

HOW TO ENGAGE IN BROADBAND POLICY AND REGULATORY PROCESSES

RESEARCH ON SIGNIFICANCE OF BROADBAND/INTERNET

SESSION 2, APRIL 5, 2013

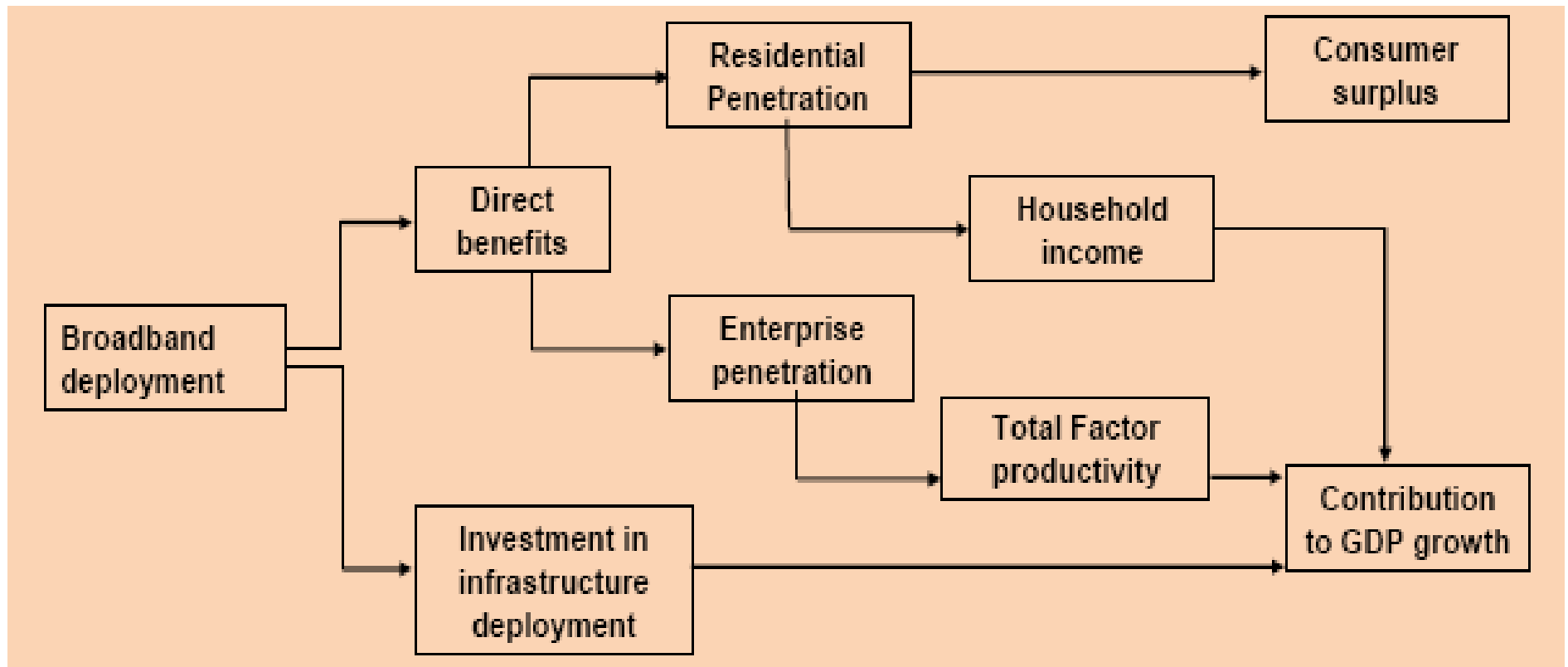
Objective

- To provide a brief overview of the various research studies that assess the impact/significance of Broadband (BB)
- Catalyst for economic and social development
 - ✓ National income (GDP)
 - ✓ Transformative impact on businesses and livelihoods

Why this research on research?

