

# RIETI BBL Seminar Handout

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“Transportation and the United States  
Economy: Implications for governance”

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**Transportation and the  
(United States) Economy:  
Implications for Governance**



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# Outline

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- **Basic data about the US transportation system**
- **Analyze the system in the context of an economy**
- **Governance to improve transportation's contribution to an economy**
- **Sprinkle observations about the Japanese situation**

# Conclusions

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- Transportation accounts for a substantial amount of economic activity
- Current system reflects notable inefficiencies
- Improving system efficiency accounting for effects on non-transport sectors would yield larger gains than suggested by a conventional analysis
- Policy outcomes
  - Deregulation has contributed large gains
  - Privatization's outcomes not clear
  - Technology policy could be critical

# Basic Data on Transport System and US Economy

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- Total pecuniary spending by firms and consumers \$2.1 trillion
- Government spending on infrastructure \$0.26 trillion
- Transportation's share of GDP (17%) is similar to healthcare's share
- Expenditures in time (freight and travelers) \$3 trillion

# Value of the Capital Stock

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- **Highways \$2.8 trillion**
- **Rail network \$0.34 trillion**
- **Pipelines \$0.17 trillion**
- **Public airways, waterways, and transit structures \$0.57 trillion**

# Infrastructure Stock as a Share of GDP Across Countries

China's infrastructure stock as a percentage of GDP is above the world average.

Total infrastructure stock, 2012, % of GDP

Average excluding outliers, Brazil and Japan

71%

16

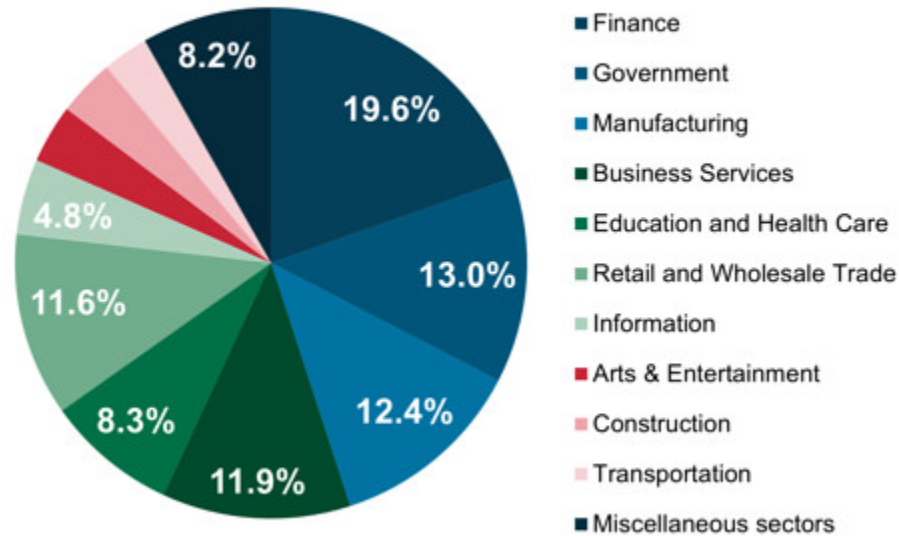
Country	Infrastructure Stock as % of GDP (2012)
Brazil	16
United Kingdom	57
Canada	58
India	58
United States	64
Germany	71
Spain	73
China	76
Poland	80
Italy	82
South Africa	87
Japan	179

Source: IHS Global Insight; Global Water Intelligence; International Transport Forum, Organisation for Economic Co-operation and Development (OECD); OECD's perpetual inventory method; McKinsey Global Institute analysis

# Misleading Industry Perspective

## GDP by Industry

Finance remained the nation's top industry in 2013, while government was no. 2 despite efforts to roll back spending.



