

Testimony on Radio Spectrum
Allocations and Valuation
Before the U.S. Senate
Committee on Commerce,
Science, and Transportation

by Eli M. Noam

Do not quote without the permission of the author.
©1995 Columbia Institute for Tele-Information

Columbia Institute for Tele-Information
Graduate School of Business
Columbia University
809 Uris Hall
New York, NY 10027
(212)854-4222

**Testimony on Radio Spectrum Allocations and Valuation before the
U.S. Senate Committee on Commerce, Science, and Transportation**

July 27, 1995

Eli M. Noam

Professor of Finance and Economics

Director, Columbia Institute for Tele-Information

809 Uris Hall

Columbia University, Graduate School of Business

tel. 212-854-4222

fax. 212-932-7816

e-mail: enoam@research.gsb.columbia.edu

Chairman Pressler, Senator Hollings, Members of the Commerce Committee: Thank you for the opportunity to appear before you this morning.

I'll address two major issues here: spectrum auctioning, and flexibility.

Spectrum auctions have moved from a fringe idea to become the dominant orthodoxy.

They are good approaches, but they are being oversold as the silver bullet. This they are not, because as they solve old problems, they also create new ones. It's important that you understand this.

My own conclusion is that our present auction system is not the best way to go, though I know all the ritualistic counter-arguments: an auction is better than a mindless lottery, or than a politicized comparative hearing. Auctions get spectrum resources quickly into the hands of users. And it's better to hold a public auction rather than the already existing private one.

But all these reasons are secondary to the desire to raise cash, quick, for the government.

Our goal is to advance the national communications infrastructure. There seems to be a widespread agreement that this should be done without government money. But we are now actually doing the opposite of making public investments. We are taking money out of the infrastructure, and we call it auctions, and we throw it into the black hole of the budget deficit

to cover entitlements, defense, everything except communications. For decades America's telecommunications system was superior to that of other countries, often because the latter used telecommunications as a cash-cow for general government expenses. Now we have embarked on the same road, just as other countries have left it at our urging.

Budget policy is the driver for the auction system. But is it good telecom policy?

An auction is a tax, a tax on future usage of an advanced technology. It retards the spread of applications. It is a barrier to entry. It's a double hit on consumers: first, as a tax on new entrants that will be passed on, and second, because it will leave the market price higher than otherwise, it will lead to less of a competitive price reduction in the incumbent service.

It's important to recognize that the highest bidders in an auction will likely be those who will be able to organize an oligopoly. This is done, first, by bidding "consortia" of companies that would otherwise be each other's natural competitors. Second, after the auction, the bidders will, after some shake-out period, collaborate through some parallels or in action.

The auction is only the beginning of ongoing headaches because the market structure in mobile and other spectrum uses will tend to become oligopolistic. It will be so because potential oligopolists can bid higher. Therefore, an auction will require continued

government intervention. The alternative is open entry at any time, and this is what is what I am proposing.

Yes, we can deal with this through antitrust law. But that brings government right back, through its role in prosecution, adjudication, and enforcement. Thus, in no way does an auction get government out of communications.

Even within the goal of raising revenue maximization, the auction is not necessarily the best way to go. If one is unable to predict future circumstances, which is the case with PCS, the buyers will underbid. Thus, the auction system results in prices that are too expensive in the short term, because the bid price has to be tendered initially, but too low in the long term, because the bid will be too low.

The FCC's auction -- it's really a license auction and not a spectrum auction -- has been innovative and reasonably speedy as government goes, and Chairman Hundt and his staff deserves credit. But the revenues raise tend to get exaggerated. Any anchor receipts must be offset against reduced tax receipts in the future, because license payments can be depreciated against corporate income, and are likely to reduce dividends. Under quite reasonable assumptions, for each 1\$ of anchor revenue, tax revenue is reduced by about -

And where is this going to end?

Budget pressures, not diamonds, are forever. There is never enough money. This creates expectations for more auctions, especially ones of the up-front cash rather than pay-as-you-go type. It's one thing to sell assets for use in investment. But this a situation of pure consumption.

Domestically, everybody will get into auctions, because everybody needs money. Local governments will start auctioning off cable licenses, but not to the first cable franchise, where renewal is protected, only to its competitors.

Also, American firms will pay dearly for this auction system abroad. There will be auctions everywhere, in any country chasing hard currency, and our companies will do a major part of the paying. The ITU will also get into auctions for spectrum and orbital allocations. After all, the US government's ability to sell auction is often derivative to an earlier allocation by some international agreement. Such auctions will give international organizations an independent source of income. Then, there will inevitably be preferences for all kinds of countries, with the concept of preferences the small businesses carried to small and poor countries.

It can be argued that at least the auctions put a foreign government's decision process into the open, away from influence peddling and corruption. This might be true in some cases, but the opposite to liberalization is just as likely. A revenue-starved country is likely to sell off a monopoly licenses, because if it will fetch the highest bid price. And the non-political nature of the auction can be easily undermined by various preference for local roots.

The alternative is not to return to the wasteful lotteries or comparative hearings systems of the past, but to take a further step forward, to full openness of entry. There is a free-market alternative to the present auction system: I call it the *open entry clearinghouse system*. In this system anyone can enter.

Instead of the fee - simple - absolute, real-estate model, property rights can be much finer sliced. Anybody could enter. Large, small, white, black, male, female, American, foreigner. There is no license, and no up-front spectrum auction.