- Huge Investment
- USA- USD 97.7 billion in broadband deployment
- China- USD 7.44 billion in broadband since 2009: China
- Malaysia: USD 1.6 billion since 2009
- Information key for efficient running of markets
- Information key for governments to design their social programmes
- Information key for democratising access to human knowledge
- Quantitative and qualitative assessment

Broadband Economic Impact

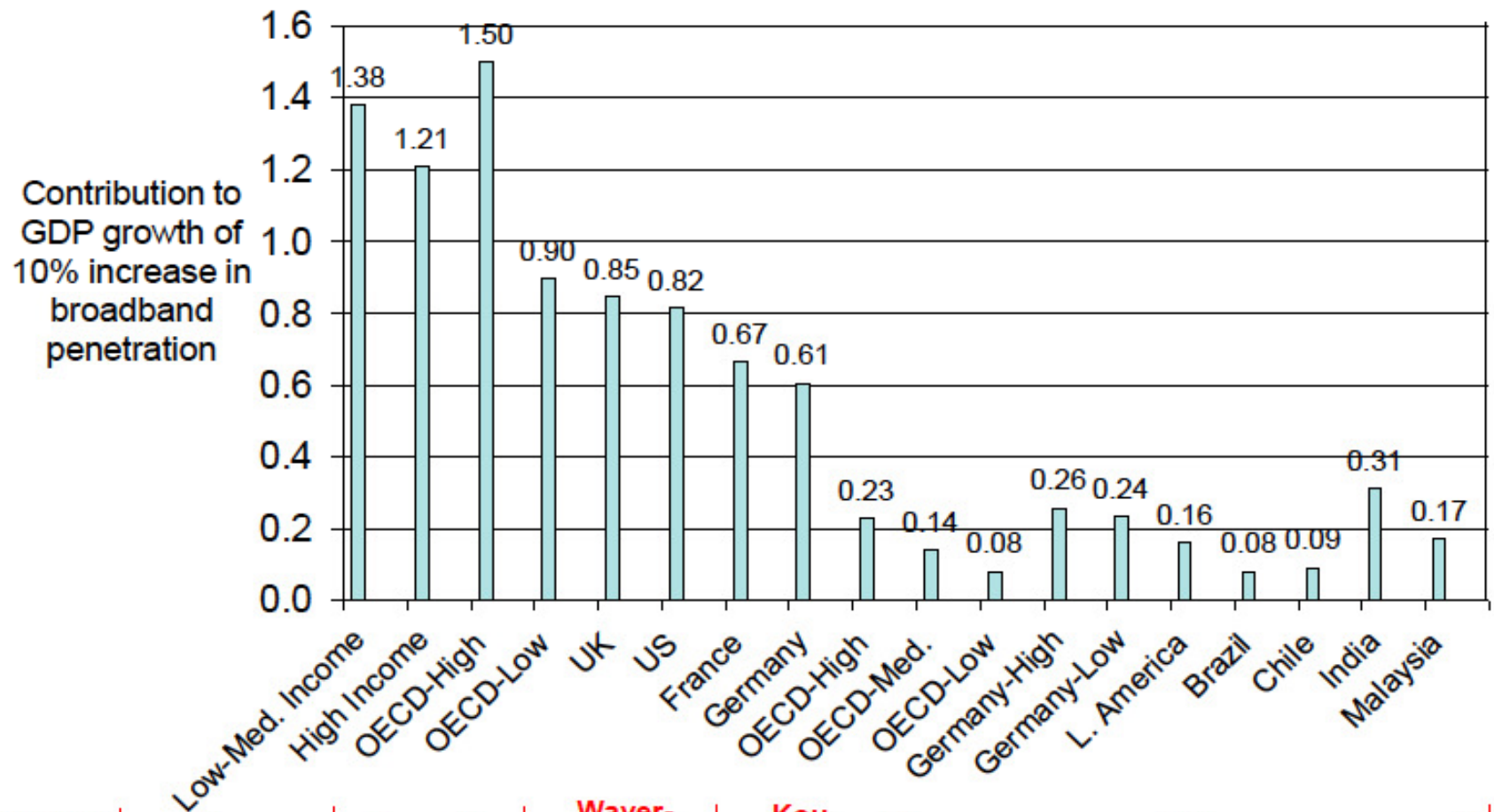


Approaches

- Quantitative Techniques
 - ✓ Input-Output (impact of broadband infrastructure deployment on output and employment generation within a country)
 - ✓ Multivariate Regression Techniques (causal link)
 - aggregate impact of broadband on economic development
 - what is the contribution of broadband to GDP growth, productivity and employment?
 - ✓ Micropersepctive
 - contribution of broadband to business process efficiency and sales growth
- Qualitative mainly case study approaches

