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Government Spectrum

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Market Mechanisms and the Efficient Use and Management of Scarce Spectrum Resources

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Abstract: Today, the Federal Government has assignments for about half of what is considered to be “beachfront” spectrum. However, most agree that Government agencies, and the Government as a whole, use and manage spectrum resources inefficiently. As such, much attention is now focused on improving the Federal Government’s efficiency in the use and management of its spectrum resources with the aim of freeing up spectrum which can be repurposed for the spectrum-constrained commercial sector. In this paper, we first tackle Government use and demonstrate that the “ghost market” approach to Administration-type management can enhance public sector efficiency in spectrum resource management. We then argue that market-based policy reforms can be used to provide incentives for the Government to better align its spectrum use with national priorities.
Spectrum Policy

• Commercial Sector Needs More Spectrum
• Where’s it going to come from?
• Who’s going to get it?
‘We need to be thinking about how we get a continuous supply of spectrum out there for commercial mobile wireless .... And, frankly, one of the key places to look is government spectrum.’

Charla Rath, Verizon
Federal agencies are assigned about half (1,687 MHz) of the “beachfront” spectrum between 225 MHz and 3.7 GHz.

PCAST Report (2012)
‘Federal users currently have no incentives to improve the efficiency with which they use their own spectrum allocation’

‘nor does the Federal system as a whole have the incentives to improve its efficiency’

‘a long history of failed attempts to implement significant reforms in Federal spectrum use’

1. Inefficient users
2. Inefficient managers (system as a whole)
3. Efforts to reform are failures
‘Requiring Federal agencies to purchase spectrum rights through a market mechanism would go a long way toward achieving transparency, accountability, and efficiency in Federal spectrum use.’

'desirable to move quickly to a market mechanism so that Federal uses reflect their true social resource cost'

1. Inefficient users
2. Inefficient managers (system as a whole)
3. Efforts to reform failures
4. Market mechanism is solution
‘traditional practice of clearing government-held spectrum of Federal users and auctioning it for commercial use is not sustainable’

PCAST Report (2012)
‘radically different model’
‘increased White House involvement’

Spectrum Management Team

National Security Staff

OMB

Nat’l Economic Council

NTIA

SSPSC

Spectrum Access System

Federal Spectrum Management System

DEPARTMENT OF DEFENSE

new “accounting, allocation, and incentive system”

new legislation

new and highly complex monitoring and pricing system

new regulation for receiver performance
‘today’s apparent shortage of spectrum [is the result of] assigning exclusive rights to use a specific frequency in a specific location ... into ever more finely divided exclusive frequency assignments. [By using the t]echnology innovations of recent years ... we can transform the availability of a precious national resource—spectrum—from scarcity to abundance.

‘The same will be true of agriculture, which also suffers from the pressure of private property and is held back by the division of privately owned land into small parcels. Here, existing improvements and scientific procedures will be put into practice, with a resulting leap forward which will assure to society all the products it needs. In this way, such an abundance of goods will be able to satisfy the needs of all its members.

Frederick Engels

The Principles of Communism (1847)
Policy Paper No. 46:  
Part I – Efficiency in Use

• Most studies on improving government efficiency call for agencies to pay “market prices” for their spectrum

• Problems
  – Not true market prices, so not true “efficiency”
  – Federal agencies do not maximize profits
  – Budget process matters

• PCAST – Spectrum Currency
  – Internal market will not reflect opportunity cost
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- General Equilibrium Model of Spectrum “Allocation”
  - Share held by Government for Public Services
  - Share leased by Govt to Private Sector
  - Share auctioned by Govt to Private Sector
- Government is Welfare Maximizer, but an inefficient manager of spectrum used for private goods
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Part II - Efficiency in Management

• Any proposal for spectrum reform that includes government leasing to the private sector should be presumed to have too little auctioning of exclusive licenses

• Government should manage as little spectrum as is necessary
Policy Paper No. 46:
Part II - Efficiency in Management

• Entity A excels at doing activity X
• Entity B stinks at doing activity X
• Who should do activity X?
• Entity A
• If the government “as a whole” has no incentive to efficiency, then it should not manage spectrum
‘we believe that the public interest would be better served if spectrum management in the United States made greater use of the “management” approach relied on so successfully throughout our economy to allocate resources and produce those goods and services most valued by consumers—the market system.’

‘... federal users could have a private contractor build and operate a “pooled” system using government spectrum to meet existing federal needs. As an incentive to operate most efficiently, the contractor could sell to the public any excess capacity on its system once federal needs were met as its first priority.’

Take Away

• Inefficient Use
• Inefficient Management
• The latter is more important