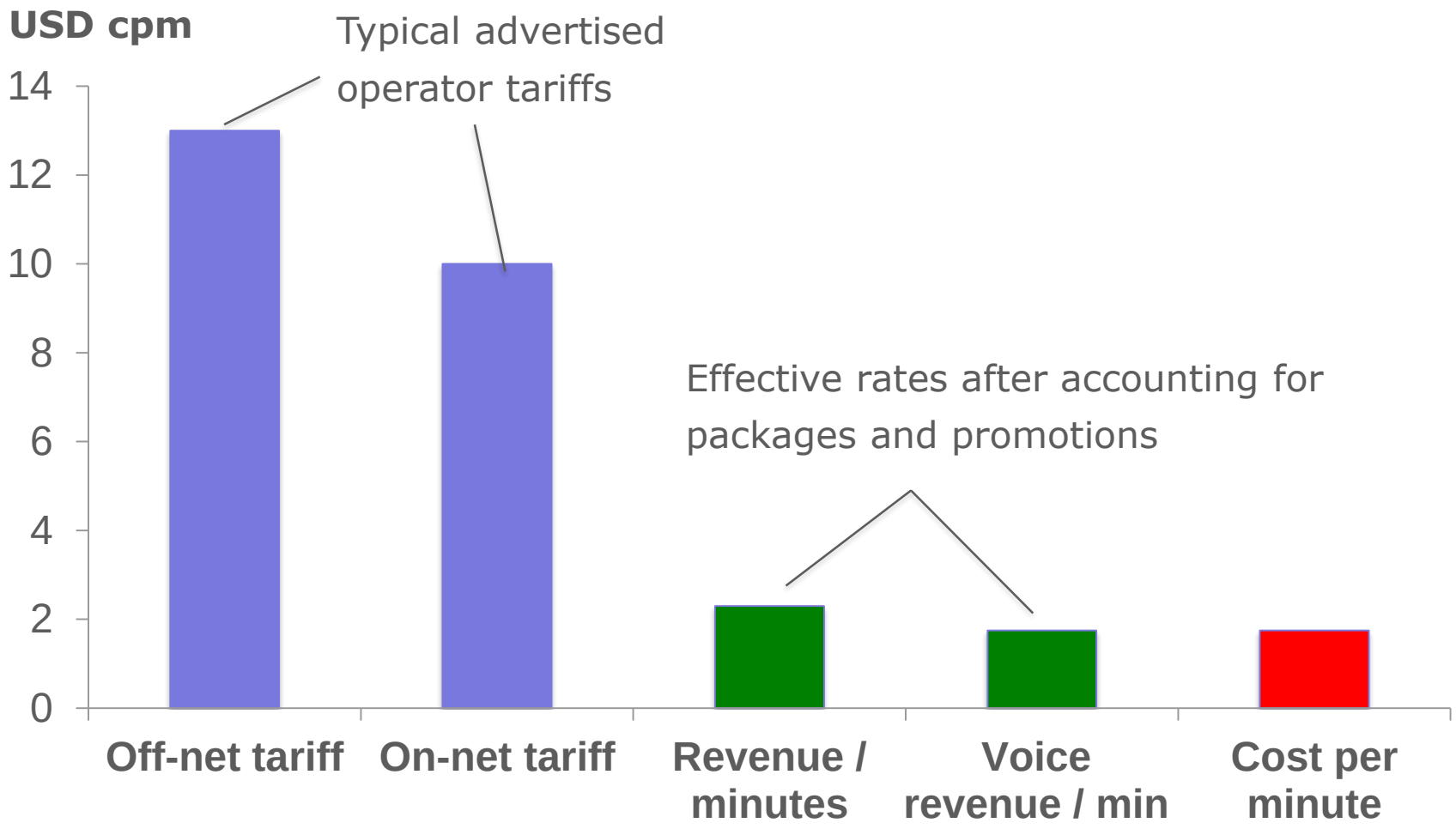
F. HOW REGULATION IS NOW



Price regulation issues 1 – cross-subsidy

- Bundles offer reduced prices to customers who are prepared to commit expenditure regardless of the amount usage.
- Retail bundles generally include voice, data and text.
- Bundles offer apparently far lower price per minute or per message per per Mbyte of data … but only if the whole (or a large part of the bundle is used).
- Some customers will end up paying more, and some will pay a lot less per unit of usage. There is cross-subsidy.
- Regulators have to decided whether such cross-subsidy is unfair or anti-competitive. Generally this means below a measure of incremental or avoidable cost.

Example of the effects of bundling



Price regulation issues 2 – margin squeeze

- A margin squeeze may occur where a vertically integrated operator is dominant in the supply of an essential input for a downstream market in which it also operates.
- The vertically integrated operator could then harm competition by setting such a low margin between its wholesale price and the price it sets at retail level that an efficient downstream competitor is forced to exit the market or is unable to compete effectively
- The analysis is made more difficult where retail services are sold in bundles but wholesale services are not (or are sold in different bundles or with different discount schemes).
- The regulator must then apply a margin squeeze test.

The margin squeeze test

- The general idea of the margin squeeze test is to identify:
  a) Identify the difference between the retail price of the dominant operator and the price of its the equivalent wholesale service, and
  b) Identify he additional costs required to turn the wholesale service into the retail service
  c) Compare these two: if b) > a) then there is a margin squeeze

- In assessing costs two types of operator may be considered: Reasonably Efficient Operator (REO) or Equally Efficient Operator (EEO)
- If the EEO or REO could not operate in the margin between retail and wholesale prices then there is a margin squeeze.

Two costs standards for the margin squeeze test

Equally efficient operator (EEO)

Tests if the proposed retail prices would cover the SMP operator's own network & commercial costs

$$P - r - w \geq d$$

Where:

- *P = retail price of the SMP´s downstream service*
- *r = regulated price of the wholesale service needed by alt operator* to provide such downstream service
- *w = SMP's other upstream costs*
- *d = the SMP's downstream costs*

Reasonably efficient operator (REO)

Tests if a reasonably efficient downstream operator paying the wholesale input price could earn a reasonable margin

$$P - r - w \geq d$$

Where:

- *w = the upstream costs of a hypothetical REO*
- *d = the downstream costs of a hypothetical REO*

Case study for discussion

- A is one of three licensed mobile operators in the country. X is a reseller that is hosted on A's network.
- A has now launched a retail mobile data service and, after protracted negotiation has offered X a wholesale equivalent service.
  - Retail price per 10GB per month = $30 (but the average subscriber only uses 6GB)
  - Wholesale price per GB usage = $4.5
  - Retail costs of A = $0.5 per GB; for X = $0.8 per GB
- X complains to the regulator that A is engaging in an anti-competitive margin squeeze against X.

- Has a good case been made out? Why, or why not?
- What should the regulator do?