

*Prepared for IK 2514 Wireless Infrastructure Deployment & Economics*

# **Intro to telecom markets**

## **- From monopoly to oligopoly, de-regulation, liberalization**



5 November 2014, 10-12

Bengt G Mölleryd, Ph.D.  
Swedish Post and Telecom Agency (PTS)  
guest researcher at wireless@kth

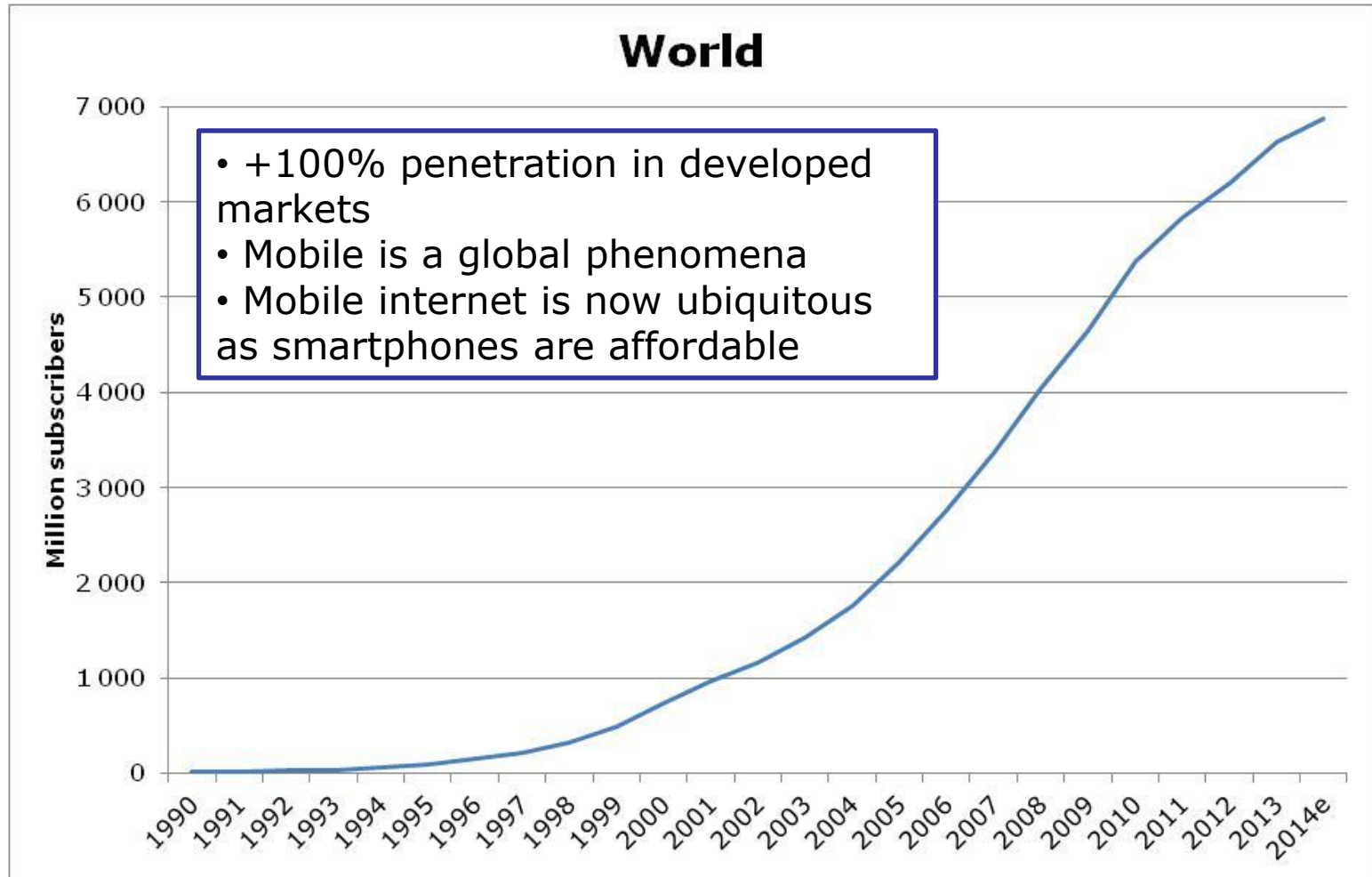
email: [bengt.molleryd@pts.se](mailto:bengt.molleryd@pts.se)

# Agenda



- Telecom market
- Market structure
- Market development
- All IP networks
- Network sharing

# 7 bn mobile subscribers

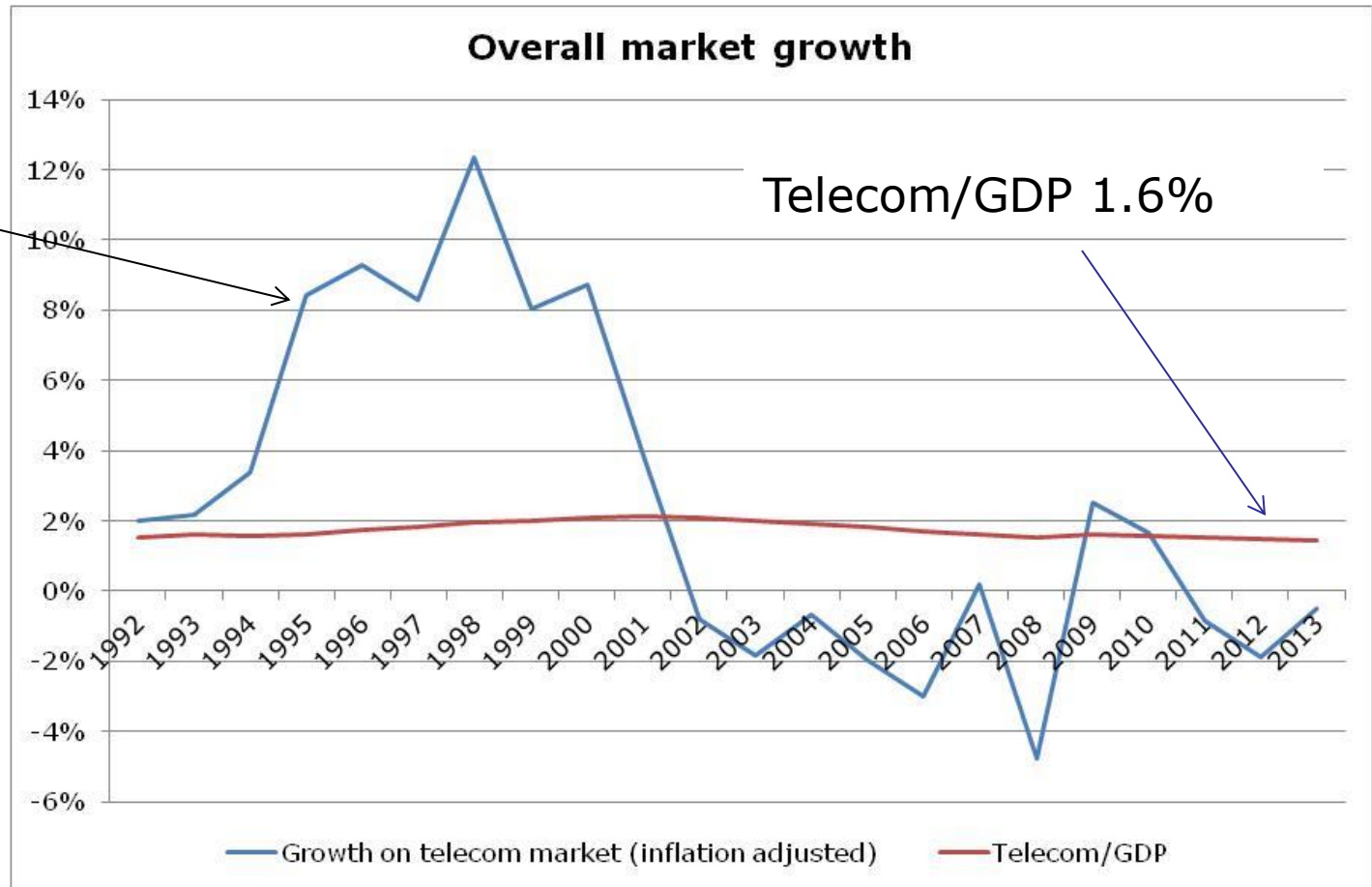


Source: ITU

<b>Concept</b>	<b>Definition</b>
ARPU	Average Revenue per User
Capex	Funds used to acquire physical assets
Free cash flow	Operating cash flow minus capex
GDP	Gross Domestic Product
EBITDA	Earnings before interest, taxes, depreciation and amortization
EBIT	Earnings before interest and taxes
Gearing/leverage	Difference between fixed-interest capital and equity capital
Market cap	The company's worth calculated as outstanding shares multiplied by the price per share,
MoU	Minutes of Use
Net debt	Netting the value of a company's liabilities and debts with its cash and other liquid assets
Revenues	The amount of money that a company actually receives during a specific period

# Sweden: A mature market

Growth of telecom revenues\* (inflation adjusted)

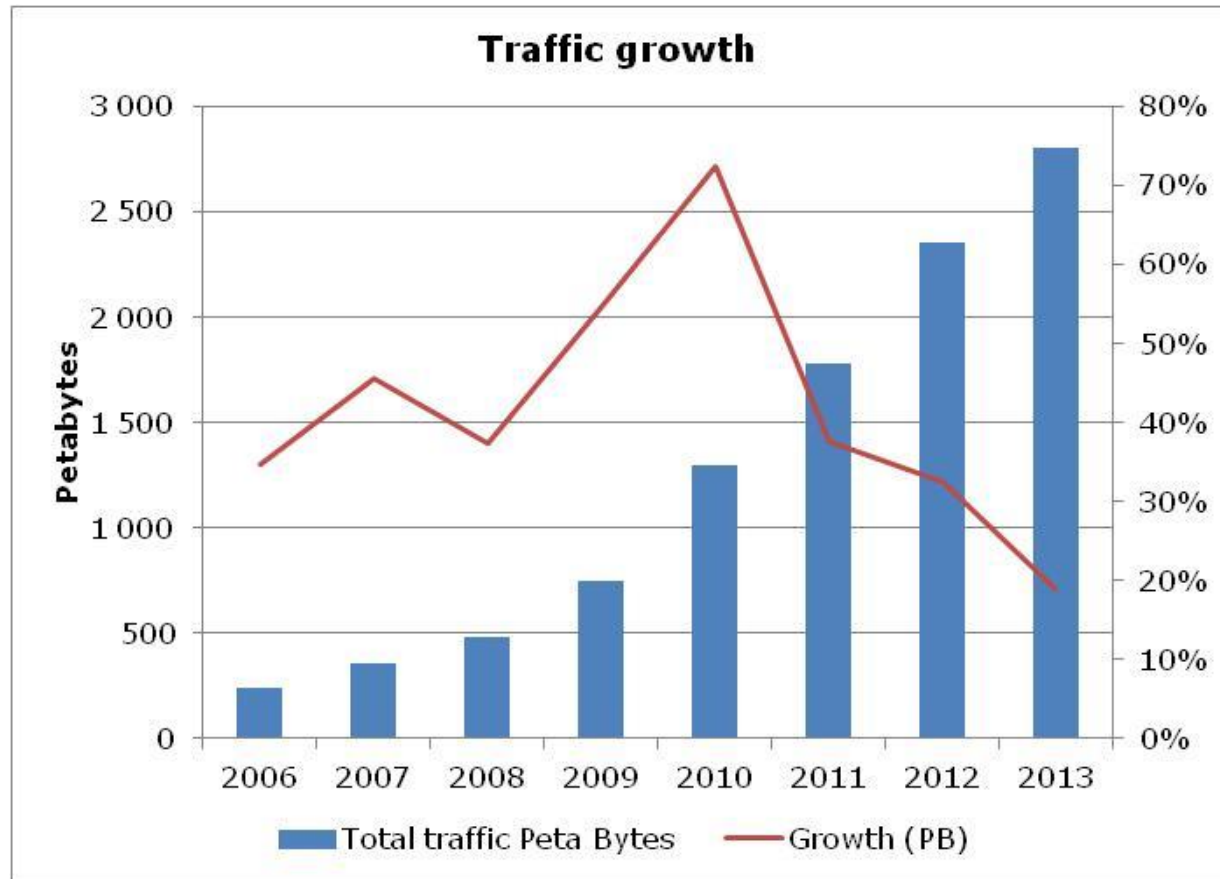


Mobile and fixed broadband is growing but not sufficient to offset decline on fixed

