"Optimal Queue Design"
Yeon-Koo Che (Columbia) and Olivier Tercieux (PSE)

Audience Q&A

1) Q Elliot Lipnowski: Agents are large/discrete?

A Yeon-Koo Che: finite

Lipnowski: Cool, thanks.

Che: or discrete (since it can be infinite)

Lipnowski: Is the Markovian property (that agents' treatment depend only on their place in line and the length of the line) without loss, or should I think of it as an assumption that supports the "queue" interpretation? One could imagine that, for incentive reasons, they way I would want to treat agents currently in line would depend on the arrival history.

2) Q Caroline Thomas: Do agents know calendar time?

A Yeon-Koo Che: For x and y, we need Markovian structure since we focus on steady state (at invariant distr). This also answers Caroline, since the outcome/recommendation will not depend on calendar time.

For q and I, we do not need Markovian structure since we exhibit an optimal policy that is Markovian

Thomas: Thanks!

Che: To Caroline: you are right. No info unless given. Think of call centers.

3) Q Nick Arnosti: All agents have identical V and C, right?

A Yeon-Koo Che: Yes, in fact most binding with full info. Meaning that most difficult to motivating joining in case of full info

4) Q Teddy Mekonnen: Do dynamic ICs matter if agents have full info upon arrival?

Sorry, I meant the IC to stay conditional on agreeing to enter

A Che: Not necessarily, unless FCFS.

Mekonnen: Thanks!

For example, can the designed prevent re-entry in LCFS?

Che: Exit is not a problem since the designer can control provision of service.

Yes, we assume that LCFS can be enforced in that way. This gives the best chance to LCFS. We show that even with that LCFS is not optimal

5) Q Nikhil Agarwal: I understand that you're not thinking about preference heterogeneity. Have you thought about whether these results are robust to heterogeneity? Specifically, I wonder if giving information may be valuable if there is heterogeneity in either values or costs.

A Yeon-Koo Che: Yes, this will be our next project. The optimality of FCFS for a cutoff policy will continue to hold, but the cutoff policy will no longer be optimal. In short, preference heterogeneity introduce another channel through which queueing rules matter (in addition to regulating dynamic incentives).

Agarwal: Thanks — and also potentially information design.

6) Q Laura Doval: Nikhil, Yeon-Koo, would this allow for having multiple queues? I would think that a natural benchmark is creating different queues for each value the agents may have.

A: Nikhil Agarwal: + Laura's question. In fact there's something like this that might work well as a mechanism if there are heterogeneous goods being served in the different queues.

Doval: Nikhil — this is a good point, even in the heterogeneous preference case, if one implements different queues, the question remains as to how you assign the good across the queues.

So maybe the homogeneous agents + heterogeneous goods would be a natural first step.