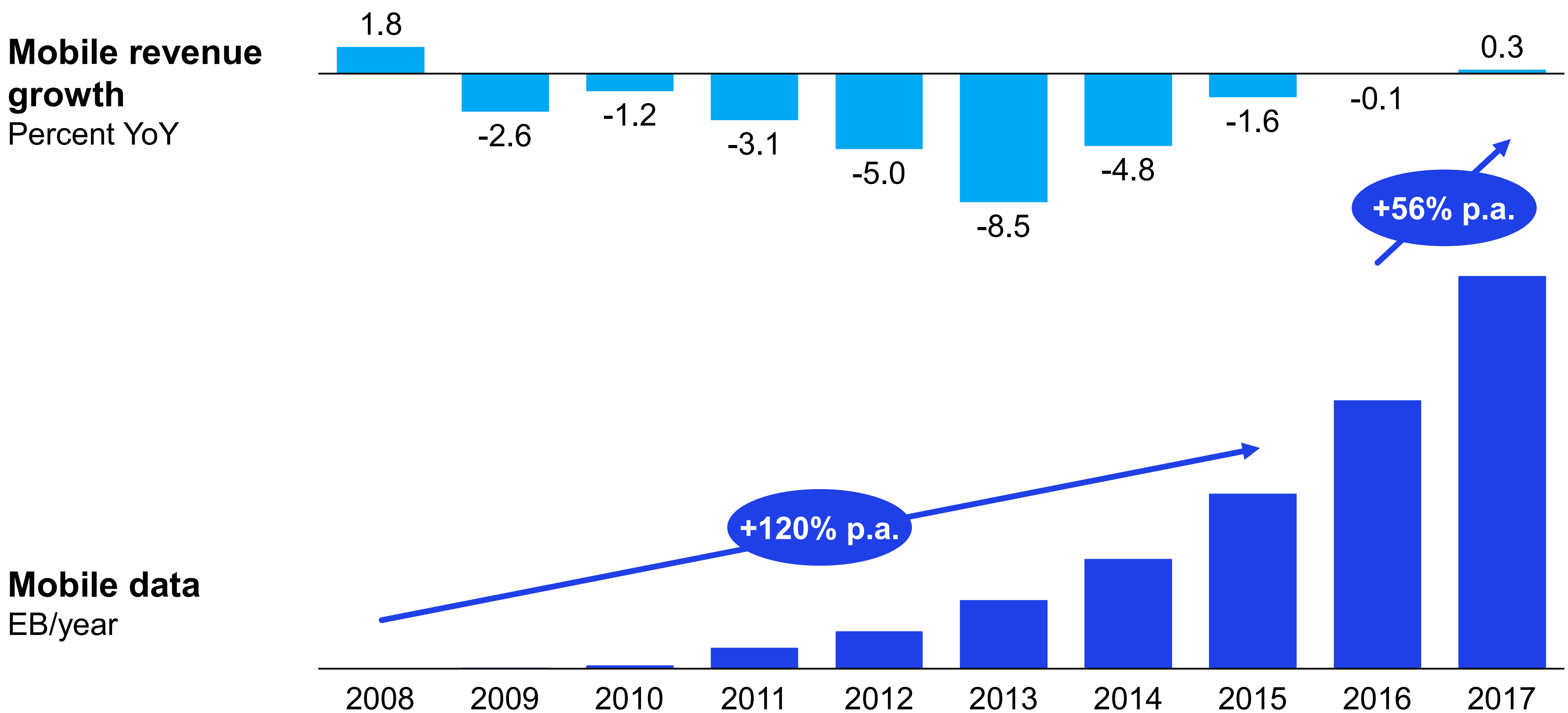
McKinsey & Company

The 5G inflection point

Operator perspective

Rolando Balsinde | Port Vila, July 12 2019

Business performance has been challenging – falling revenues despite exploding usage