\*Total end-customer revenues. Source: PTS

# Sweden: total telecom traffic

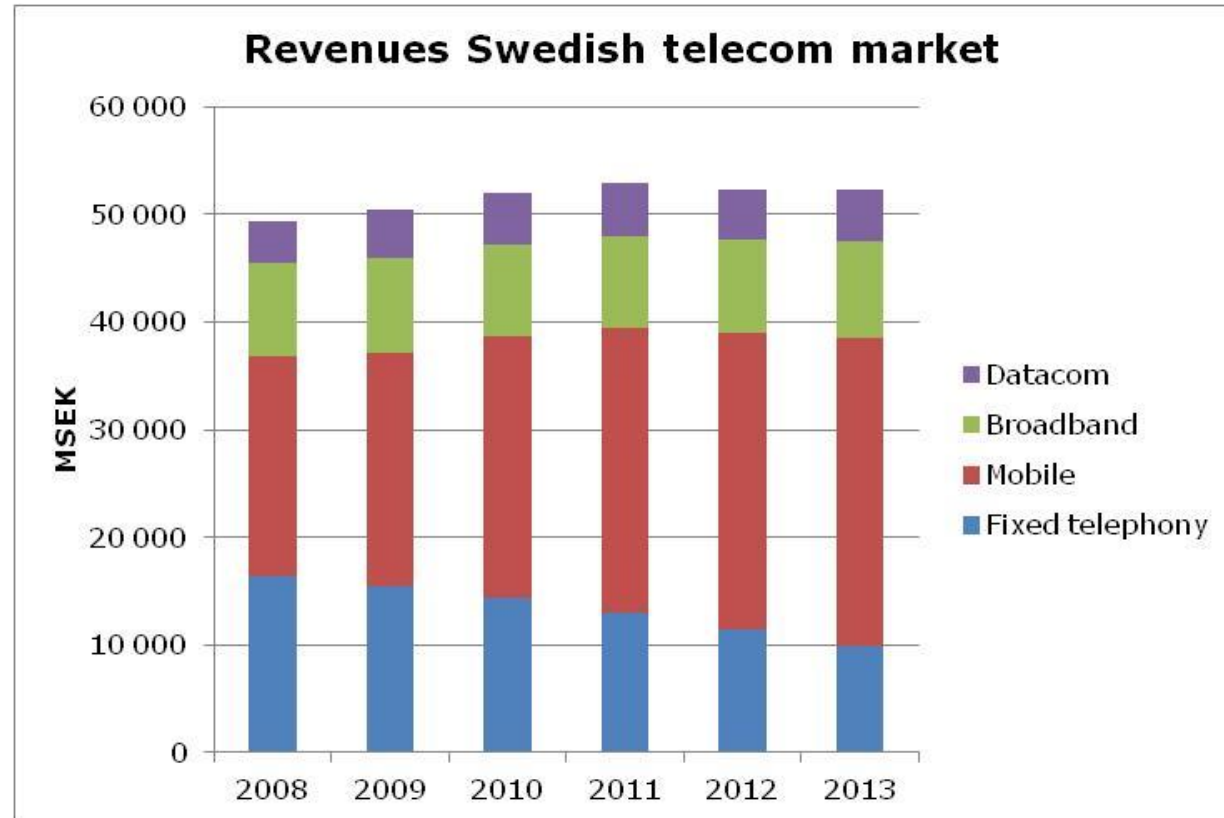
Average traffic growth 30% per annum



Relation between traffic and revenue growth?

Source: PTS

# Sweden: revenues from telecom services

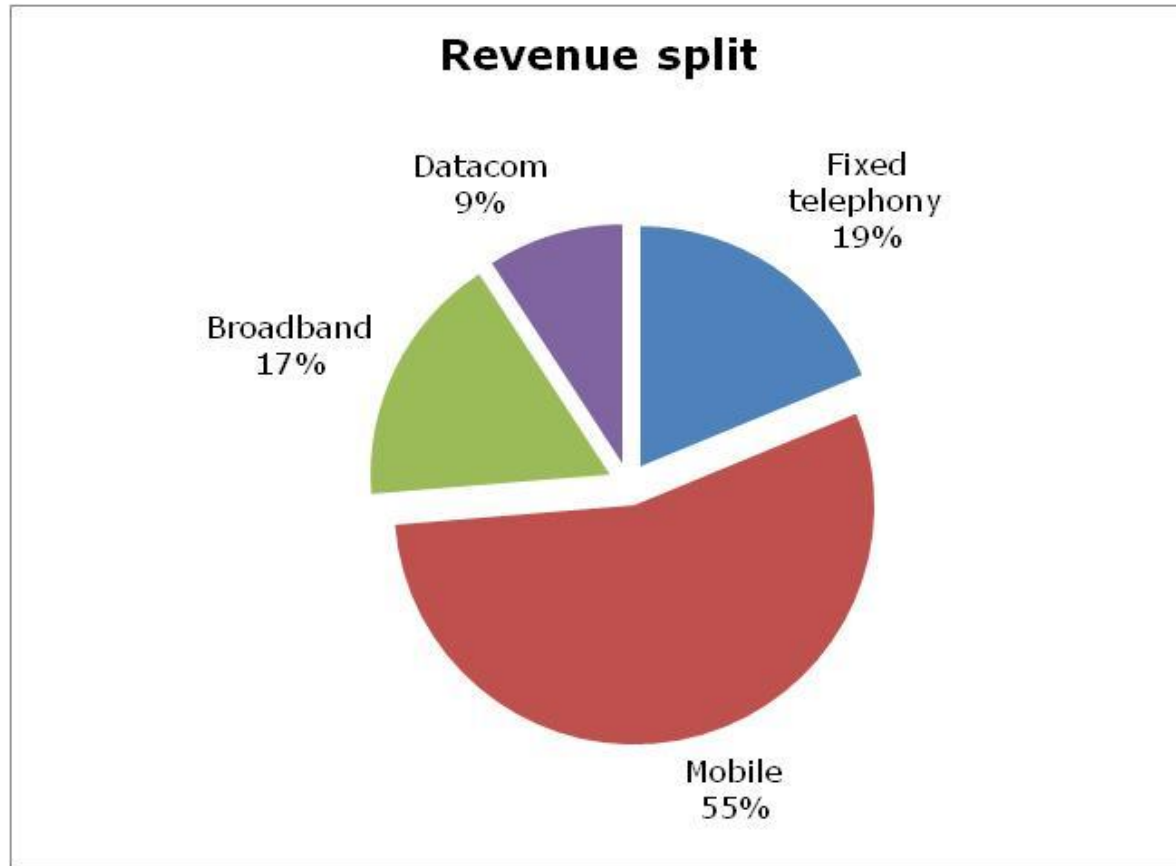


What factors influence the revenue development?

Revenues = total end customer revenues

Source: PTS

# Sweden: Revenue split telecom services

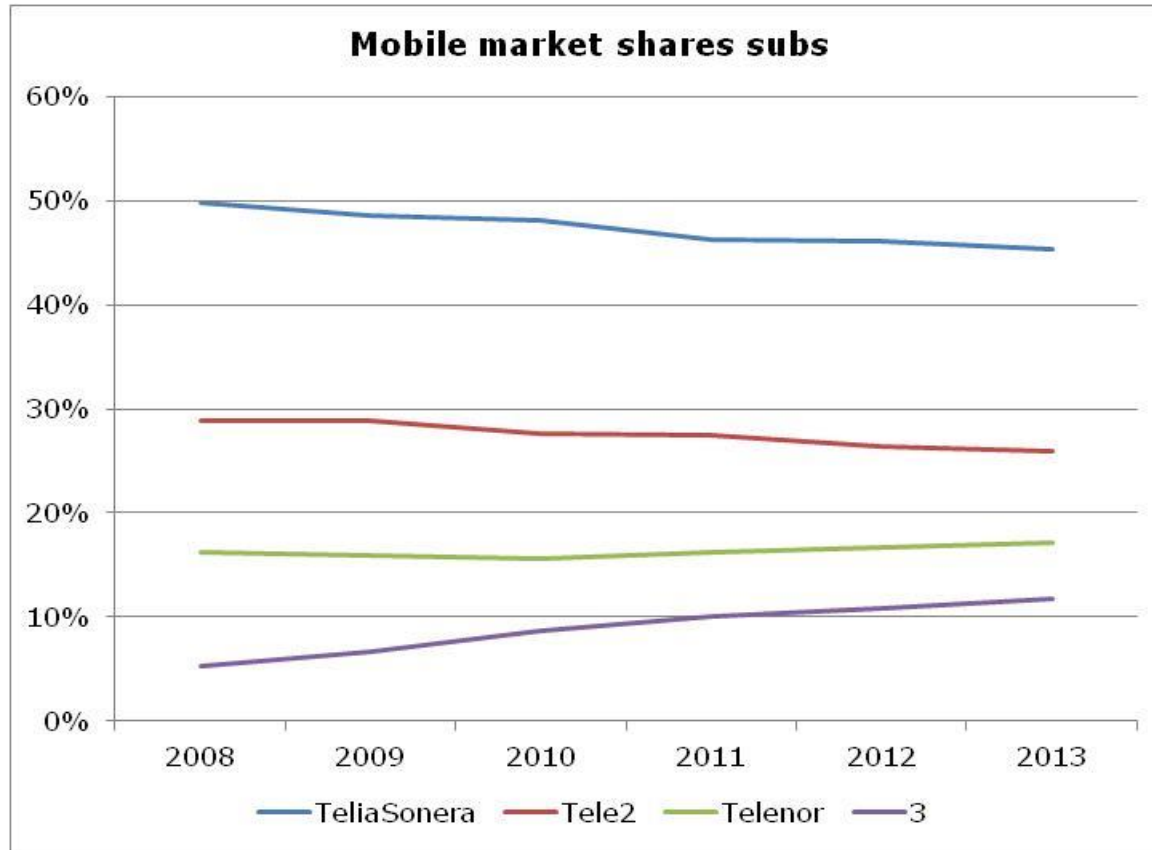


What does the split tell us about the market?