Source: Commerce Department | WSJ.com



# Distributional Considerations

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- The 1% wealthiest people cannot escape delays when their private planes are prohibited from taking off and when their limousines are stuck in gridlocked traffic
- At the same time, transportation is generally considered to be a merit good—citizens are entitled to accessibility to attain a reasonable quality of life—so it is important for a system to achieve that social goal at minimum cost

# Policy Motivation

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- Given the large efficiency and distributional stakes, it is vital for transportation capital stocks to generate high returns
- Public policy can contribute in three ways:
  - Encourage the modes to operate efficiently in their pricing, service, and innovation—regulate or deregulate?
  - Ensure that the infrastructure operates efficiently in pricing, investment, and technology—public ownership or privatization?
  - Technology policy to realize gains from private sector innovations

# Transportation's Effects On Other Sectors

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- **Labor Markets—job matching, employment, and wages**
- **International & Domestic Trade Flows—trade costs, product variety**
- **Industry Competition and Efficiency—scale and scope economies**
- **Agglomeration Economies in Metropolitan areas**
- **Inefficiencies Generate Huge Costs Because Entire Economy is Affected**

# Observations about Transport in Japan

- Compared with the US transport system, Japan's system is marked by substantial investment in infrastructure as a share of GDP; less domestic air travel; but greater trade flows as a share of all transport flows.
- Efficiency of modal and infrastructure operations is as important in Japan as it is in the US.
- Implications of transport for performance of other sectors in Japan is also important, especially the trade sector.

# Governance: How to Increase in Efficiency?

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- Goal is to eliminate static inefficiencies and stimulate innovation and technological advance
- Deregulation: affected intercity modes, including airlines, railroads, water carriers, and trucking. Japan also went through regulatory reform.
- Privatization?: urban transit modes and public infrastructure.
- Technology policy: using and promoting innovations and technological advance by the private sector to improve infrastructure

# Deregulation: Air, Rail, Truck

- Static inefficiencies: prices not aligned with costs; production costs inflated; poor service quality
- Entry of new competitors stimulated competition that led to lower costs and reduced price-cost margins
- Inefficient firms were driven out of the industry
- Welfare Gains:
  - Traditional consumer surplus and profit changes
  - Better service and lower costs also spurs industry development, employment, competition, and greater product variety

# Unanticipated Innovations Underlie Gains From Deregulation

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- Rail: real time monitoring of shipments and condition of the track enables shippers to apply Just In Time (JIT) Inventory
- Truck: improved routing and scheduling based on information technology; apply JIT Inventory
- Air: yield management programs to make more efficient use of capacity; better match of capacity to demand
- Under regulation firms lacked the ability and incentives to make those innovations
- Global air deregulation, including open skies and cabotage, would generate more gains. Global deregulation could also generate further improvements in surface freight.

# Low Cost Carrier Competition for the US and Japanese Markets?

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- US airline industry has consolidated and concerns exist that carriers are raising prices and cutting service in low density areas.
- One approach to addressing claims of insufficient competition is to give cabotage rights to foreign carriers and allow them to serve US routes.
- Could Japanese airlines provide additional competition on US domestic routes and lower fares? Could US carriers have that effect in Japan?



# Public Infrastructure and Transit Inefficiencies

- **Growing delays and congestion that increase operating costs and travel time—auto and air**
- **Budget deficits now occur**
- **Those are symptoms of:**
  - **Mispricing—prices don't reflect costs**
  - **Suboptimal investment—cost-benefit not used**
  - **Inflated productions costs—regulations raise labor and capital costs**
  - **Slow implementation of technological innovations**

# Inefficiencies (continued)

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- **The potential gains from efficient policies are large and well documented in the empirical literature**
- **Policymakers ignore calls for efficient reforms and seek to raise revenue and spend their way out of the problems**
- **Obama's proposal of a 4 year \$300 billion highway infrastructure program is an example. Clinton & Trump call for increasing spending**
- **Unsustainable strategy & ignores inefficiencies**

# Japan: Efficient Congestion Pricing

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- Japan pioneered electronic tolling. Efficient pricing should follow
- Road capacity should not be wasted by prohibiting certain users who are willing to pay a fee to use less congested lanes or roads.
- Prices can be set based on real-time traffic flows and the charge can be collected electronically.
- Trucks should be charged for congestion and pavement damage based on axle weight.