Research results of broadband Impact on GDP growth

RESEARCH EVIDENCE OF BROADBAND IMPACT ON GDP GROWTH



RESEARCHER /INSTITUTION

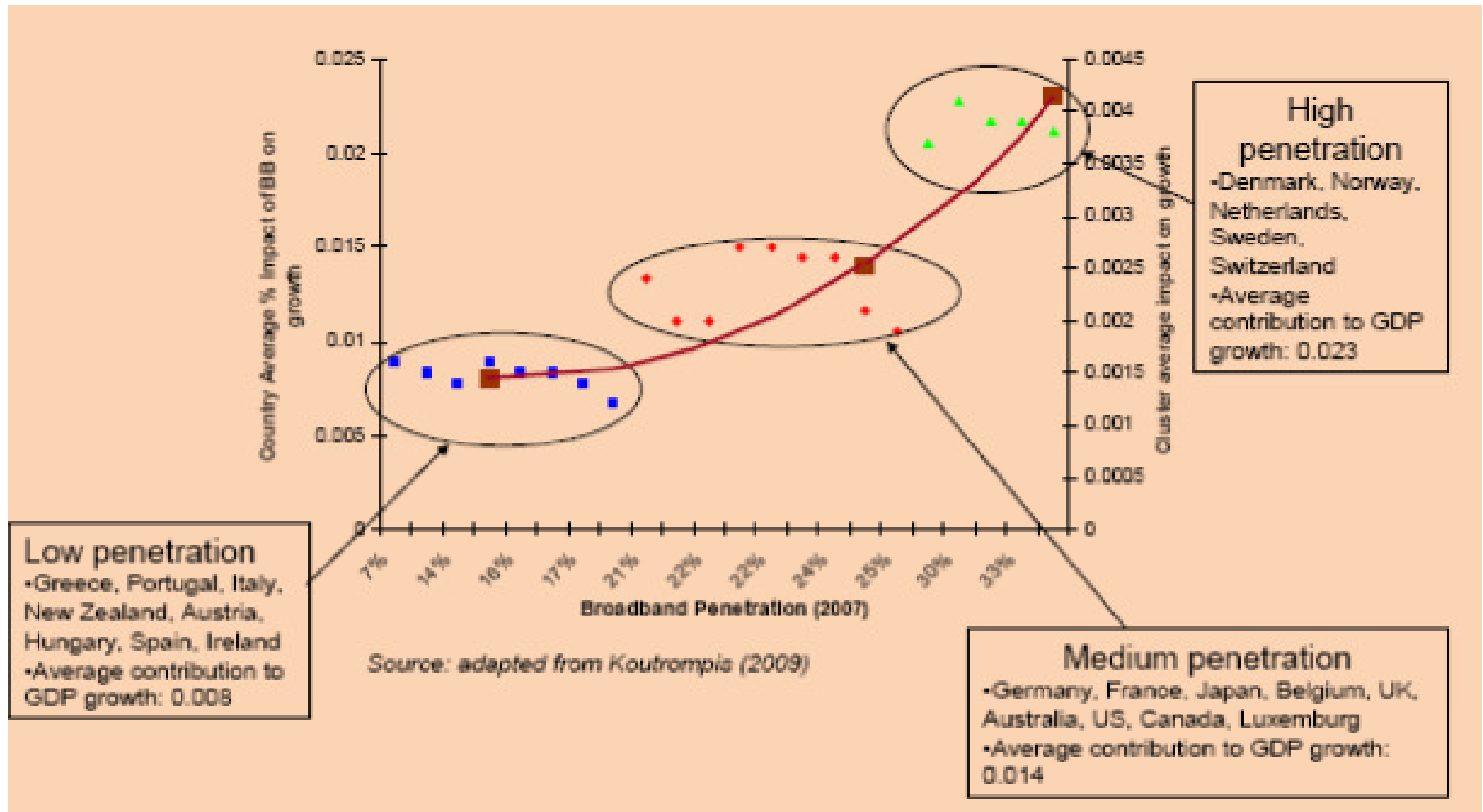
← Qiang World Bank → Czernich U. Munich → Waverman LECG → Koutroumpis Imperial C. → Katz U. Columbia →