Source: PTS



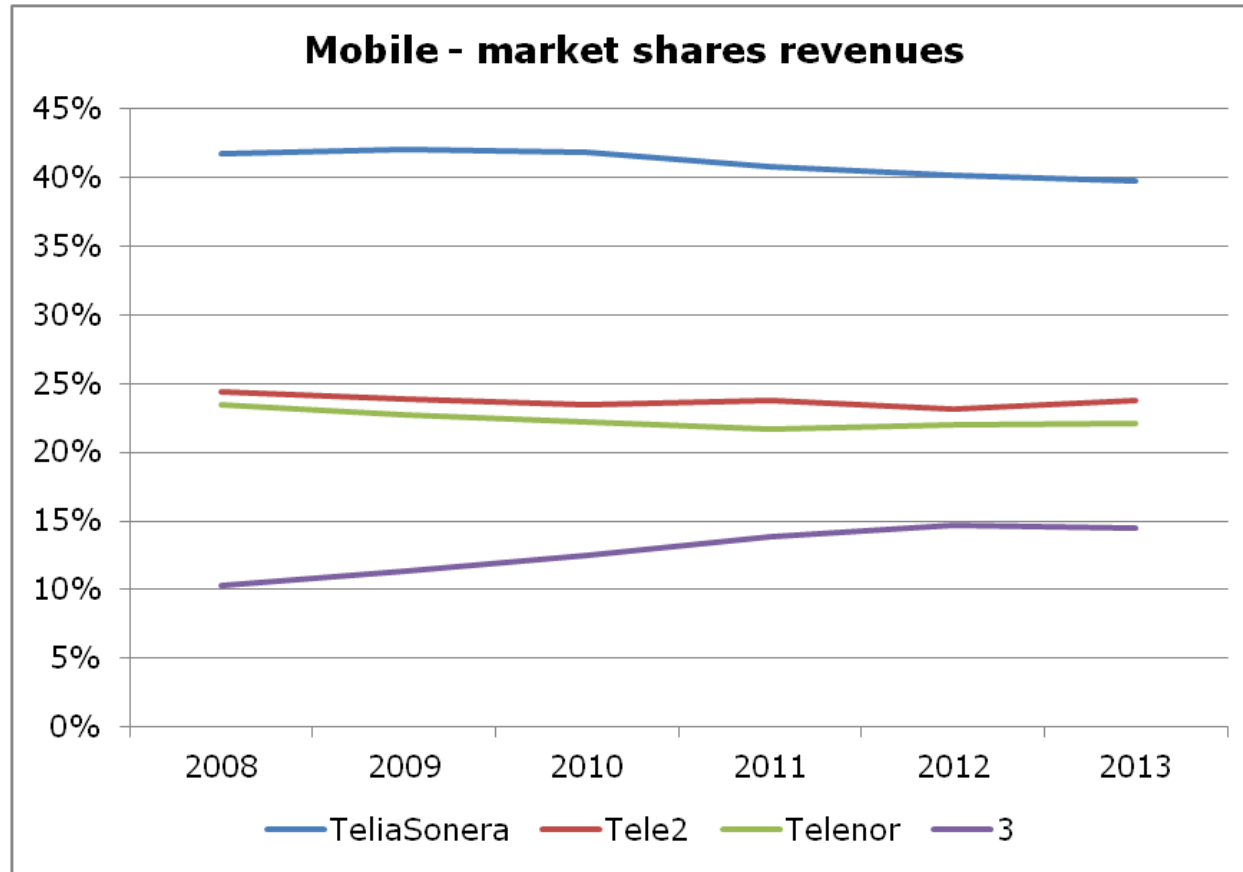
# Market shares (subs) Swedish mobile



Source: PTS

TeliaSonera dominates, 3 is gaining shares, Tele2 declining

# Market shares (revenues) Swedish mobile



Source: PTS

What conclusions could be drawn from the deviation: market shares on subscribers vs revenues?

# Actors – different roles and functions



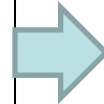
- Network Operators
- Mobile Virtual Network Operators (MVNO)
- Tower companies
- Distributors
- Equipment manufactures
- Handset suppliers
- Application providers
- Online companies
- Other...



# Core competence



- Distributors
- Equipment suppliers
- Terminal suppliers
- Network operators
- MVNOs
- Applications
- Payments



- Financial
- Innovation
- Management
- Operational
- Sales and marketing
- Services
- Software
- Technical
- Other

What competences are critical?

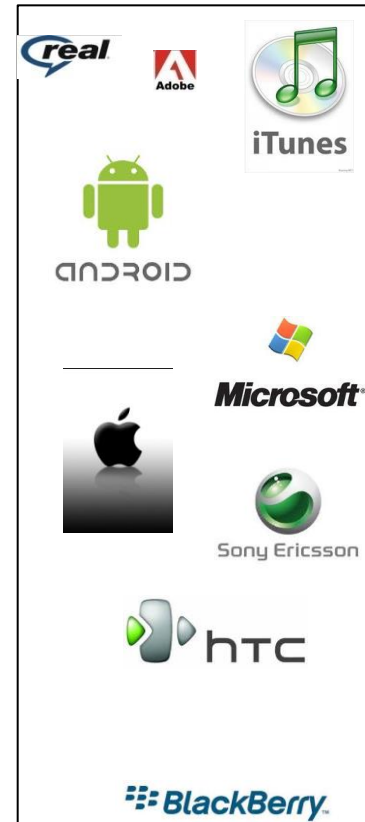
# Competition from on-line companies

Connectivity

Enabling technology/  
services

User interface

Online Services



What impact have Apple's, Google's and Facebook's expansion on operators?

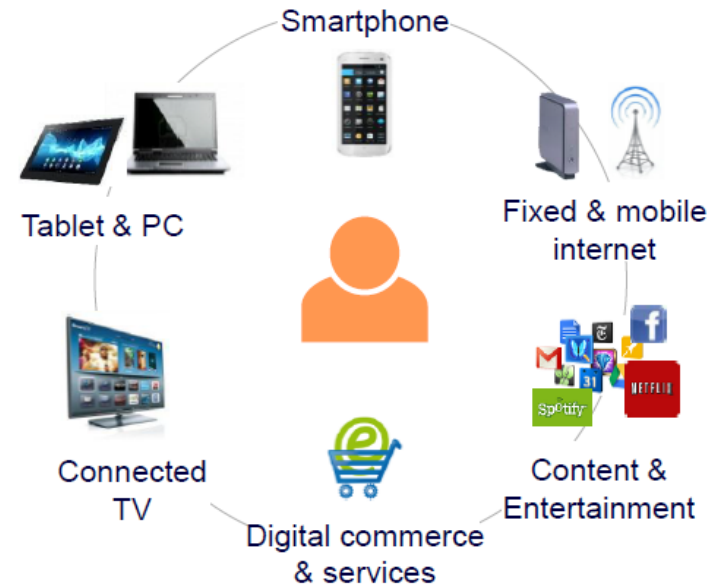


## Old world telco

Feature phone



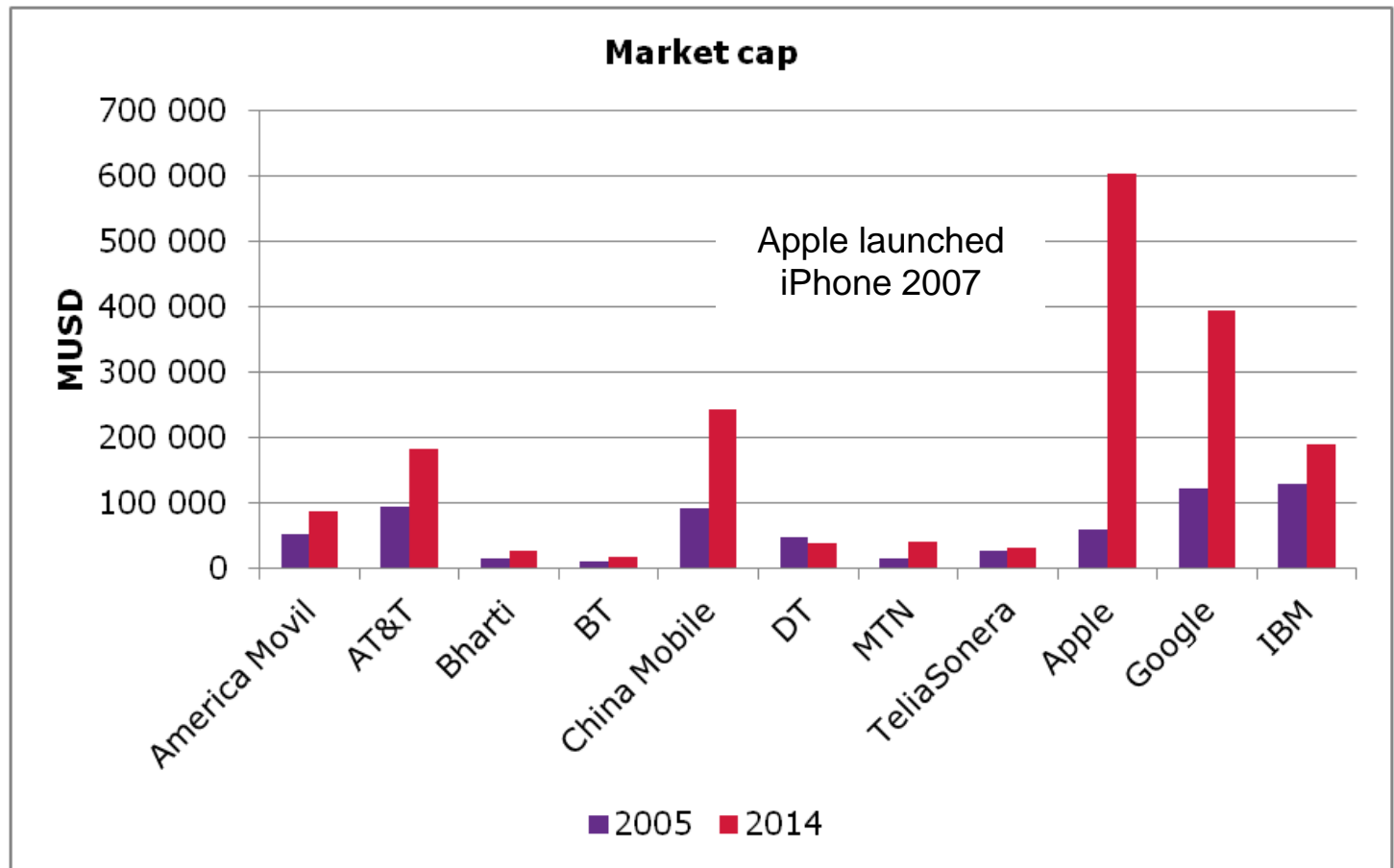
## New world: Digital lifestyle company



- Increased stickiness
- Higher share of wallet
- Millicom has the payment mechanism

