Broadband Bottlenecks in South Asia
How do we avoid spectrum bottleneck?

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Payal Malik
Associate Professor, University of Delhi
Senior Research Fellow, LIRNEasia

LIRNEasia
www.lirneasia.net

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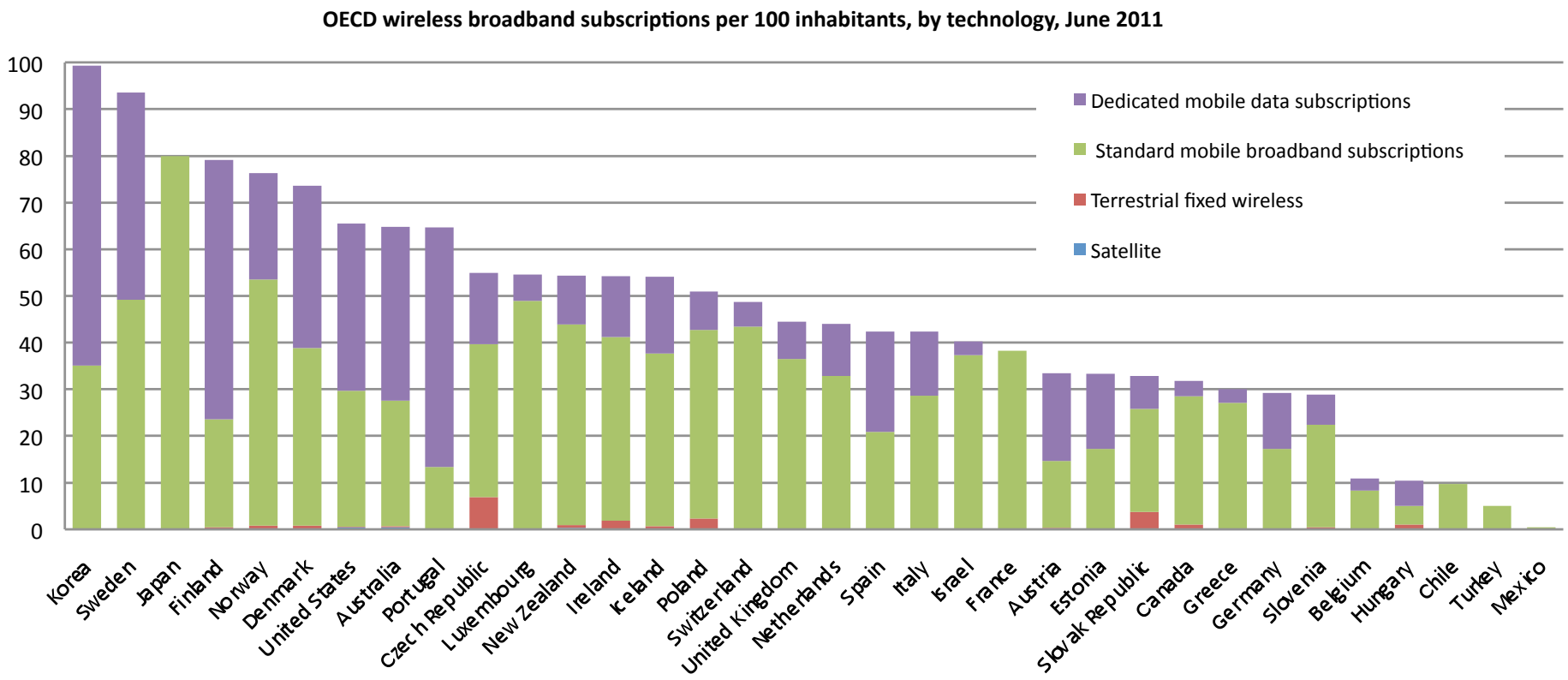
IDRC International Development Research Centre
CRDI Centre de recherches pour le développement international
DFID Department for International Development

Putting things in perspective

- Demand from new wireless broadband subscribers is driving growth in high-speed Internet access in OECD countries
- New wireless broadband subscriptions maintained double digit growth, rising by 14% from the last half of 2010.
- Fixed wired broadband subscriptions increased by 2.25% between December 2010 and June 2011 (5.83% year-on-year), down from 3.5% in the last half of 2010.
- Korea (99.3), Sweden (93.6), Japan (80.0) and Finland (79.1) are the leading countries in wireless broadband penetration, some of them nearly doubling the OECD average of 47.9.