Research results of broadband Impact on GDP growth

- Vary widely, from 0.25 to 1.38 per cent
- ✓ different datasets used; varying model specifications
- World Bank study (Qiang 2009) 120 developing countries
- ✓ Hierarchy of impacts fixed being the lowest and broadband being the highest
- ✓ Impact is higher for developing countries
- ✓ However, the significance of the impact is greater for developed

	High Income	Low Income
Fixed	0.43	0.73
Mobile	0.60	0.81
Internet	0.77	1.12
Broadband	1.21	1.38

Higher penetration- Higher Impact - Koutroumpis, P.



Problems

- Very high levels of data aggregation
- ✓ do not account for the wide discrepancy between regions
- ✓ probably suggests an over-estimation of impact of broadband on GDP growth
- Conduct the analysis at lower levels of aggregation such as states, communities
- Research consistently concludes that broadband has a significant positive effect on GDP growth
- Strength of the relationship is highest once the technology has achieved a certain critical mass but before it reaches saturation

Caveats

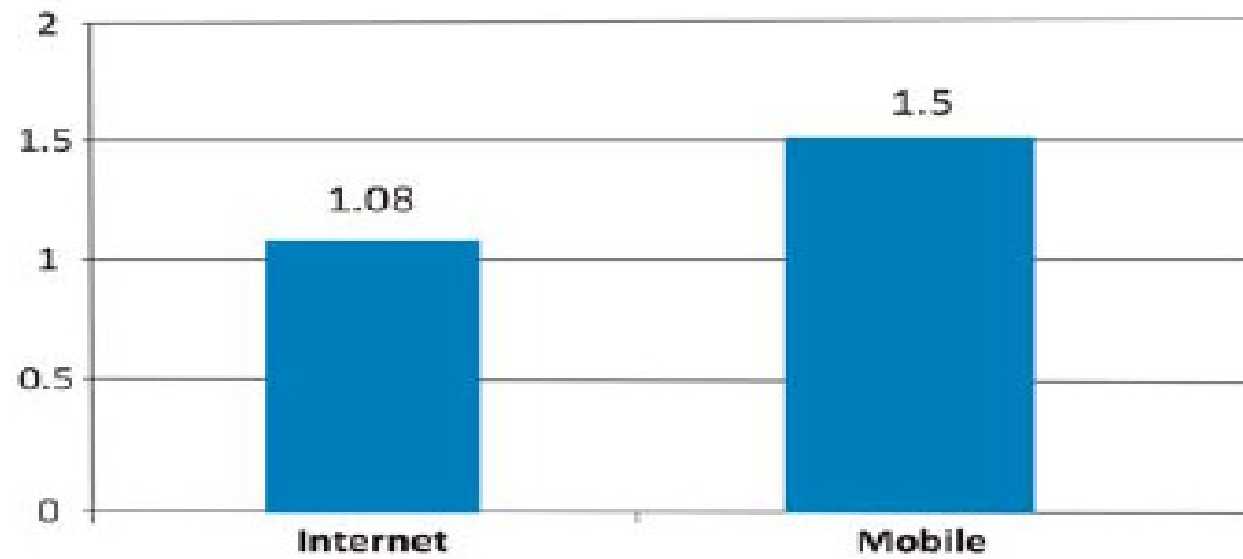
- Higher contribution to economic growth where there is a higher adoption of the technology
- Stronger productivity impact in sectors
- ✓ high transaction costs
- ✓ high labour intensity
- Capital-labour substitution
- Impact on small and medium enterprises takes longer
- Higher impact combined with stimulus of innovative businesses that are tied to new applications.
- Impact neither automatic nor homogeneous
- Concomitant public policies education, economic development and planning, S&T