Source: Millicom

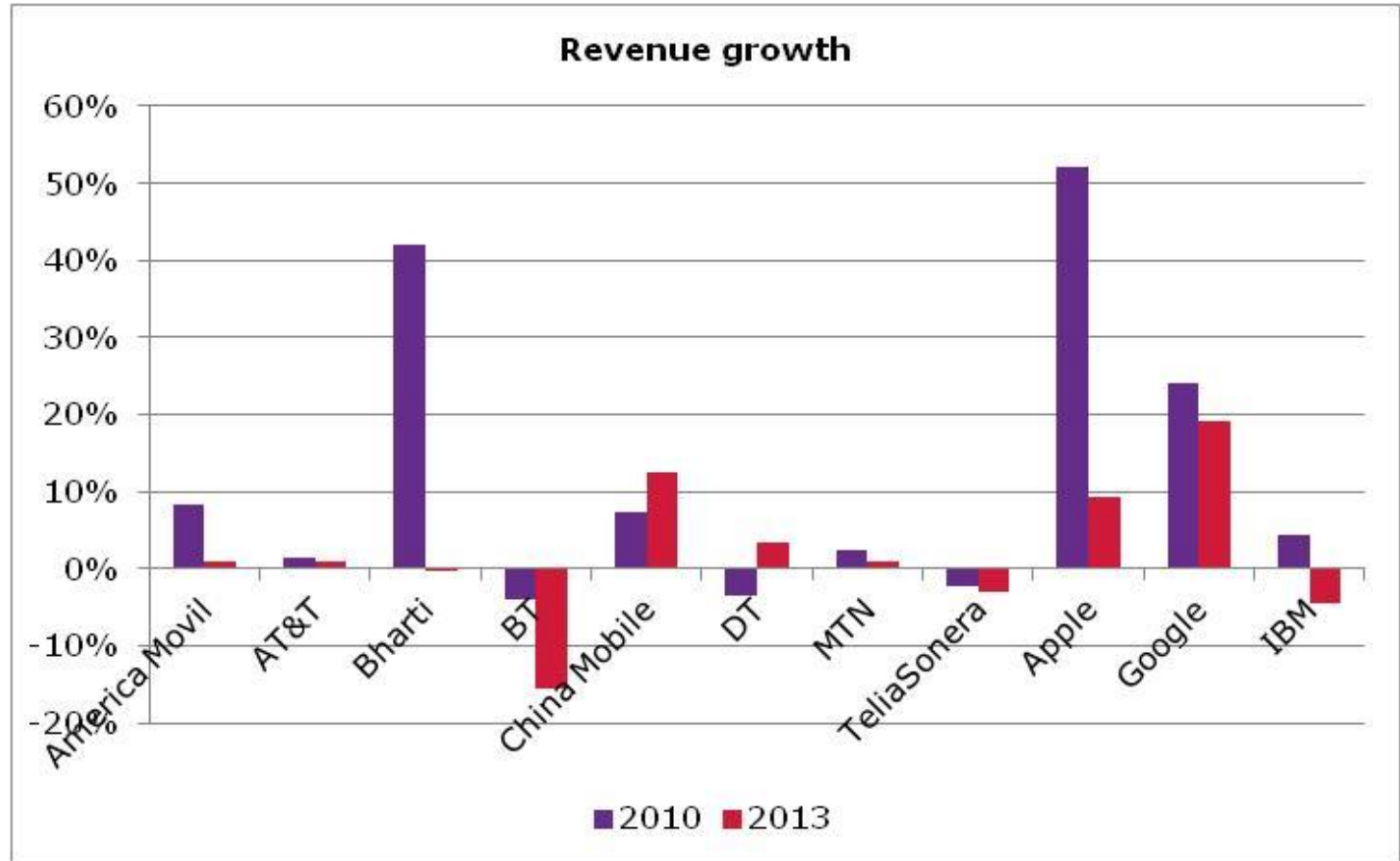
# Growing or dropping in value



What factors determine the market capitalization of a company?  
Why has Apple's value increased while TeliaSonera has hardly moved?

Source: Bloomberg

# Apple outperform

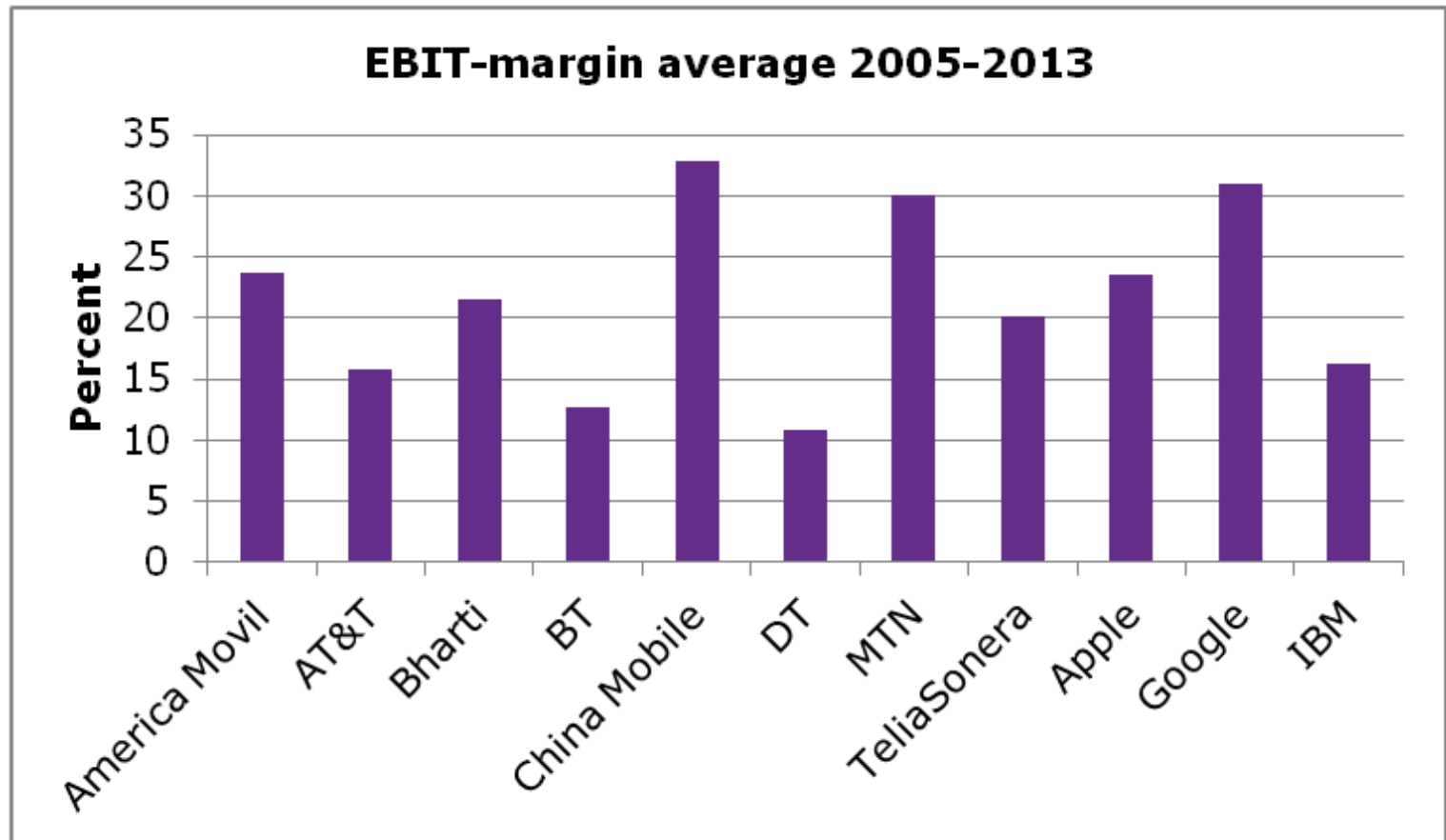


Source: Bloomberg

What can explain the differences between the companies?



# ...and high margin



Source: Bloomberg

What explains TeliaSonera's high margin?

# Focus on access and/or services

- Should operators focus on services or only access?
- How to capitalize on the social network trend?
- A myriad of services: each being small versus operators' revenues
- Different business models
- Many new competitors with established brands: operators market share will be small
- Enabler, 3rd party service



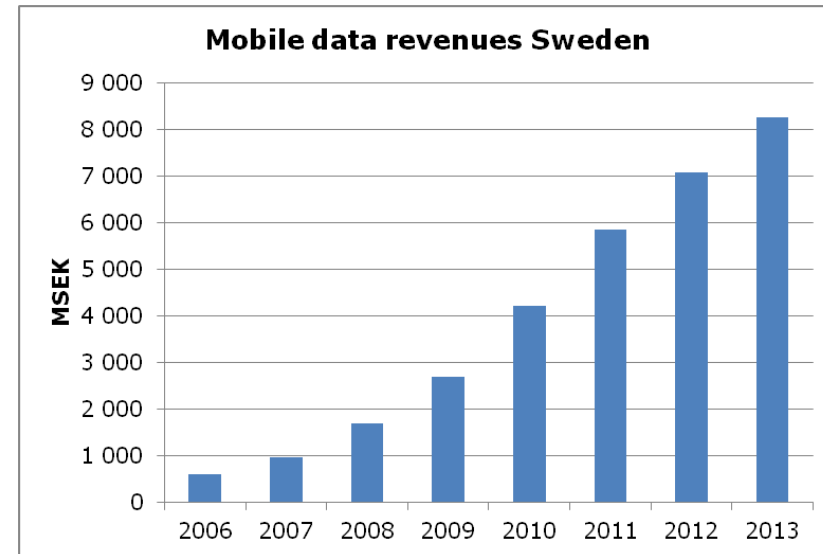
# Operators loosing ground on services and apps



- Consumers have embraced smartphones and it is driving contracts and data packages
- The emergence of a an App economy
- The transition to all IP network pave the way for over the top (OTT)

# Support from mobile data

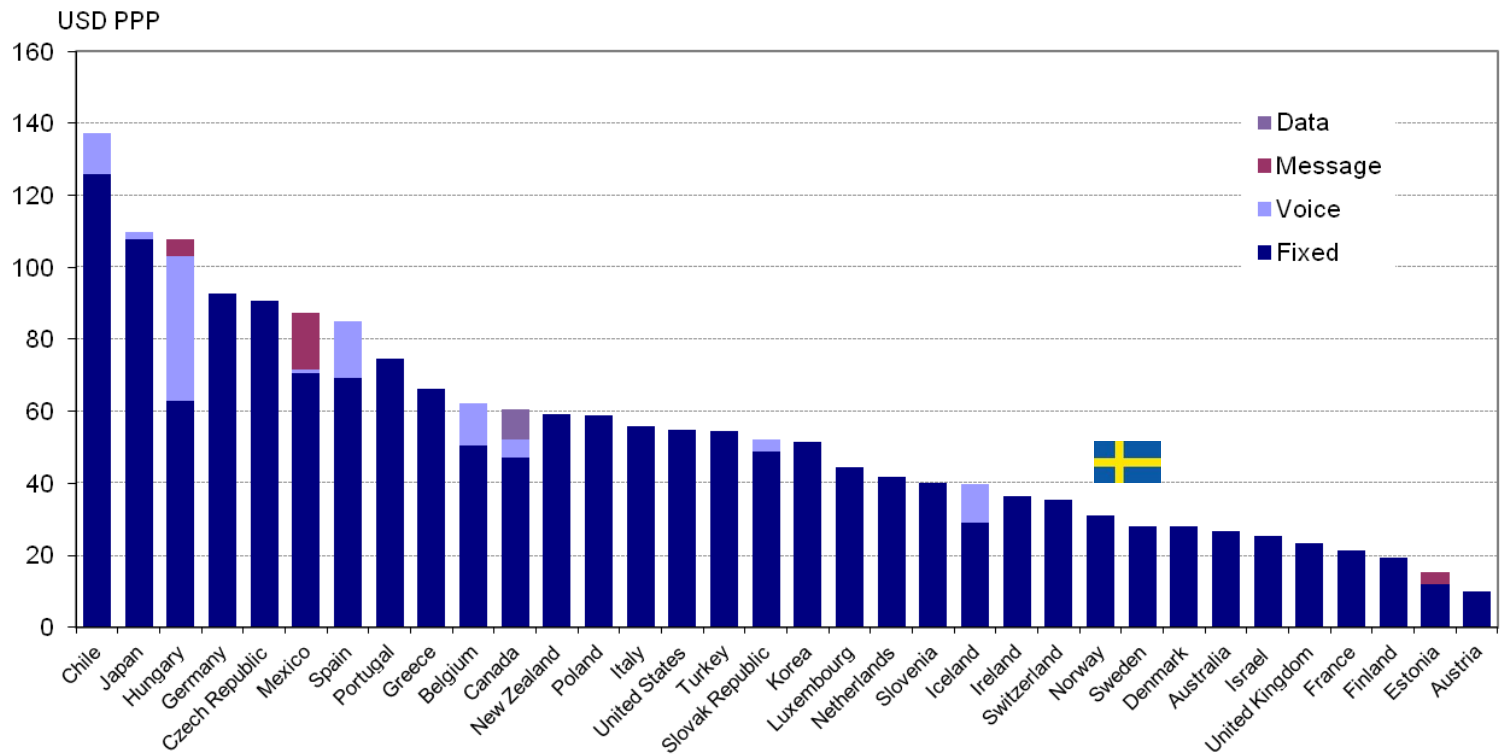
- Mobile data drives growth
- The share of smartphones are increasing rapidly, now ~70% of the subscribers use smartphones and subscribe to data packages
- Rapid growth of mobile data traffic +53% 2012 while revenues increased 17% 2013, illustrating that operators have difficulties to monetize on mobile data



