

APPLICATION OF ECONOMIC ANALYSIS FOR TRANSPORT DECISION MAKING: *Progress & Challenges*

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TOPICS

1. Policy Problems , Issues & Needs
2. Model Coverage of Effects
3. Predictive Models & Tools
4. Research Implications

POLICY PROBLEMS

Mis-Use of Research

- Induced Growth
(Return on Investment)
- Spatial Spillovers
- Magnitude of Effects



→ *Challenge: research to correctly inform decision-making*

POLICY NEEDS

- Breadth of Effects Measured
- Spatial Level of Measurement
- Modeling Tools Applied
- Accuracy/repeatability

- Policy Levers
- Benefit Cost Appraisal

MODELING “WIDER” EFFECTS

- Cohen: wider spatial spillovers
- Graham: effects beyond standard B/C: agglomeration externalities, non-linearities
- Johansson: geographic scale and inter-urban network effects
- Sue Wing, Anderson, Lakshaman: breadth of model & endogeneity
- Vickerman: reconciling B/C appraisal and macroeconomic models

PREDICTIVE MODEL TOOLS

Measurement/Model Tradeoffs

- Precision/detail: *spatial zones, industrial groups, travel categories, class of “user”*
- Breadth of variation: *non-linearities, thresholds, scale economies*
- Endogeneity (Interactions): *interactions of inter-modal and inter-industry flows*



- Complexity: *simplifying assumptions vs. realism*

ALTERNATIVE MODEL VIEWS (1)

MODELS	POSITIVE	NEGATIVE
Land Use/ Transport (<i>PECAS, MEPLAN, TELUM</i>)	Spatial zone and price detail, feedback effects	Economic industry detail, disjoint markets
Computable General Equilibrium (<i>CGE</i>)	Multi-model, theoretical rigor	Simplify cost and response mechanisms

ALTERNATIVE MODEL VIEWS (2)

MODELS	POSITIVE	NEGATIVE
Dynamic Development (REMI, ASTRA)	Labor, housing, population, wage responses	Theory vs. realism (<i>linear, gravity functions</i>)
Access Models	Market scale economies, supply chain connectivity, spatial spillover	Exogenous effects, not integrated into macro systems

→ EXTERNALITIES SOMETIMES ARE THE OBJECTIVES

ALT. VIEWS: BUSINESS GROUPS

Sponsored Case Studies – highlight wider issues missed by models

- Multi-modal intl. gateways
- Freight corridors
- Just-in-time logistics
- Urban services & regional distribution location & delivery



BUSINESS-LED STUDIES

- Chicago (IL) Metropolis 2020
 - *Competitiveness of Rail Freight Yards, Regional Distribution, Global Supply Chain*
- Vancouver (BC) Gateway Council
 - *Competitiveness of Seaport, Airport & Border Facilities as Global Gateways*
- Portland (OR) Business Alliance
 - *Competitiveness as an Intermodal Center & Distribution Hub*

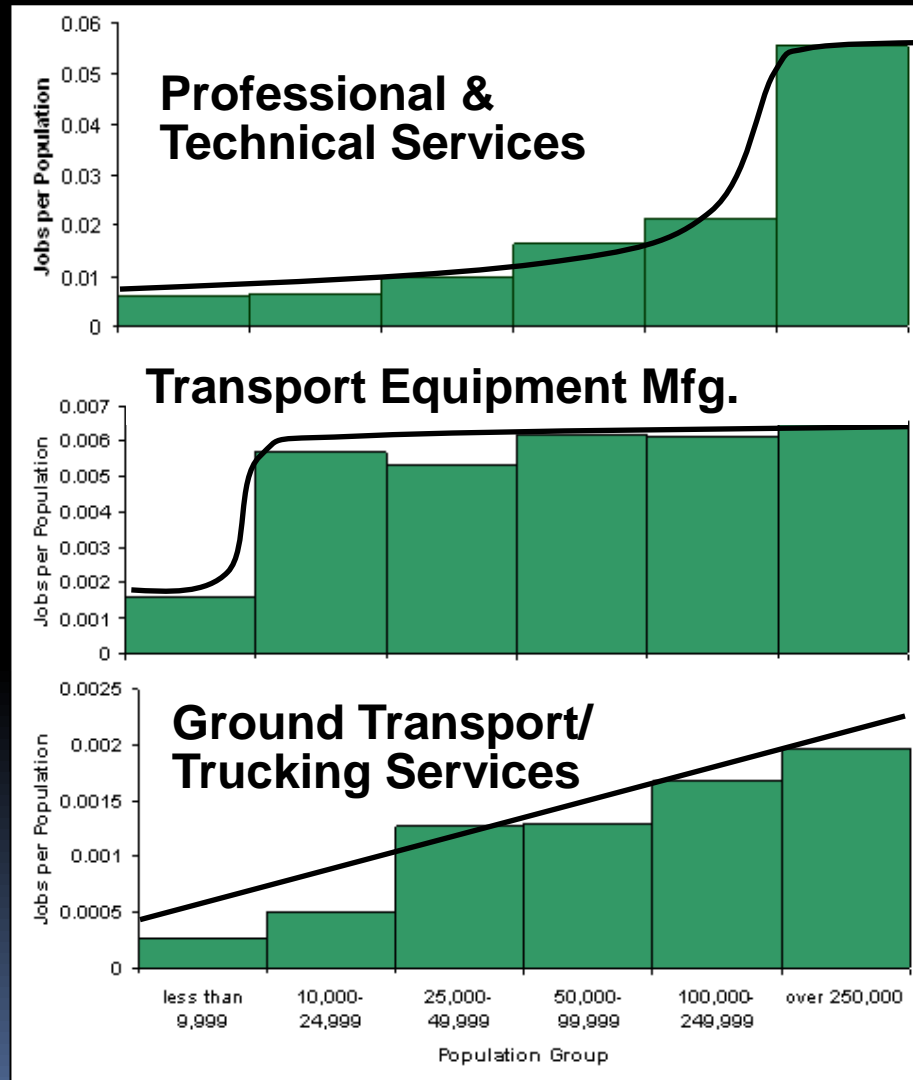
BUSINESS CONCERNS

Productivity & Competitiveness Impacts

- **Market Access**
 - *Worker markets*
 - *Supplier markets*
 - *Customer markets*
- **Connectivity & Reliability**
 - *Airports, Marine ports,
Inter-modal rail terminals,*
 - *Intl. Borders, Industrial Parks*

NON-LINEAR EFFECTS: MKT SIZE

Industry Concentration by Market Size



RESEARCH IMPLICATIONS:

- Cohen: +/- spatial spillovers differ among localities
- Graham: externality impacts differ across industries and space
- Johansson: threshold and non-linear effects differ by geographic scale
- Sue Wing, Anderson, Lakshaman: role of broader productivity factors at meso scale
- Vickerman: importance of infrastructure use, CGE limitation to large projects

FUTURE PRIORITIES

- Spatial scales of economic factors
- Threshold factors (*starting basis matters*)
- Inter-modal access interactions
- Special service linkage functions
- Development dispersion forces
- Policy levers: roles of infrastructure types, transport services and context

NEEDS FOR CBA

- Consideration of multi-modal interactions
- Project objectives should be reflected in the benefit measurement
- Spatial scale of project and analysis makes a difference
- Complexity & endogeneity need to be traded off against accuracy in capturing key effects
- Reconciling macroeconomic growth against consumer surplus concepts