Comments on Verhoef and Silva

Daniel's seminal 1995 work on airport congestion used a numerically oriented bottleneck model.

But much subsequent work relied on static models with no time dimension.

Recently, researchers have "reopened" the bottleneck model to get further insight into congestion in the presence of large agents like airlines.

Evidently, an existence-of-equilibrium issue arises in these models.

Comments on Verhoef and Silva

In response, authors use simpler Henderson-Chu model, a dynamic framework in which queueing is absent.

Has early- and late-arrival penalties like bottleneck model.

But congestion just depends on volume of traffic arriving at a particular time, with no queue forming.

Paper finds no existence problem in this setup.

It's skillfully used to compare equilibrium and optimal time patterns of traffic.

Comments on Verhoef and Silva

Results show peaking of traffic around preferred time, with natural differences across cases.

Peaking is steepest when agents do not internalize congestion.

Moderately steep when they do, least steep under social optimum.

Comments on Verhoef and Silva

In airport context, model could apply around preferred times for business passengers: early morning and early evening.

But, because hub airlines must create multiple traffic "banks" to ease connections, peaking occurs periodically through day.

Spacing of midday banks chosen for operational reasons, not due to passenger time preference.

Comments on Verhoef and Silva

Leads to question: what if model's "preferred time" (bank center) is actually chosen by the airline.

Passengers want to arrive at bank center for best connection.

But two hub airlines sharing an airport (e.g., Chicago) would like to separate their banks to the extent possible to avoid congestion.

Adapting the current model, what would analysis of this problem look like?