**Motivation**

New pieces of legislation such as PRIIA (2008) or EU directives 91-440 and 2007-58 promote the use of shared systems.

Shared railway systems are systems in which different railway operators may use the same infrastructure. It allows for efficient use of the infrastructure, which is expensive: represents 60-80% of total rail transportation costs. It requires coordination: when different operators request access to the infrastructure the regulator should decide who gets access, when, and at what price.

**Infrastructure**

Railway capacity is constrained by the infrastructure (signaling systems, topology, etc.).

**Users demand**

Initially, shared railway systems are designed to accommodate different types of services in the same infrastructure. As a consequence, the transportation demand consists of intercity passenger demand (including high-speed rail), commuter passenger demand, and freight demand.

**Performance**

The performance is measured using multiple criteria:
1. Infrastructure manager: cost recovered, use of capacity
2. Train operators: track-access charges, barriers to entry
3. Users: level of service, demand served

**Capacity Pricing and Allocation Mechanisms**

Rules for deciding what trains to schedule, when, and at what prices

This research analyzes:
1. Auctions
2. Cost allocation methods + priority rules

**Capacity Allocation**

Decision of which trains get access to the infrastructure and when

**Capacity Pricing**

Decision of the access fee that each train scheduled should pay to the infrastructure manager

**Research Question and Objectives**

Research Question
How do different mechanisms for capacity pricing and allocation affect the performance of shared railway systems?

Objectives
1. Identify representative mechanism for shared railway systems, and
2. Understand implications of these mechanisms for the infrastructure manager, the operators, and the users, in system like the Northeast Corridor (NEC) in the U.S.

**Train Operator Model**

Simulates the behavior of the operators and its impact on the users (behavioral economic model).

The main decision variables for the train operators are the number of trains to operate (level of service), the fare or service rate charged to the users, and the willingness to pay to access the infrastructure.

**Future Work and Expected Contributions**

Future work:
1. Integrate the infrastructure manager and the train operator model
2. Analyze the implications of alternative capacity pricing and allocation mechanisms for the Northeast Corridor (NEC) in the U.S.

Expected contributions:
1. Increase the understanding of alternative capacity pricing and allocation mechanisms
2. Provide a framework to evaluate the implications of these mechanisms for the infrastructure manager, the train operators, and the users
3. Analyze the implications for regulating different shared railway systems.