Other issues

- Never happens in isolation
- ✓ Ecosystem of complementary technologies, products
- Intangible capital accumulation and the adoption of e-business processes delay the full economic impact of broadband
- Institutional variables such as labour market regulation
- ✓ Van Reenen et. al. (2010): Offsets the productivity impact of ICTs by - 45%
- Public policy implications
- ✓ Skill development
- ✓ Ease of doing business

Disaggregated Studies

- Indian Study IMAI and DIT
- ✓ Same macroeconometric study but state level
- ✓ Impact of ICT on GDP



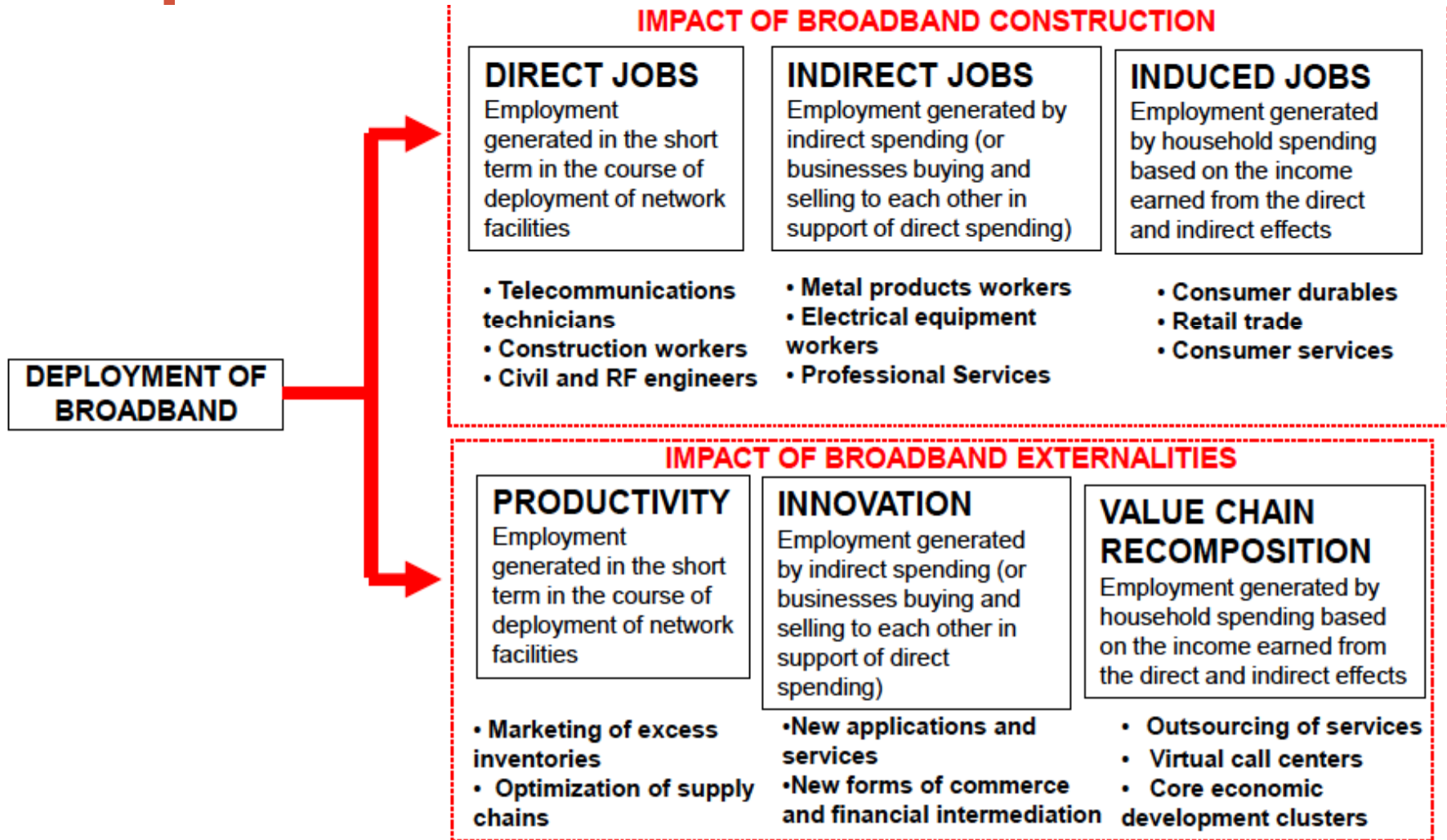
Analysys Mason December 2010

- Wireless broadband 10 percentage increase
- ✓ Increase in GDP by 3.8 billion
- ✓ Increase in GDP 1.11 percent, by 2015
- ✓ Additional 5 MHz of 3G spectrum, broadband penetration rate would likely increase 3.3 percent
- ✓ an additional 3.3 percent growth in GDP by 2015.

Broadband, Employment and Job Creation

- Direct jobs in creating broadband infrastructure
- Indirect and induced jobs created from this activity
- Additional jobs - network externalities and spillovers.
