Transportation and the United States Economy: Implications for Governance

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Overview of My Visit

- I am visiting China to hopefully develop a project that assesses and compares the U.S. and Chinese transportation systems to learn from each other
- Chinese researchers interested in participating in this project should please let me know
- I will provide an overview of the U.S. transportation system from an economic perspective
- A central message is the importance of sound policy to promote efficiency and reduce waste

Outline

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

Conclusions

- Transportation accounts for a substantial amount of economic activity
- Current U.S. 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 gains
  - Privatization's outcomes not clear
  - Technology policy could be critical

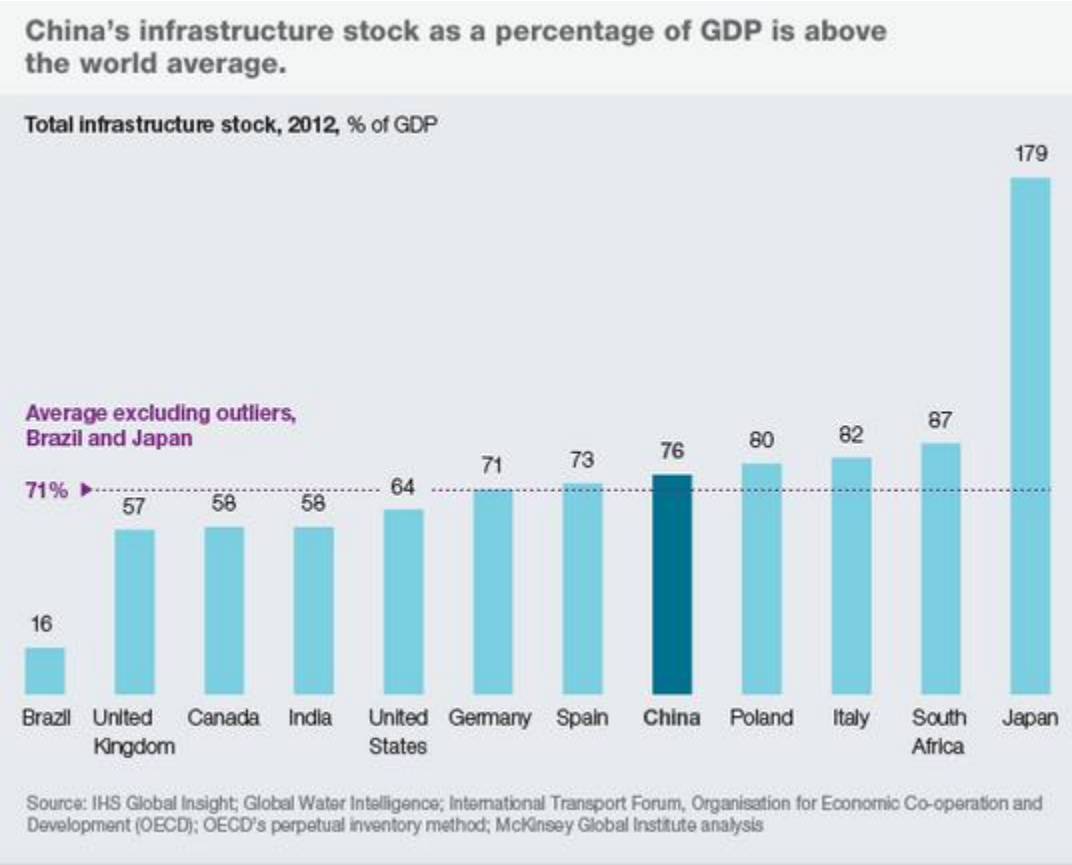
Basic Data on Transport System and US Economy

- 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

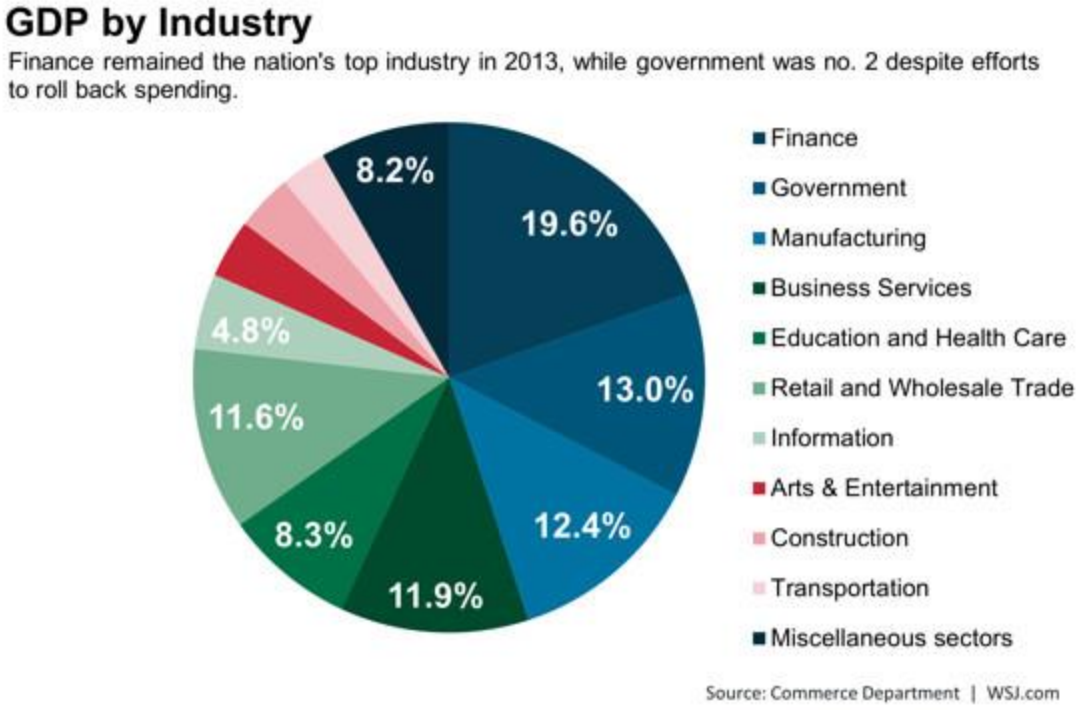
Value of the Capital Stock

- **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



Misleading Industry Perspective



Inequality or Transportation Capital in the 21st Century

- Wealthy 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

- 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

- **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**
- **Transport Inefficiencies Generate Huge Costs Because Entire Economy is Affected**

Research Integrating Transportation and Other Sectors

- Transportation as part of a general equilibrium model of the U.S. economy. Find large gains from efficiency improvements without significant increases in spending.
- The full costs of congestion on an economy. How does congestion affect the California economy accounting for unemployment, GDP growth, wages, and trade flows?

Governance: How to Increase in Efficiency?

- Goal is to eliminate static inefficiencies and stimulate innovation and technological advance
- Deregulation: affected intercity modes, including airlines, railroads, water carriers, and trucking
- 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

- 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.

Cabotage: A Source of Low Cost Carrier Competition for the US

- 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.
- Current research explores the effect of Ryanair and EasyJet on fares on US routes not served by Southwest and finds a significant decrease in fares.

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)

- **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 recent proposal of a 4 year $300 billion highway infrastructure program is an example**
- **Unsustainable strategy in the United States**

Privatization: Theory and Practice

- **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 as we learned from Railtrack in the United Kingdom**

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**

Technology Policy: Modes Lead Infrastructure

- **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.**
- **UK experiments: London and Oxford**
- **Benefits to the broader economy would be larger**
- **Issues are liability and appropriate safety regulations**

Innovations (continued)

- **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

- **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)

- **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)

- **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**