Source: PTS

# International comparison on prices

300 calls + 1 GB mobile basket, August 2012, VAT included

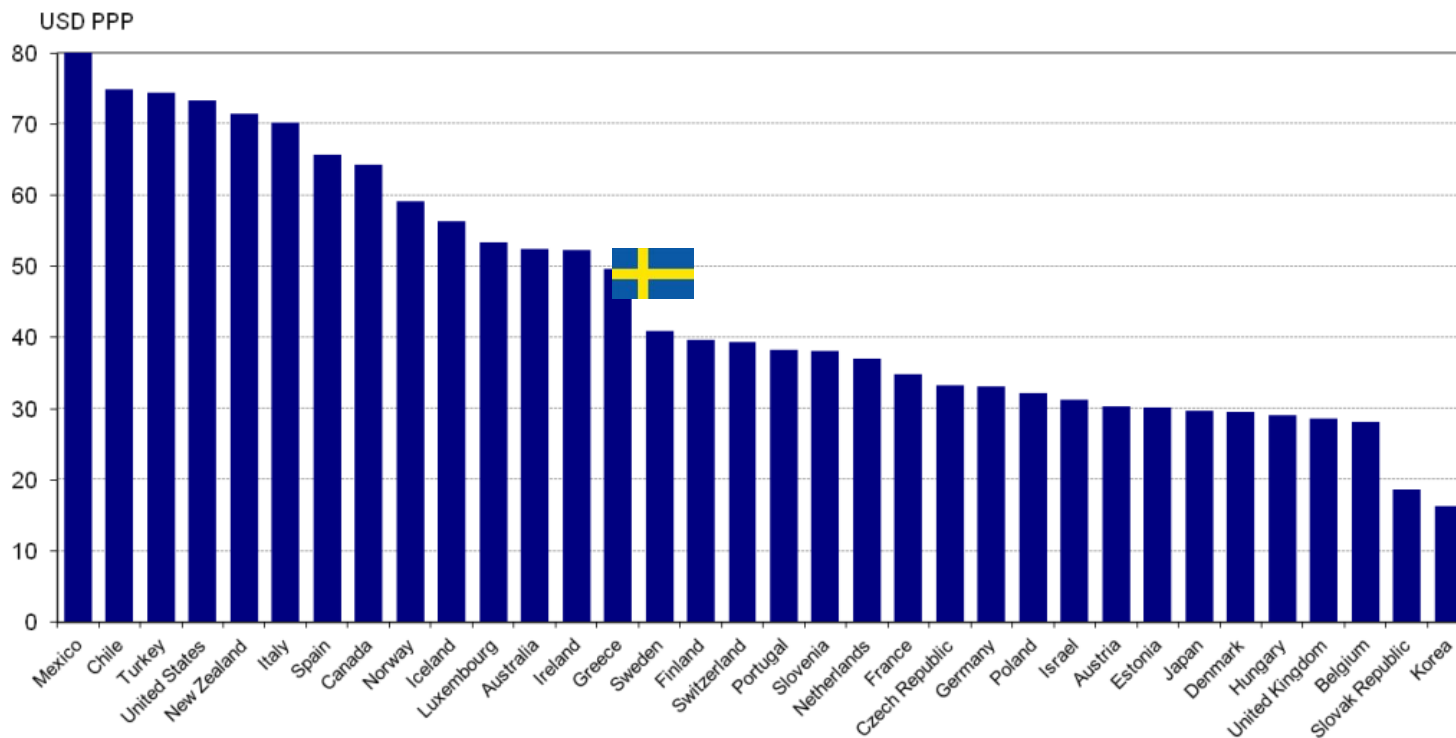


Identify loopholes in comparison of prices

Source: OECD Communications Outlook 2013

# Comparison on prices for MBB

Fixed Broadband basket High 4: 42 GB, 30 Mbit/s and above, Sept. 2012



What explains the price difference between Sweden and the US?

Source: OECD Communications Outlook 2013

# Concluding

- The operator landscape is changing
- Increased competition from OTT
- The diffusion of smartphones is having a fundamental impact on the industry





# From monopoly to oligopoly, de-regulation, liberalizing



# From monopoly to liberalization



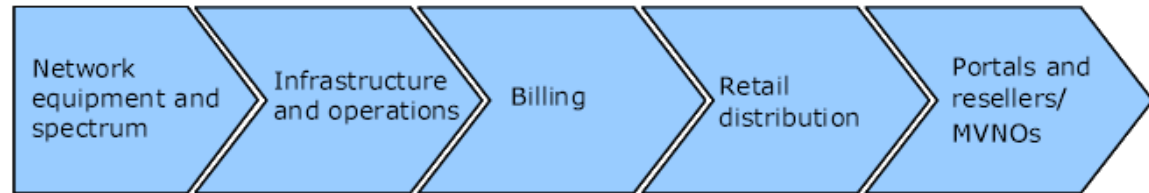
## Monopoly

- Control
- Monopoly on telecom services and the relevant competence
- Micro electronics
- Undeveloped market

## Liberalization

- BT paved the way (network vs financial position)
- New operators, competition, mobile expansion
- EU framework
- Internationalization
- Capital market

# Value chain – mobile operators



<b>Vodafone</b>	<ul style="list-style-type: none"> <li>• 99% population coverage</li> <li>• 1,800hMz</li> </ul>	<ul style="list-style-type: none"> <li>• In-house</li> </ul>	<ul style="list-style-type: none"> <li>• Own billing system</li> </ul>	<ul style="list-style-type: none"> <li>• Own branded and other retail chains</li> <li>• Distribution</li> </ul>	<ul style="list-style-type: none"> <li>• Own portal</li> <li>• Centrica</li> </ul>
<b>Orange</b>	<ul style="list-style-type: none"> <li>• 99% population coverage</li> <li>• 1,800hMz</li> </ul>	<ul style="list-style-type: none"> <li>• In-house</li> </ul>	<ul style="list-style-type: none"> <li>• Own billing system</li> </ul>	<ul style="list-style-type: none"> <li>• Own branded retail chains</li> <li>• Other retailers</li> <li>• Distributors</li> </ul>	<ul style="list-style-type: none"> <li>• Own portal</li> </ul>

**FIGURE 3** The traditional industry value chain view of the mobile network operator: Vodafone and Orange.

Source: Joe Peppard, Anna Rylander, From Value Chain to value Network, European Management Journal, Vol. 24, Issue 2, 2006.

Vertical integration vs disintegration?

