
PLENARY SESSION 1

Comments and discussion

Frank Wolak (Stanford University)

One of the questions I was hoping you would expand upon is the endogenising of market structure in the sense of how that happens — do we go from having a single firm to multiple firms supplying this obligation? What happens in terms of the bids and things?

Paul Milgrom (Stanford University)

What happens in the auction is that the bids are made. The bids in this specific proposal we made are two part bids that express what your minimum subsidy requirement would be if you were the sole supplier in America and if you were one of two suppliers in America. If the cost penalty for having two suppliers in the market is sufficiently small, where we have criteria which are adjustable criteria for determining what is sufficiently small means, then the auction establishes that there are two suppliers in the market. If one of the suppliers in the market is the incumbent carrier that incumbent continues to provide service and the other winner has a transition period during which it is allowed to enter and begin providing service, at the end of which it has to be offering a service to anyone who requests it in the relevant area.

If the incumbent is not one of the winners there are alternative transition arrangements that are specified. You want to make sure, as in any procurement auction, before you finally accept the bids that the carrier is qualified to provide the service so there is a transition, there is a checking of qualifications that occurs. A lot of this is affected by United States law and regulatory policy. The 1996 *Telecommunications Act* specifies that any eligible telecommunications carrier can become a carrier of last resort and it says what that is.

The qualifications there specified are insufficient to be sure that they are actually able to provide the service, so we have been forced to structure the transition around the law to make sure that bidders who are supposed to be eligible to bid are allowed to bid, and yet to ensure that after the option is over those who are undertaking obligations are actually capable of fulfilling those obligations.

Joshua Gans (Melbourne Business School)

Every second microeconomic reform issue in Australia, the goal of which is to eliminate some form of cross subsidisation that might have occurred in a previously public owned industry or something like that, a lot of that had to do with coverage, as you mentioned here, but there are other stickier things that could be concerns. For instance, in telecommunications there is a debate about timed versus untimed local phone calls. Where in Australia the concern is about, in the year of deregulated competition, that sort of service, which is often argued and supported by social objectives for simplicity and other things, and concern about complexity and what have you, might be something that the government might wish to encourage a provider, maybe its own publicly-owned provider, to supply. Could we think of extending options for those sorts of subsidies, as well as cross subsidisation issues, or constraints on pricing that the government might want at least one operator to offer?

Paul Milgrom

There are some hard issues here that are not inherently auction issues. They are issues of determining values. Let me just draw a connection between some of the issues you were talking about in the universal service issue. In describing what constitutes the basic service that these guys are going to provide, there is a question about should we be charging for minutes of use. If simply providing access to the network is what is required and a relatively small number of minutes of use are included in the basic service definition, then competition from wireless carriers becomes a serious option in a lot of these areas. Typically one of the more expensive parts of wireless service is the charge for air time whereas typically that is not the case for wireline service. Depending on how those definitions are set you can encourage entry or not. In the context we have been looking at here, those are part of the decisions that the regulators are making.

Could we set those things by auction? Somebody has to be representing the public in determining where the values lie to the consumers here, and I think that is really the regulator's role in specifying these basic service packages — deciding where the value lies, what exactly is it that we are trying to procure and what constitutes a satisfactory basic service offering. So I don't think that auctions can be used to answer the question of what is most valuable for customers when we are talking about technologically imperfect substitutes where they can't all be offered at the same time, and letting the customers must choose for themselves in the market.

Question

But it might be a way of pricing a regulatory auction. That is, if you have a political constraint for some other non-economic reason to do something that is what universal service obligation might be. It might be a way of working out or helping the process generating the cost benefit analysis at the time.

Paul Milgrom

Yes, I agree with that.

Question

The question in my mind is that I detect a similarity in the revelation principle you have here with the so-called Groves Clark / Clark Groves mechanism which is conventionally applied to the pricing of public goods. Am I correct or I am missing it?

Paul Milgrom

No, I passed over some slides of what I would call the Vickrey Groves mechanism because all three of those contributions were related. In fact, among the former slides that I passed over included a Vickrey Groves Clark implementation of this. So, yes, there is a close connection.

Question

So basically, in general you are saying that any mechanism that makes it in such a way that what you pay doesn't depend on what you reveal about yourself would work?

Paul Milgrom

No. You are asking the technical question— that has to do with dominant strategy implementation. The Vickrey Groves Clark analysis was not about that, it was about implementing something in particular, some outcome in particular. The revelation principle is a principle that says that if you find any mechanism that implements, using this notion of implementation, this Bass Nash equilibrium notion of implementation, any mechanism at all that implements any outcome at all, then there is a direct revelation mechanism that also implements that outcome.

Consequently, when you do your optimisation you don't have to search over all possible kinds of rules, you can search only over direct revelation rules. That makes it possible. This is Myerson's big contribution. It makes it possible to formulate and solve the problem of what is the optimum mechanism. The set of all possible rules is way too big a set for us to write down and search over. But the set of revelation mechanisms is not too big a set and the fact that the best you can do with one of the revelation mechanisms is the best you can do with any mechanism makes it possible to write down mathematically and solve the problem of what is the optimal auction in this context.

Losantha Perera (Eastern Energy Ltd)

I want to make a clarification and then a question. The clarification is in terms of when you are dropping off subsidiary requirement, is it because that in the auction design process you're looking at it from the public benefit point of view and as such you expect that there is now a government-funded subsidiary going into the provision of that service, and that is where you are talking of a subsidiary requirement? Because there may be instances of auctions which does not require a public benefit coming in, or rather a government subsidy. For example, electricity companies were self funded and therefore didn't have something coming from the Government as such, and that's the whole situation.

