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Abstract

This paper studies the interaction between dynamic traffic congestion and urban spatial equilibrium, using a model that is a straight unification of the Vickrey (1969) bottleneck congestion model and the Alonso (1964) monocentric city model. In a monocentric city with a bottleneck at the entrance to the CBD, residents choose their commute departure time jointly with residential location and housing consumption. Commuters arrive at the bottleneck in sequence sorted by residential location, so that more distant residents arrive later. The socially optimal toll makes central residents commute earlier in the morning than they would without the toll, which in turn induces a city that is less dense in the center and more dense further out. This is the opposite effect of what is found in models with static congestion.

Keywords: congestion; toll; land use; bottleneck model; monocentric model

JEL Classification Numbers: D62, R14, R41

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