- Input-Output tables are a reliable tool for predicting investment impact
- ✓ Static models reflecting interrelationship between economic sectors at a certain point in time

Broadband impact on job creation comprises two effects



Job Multipliers

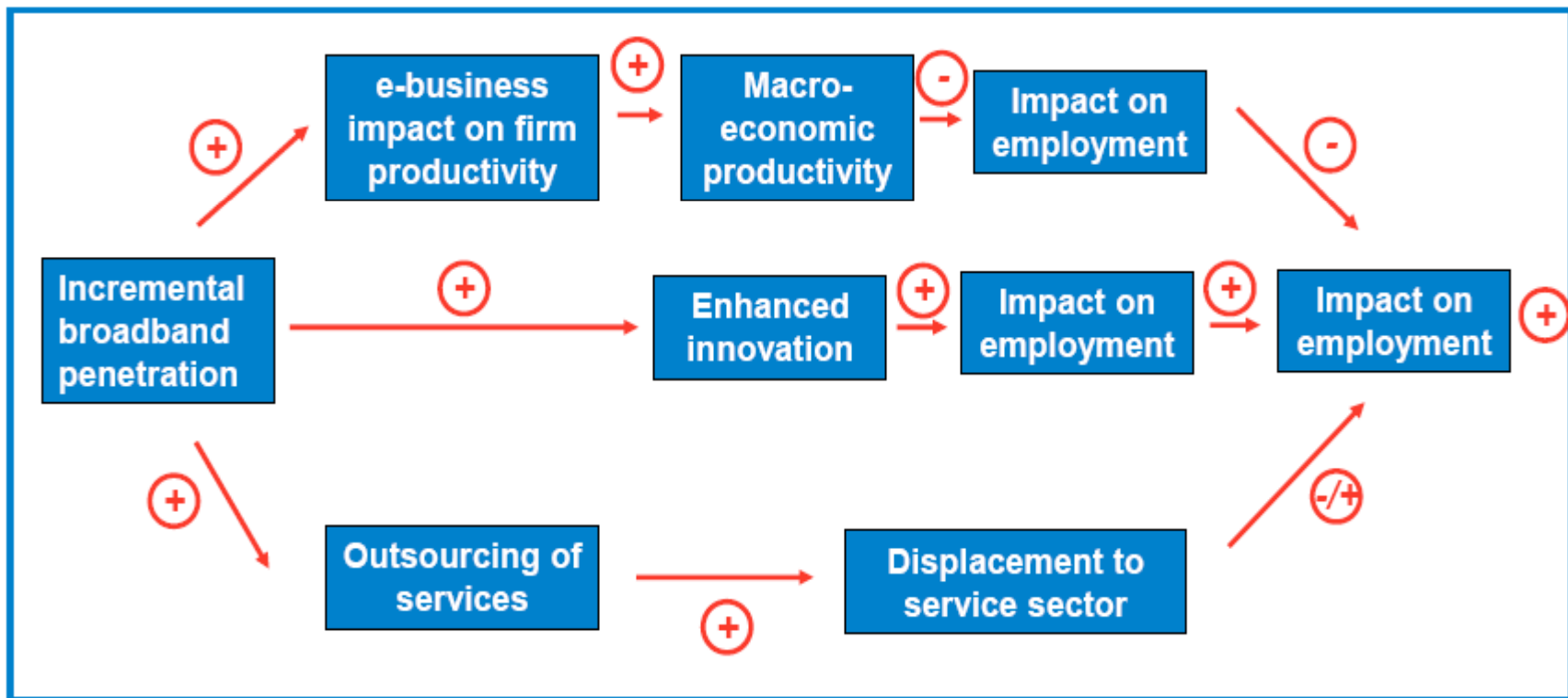
Author (Year)	Country	Variable	Type I Multiplier	Type II Multiplier
Katz et al (2009)	Germany	Employment	1.45	1.94
Katz et al (2009)	Germany	GDP	20.2 billion Euro investment will result in 170.9 billion Euro of additional GDP (6% of annual GDP growth)	
Katz et al (2008)	Switzerland	Employment	1.38	(Study did not estimate induced employment)
Katz et al (2009)	United States	Employment	1.83	3.42
Libenau et al (2009)	United Kingdom	Employment	(Indirect and induced employment estimated together)	2.78
Crandall (2003)	United States	Employment	(Indirect and induced employment estimated together)	2.17
Atkinson (2009)	United States	Employment	2.58	3.6
Australian Govt	Australia	Employment	Direct, Indirect and Induced jobs would sum up to 200,000	
Strategic Analysis Group	Canada (Ontario)	Employment	2.03	3.42

