Differentiating Forms of Economic Impact: Implications for Transportation Policy

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Forkenbrock Series on Public Policy
Transportation Finance and Economics Conference
September 2008
Topics

1. Confusion in the Transfer from Academic Research to Public Policy
2. Different Forms of Economic Productivity and Efficiency in Real World Situations
3. Enhancing Our Models: Towards a More Realistic Approach
4. Future Directions for Policy Research
Policy – Research Confusion

Challenge: research to correctly inform decision-making

Policy

What Should we Do?
How to Set Priorities?
How to Spend or Regulate?
Where /How to Implement?

Research

What Can we Measure?
Does Transportation Matter?
How Does it Matter?
When Does it Matter?

issue for the Strategic Highway Research Program (SHRP2)
Return on Investment

- What is the payoff from highway investment?
- …Clarifying conditions for productivity benefits

Avoiding “out-of-context” use of national studies
Net Gains & Transfers

- Do highways matter? In what situations?
- …Clarifying gains, losses and productivity

Avoiding “out-of-context” use of local studies
What is the Relationship?

- How to avoid double-counting?
- Clarifying inter-relationships

(Forkenbrock, NCHRP 465)
Resulting Forms of Impact

- **Speed-Distance Enhancement**
  - *traveler direct cost savings*

- **Route Bypass or Access Control**
  - *spatial shift in traveler activity*

- **Safety Improvement**
  - *traveler quality of life improvement*

- **Environment Improvements**
  - *externality effects (non-travelers)*

- **Economics: Enabling Scale or Process Changes**
  - *“system” users in the broad sense*
Sources of Productivity

1. Scale Economies (*cost reduction*)
2. Dispersion Economies (*cost reduction*)
3. Logistic/Process Efficiencies (*JIT, distribution*)
4. Connectivity Efficiencies (*inter-modal*)
5. Redistribution Efficiencies (*use of resources*)

(*ARC, Sources of Economic Growth, 2008*)
Market Scale Effects

- Appalachian Region – reducing isolation
- Industry concentration (location & growth) differs by market size
- Expanding labor and delivery markets enable activities that were previously not feasible

(ARC, 2008)
Dispersion Economies

- Corridors can reduce supply chain costs by avoiding congestion & saturation
Logistic Economies

- Network enhancements can improve reliability, enabling broadened warehousing and delivery

Scranton Area: Industrial Parks, Warehouses

- I-84 to New England
- I-80 / 380 to New York City

Harrisburg Area: 10m sf Food Distribution Centers & Warehouses

- I-78 to New York City
- I-76 (Turnpike) to Philadelphia
- I-83 to Baltimore / Washington

(FHWA, 2005)
Intermodal Connectivity

- Intermodal Connections enable efficiencies that are not captured in single mode analyses

Portland, OR Study (Portland, 2005)
- Ground congestion to/from air and sea ports
- Missed delivery windows
- Rescheduled air/sea connections
- Third shift for early AM deliveries
- Padded schedules – shorten production cutoff
Rules to Minimize Mis-Use for Policy

apply to both retrospective statistical analysis and prospective forecasting models

• Timing and peaking effects should matter
• Multi-modal connectivity should matter
• Location, scale and setting should matter
• Technology and quality features should matter
Percent income growth following completion of new Appalachian Development Highways.

Regression coefficients show time lags

5-7 yrs for rural non-distressed areas

8-11 years for rural distressed areas

*(ARC, 2008)*
Quality Matters

This track is in good enough shape
Technology Should Matter

Actual Photo of UFO Landing Zone on the A27 Highway in the Netherlands
Context Matters

- **SHRP2 Project: Key Decision Points**
  - *Different Issues, Different Research Needs*
    (Univ. of Iowa Public Policy Center and Economic Development Research Group)

- **OECD Forum: Macro-Meso-Micro Scales**
  - *Different Issues, Different Research Needs*
    (Avoiding dilution bias and inappropriate transfer of model mechanisms)

- **TREDIS: Multi-modal, Multi-Scale Framework**
  - *Different Issues, Different Research Needs*
    (www.tredis.com)
Future Direction

- Towards a Consistent Framework

Issues: Form of Impact

Relevant Scales

Inter-Relationships
Research Sources Cited


ARC - Sources of Regional Growth in Non-Metro Appalachia by Economic Development Research Group, Regional Technology Strategies and MIT Dept. of Urban Studies & Planning, for the Appalachian Regional Commission, 2008


FHWA - Economic Effects of Selected Rural Interstates at the County Level by Jack Faucett Associates and Economic Development Research Group, 2005


See Link to Sources at www.edrgroup.com (Sidebar)