Spectrum 20/20
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The economic impact of the use of spectrum in a national economy

Bob Young, Europe Economics, London

Projects most relevant to today

- *Economic impact of the use of radio spectrum in the UK (Ofcom, 2006)*
  – A straight quantification for Ofcom, not analysis leading to policy advice
- *How can Ireland best benefit from its digital dividend? (ComReg, 2008)*
  – Brief review of policy in eleven other jurisdictions
  – More detailed review of the Irish position
  – Recommendations to ComReg
  – Presentation at high-profile national conference

We used two ways to calculate the economic value of spectrum

- Add up consumer and producer surpluses

  OR

- Calculate GDP (gross domestic product) impact

  BUT

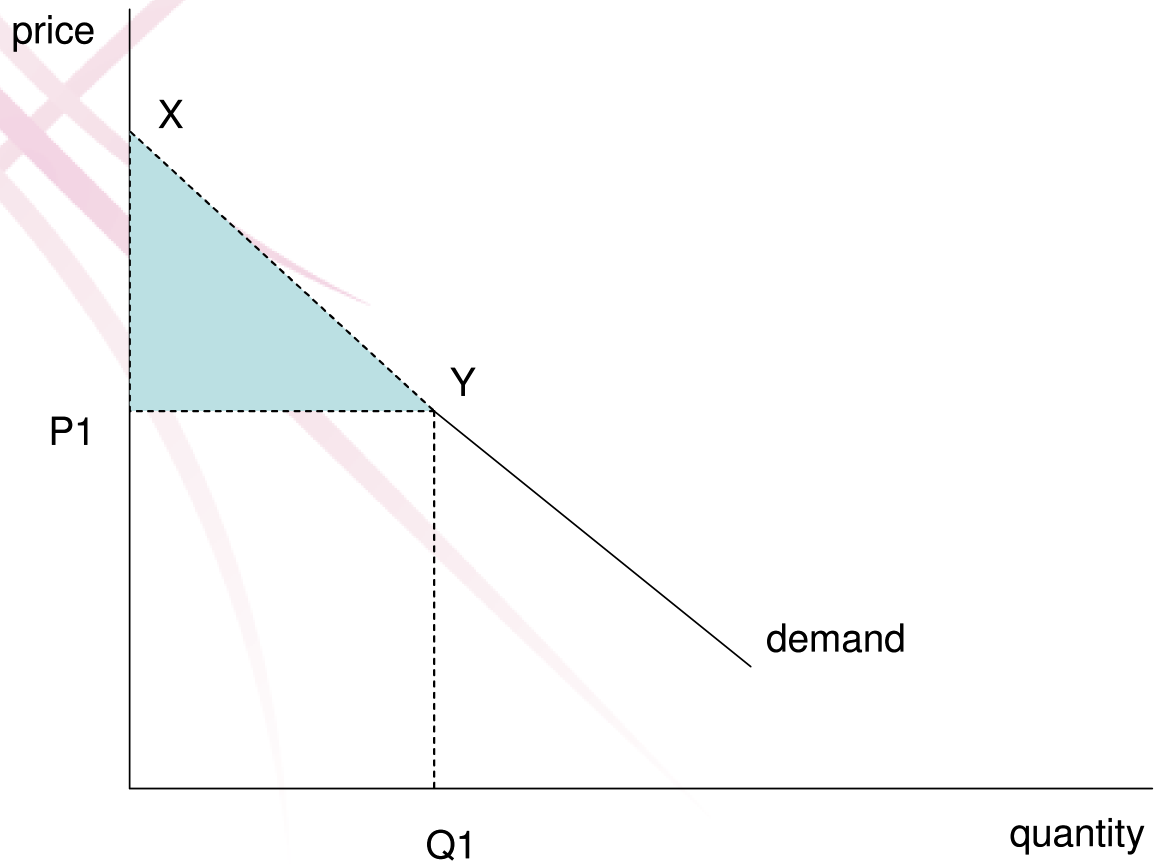
- The impacts change over time
  - in total and as between different spectrum uses
- And economic impacts alone may not give policy-makers the answers they need or want

Consumer surplus

"the price which a person pays for a thing can never exceed and seldom comes up to that which he would be willing to pay rather than go without it: so that the satisfaction which he gets from its purchase generally exceeds that which he gives up in paying away its price; and he thus derives from the purchase a surplus satisfaction. <u>The excess of the price which he would be willing to pay rather than go without the thing, over that which he actually does pay, is the economic measure of this surplus satisfaction</u>."