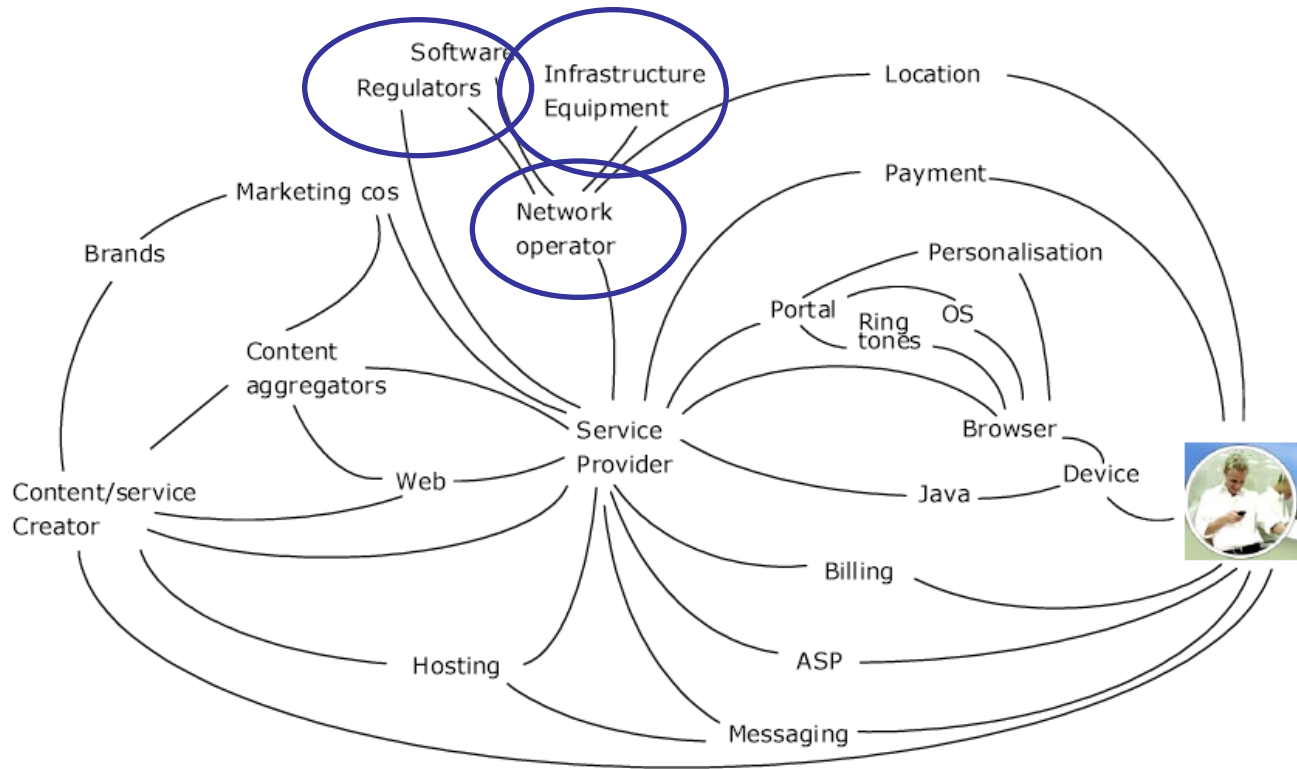


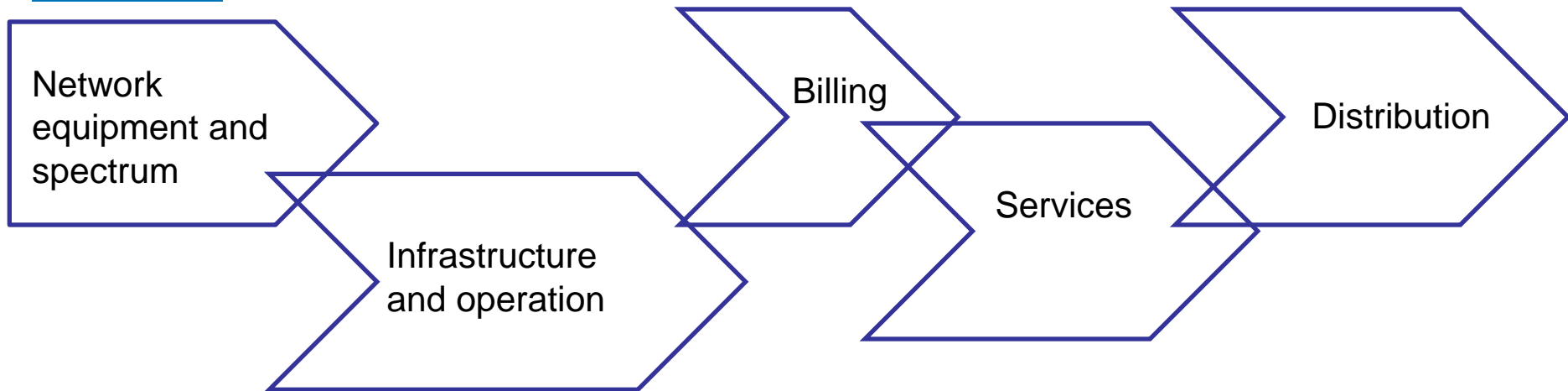
FIGURE 4 Partial network value map for mobile content.

Who are driving the current development? Explore vital links...

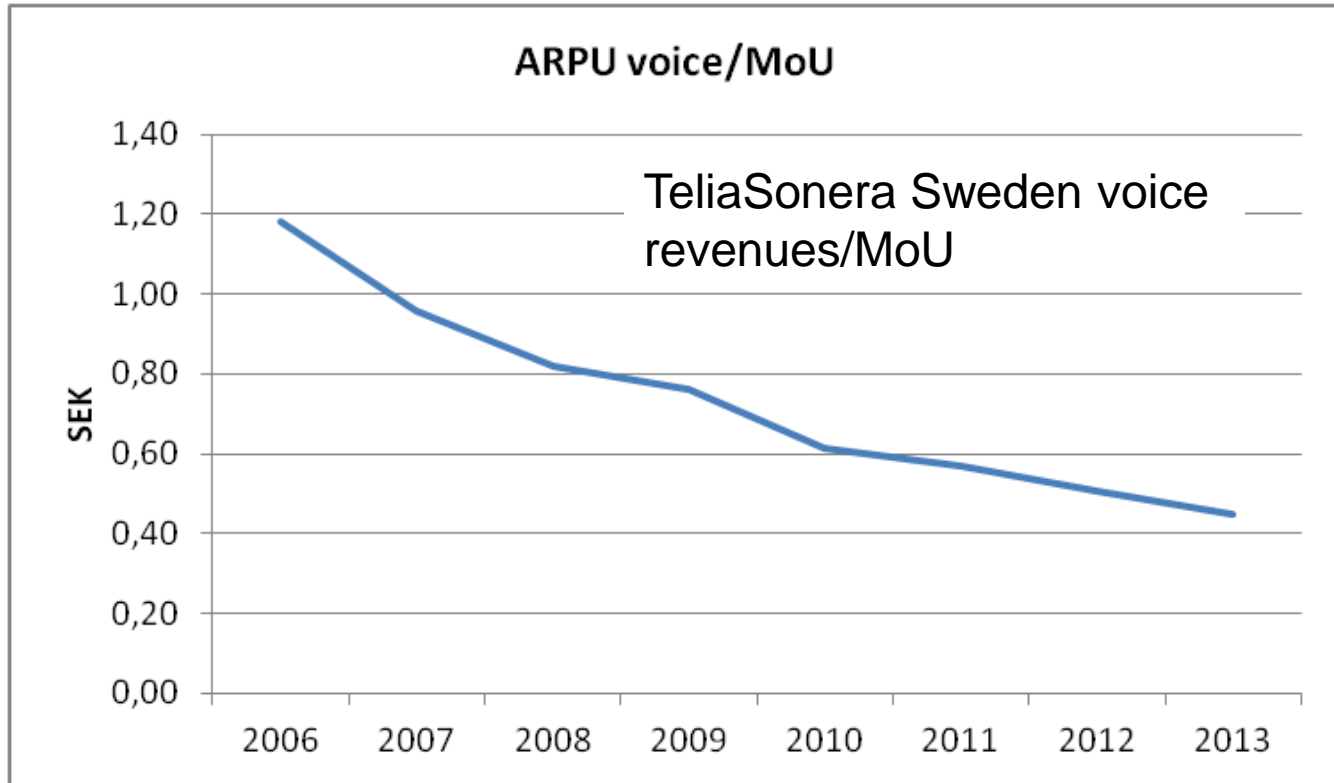
Source: Joe Peppard, Anna Rylander, From Value Chain to value Network, European Management Journal, Vol. 24, Issue 2, 2006.

# A gradual disintegration

- The majority of network operators are still vertically integrated,
- But lower growth are driving operators to disconnect (phase out, outsource) various parts of their operations to reduce cost
- Larger extent of network sharing drive more specialization

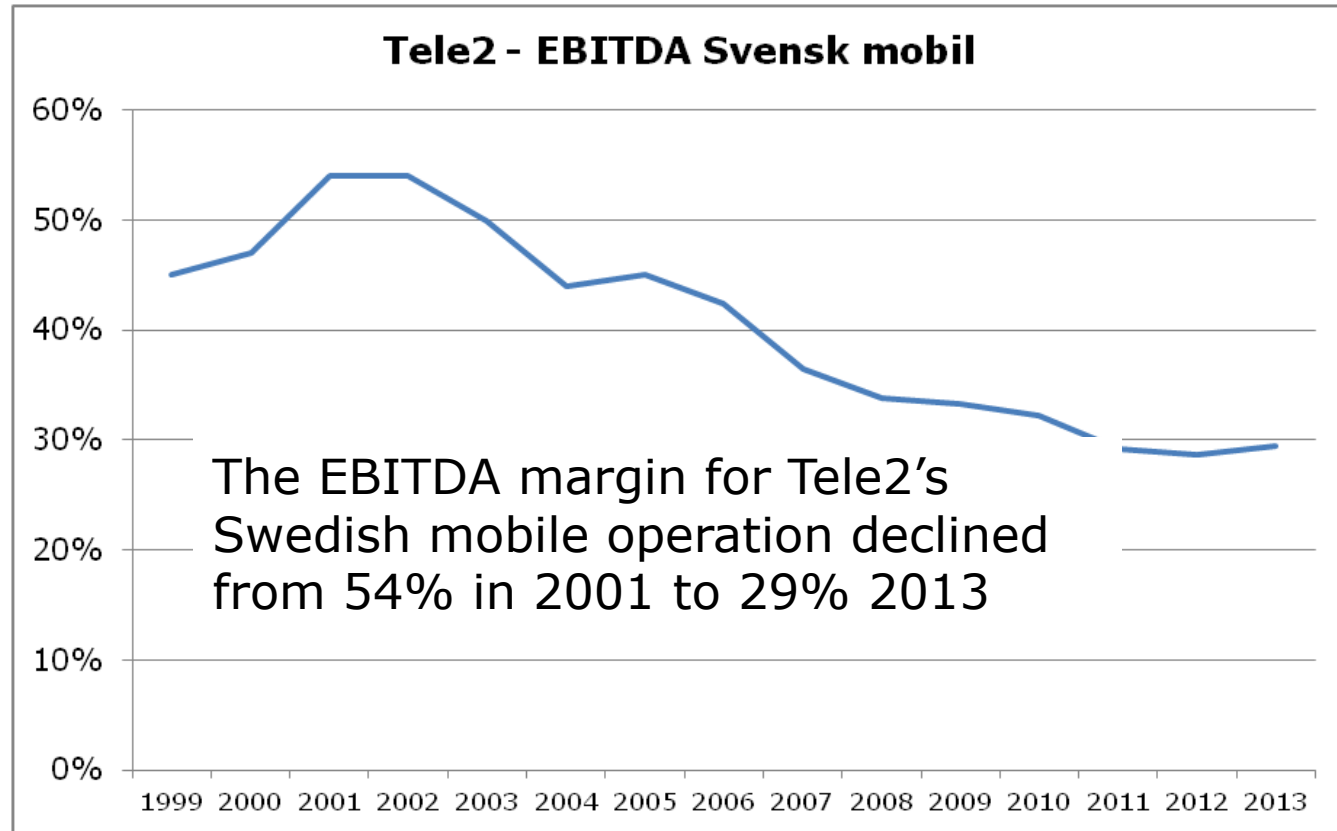


# Competition pushing down prices



Revenues per minute has declined  $\sim 12\%$  per year since 1995

## ...and pressed down Tele2's profit margin



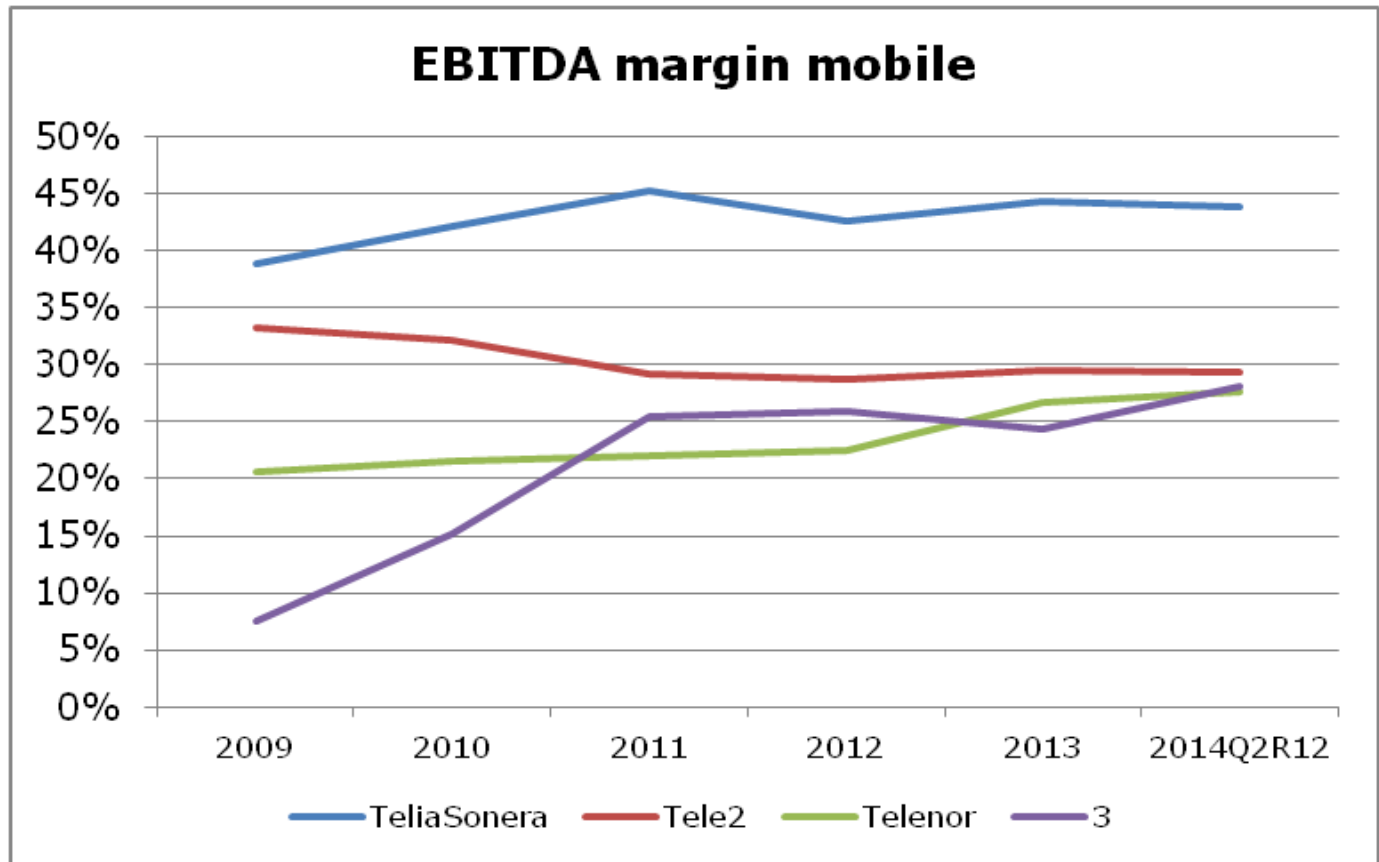
EBITDA= Earnings before interest, taxes, depreciations and amortizations

What factors explain lower profit margin?

