



# ITU workshop on Taxation of Telecommunications Services and Related Products

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## Session 3: The impact of taxation on ICT growth

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the London School of **Economics**  
and **Political Science**

# **This session's goal**

- To establish why there might be a wider effect on growth from telecom/ICT diffusion
- To consider its probable magnitude
- To evaluate the impact of this effect on the desirability of special telecoms taxes

# Telecom/ICT diffusion and growth

- Increased expenditure on telecoms/ICT may have an impact on growth of gross domestic product (GDP), beyond what is implied by the standard direct demand.
- This implies the existence of a 'spill-over' mechanism which covers part or all of the the rest of the economy. If this positive feedback is at work, it would be an argument against taxing telecoms/ICT.
- How might this work? We first address the question in relation to broadband.

# What are the transmission mechanisms mechanisms for broadband?

- Broadband is, like electricity, a 'general purpose technology in consumption and production.' Its effects include:
  - enhanced speed and quality of information flows
  - better access to markets
  - new business processes and organisational structures
  - more innovation in general

# The evidence

- This includes studies on fixed voice, mobile voice and (so far, mostly fixed) broadband.
- Because wireless is the overwhelmingly dominant technology (5bn. lines vs. 1bn.), mobile evidence is most important. We have it for voice but not for data applications.
- Studies are both 'micro' (at firm or user level) and 'macro' (economy-wide).

# Micro evidence on mobile voice

- Famous study of Indian ocean fishing show how mobile connection can empower supply side and improve incomes and efficiency (Jensen, *Quart. Jnl. Econ.* 2007)
- Evidence collected by Dr. Windfred Mfuh on effect of mobile connectivity on small businesses in Cameroon and Afghanistan – see following slides.

# Micro evidence on mobile voice...

- Investigated the structural relationship between mobile telephony services and business performance of the micro-enterprise by analysing mobile phone call log and survey data collected from a random sample of 210 micro-business entrepreneurs representing a broad spectrum of industries across Afghanistan and Cameroon.
- The findings suggest that the integration of mobile telephony services into business processes is significantly and positively related to perceived enhanced micro-business performance. In particular, the ability to use mobile telephony services innovatively can enhance business performance by as much as **40 percent**.

# Mobile telephony services enhance business performance

- Mobile telephony services contribute to the acquisition of new customers, increase knowledge sharing within the micro-business, contribute to the reduction of information asymmetries and cost, and also increase operational flexibility, which all combine to enhance perceived business performance.
  - increasing operational flexibility by 32.4%.
  - reducing operational costs by 35.5 %
  - reducing information asymmetries by 30.0 %
  - On average, a MOM saves **2.8 business hours** and **33.6 business kilometres per day** by simply using mobile telephony services.