Alfred Marshall, *Principles of Economics,* 1890

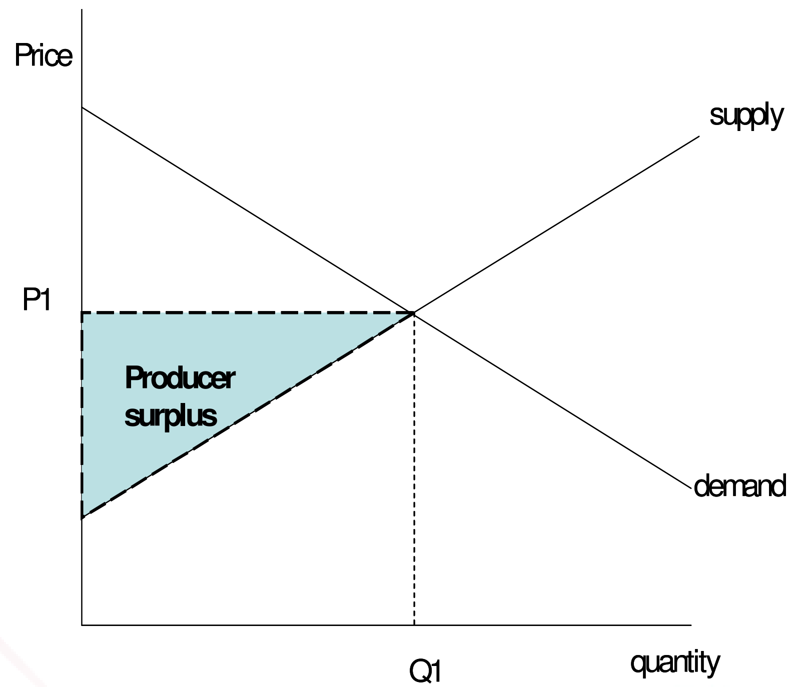
In graph form…



Producer surplus

"…revenue received by a supplier of any particular good or service over the minimum amount he would be willing to accept to maintain the same level of supply…

the difference between turnover and avoidable economic costs"



Total welfare = the sum of consumer surplus and producer surplus

- Measurement is a problem
  - Calculating consumer surplus needs surveys of willingness to pay
  - Recent or current producer surplus can be calculated from published accounts
  - But producers may choose to run at negative surplus (a loss) for a period of time
- Forecasting future surplus is highly problematic
- But over time total welfare represents a reasonable approximation of current spectrum value

Consumer surplus far exceeds producer surplus

	2006		2002	
Sector	**Consumer surplus (£M)**	**Producer surplus (£M)**	**Consumer surplus (£M)**	**Producer surplus (£M)**
Total	**37,783**	**4,619**	**27,491**	**741**
of which:				
Public mobile	18,964	2,821	13,642	771
Broadcasting	10,579	1,690	6,057	- 137
Satellite links	2,832	- 5	2,903	- 9
Fixed links	3,883	-	3,793	-
Wireless broadband	292	- 1	-	-
Private mobile radio	1,223	-	1,086	-
Other	10	114	10	116

Some comments

- £42bn (C$67bn) = 3.3 per cent of UK GDP for 2005
- £28bn (C$45bn) = 2.7 per cent of UK GDP for 2001
- The true public mobile figure could be much higher
- Public mobile and broadcasting together account for two thirds of total welfare
  - Mobile exceeds broadcasting by some way
  - Strong UK tradition in free-to-air TV but pay-TV gaining
- Total now would be higher
- Wireless broadband would almost certainly account for a much higher percentage

GDP-based valuation

- The formula is:
  - Total effects = Direct effects + Indirect (linkage) effects + Multiplier (induced) effects – Re-absorption effects
- Direct effects obtained from company returns
- Indirect effects from national Input-Output Tables
- Standard multiplier effects and re-absorption effects from Government-published factors
- Results expressed as revenue and employment
- We did not attempt a breakdown by sub-sector

The results

• Direct effects:	£46.5bn (C$74.4bn)
• Indirect effects:	£23.6bn (C$37.8bn)
• Multiplier effects (1.1):	£7bn (C$11bn)
• Total:	£76.7bn (C$122.7bn)
• Less 52% re-absorption:	£36.8 billion (C$58.9bn)

- Equivalent to 3 per cent of GDP
  - Almost the same as from welfare calculations
- And to c240,000 net jobs (0.8 per cent of workforce)

The Irish study

- A very different requirement
  - *What are our options?* (ComReg) rather than *What is the current spectrum value?* (Ofcom)
- Driven largely by analogue TV switch-off
- What have other countries done?
- What peculiarities must Ireland take into account?
- No spectrum valuation sought
- A broad study of limited depth
- But a political dimension in Ireland which was absent from the study for Ofcom
  - Final conference led by Minister and EU Commissioner

Distinctive issues for Ireland

- Importance of UK and EU channel harmonisation
  - A lot of TV comes from Northern Ireland and mainland UK (spillover or cabled)
- Small population, unevenly distributed
  - 4 million total, of which 1.5 million in Dublin
  - Average GDP per capita was then the highest in the EU
  - Dublin affluent and economically overheated…
  - …but many poor and thinly populated rural areas
  - Fairly flat topology helps wireless applications
- Tradition of political intervention in regulation
  - Incumbent broadcaster (RTÉ) wields a lot of clout
- High and rising pay-TV penetration (76 per cent)
  - But many viewers pay very little