OECD wireless broadband subscriptions per 100 inhabitants, by technology, June 2011
100
90
80
70
60
50
40
30
20
10
0
Dedicated mobile data subscriptions
Standard mobile broadband subscriptions
Terrestrial fixed wireless
Satellite
Korea
Sweden
Japan
Finland
Norway
Denmark
United States
Australia
Portugal
Czech Republic
Luxembourg
New Zealand
Ireland
Iceland
Poland
Switzerland
United Kingdom
Netherlands
Spain
Italy
Israel
France
Austria
Estonia
Slovak Republic
Canada
Greece
Germany
Slovenia
Belgium
Hungary
Chile
Turkey
Mexico

Can this be replicated in South Asia?

- Could wireless BB really be a substitute to the FTTH or any other fiber centric policies?
- Wireless is considered by many to be ideal in South Asia, which is without legacy wired networks
- However, in India About 86% of 12.83 million broadband connections are provided using DSL technology and 2.85% using wireless
- If DSL remains the predominant technology, only 22.2 million broadband connections by 2014

Things are changing (e.g.India)

- 42.79% of total wireless subscribers base are capable of accessing data services/Internet (374 million, However, 2g)
- High growth of data subscribers, capable of using Internet through mobile devices, makes available a ready population which could adopt broadband
- TRAI : Contribution of wireless broadband technologies by the year end 2012 and 2014 is expected to be 26.5 million subscribers and 59.6 million subscribers respectively

Importance of Spectrum Management Policies

- Spectrum Management policies critical to diffusion

✓ The decisions on technology standards

✓ the choice of spectrum band

✓ the method to award licenses

- Simple: Correct polices can increase the speed of diffusion whereas flawed policies can hinder growth

Results of Moinul Zaber (2011, CPRsouth)

Does mandating a single technology standard help?

- Converge to single standard (LTE advanced)?

