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Inching Toward Wireless Capitalism

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In the late 1980s in the U.S., a former telecom regulator bought licenses authorizing analog wireless dispatch service to taxis and pizza-delivery vehicles. He then obtained permission to digitize services and to use the extra capacity thereby created (several digital calls can be crammed into the space of one analog call) to offer cell-phone service. The firm, Nextel, now serves over 12 million subscribers, one of six nationwide American carriers.

Nextel's alchemy, weaving taxi-dispatch licenses into a mobile phone network, wrought a magical improvement in customer choice. Sadly, this is the exception; this sort of repurposing is typically thwarted by spectrum regulations that micro-manage markets. Traditionally, regulators -- strongly backed by incumbent operators -- deny requests to use spectrum allocated for one purpose to be deployed for anything else.

A major European Commission report due out this spring will sketch policies to allow frequency trading, a once-revolutionary idea now elevated to conventional wisdom. This reform may succeed in allowing wireless competitors to use bandwidth where and how it is most valuable to customers, unleashing innovative technologies.

Secondary markets have long existed for wireless licenses, but these trades change operators rather than spectrum use. Technologies, services and business models have been fixed, with bureaucrats mapping out entire markets decades into the future.

Not surprisingly, many bands lie virtually silent, even as entrepreneurs ache to gain spectrum for new applications. Wireless broadband is blocked, for example, from utilizing the TV band, even as broadcast signals could be delivered using a small fraction of allotted airspace.

When an innovator seeks to launch a new wireless service, its first task is to convince regulators to allocate spectrum to the project. This takes years, and the process is a playground for rivals, who are able to drag out requests simply by raising questions. This hurdle slows entrepreneurs from leaping into markets, and undermines the incentives of investors to fund those brave enough to try.

Moreover, given tight regulatory control of spectrum, licensees bear no cost for underutilizing this valuable resource. Consider the case of Wireless Imaginary Networks for Knowledge (WINK), a hypothetical wireless operator (and license holder). Suppose WINK had the opportunity to switch its network from wireless to fiber-optic links thus freeing up the wireless spectrum it holds. Switching to fiber optic would cost €100,000 per year, but there is a wireless phone operator who would gladly pay €500,000 per year for the spectrum allotted to WINK. With rigid license rules, a productive redeployment is squandered. Give WINK a right to resell or lease its licensed spectrum, however, and new bandwidth is created out of thin air. Hoarding the spectrum, which cost WINK nothing without flexible rights, is now expensive. The firm gains a profit of €400,000 if, and only if, it makes its frequencies available to where they satisfy the most intense demand.

This is the promise of secondary markets for bandwidth, which could sprinkle ownership incentives throughout the wireless sector. Several countries, including Germany, Belgium and Austria, have begun implementing their own rules. The U.K. government has passed enabling legislation, having embraced economist Martin Cave's 2002 plan to move "to a full market approach, based on trading across all frequencies." Now the commission will recommend a reform path of its own. Opportunities for new efficiencies abound. But the regulatory path must wind through administrative quicksand guarded by

bureaucrats reinforced by incumbents. Here are three major policy priorities:

• Flexibility first. Reforms should enable users to slice up licenses and then trade the parts, but the big bang will come from allowing spectrum to be used differently, without obtaining regulatory approval, and not merely sold or leased. Some restrictions will prove difficult to eliminate, including regulations mandating the Nokia-Ericsson favored GSM standard for wireless phones. The "harmonization" argument is already being invoked to leave central planning intact. But the case for common standards -- to create industrywide economies of scale -- only stretches to voluntary coordination. Should competitive networks elect to sing their own tune, forgoing economies of scale, it is a good sign that competing standards offer something valuable.

• Abundant spectrum. The most powerful emerging technologies need to achieve critical mass. Spectrum deals must be quick and easy to negotiate, and entrepreneurs must have access to lots of bandwidth. A discouraging precedent has been set in the United States, where regulators recently issued secondary-market rules that took four years to craft, and exempted the entire TV band -- lush frequencies ripe for redeployment. Overallocation to one-way TV broadcasting is choking the formation of interactive networks with far higher pay-offs.

• Competition -- or government -- as regulator? Advocates of unlicensed spectrum often seek to limit property rights. Yet, where licensees exercise control over spectrum, profit incentives drive widespread sharing and operator-led technological innovation -- as seen in the very productive "commons" created in the relatively flexible confines of wireless phone licenses. There, millions of users share access to spectrum, as coordinated by network owners, who invest billions to optimize the complex mesh of base stations, mobile handsets, wireless applications, power sources and frequency space.

There are also concerns over hoarding, the possibility that incumbent licensees will buy up rights to deny entrants the right to compete. The irony is that regulators today perform this service for incumbents free of charge. Standard competition policy is one remedy to limit "preclusionary values" in secondary markets, but the more targeted attack is via liberal spectrum allocations. Only when entrants have few choices does the incumbent benefit from buying spectrum and sitting on it; in a marketplace flush with competing bands, innovative entrepreneurs find many roads to the customer. A study by two top U.S. Federal Communications Commission officials in 2002 found that a vast amount of prime spectrum -- more than twice the amount now used by all U.S. mobile phone providers -- could be diverted to new uses while leaving existing services undisturbed. This chance exists in virtually every advanced economy.

Except Australia. There, a sweeping 1990s liberalization defined frequency parcels without fixing services or constraining technology. Markets determine what wireless applications are delivered and how, making access to customers cheap and efficient. With impediments to a secondary market in spectrum removed, it is revealing that the Aussies have already seen an organized bandwidth exchange, by Macquerie Bank, come and go. It failed, says a recent report for the New Zealand government, because it "was poorly constructed." Perhaps. But the availability of flexible rights in the primary market, and the freedom to conduct discrete transactions, may simply obviate the role of a formal spot market.

That would be a healthy outcome. Liberal spectrum rights -- not organized exchanges -- are key to allowing the spectrum resource to host new wireless applications that entrepreneurs yearn to offer and consumers would love to crave.

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About Thomas Hazlett: articles, bio, and photo