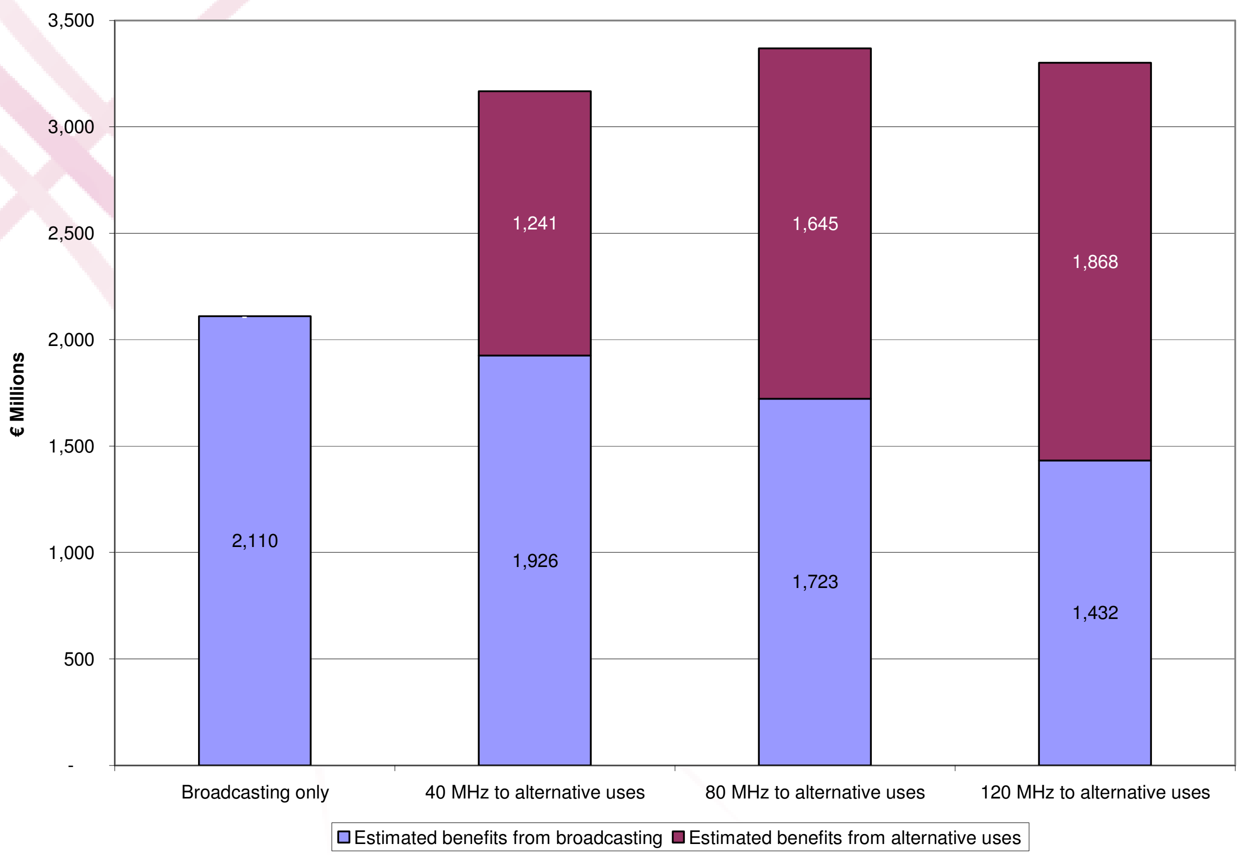
Review of other jurisdictions

- Five other EU: Finland, France, Italy, Sweden, UK
- Six non-EU: Australia, Canada, Japan, New Zealand, Switzerland, USA
- Switch-over dates range from 2007 to 2013 plus “don’t know”
- The big questions we looked at in each were:
  - How much spectrum is to be freed up?
  - What decisions made about re-allocation (especially between TV and mobile)?
  - If no decisions yet, what rules for spectrum reallocation?
- By implication, what value do governments place on different types of spectrum usage?

TV versus mobile

- In eight of the twelve jurisdictions there is a presumption in favour of, or there is benevolence towards, TV
  - Finland, France, Italy, UK, Canada (with qualifications), Switzerland (with qualifications), Japan, and Ireland itself (with qualifications)
- Generally not backed up by economic valuations
  - Our reading is that such decisions are based mainly on non-disruption to consumers and/or broadcasters
  - And broadcasters will fight to gain/retain spectrum for HD
- Some recognition that public and/or emergency services need more spectrum to improve quality
  - But nothing systematic
- Some recognition of needs of remote rural communities
  - But again nothing systematic

Some spectrum valuations for Ireland



Conclusions for Ireland

- Still some difficult decisions to take
  - Challenge broadcasters and mobile operators to specify what future services they envisage
  - Decide on the maximum amount of spectrum to be allowed to broadcasting
  - Enact legislation and regulation that would allow spectrum re-allocation
  - Decide whether to allow spectrum trading between spectrum holders
  - Mandate an innovation channel?

Economics doesn’t have all the answers

- Nothing wrong in principle with going for high economic value
  - Even though the valuations will be at best approximate
- But what about distributional effects?
  - Do we want to give special consideration to remote or rural communities?
- Should banal conversations on cell-phones take priority over TV shopping channels?
- Definitely one for the politicians!

Thank you!

bob.young@europe-economics.com

+44 207 831 4717