✓ Avoid inertia while consumers wait to see which technology will dominate

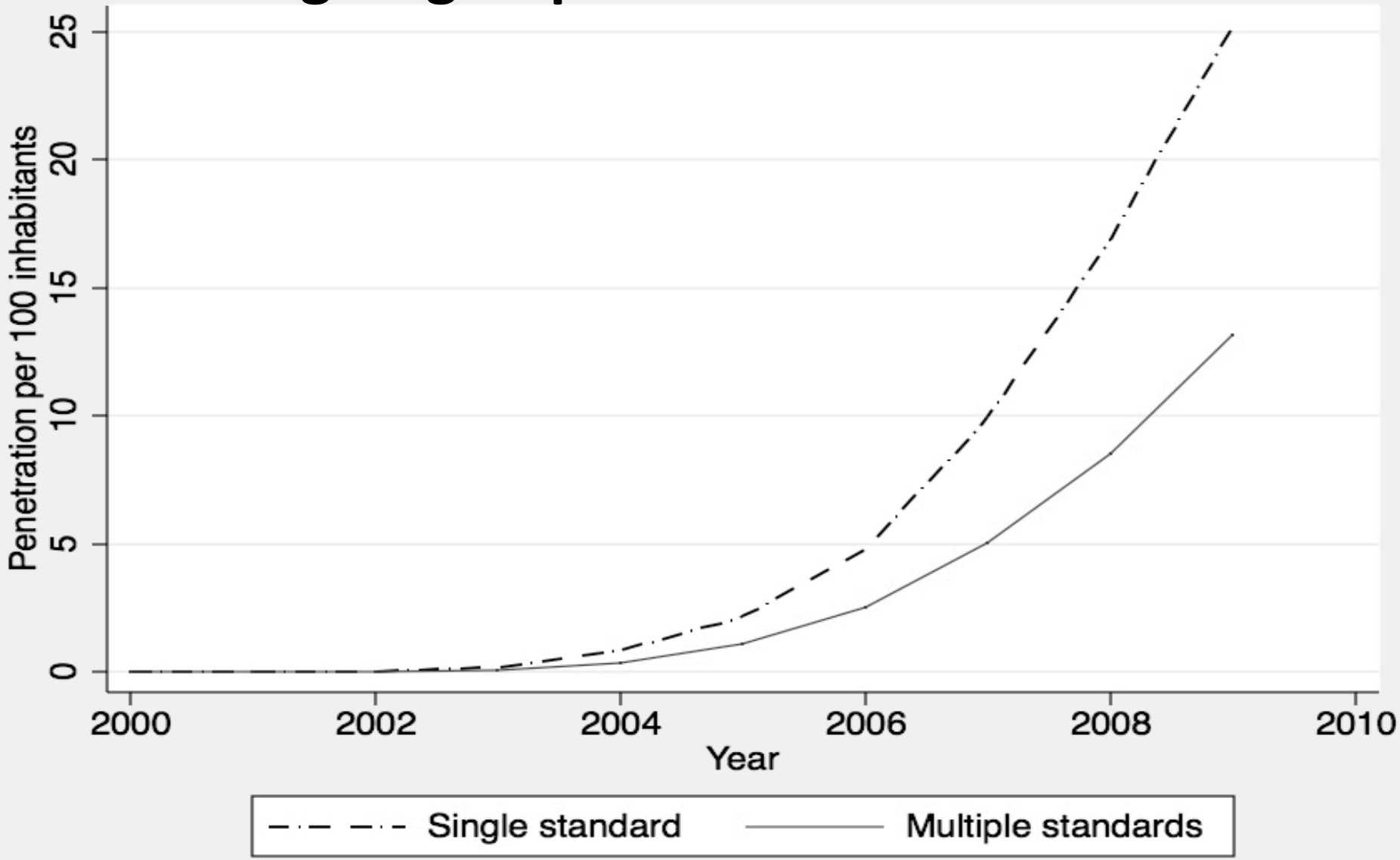
✓ Global roaming

- Cons

✓ Avoid premature adoption of inferior technology

✓ Technological competition can lead to lower price and innovation

Mandating single spectrum standard



Mandating Specific Spectrum Band

- Mandating

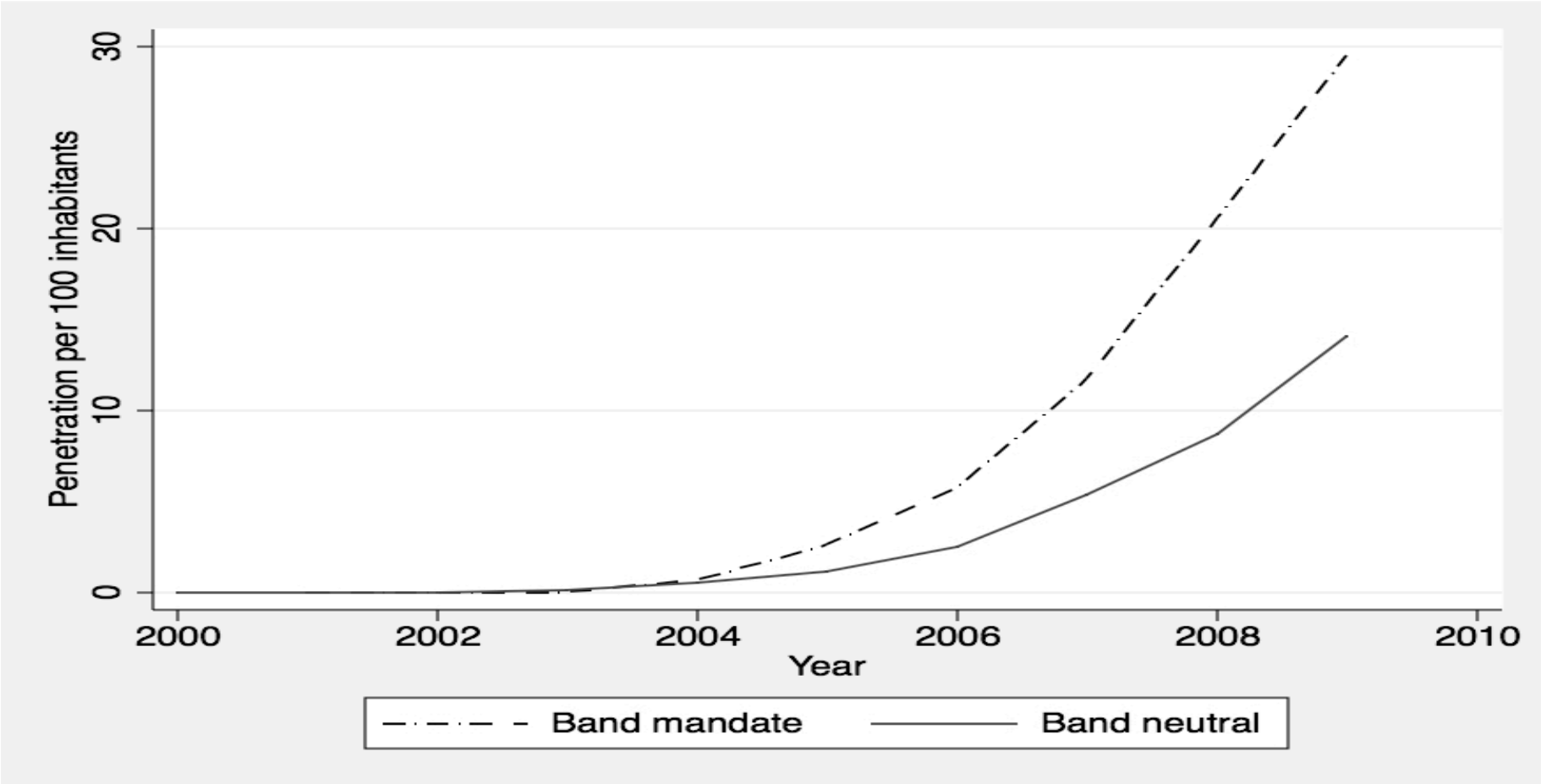
✓ forces the operators to go through the spectrum award process to introduce new technology

✓ might be capable of reusing their existing spectrum

- Not mandating

✓ allow spectrum holders to optimise spectrum usage by refarming certain portions of the 900/1800 MHz for more efficient 3G/4G services

Mandating Specific Spectrum Band



Limiting 3G to a single frequency band promotes faster roll out (approx 7 to 8 months) , but in the long run can slow down the growth

What do empirical results tell us about the award process and diffusion?

Auctions and Diffussion

- Park, Lee, Choi (2011, Information Economics and Policy)
- Test for potential problems that auctions may cause

