

TRANSPORT INFRASTRUCTURE INSIDE AND ACROSS URBAN REGIONS:

Models and Assessment Methods

1. NETWORKS AND THE SPATIAL ORGANISATION OF ECONOMIES
2. TRANSPORT NETWORKS AND AGGLOMERATION ECONOMIES
3. TRANSPORT INFRASTRUCTURE AND NEW GROWTH THEORY
4. NETWORKS AND ACCESSIBILITY
5. EMPIRICAL RESULTS FROM ACCESSIBILITY-BASED STUDIES

Börje Johansson, JIBS & KTH

SPATIAL ORGANISATION

- ZONE
- CITY
- FUNCTIONAL URBAN REGION
- SET OF REGIONS (FURS)

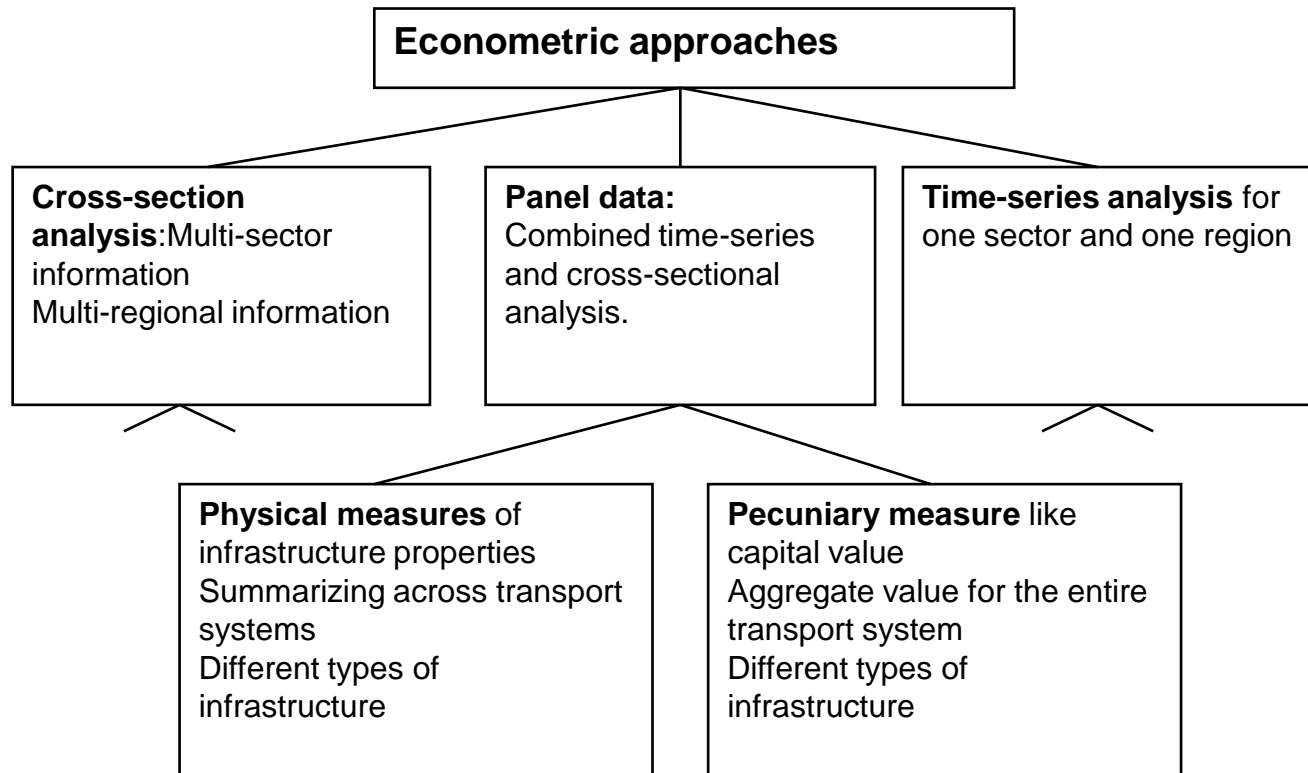
TRANSPORT NETWORKS:

- CAPITAL VALUES vs TANGIBLE PROPERTIES
- CONNECTIVITY, TIME DISTANCES, FREQUENCIES

LOCAL AND DISTANT MARKETS

Classification of time distances between zones

	Time interval in minutes	Average travel time in minutes
Between zones in the same city (local)	0 - 15	8 - 12
From a zone in a city to zones in other parts of the FUR (regional)	15 - 50	25 - 35
From a city in a FUR to a city in another FUR (inter-regional)	More than 60	More than 60



