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Dealing with the digital dividend

- It occurs at the right time, when demand for mobile broadband is taking off and when broadcasting platforms are proliferating
- Governments and regulators may not be best place to anticipate these developments
- How strong is the case for leaving it to the market – via neutral spectrum auctions?
- Is this technically feasible?
- Will it merely achieve a private but not a social optimum?

Different general approaches to spectrum allocation and assignment

- Traditional administrative approach: leaves all the power with the regulator and the rents with the operators
- Restricted auctions; keeps control over output in regulators' hands and rents go to government
- Service neutral auctions; decentralises decisions and should maximise revenues, but doubts about feasibility
- Mixture of last two; restrictions emerge for a number of reasons, including EU harmonisation.

The record so far of spectrum auctions in Europe

- Ambiguous legacy of 3G auctions
- Increasing complexity – combinatorial auctions, clocks, two stages, mini 'big bang' (cf Germany)
- Recent revenues, even from 'beach front' spectrum, adequate not awesome
- These methods are within regulators' comfort zone
- Continuing anxiety about genuinely service neutral auctions: are they too complex? Will there be interference problems?

A further way auctions may fail

- Increasing anxiety about exclusionary behaviour by mobile oligopolists, achieved by hoarding spectrum
- Result is congealing of market structures, even as new technologies or generations emerge
- Similar factors may deter trades in countries which permit them
- How to maintain shocks? Solution may be spectrum caps or set aside, but these methods can backfire (cf recent Netherland auction)

Market failure due to externalities

- Firms in auctions bid according to the private benefits they can appropriate
- But some uses may have beneficial side effects on others
- The government can subsidise such bidders; this may look expensive, but is no more so than assigning spectrum directly and foregoing auction revenue.

Which socially desirable services uses of DD spectrum merit protection?

- *Predominantly public funding:*
  - Distribution of public services
  - Public service television
  - Emergency services communications, etc
- *Predominantly private provision*
  - Local television
  - Mobile data
  - etc

The emergency services conundrum

- In principle, emergency services can bid for spectrum, or contract out delivery of spectrum-based services, like any other customer
- It just requires the government to put up the money, and is no more expensive than direct assignment (see above); in fact, it is cheaper, since the money can be spent on non-spectrum inputs, if they are cheaper
- But do public spending arrangements permit this type of procedure? Perhaps not.

The European Institutions' approach to the Digital Dividend

- Implement 2012 completion date
- Harmonise 790-862 MHz see recent Technical specification decision); will have some advantages – possibly including pan-European networks - but might have happened anyway
- May 2010 *Digital agenda for Europe* proposes 'mandating the use of certain… frequencies for broadband…, by ensuring additional flexibility (also allowing spectrum trading) and by supporting competition and innovation.'
- Sounds like some kind of managed market, but not for social goals in the prime spectrum.