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The Economics of Crowding in Rail Transit

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Abstract

We model trip-timing decisions of rail transit users who trade off crowding costs and disutility from traveling early or late. With no fare or a uniform fare, ridership is too concentrated on timely trains. Marginal-cost-pricing calls for time-dependent fares that smooth train loads and generate more revenue than an optimal uniform fare. The welfare gains from time-dependent fares are unlikely to increase as ridership grows. However, imposing time-dependent fares raises the benefits of expanding capacity by either adding trains or increasing train capacity. We illustrate these results by calibrating the model to the Paris RER A transit system.

Keywords: rail transit; crowding; pricing; optimal capacity

JEL Codes: R41; R48; D62

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