✓ high licensing fees

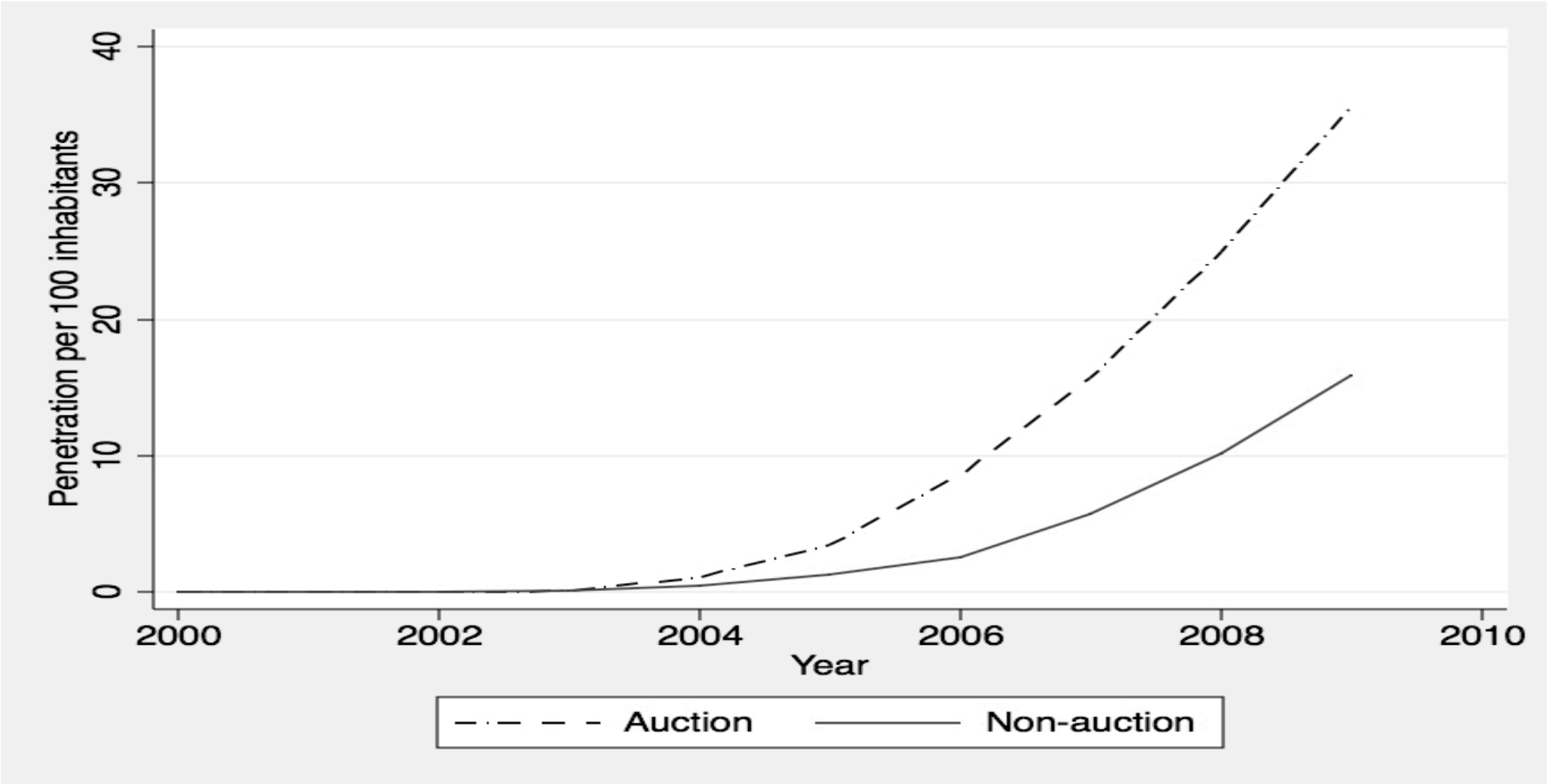
✓ high consumer prices

✓ lower incentive to invest in infrastructure

✓ concerns about market concentration

- Despite the higher average fees for the auctioned spectrum, there is no evidence that auctions have led to an increase in consumer prices

Average 3G per 100 pop world wide (auction vs. non auction)



Development of Secondary markets

- Policy should recognize critical nature of secondary markets in maintaining efficient spectrum and wireless markets

✓ Spectrum sharing, MVNOs, real time spectrum auctions

✓ mesh networks; location technologies and spectrum sensors do allow various forms of spectral sharing

- Secondary market could emerge and reinforce the efficiencies created through the auctions
- Time to move away fro "Mother May I" approach to spectrum usage

Points to ponder

- How much new spectrum is to be allocated
- more significantly, Who gets it? Quality vs. Competition trade off
- Any gains from dividing spectrum into smaller parts in an effort to create more firms (e.g., using spectrum caps)?
- Recognise valuable roles for both licensed and unlicensed spectrum in overall spectrum policy

✓ Unlicensed spectrum encourages innovation by many parties

✓ Licensing or ownership discourages innovation by giving too much power to the licensee or owner