In that sort of context when you talk of new benefits to the customers as part of the valuation model that you have, is it also meaning that because the auction bidders are able to think of new uses of that electricity, or whatever their business is, so therefore they can generate new production, give more new service to the customer, so that there is a benefit to the customer coming there? But does it also involve the customer relocating his resources to that particular substance that is being used?

For example, if you take a very stark example of a casino and where you can have the customer giving that resources to the casino which would otherwise have gone to may be buying the milk or something. Now, in that sort of situation would that be also brought into the model, or can you bring it into the model to say the depreciation of that resource going from one to the other would mean that there would be harm done to the public benefit? Is that a plausible thing to be taken up in your model?

Paul Milgrom

There were two questions. The first one was why there had to be subsidies at all in the context and the second one concerned the responses of where these benefits came from.

Regarding the first question, what is going on in the United States is, on account of the telephone deregulation, we are anticipating increased competition in providing a local telephone service. So we anticipate that in those areas where profits are relatively high and those areas where at what is specified to be the affordable price, let us say \$15 a month is taken to be the affordable price, where the costs are significantly lower than that we expect those prices to be driven down by competition.

Right now the subsidies to the high cost areas are being provided for implicitly by profits earned in the low cost areas. The Government wishes to maintain service in the high cost areas. Somehow or other we are going to have to be paying for these extra costs that are incurred in the high cost areas. The question is where is that money going to come from? And the answer that provided by the *Telecommunications Act* is by explicit subsidies for firms that undertake these carrier of last resort obligations.

Where are these explicit subsidies going to come from? They are going to come from some kind of telecommunication surcharge and those surcharges are going to create costly distortions in the market. How are we going to keep those surcharges low? Who should the suppliers be? The auction is designed to allow us to answer those questions using a market-type mechanism without the need for extensive regulatory intervention. That is what is going on there.

In terms of the consumer benefits, I did not model the consumer benefits in any detail. I simply assumed for the purposes of the auction design that consumers benefit from competition. If there is a larger set of suppliers consumers get some benefit from that. I had in mind that if there are a larger set of suppliers, typically either there would be innovations or there would be more variety and service. If there is a wireline provider and also a wireless provider you may have more options as a customer to add mobility to your basic service or to add cable television offerings to your basic service. Generally, I have simply assumed in my benefits specification that the more competition or wider set of providers benefits consumers.

Could we take into account other sorts of affects of the kind you have described? Again, I have used a reduced form in modelling the benefits. You may disagree with me about what the nature of these benefits are and if you do you would reach different conclusions about the form of the optimal auction. But I have not tried to be explicit at all about substitution away from socially

valued services into less valued services. I have taken as an input into this model consumer benefit function where consumers benefit from more variety and more competition and they benefit from lower costs and I have not done any more detailed analysis than that of consumer benefits.

Chris Pritchard (South Australian Office of Energy Policy)

This is a simple question. Essential services or essential use — is that catered for by reserving certain capacity before the auction or is it just a question of bidding high?

Ian Hayne (Australian Communications Authority)

We can do that. The preferred way of approaching it from a theoretical perspective would be to have the bid in an open auction and top them up from the public purse. But there are obviously some very sensitive political issues there and people in those sorts of utility industries tend not to think in those terms. They tend to see themselves as a public good and they therefore, or at least in their discussions with me, tend to say that we should be exempt from auctioning because we are a public good. From my point of view, I am interested in the spectre of efficiency, and these sorts of techniques can be used against the spectre of efficiency and I would argue that those emergency services especially need to up their act in terms of efficiency anyway. So, I don't know.

It is a long way to go in that front and I think we will continue to use the traditional apparatus licensing approach for some time yet to deal with emergency services and those sorts of things. Ideally, their transitional property rights regime will give them much better certainty and much better flexibility to deploy that resource themselves. They have just got to have a bit of education.

Michael Cunningham (Queensland Treasury)

A slightly related question. You said that your objective was to put the spectrum into the hands of those who value it most — the same as the SEC's objective. I believe that the Minister announced last night that in the telephone spectrum you will not be able to bid for the whole spectrum, but only a portion of it.

Ian Hayne

There are bidding caps imposed in the ...(indistinct)...

Michael Cunningham

What is the rationale for that?

Ian Hayne

They are quite competitive bidding caps. They reflect that the current industry is dominated by one former monopoly carrier and we are in transition through a regulated duopoly to a liberated market. That is the rationale.

Jerome Fahrner (Allen Consulting Group)

You said you only had a thin market for the 500 MHz auction. Could you tell us how many bidders you did have and, if you know, what does the experimental economics literature say about how many bidders you need for this kind of auction before you get something approaching an efficient outcome?

Ian Hayne

Part A — 13. Part B — I think I'd prefer to defer to Paul on that — that is, the literature's view of thin market problems.

Paul Milgrom

You are asking about experiments. They had 13 bidders, 12 of whom ended up winning some licences. The issue is, is that enough to be competitive? That also depends on how many licences were being sold. There were quite a large number of licences being sold here which means that probably it was in the interest of some bidders to withhold some demand to keep the prices lower, and that leads to less efficiency, theoretically. There aren't very many experimental auctions that have been of this size that — there is not relevant experimental evidence on the specific question that you asked.

Losantha Perera

What is the drive time of ...(indistinct)...

Ian Hayne

The 500 MHz was ten years fixed term non-renewable and the PCS spectrum auction will be 15 year fixed term non-renewable. At the end of 15 years we have another auction. My team gets to ride again.