## ....but still healthy EBITDA margins for mobile



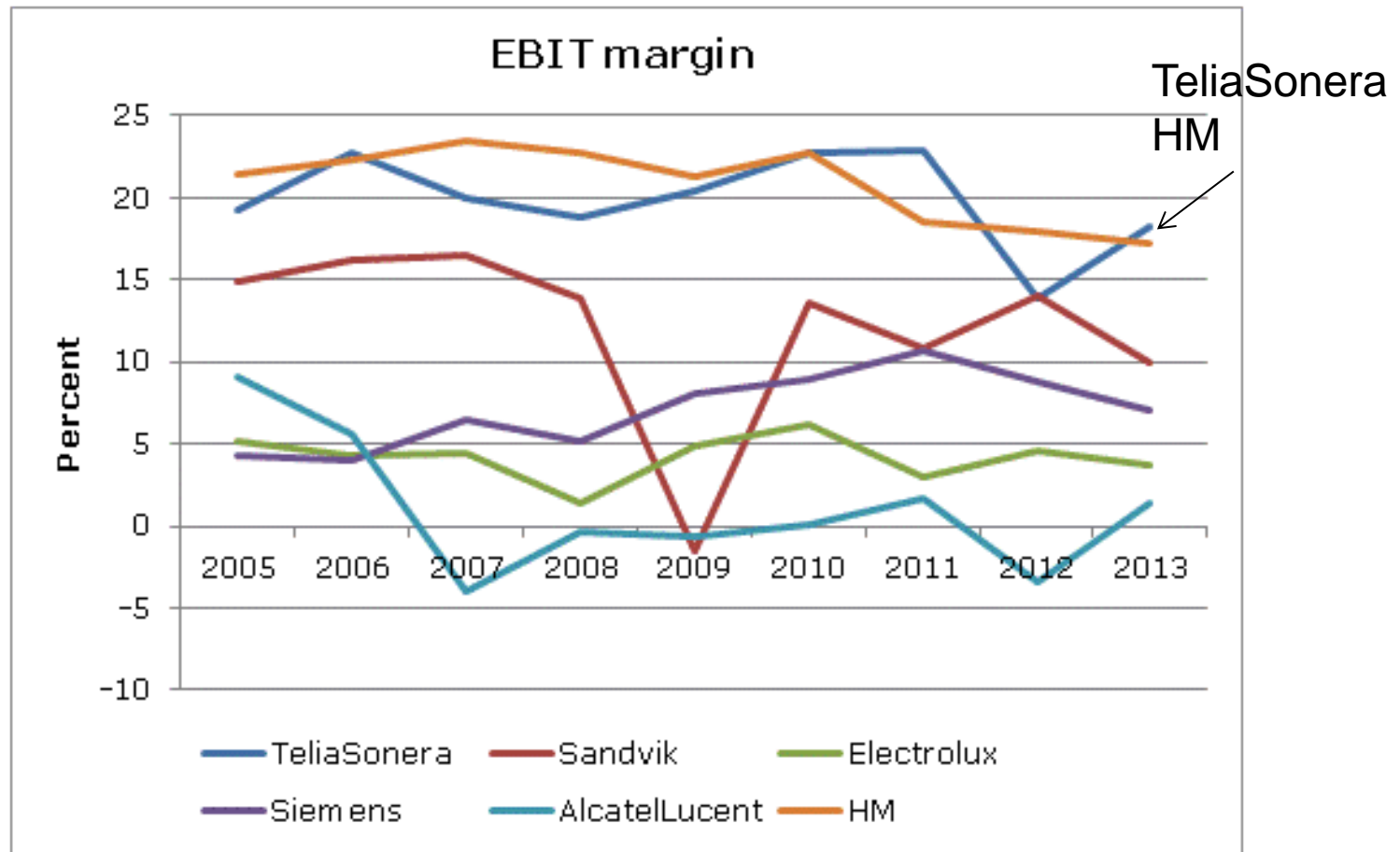
EBITDA  
(Earnings before  
interest taxation,  
depreciation, and  
amortization)



What should TeliaSonera's competitors do in order to improve profitability?

Source: Operator reports

...and good profitability compared to other industries



Source: Bloomberg



# Becoming a mature industry



- Telecom => "commodity"
- Mobile broadband is changing traffic mix but not revenues
- Lower growth => Pressure on costs
- Searching for new revenue streams
- Infrastructure based competition demands massive capital investments .... "sunk cost"
- Spectrum auctions is favoring large operators
- Driving consolidation

What characterize a mature industry? What measures could be done in order to offset this development?

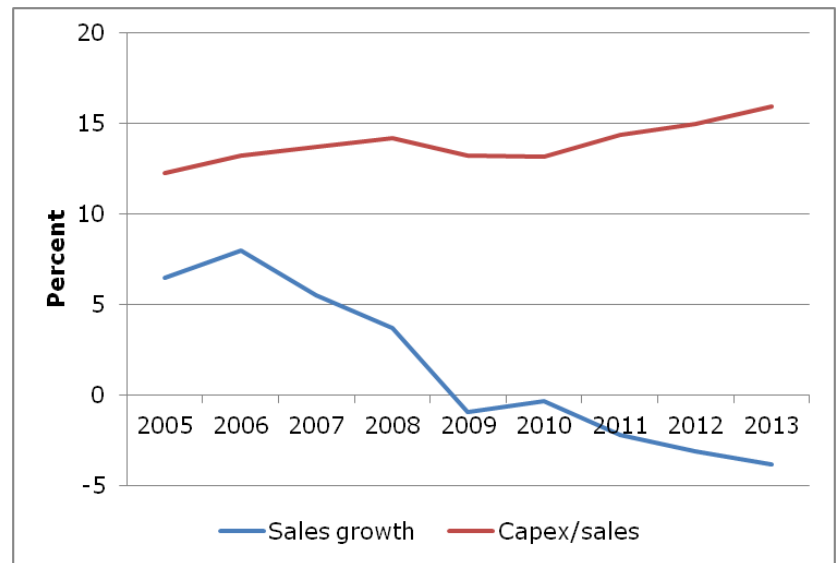
# With lower growth

- Lower revenue growth
- Profitable growth requires lower Opex
- Improved cash flow requires reduction of Capex



Interplay between operational expenditures (Opex) and capital expenditures (Capex)?

European operators: revenue growth



Source: Bloomberg

## Outlook



Positive revenue growth 2014

# When the market is shrinking



- **Consolidation**, financially strong operators take over smaller operators, or smaller operators merge
- **Lower competition** with no growth and consolidation, declining margins drives cost cutting and efficiency programs
- **Consumer value lower** with fewer choices and higher prices, but offset from cost cutting and competition from new actors such as online companies
- **Operators** have to be enablers and provide a smart pipe in order to create growth

# How to cope with the data growth?



- Traffic is growing strongly, but flat revenues
- Increased load on networks
- Production costs has to be trimmed

Growing demand for our services and changing customer behavior...

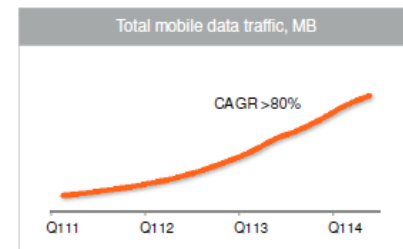
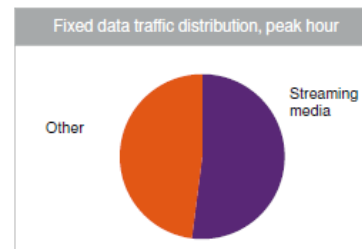
*Customers demanding bandwidth & quality...*



