

What principles of governance does spectrum policy need?

By Professor Kevin Tsui

What lessons can be learned for spectrum policy from the management of other natural resources? Here, an expert on resource management says good governance depends on a transparent, rules-based approach that will minimise regulatory uncertainty. This stability is key to encouraging the necessary investment in networks.

Introduction

In the information age, spectrum has become an increasingly valuable resource and one vital to national interests.¹ The right to use vital national resources has been decided using a variety of approaches, including first-possession rules (granting ownership to whoever got there first), administrative assignments, lotteries and auctions organised by governments.²

The use of auctions to assign spectrum rights is a relatively recent method. Yet between 1994 and 2009 the US Government had realised \$53 billion from spectrum auctions. Unlike taxes, revenues from a well-designed auction (not one geared toward short-term government revenues) do not distort economic incentives. This is a big advantage – it is estimated that every tax dollar costs another 33 cents to society due to this distorting effect.³

A number of countries, such as India, South Africa and Ghana, will soon seek to use spectrum assignments to achieve a range of aims, including raising funds for the government. What lessons can be drawn for spectrum from the economic literature on the importance of institutions for development, especially in the management of natural resources?

Natural resources: curse or blessing?

The disappointing growth record and reported corruption in many resource-rich countries in Africa and Latin America has led many economists to describe natural resource abundance as a 'curse' for development. There is some evidence of a negative statistical relationship between natural resource dependence and economic growth. One possible reason is that resource booms relieve the pressure to drive other sources of wealth and growth, such as manufacturing activity, sometimes due to a higher exchange rate.⁴

Another possibility, which has been the focus of recent research, is that the exploitation of resources leads to rent-seeking and corruption, with damaging effects on the quality of government and political institutions.⁵

Yet natural resource wealth can sometimes improve economic growth and health outcomes.⁶ Natural resource abundance need not be a curse, but the economic and social benefits will depend on the quality of institutions, such as government accountability in handling money, property rights protection and contract enforcement. To benefit fully from the revenues from natural resources, corruption, boom-bust cycles in commodity prices and volatility in government spending and debt all need to be addressed.⁷

Managing revenues from spectrum assignment

An important lesson from the 'resource curse' literature is therefore that institutions and government policies can help ensure society achieves the full potential of natural resource abundance. How can this be achieved in the specific context of wireless spectrum?

Corruption

To get the maximum possible benefit to society from this resource, well-defined spectrum rights need to be established. Non-price mechanisms, such as administrative assignments, lack transparency, can undermine competition and can be more vulnerable to corruption and favouritism. The use of auctions instead to assign spectrum is particularly desirable in emerging markets that have poor governance and weak institutions. To ensure the most efficient assignment of the spectrum, as well as to limit potential corruption and favouritism, spectrum auctions should be open to all players in the industry.



Spectrum auctions should also be designed in ways that reduce the risk of corruption. According to auction theory, a sealed-bid design is less susceptible to collusion among bidders. However, open bidding is generally better than a single sealed bid because the bidding process reveals information about other bidders' valuations and hence promotes the efficient assignment of licences. In emerging markets with weak governance, an additional benefit of non-discriminatory open bidding is that it increases transparency and is less vulnerable to corruption. Furthermore, independent third-party auction managers can help by monitoring all aspects of the process.

Political risk

It is also crucial for emerging markets to create a credible and stable regime for private investment to exploit any natural resources. It is hard for private investors to take on a government in the courts if it alters the terms of a contract. Yet although a host country can get an immediate benefit from adverse renegotiation of licences, it will pay the price long term. A central and persistent problem in encouraging investment to exploit natural resources in countries with weak institutions is, therefore, to provide a legal framework that seeks to reduce political risk and retrospective actions. While there is little a country can do in the short term to reduce perceptions of political risk, companies' fear of expropriation can be sometimes be mitigated through the structure of the contract terms.

In the case of oil, for example, emerging markets need multinational corporations to discover and develop the oil. Heavy reliance on royalties or production-sharing is therefore common because these payments are not due until after revenues have been received by the oil companies. In India, all spectrum holders are required to pay a spectrum usage charge as a percentage of revenue but for those who acquired 3G spectrum by auction, this was levied in addition to the up-front spectrum acquisition fees. In India, the process for allocating spectrum has changed frequently (see page 24), but in order to continue attracting investment, a host country needs policy stability with no ex post changes in order to establish a reputation for not expropriating private investments.