Source: Ovum, Cisco

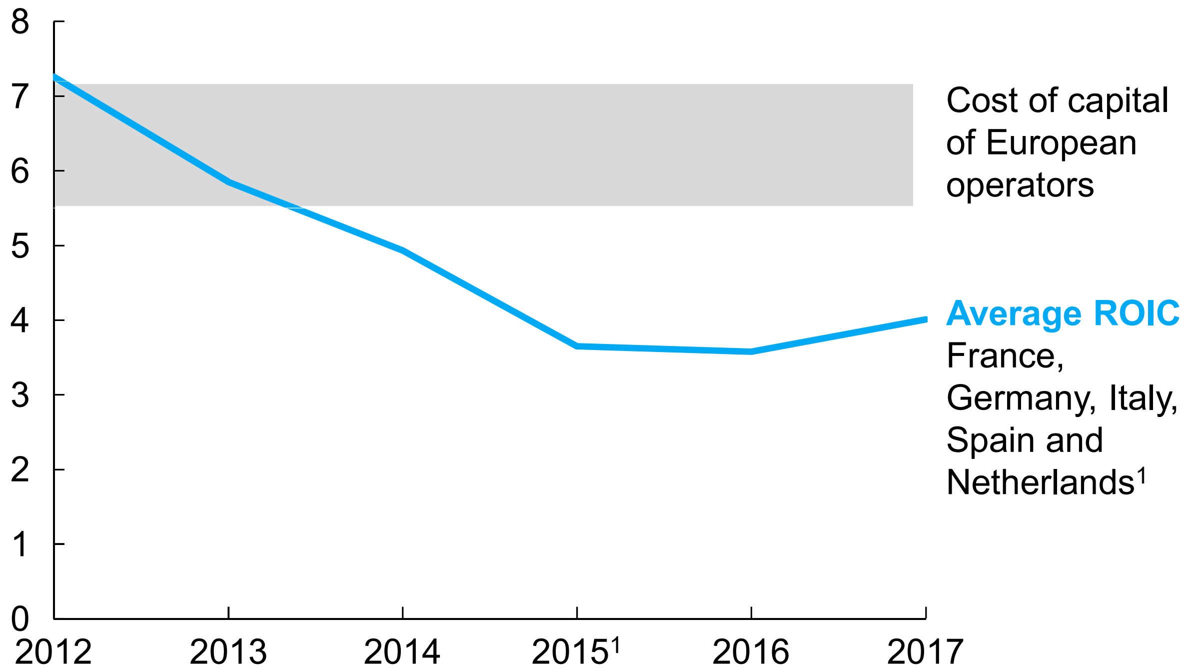
The inevitable race for 5G has begun and all operators are defining their strategies

	Challenger network	Best network (at scale)
First-movers	**Disruptors –** attacking incumbents, but without a long-term strategy to lead in network Telia DK/NO, 3, UK Broadband (First 4G - acquired by 3), Optus, Vodafone	**First and best –** brand value built on offering the best network *first* – focused on premium and early adopter customers Elisa, Swisscom, EE, Telstra, Verizon
Wait-and-see	**Fast-followers –** challengers content with awaiting proof of concepts, then following Sprint, Bouygues Telecom, DNA, O2, Sunrise, T-Mobile U.S., Salt.	**Stable leaders –** focused on long-term network leadership – less so on moving first – leaders that launched 4G after market challengers Telenor, TDC, Telefónica

Source: McKinsey

Operators are badly positioned to take on further investments with return of invested capital (ROIC) below cost of capital

Evolution of European MNOs return on invested capital
Percent

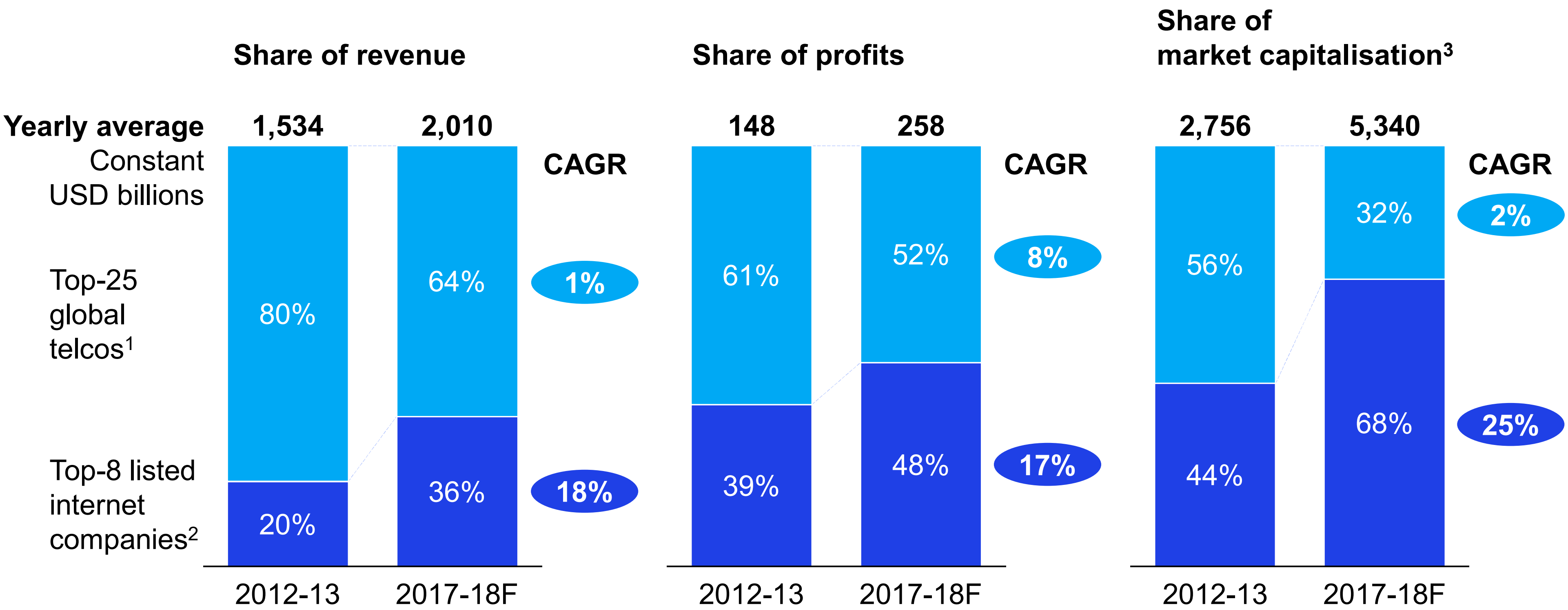


Without and inversion of trend, further investment in the sector would look increasingly unattractive