*...with more usage, anytime anywhere...*



*...and simplicity for customers*



Source: Teliasonera CMD 2014 presentation

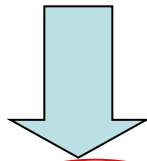
# The data challenge

5 min clip



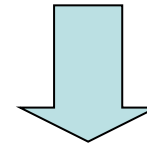
=

115 000



1 SEK

Revenues



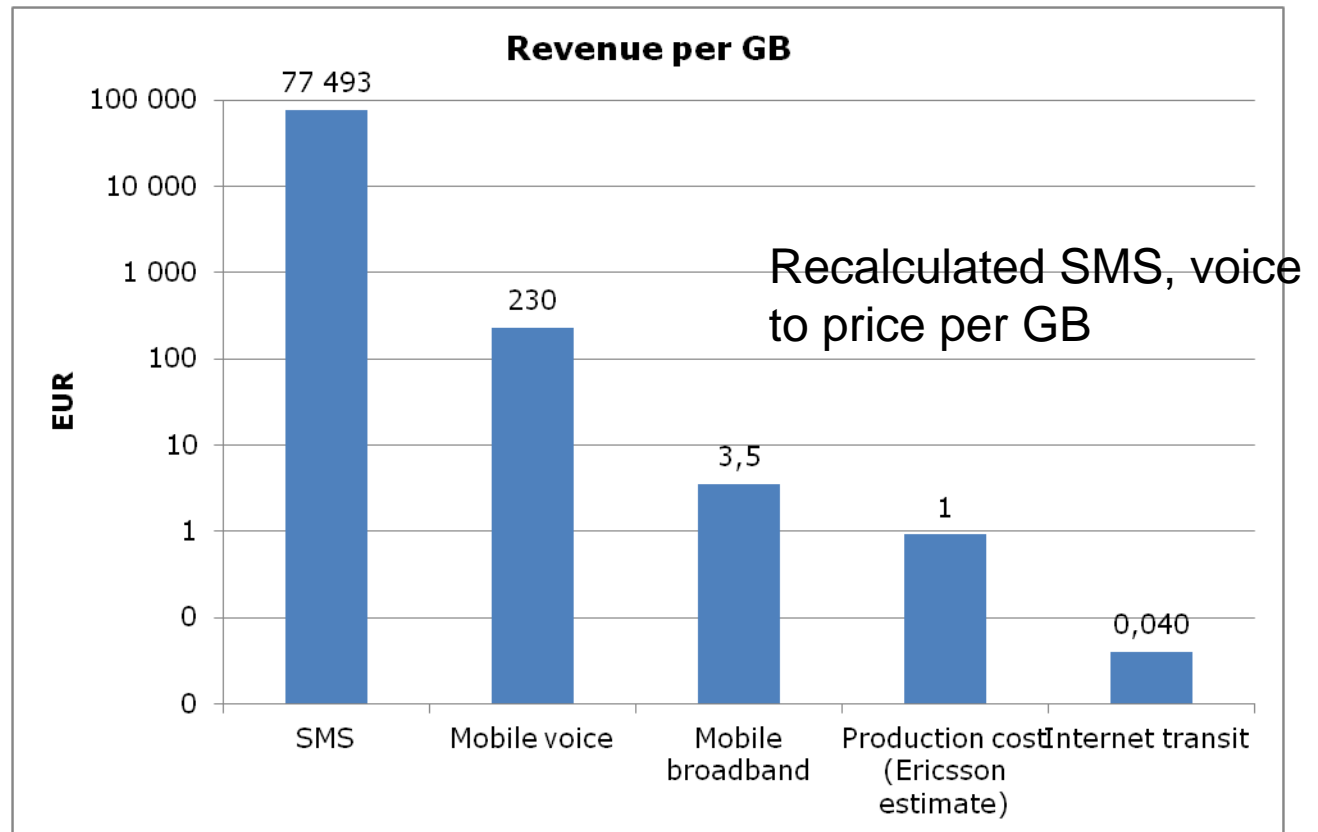
23 000 SEK

Similar amount  
of data

Assumption: YouTube 0.5 Mbit/s and with 5 min clip,  $60 * 0.5/8 * 5 = 19$  MB. Price ca 0,05 SEK per MB. SMS 160 bytes = 6250 SMS per MB. Price 0,20 SEK per SMS. SMS is very profitable with EBITDA margin of 90%. If you assume 15% of revenues is SMS and a group EBITDA marginal of 35% should a drop of SMS lead to a drop of margin to ca 25%



# Voice as an application



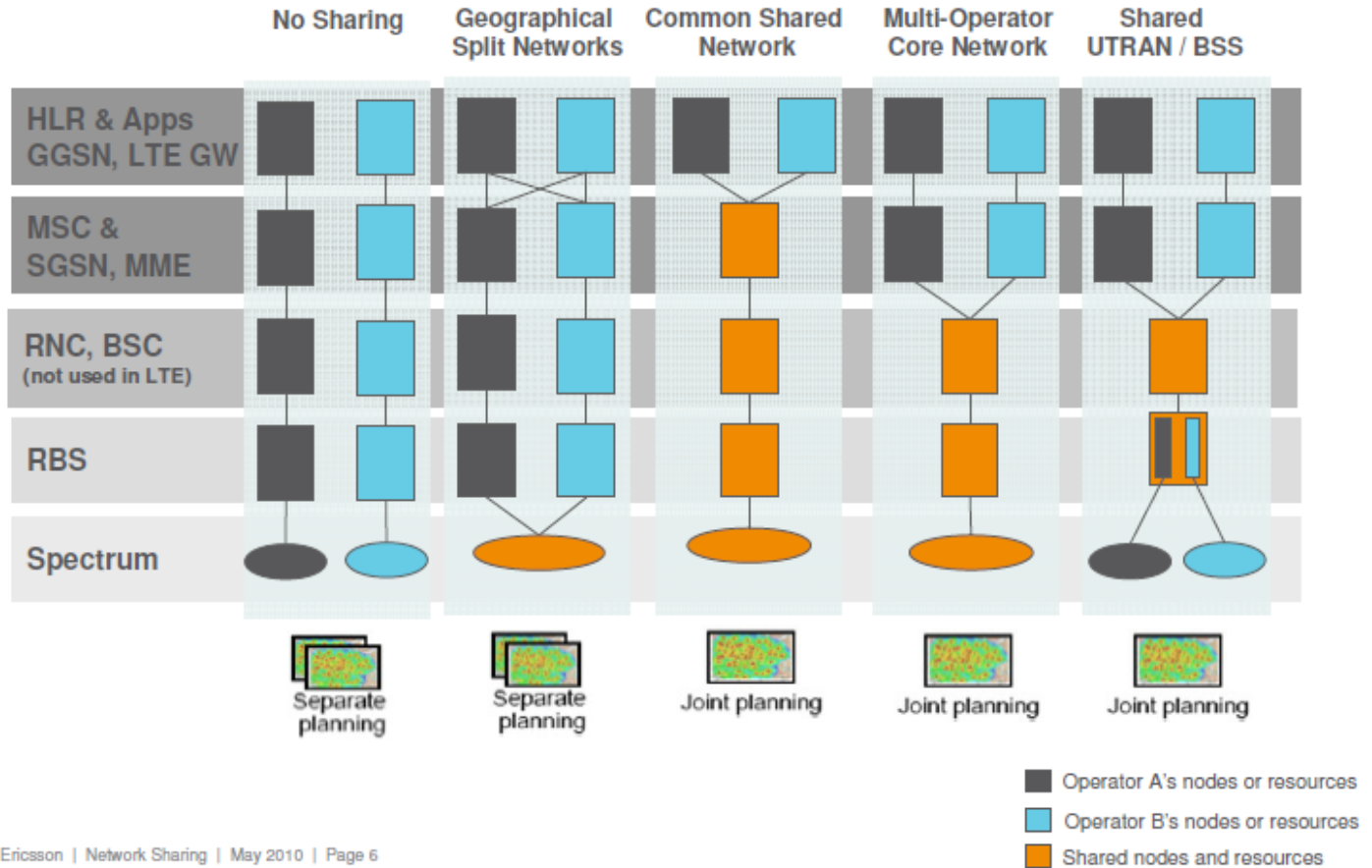
Basis: SMS 160 bytes, 6554 SMS per MB, average price per SMS SEK 0.13

Voice: 47 kbps including overhead

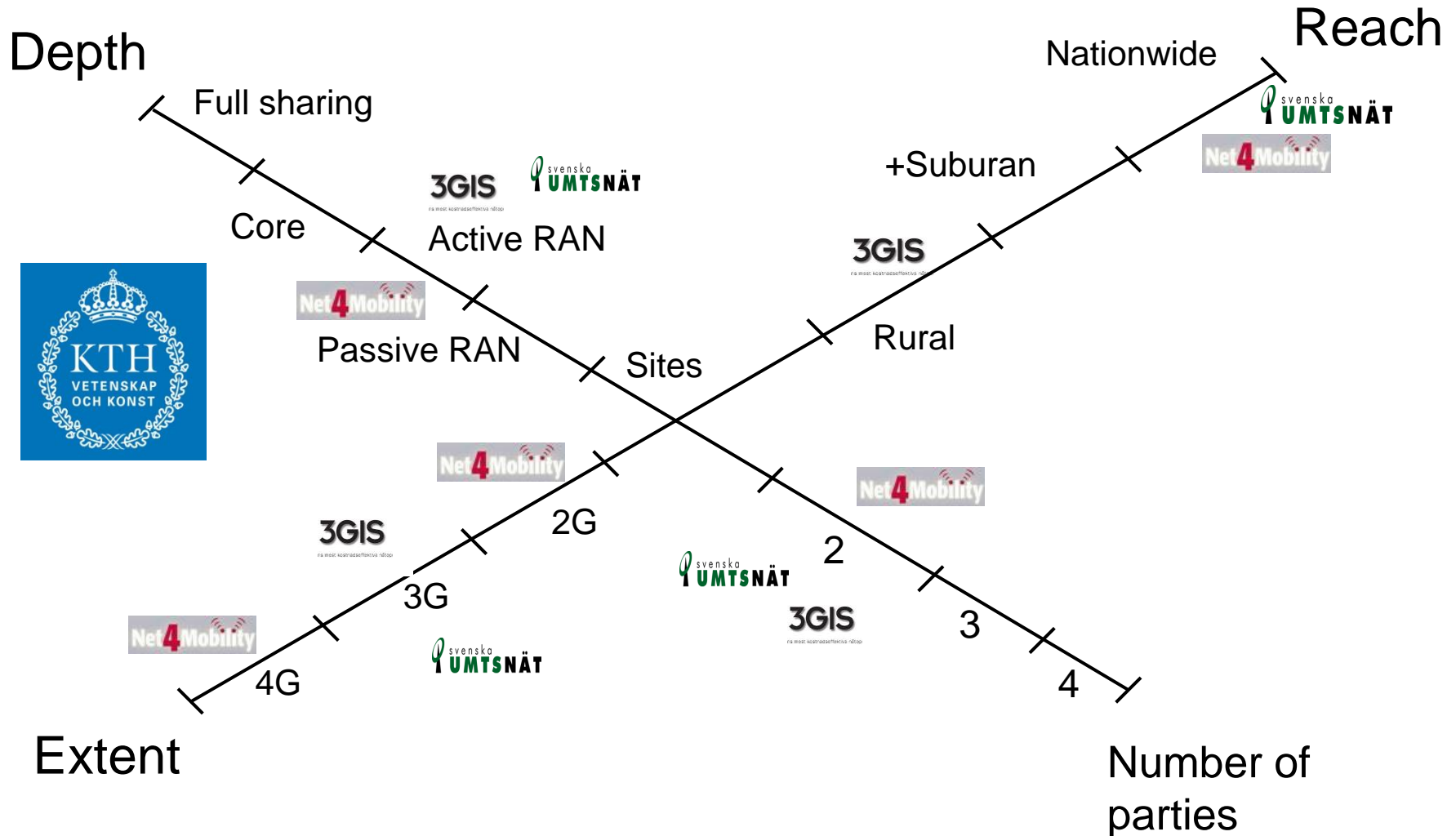
Internet transit, 125 VoIP per MB, price per VoIP SEK 0.0000028,

Source: OECD Internet traffic exchange, Svensk telemarknad

# Network sharing on the agenda



# Network sharing – 4 dimensions



Source: T. Frisanco et.al , Infrastructure Sharing and Shared Operations for Network Operators, IEEE, ICC 2008



# Pros and cons with mobile network sharing

+

- Lower capex
- Lower opex
- Maintained position on the market with its brand
- Support from a better network than what it could afford to build on their own



-

- Cumbersome to reach consensus on all decisions and form a common view
- Lose independence over network strategy
- Hidden cost, impossible to foresee everything that has to be part of a network agreement

<b>Concept</b>	<b>Definition</b>
ARPU	Average Revenue per User
Capex	Funds used to acquire physical assets
Free cash flow	Operating cash flow minus capex
GDP	Gross Domestic Product
EBITDA	Earnings before interest, taxes, depreciation and amortization
EBIT	Earnings before interest and taxes
Gearing	Leverage, difference between fixed-interest capital and equity capital
Market cap	The company's worth calculated as outstanding shares multiplied by the price per share,
MoU	Minutes of Use
Net debt	Netting the value of a company's liabilities and debts with its cash and other liquid assets
Revenues	The amount of money that a company actually receives during a specific period

# Conclusions



- Telecom is maturing, searching for a new revenue streams
- Strong volume growth with continuously lower prices
- Focus on lower costs, looking for new ways to rationalize