Volatility of government revenues

Greater volatility in government spending is clearly linked to lower growth.⁸ The 'curse' of natural resources is first and foremost a problem of volatility.⁹ Unlike commodities, spectrum is not traded in world markets, so volatility ought not to be a problem, and yet FCC spectrum auctions have resulted in highly volatile government revenues in the US.¹⁰

What can be done to manage the revenues from spectrum auctions? In many resource-dependent countries, natural resource funds are used to help smooth government spending. The volatility of spending has been greater in countries

with weak political checks and balances.¹¹ The weaker the governance, the stronger the scope and incentive for one political constituency to use windfall revenues as soon as they come in. This can be limited if the fund has rules about how it can be spent, if decisions on spending can be shared by different political groups and if there is greater transparency.

Finally, good auction design can also help. What does that involve? The timing of an auction can be as much a political choice as an economic one, because there is a conflict between raising the maximum government revenue in the short run and creating the maximum benefit for the economy in the long run. For instance, in the US a spectrum drought for the decade 1996–2005 was caused by a political calculation that a delay would increase auction revenues.¹²

In general, the timing of auctions can also be subject to the influence of electoral cycles. Running auctions sequentially may produce a steadier flow of auction revenues over time. Arrangements for profit or revenue sharing with winning bidders can also result in a less volatile contribution to government revenues than auctions with a one-time payment.¹³

Concluding remarks

Spectrum can be a useful development resource when spectrum rights are assigned appropriately. Lessons from countries with abundant natural resources suggest that resource rents can be all too easily dissipated through corruption and a volatility in government spending that hinders growth.

To exploit the full potential of rents from spectrum, institutions that support good governance are key. Good governance is based on rules rather than discretion. Informal processes, such as negotiation on a first-come-first-serve basis, and other formal administrative processes, lack transparency and are vulnerable to favouritism, corruption or simple mistakes. Auctions provide a transparent and fair means of awarding spectrum licences. However, they must create a stable environment for investment. Auction rules intended to increase short-term government revenues by limiting spectrum access, either by restricting participation of some potential bidders, delaying new licence sales, or other restrictions, will harm social welfare from a long-term perspective. The design of auctions can limit this damaging volatility.

Notes

- 1 Patrick S. Ryan 'Treating the Wireless Spectrum as a Natural Resource.' *Environmental Law Reporter*. 35, September 2005: 10620-10629.
- 2 Gary D. Libecap 'Assigning Property Rights in the Common Pool: Implications of the Prevalence of First-Possession Rules for ITQs in Fisheries.' *Marine Resource Economics*. 22(4), 2007: 407-423.
- 3 Thomas W. Hazlett and Roberto E. Muñoz. 'A Welfare Analysis of Spectrum Allocation Policies.' *RAND Journal of Economics*. 40(3), Autumn 2009: 424-454.
- 4 Jeffery D. Sachs and Andrew Warner. 'The Big Push, Natural Resource Booms and Growth.' *Journal of Development Economics*. 59(1), June 1999: 43-76.
- 5 Halvor S. Mehlum, Karl Moene, and Ragnar Torvik. 'Institutions and the Resource Curse.' *Economic Journal*. 116, January 2006: 1-20.
- 6 See Anca M. Cotet and Kevin K. Tsui. 'Oil, Growth, and Health: What Does the Cross-Country Evidence Really Show?' *Scandinavian Journal of Economics*. ISS(4) October 2013, 1107-1137. See also Frederick van der Ploeg 'Natural Resources: Curse or Blessing?' *Journal of Economic Literature*. 49(2), June 2011: 366-420, for a recent survey.
- 7 See Mehlum, Moene, and Torvik, (2006), van der Ploeg and Poelhekke, 2009), and Manzano, Osmel and Roberto Rigobon. 'Resource Curse or Debt Overhang?' in Daniel Lederman and William F. Maloney (eds.) *Natural Resources and Development: Are They a Curse? Are They Destiny?* Stanford University Press, 2003.
- 8 Ramey, Garey & Valerie A. Ramey. 'Cross-Country Evidence on the Link between Volatility and Growth.' *American Economic Review*. 85(5), December 1995: 1138-1151.
- 9 Frederick van der Ploeg and Steven Poelhekke 'Volatility and the Natural Resource Curse.' *Oxford Economic Papers*. 61(4), October 2009: 727-760.
- 10 See Thomas W. Hazlett 'U.S. Wireless License Auctions: 1994-2009.' ACCC Conference, Brisbane, Australia. July 1, 2009.
- 11 Macartan Humphreys and Martin Sandbu. 'The Political Economy of Natural Resource Funds.' in Macartan Humphreys, Jeffrey Sachs, and Joseph Stiglitz (ed.), *Escaping the Resource Curse*. Columbia University Press, 2007.
- 12 See Hazlett (2009), *ibid*.
- 13 Jean-Jacques Laffont and Jean Tirole. 'Auctioning Incentive Contracts.' *Journal of Political Economy*. 95(5), October 1987: 921-37 explains how auctioneers can also profit from contracting a cost-sharing arrangement with the winning bidder in procurement auctions.