If there are multiple entrants and congestion happens, a coordination of users is necessary. This would be accomplished by a clearinghouse of users. A user of congested spectrum must get the right of use by the clearinghouse by a bidding process. Think of it as an exchange. In practical terms, it would be a computer that clears markets in allocations. These congestion fee payments would then be government revenues.

This system converts fixed costs of entry into marginal costs of usage. It therefore has a major stabilizing function because marginal costs are otherwise so low as to fail to cover total cost, and hence encourage collusive pricing.

Are "fee simple absolute" property rights important? Sure, without secure long-term tenure, there may be under-investment. On the other hand, greater competition spurs investments. One needs to balance certainty with contestability. Uncertainty exists in every business. One can

never control every input. Where certainty is considered necessary, future markets for capacity will evolve to reduce risk. Congestion charges are in effect only the spot auctions for capacity.

Could an auction winner administer such a system itself? If it had market power in spectrum, it would charge spectrum users high prices, price discriminate, and appropriate the efficiencies of rivals. It is like letting the old AT&T auction the right to compete against it. Would MCI have emerged? Where no market power exists, a spectrum owner could not charge such prices, given the small number of licenses issued, the history of concentration in this industry, and of oligopoly, a competitive system might not be easily achievable, at least not without much government interventions. Such intervention could be by regulation or by antitrust, which some people consider morally purer than regulation, despite its sledgehammer style. They seem to have forgotten the deep political and campaign involvements of the Justice Department and the antitrust division.

This leaves a final question: is the clearinghouse idea practical? Once you think of it as a computer that is clearing spectrum bids for a given capacity endowment (in the short term), it's not that complicated. And remember, the spectrum auction we just finished took more than three months and 111 rounds to conclude, so it's hard to consider it very simple, either. And that is by no means the end of the road. Technologically, the proposed system does not require a packet-based technology to work, though packets or cells could be tagged with a reservation price, making the proposed system technically easier.

Does this new system mean more or less government intrusion? I think less. The government's role is only an initial endowment (the same function as in an auction), the requirement to clear through a clearinghouse, and assuring that every new spectrum service provider can join the clearinghouse.

On flexibility: Full spectrum flexibility sounds good, but like every quick fix it's also got a down-side. My conclusion is that there is no need for a one-size-fits-all approach. So let me advocate flexible flexibility. Think of it like zoning in real estate.

Different approaches are appropriate for different zones. I have three transceivers here, and I could transmit on each of them. The first is for aviation use in air traffic. Simply by using it now I could disrupt and endanger air traffic. Therefore, users should be tightly regulated and given very little inflexibility. The second handset is an amateur radio. Here, we want to encourage flexibility in technical experimentation and public service, but not in the non-profit status, just like for a public park. Central park: no flexibility. need protection against short term selling off of assets. frankly, need protection against congress. And the third is a cellular phone, provided commercially by private competitors, and the arguments for flexibility are much stronger, especially if the license was paid for.

Flexibility means supplier choice. But market prices do not necessarily reflect all social value, because social value, to economists, also includes consumer surplus. For broadcasting, the surplus of social over private value has been estimated to be 7x as high as market price (Noll,

McGowan, and Peck). A 1992 FCC study found that one UHF station, 1 bil net gain.

[EN check and expand]

Flexibility makes most sense for new commercial spectrum bands. But flexibility would be a major windfall for existing services and bands, and skew competition in their favor.

Let's also think what full flexibility means, and we quickly realize that any flexibility will have its limits unless we totally deregulate today, not tomorrow, all communications, including interconnection, common carriage, universal service, and ----- . Why? Because truly full flexibility means that a service provider could simply opt out of most rules by creating a do-it-yourself service category. So we'll have new-type without public-interest, new-type mobile companies without common carriage, and new-type phone companies without interconnection and universal service. Is Congress ready for this now? More likely is that

The pluses and minuses of flexibility are similar to those of zoning. If "anything goes" on every band, you'll have some negative spillovers. The idea that a newcomer would hold the existing users harmless of every last technical impact is simply not realistic. Different services have different balances of transmitter and receiver complexity. A broadcast signal in the midst of low-power 2-way mobile phones could impose a greater equipment cost on the mobile users, and probably also on broadcast viewers, whose signal purity would need greater protection. Single-band equipment tends therefore to be simpler and therefore cheaper. Markets could handle many such clusterings, but there could be significant transaction costs in dealing with hold-outs.

Thus, it would be naive to expect government to fade away with flexibility. The opposite is more likely. There will be a substantial enforcement effort necessary to patrol the laissez-faire ether in order to keep the users apart in terms of frequency, space, and orthogonality.

Nor is it obvious that the highest bidder always is the best for the long term, because of position network externalities, that is, if each additional user benefits the other users. In such a situation, a new service without the critical mass of a subscriber base would be elbowed out by an established service, unless it had access to very patient capital. But allocating some spectrum in that direction, we are giving ourselves the option to support worthwhile infant industries, sometimes in order to create competitive ----- to existing market power. It's certainly a better way to deal with cable TV instead of direct price regulation.

Therefore, you should approach this in a pragmatic manner. Flexibility and auctions solve many problems but they also create new ones. There is no sense in making this into a theological question. And you shouldn't abdicate your responsibility in allocating spectrum resources toward uses that in your collective judgement are in the public interest, or to cluster them where technology so dictates. In other segments, let the market loose. Yes, this invisible resource needs more of the invisible hand. [But...]