

Spectrum Policy: Markets and Regulation

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What is spectrum?

- ▶ Radio spectrum a finite but non-exhaustible resource
- ▶ We use spectrum every time we use a mobile phone; listen to a radio; use a remote control on a TV
- ▶ *"Spectrum is the raw material for industry; radio connects the information society"*

Technology stuff...

- ▶ Radio signals operate as number of cycles per second – 1 Hz
- ▶ Goes from 9 kHz (9,000Hz) all the way to 200 GHz (200,000,000,000)
- ▶ So the total range of spectrum is essentially a fixed band
- ▶ The band has got larger over time as technology has improved

How is spectrum used?

- ▶ Inherent public good problem: multiple operators using the same band of spectrum will interfere with each other
- ▶ These negative external effects will result in excessive entry and overcrowding
- ▶ Historical response was to assign exclusive bands for specific users and specific technologies

Allocation mechanism

- ▶ Spectrum allocation evolved historically – result was old technologies have lower frequency spectrum, while new technology has high frequency
- ▶ Is this an efficient way to allocate spectrum?

ComReg's role

- ▶ ComReg is the national body that allocates spectrum, which usually means granting a vast number of licenses
- ▶ In the last 3 years it has awarded nearly 8,000 licenses, in areas such as ship radio, fixed links, generally for low fees
- ▶ Reserves large amounts of spectrum for certain uses: emergency services; Gardai, military

Economic contribution of spectrum

- ▶ In 2003, total share of GDP arising from spectrum use nearly €2 billion, or 1.4% of GDP (up from 1.1% in 2002)
- ▶ About 24,000 jobs depend directly on spectrum use

	2002	2003
Mobile	569	834
Broadcasting	208	265
Air Services	498	600
Total	1520	1944

ComReg's strategy for spectrum

- ▶ Spectrum Management Strategy Statement recently released; www.comreg.ie Document 05/72
- ▶ 4 objectives: (a) facilitating access to spectrum; (b) maximising economic and social benefits of spectrum; (c) promoting efficient use of scarce spectrum resources; (d) ensuring compliance and avoiding harmful interference

What is best way to allocate spectrum?

- ▶ Traditional method of “command and control”: if spectrum allocated was given indefinitely plus only given for that use
- ▶ Did not allocate use to highest bidder- did not promote efficient use of resources
- ▶ Hugely important when innovation at such a high level

Problems with old system

- ▶ Regulator cannot predict what technologies will be most valuable: which new technology will be fitted to certain spectrum bands
- ▶ If we assign certain uses and get it wrong, spectrum may be a bottleneck: lack of access to it may inhibit innovation and growth
- ▶ Bias in favour of status quo, as incumbents attempt to protect their turf

Market Liberalisation

- ▶ 3 pronged approach:
- ▶ (A) Auctions to sell off spectrum to the highest bidder (advantages over “beauty pageants”)
- ▶ (B) Secondary trading of licenses
- ▶ (C) License not linked to a specific use

Liberalisation elsewhere

- ▶ Occurred in US in 1980s
- ▶ Starting to happen in UK – OFCOM aims to have 70% of spectrum available for secondary trading by 2010
- ▶ EU committed to it – estimates over €9 billion to be gained through increased competition and innovation

Problems?

- ▶ Will it negate social benefits of spectrum?
No: certain bands will still be reserved
- ▶ Will there be spectrum hoarding – one operator buying up all the valuable spectrum? (i) competition law exists to prevent this; (ii) licenses could be limited in duration to 10-15 years

An alternate approach: Commons

- ▶ Approach suggests spectrum should be open access: no license needed
- ▶ Argument that interference-prevention technology has improved sufficiently
- ▶ But technical problems with this, plus it may limit incentive to innovate
- ▶ Still, of great importance for the future

Conclusion

- ▶ Market liberalisation offers most logical way forward
- ▶ But a mix of approaches still: move towards liberalisation with some reserved areas for social purposes, plus some experimentation with the commons (license-free) approach

Epilogue: licensing of content

- ▶ ComReg licenses spectrum to BCI, which then gives out commercial licenses for radio stations
- ▶ BCI has public obligation to promote diversity
- ▶ But it seems there are relatively few commercial radio licenses – demand outstrips supply

Epilogue continued

- ▶ BCI does not limit license numbers, but obliged to take into account viability of license holder plus effect on existing license holders
- ▶ This not good!! Limits entry – commercial radio spectrum seems to have spare capacity
- ▶ Liberalisation would be a positive move – more likely to promote diversity when free entry