# Austerity or Stimulus Spending

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- Transportation policy enters into macro debates about reviving an economy
- The US administration and certain economists advocate infrastructure spending to stimulate the economy, but this entails considerable waste.
- Spending policies to raise GDP and efficiency policies to raise welfare are different
- For example, spending may increase GDP but have little effect on welfare because of taxation required to fund spending

# Austerity or Stimulus Spending continued

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- Dynamic considerations also are important in welfare assessments of infrastructure spending. Consider the time to build and the delays created by work zones, which generate costs in the short run that may cause long run effects to be negative
- High Speed Rail would add waste in the US
- Differences between the US and Japan cannot be explained by difference in government spending

# Privatization: Theory and Practice

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- **Theory: success depends on market power of private firms, their incentives and ability, and whether consumers can exert competitive pressure.**
- **Evidence on the effects of privatization in different parts of the world is mixed**
- **Evidence in the US is basically non-existent; simulations indicate possible positive scenarios**
- **Experiments are crucial for any resolution**
- **Careful implementation is also vital**

# Technology Policy: Adopting Private Sector Innovations

- **General purpose technologies such as GPS navigation services and specific technologies such as Weigh in Motion could be used to improve road pricing, investment, and safety.**
- **Authorities are impeding technical change by not implementing recent innovations**
- **A satellite-based air traffic control system would reduce travel times and operating costs while improving safety—large net benefits**
- **Significant delays and cost overruns in implementing the US system putting us behind Europe**

# Technology Policy: Promote Private Sector Modal Innovations

- **Transportation modes have improved their performance and safety regardless of the state of their infrastructure**
- **Autonomous Vehicles: operated by computers have the potential to prevent collisions and reduce delays by creating a smoother traffic flow. Estimates of the benefits depend on market penetration—50% penetration yields annual benefits of \$200 billion from reducing externalities.**
- **Experiments: Taxi in Singapore; Uber in Pittsburg, PA**
- **Benefits to the broader economy would be larger**
- **Issues are liability and appropriate safety regulations**



# Innovations (continued)

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- **Air travel with advanced navigation systems permitting far greater use of the entire airspace, improving safety and speed.**
- **High end general aviation and some commercial carriers have installed the equipment.**
- **Estimates of potential benefits in the air sector are large and are even larger when the entire economy is considered**
- **Problem is that the Federal Aviation Administration has been slow to put in new facilities, train controllers, and approve new flight procedures**
- **Solution may be to create a private ATC system**

# Summary and Policy Perspectives

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- **A nation's transportation system is a large and vital part of its economy**
- **Transport affects many sectors besides the users and suppliers of transportation**
- **Many parts of the transport system have been compromised by inefficiencies**
- **Deregulation of intercity modes improved their operations. Benefits extend broadly to the economy. Innovations are an important source of those benefits. More benefits are possible.**

# Summary and Final Comments (continued)

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- **The inefficiencies from public policies toward infrastructure and transit cannot be denied.**
- **Current inefficiencies compromise spending proposals and lower their returns.**
- **Still, spending on infrastructure can generate significant benefits accounting for the economy-wide effects but they entail the costs of taxation and the misallocation of public funds.**
- **A preferable policy is to generate economy-wide benefits through efficiency improvements with minimal spending.**

# Summary and Final Comments (continued)

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- **Status quo bias indicates it is unlikely that efficiency improvements will be generated by policy reforms**
- **Alternatively, private modes have led infrastructure—cars were introduced and entrepreneurs built private roads; airplanes were developed and private airports emerged.**
- **Thus the private sector can contribute to transportation efficiency improvements through modal innovations, such as driverless vehicles and satellite-based ATC.**
- **Infrastructure performance would then improve, generating benefits throughout the economy**