1 Does not include Movistar (Telefonica) figures for Spain in 2015 due to the temporary impact of a plan for voluntary employment suspension

Source: Bloomberg; annual reports

Over the last five years telcos have lost significant ground to new internet companies

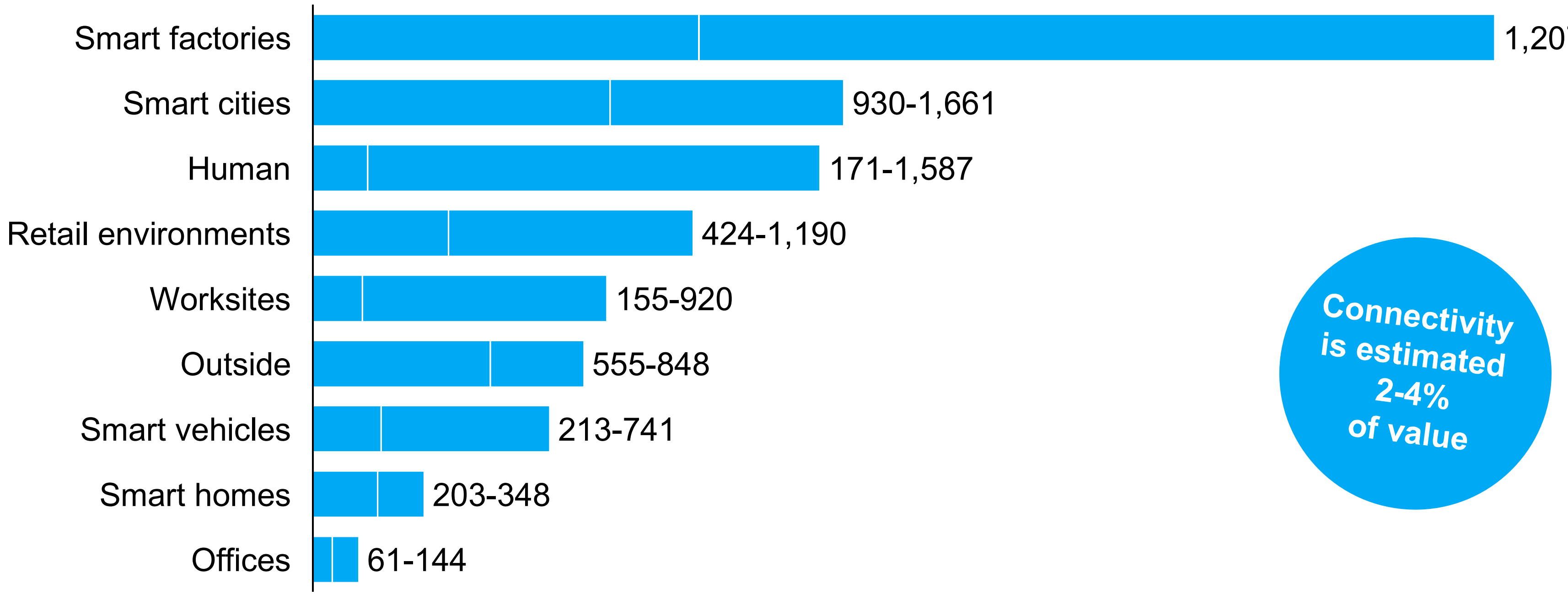


1 Operators includes the top 25 global operators by revenue
2 Internet companies comprise of FANG, BAT and Apple
3 Based on December 2017 and September 2018 average, excluding companies that were not around in 2012

Source: Capital IQ

Going forward value pools will shift "up-stack" with diminishing value of connectivity

Global IoT value outlook 2025
USD billions



Total **USD 3,919-11,135 billion**

Source: Machina; MGI

Regulators need to define an industry strategy and approach

Dimension	Topic	Example
Industry structure	# players # networks Private networks	DRILLISCH Jio
Spectrum	Bands Auction approach	
Customer experience	KPIs Coverage	OpenSignal
Wholesale and partnerships	Wholesale National roaming Network sharing Ecosystems Slicing	TDC Rakuten

Source: McKinsey

There are several difficult but important trade-offs inherent in designing 5G regulation

Maximizing **revenue** from spectrum licenses	VS	Designing spectrum auctions to encourage **investment in networks**
Award spectrum to **non-traditional players** for experimentation with private networks	VS	Concentrate spectrum to **players at scale** optimize effectiveness of use
Encourage **network sharing** (e.g., national network) to drive down industry costs	VS	Strive for **infrastructure competition** from multiple networks as means of ensuring quality
Use regulation to drive **affordability** of services (e.g., mandated wholesale)	VS	Allow pricing flexibility to ensure operators make sufficient returns to fund **investments**

Source: McKinsey

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McKinsey on regulation – contact for further questions

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