# Reasons for explosive growth

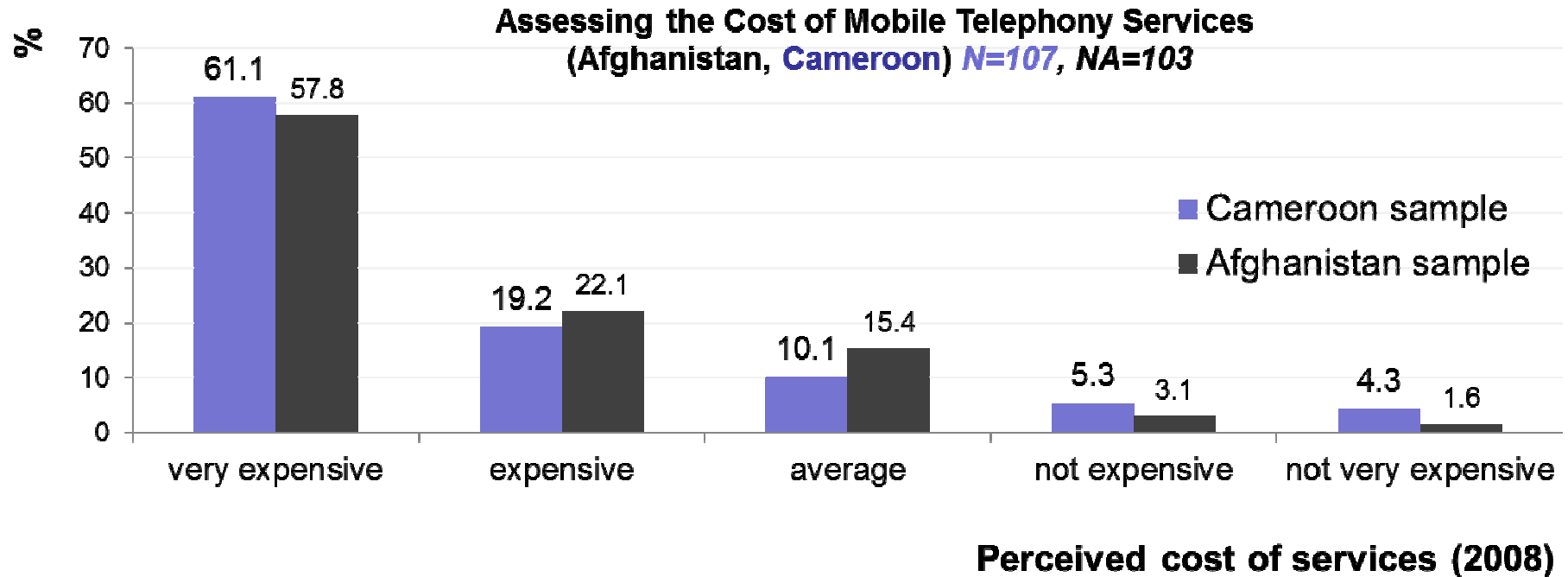


# Explosive Mobile growth.. but demand is still outgrowing supply



subscribers in emerging markets have embraced mobile services at the same rate as seen in developed markets ... but *infrastructure has not developed at the same rate.*

**Explosive Mobile growth.. but affordability is still an issue although prices are going down.**



Policy can significant improve access and usage:  
-spectrum, taxes, overall ease of doing business, a more entrepreneurial approach to regulation.

# Macro evidence on contribution of ICT to growth

- Data mostly from Europe and US.
- In US, ICT accounted for 50% of labour productivity growth from 1995 and 2000, and 33% from 2000 and 2005.
- Effect much smaller in Europe, and derived more from making ICT (eg Dell computers in Ireland) than from using ICT.
- It is suggested that benefits come from a *combination* of faster communications and processing

# Macro evidence on penetration of services

Found by estimating equation for a sample of countries in form

GDP per capita =  $f(\text{mobile voice penetration in \%}, \text{other variables})$

If the estimated coefficient of the penetration term is 0.1, it means that an increase in penetration from, say, 30 to 31% increases GDP by 0.1%. Or a 10% increase from 30 to 40% increases GDP by 1%.

# ITU/InfoDev Estimates

%age increase in economic growth per 10% increase in penetration in:	Countries with	
	high incomes	low incomes
Fixed	0.4	0.7
Mobile	0.6	0.8
Internet	0.8	1.1
Broadband	1.2	1.4

Broadband: a platform for progress, June 2011

# How reliable are the estimates?

Estimates of the effect of a 10% change in penetration vary widely, from a 0.2% to a 1.5% change in GDP.

Evidence on the most relevant application, mobile broadband, (beyond smart phones) is very sparse.

Probably safe to conclude that there is an effect, but of unknown magnitude.

# How does it affect the tax debate: a worked example

*Assumptions.* GDP=100; taxable broadband output =2; penetration rate =30%; price elasticity of demand =0.6; marginal tax rate in economy is 35%; growth effect: cutting penetration from 30 to 20% reduces GDP by 1%.

*Arithmetic.*

- 1) A 20% tax borne by consumers reduces demand by 12%, cuts penetration by 3.6% to 26.4%, and raises  $0.2 \times 0.88 \times 2$ , or 0.35 units of tax.
- 2) GDP falls by  $0.36 \times 1\%$ . As a result tax falls by  $0.36 \times 35\%$  or 0.13 units.
- 3) Overall, GDP falls by 0.36; tax revenue rises by 0.22.



# Sensitivities

<b>Sensitivity</b>	<b>Growth effect</b>	<b>Tax effect</b>
Higher price elasticity of demand	+	-
Higher share of broadband in GDP	0	+
Higher tax rate on communications	-	?
Higher marginal GDP tax rate	0	+

+, increases; -, decreases; 0, no effect; ?, ambiguous.

# Will imposing a tax *reduce* tax revenue?

- This can happen if the tax collected on telecoms service is outweighed by tax foregone on 'lost' GDP.
- Some studies have suggested that it does happen – eg in 4 countries out of 5 in a detailed study by Katz et al. for GSMA.
- The growth effect will still take time to work through, and the government may be impatient or needy.
- A tax cut will not normally be the only reasonable choice.