Source: Compiled from Katz et al (2008, 2009), Libenau (2009), Atkinson (2009)

Broadband and Network externalities

- New and innovative applications and services, such as telemedicine, Internet search, e-commerce, online education and social networking
- New forms of commerce and financial intermediation
- Mass customization of products
- Reduction of excess inventories and optimization of supply chains
- Business revenue growth
- Growth in service industries

The contribution of broadband externalities to employment comprises three simultaneous effects



Note: This causality chain was adapted from a model originally developed by Fornefeld et al., 2008 in a report for the European Commission

Productivity Growth

- Increasing the information available to SMEs and information workers
- Complementary investments in other ICTs and skills
- Enabling business process re- engineering to improve the efficiency and management of labour intensive jobs
- Supporting the development of new more efficient business models

Policy tool kit aimed at maximizing adoption

- National broadband plans outline coverage and service targets
- ✓ assign spectrum to maximize the impact of wireless broadband
- ✓ focus on demand stimulation
- ✓ define competition policy, and tackle any potential supply obstacles
- Articulate a vision and create awareness within polity and civil society
- Coordinate policies and involvement from public and private sector
- Develop state policies
- Build ownership and accountability at the highest level of government
- Competition policies aimed at stimulating private sector investment and innovation are critical
- At the same time, governments should acknowledge that they will need to intervene
- ✓ Address any market failures through universal service funds
- ✓ Alleviate investment constraints to stimulate private sector flows
- ✓ Potential entry as an investor of last resort



Social Impacts

- Entertainment, shopping, learning, health, access to employment, increase interactions with governments
- Higher levels of well-being
- Consumer Surplus

In summary

- Research evidence is consistently pointing to the positive economic of broadband
- Data analysis also indicates that economic impact increases with broadband penetration
- Economic impact varies by region indicating that broadband deployment needs to be carefully coordinated with economic development policies (training, firm relocation, etc.) to maximize impact
- Broadband policies are critical to maximize the economic impact of technology (national broadband plans, competition policies, demand stimulation, alignment of taxation with development and technology objectives)
- Policy development needs to be based on rigorous economic analysis which requires an important effort in data generation

Thank you