Approaches to estimate infrastructure productivity

NETWORKS AND ACCESSIBILITY

- INTRA-URBAN
- INTRA-REGIONAL
- EXTRA-REGIONAL

TYPE OF URBAN AREA AND TYPE OF REGION

- CENTRAL (LARGEST) CITY OF A REGION
- OTHER URBAN AREAS IN LARGE FURS
- OTHER URBAN AREAS IN SMALL FURS

HOUSEHOLD ACCESSIBILITY

ACCESSIBILITY

- TO JOBS
 - ATTRACTION OF HOUSEHOLDS, BETTER LABOUR-MARKET MATCHING. HIGHER LABOUR-MARKET PARTICIPATION
- TO HOUSEHOLD SERVICES
 - ATTRACTION OF HOUSEHOLDS, WELFARE INCREASING
- TO WAGE SUM (GRP)
 - ATTRACTION OF HOUSEHOLD, ECONOMIC OPPORTUNITIES, PRODUCTIVITY AND WAGE LEVELS

ACCESSIBILITY OF FIRMS

- TO LABOUR SUPPLY
- TO KNOWLEDGE LABOUR
- TO WAGE SUM OF HOUSEHOLDS IN RESIDENTIAL AREAS
- TO WAGE SUM IN FIRMS IN WORKPLACE AREAS
- ATTRACTION OF FIRMS, LABOUR-MARKET MATCHING
- ATTRACTING FIRMS IN KNOWLEDGE-INTENSIVE SECTORS, ADVANCED SERVICES ETC. INCREASES REGIONAL PRODUCTIVITY
- REFLECTS THE SIZE OR MARKET DEMAND FOR HOUSEHOLD SERVICES. HOME-MARKET PRODUCTIVITY EFFECT
- REFLECTS THE SIZE OF MARKET DEMAND FOR INPUT DELIVERIES, ESPECIALLY PRODUCER SERVICES. HOME-MARKET PRODUCTIVITY EFFECT

SIMPLE REGRESSIONS BASED ON ACCESSIBILITY INFORMATION

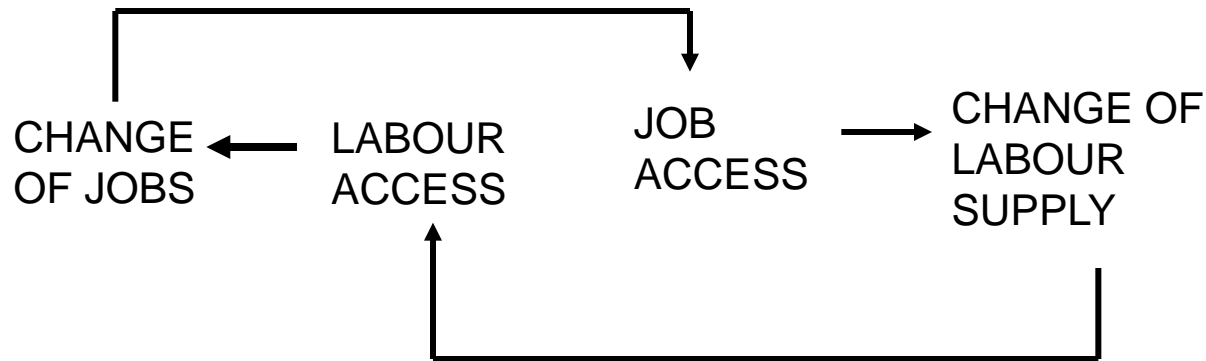
- COMMUTING OUT OF URBAN AREAS
- COMMUTING INTO URBAN AREAS
- GROWTH OF JOBS IN RESPONSE TO WAGE-SUM ACCESSIBILITY
- GROWTH OF HOUSEHOLD SERVICE SUPPLY IN RESPONSE TO WAGE-SUM ACCESSIBILITY
- GROWTH OF PRODUCER SERVICE SUPPLY IN RESPONSE TO WAGE-SUM ACCESSIBILITY

STRATEGY:

PREDICT CHANGES (1) WITH ESTABLISHED ACCESSIBILITY, AND (2) WITH NEW ACCESSIBILITY OBTAINED THROUGH CHANGES IN TRANSPORT NETWORKS. CALCULATE DIFFERENCE BETWEEN TWO TRAJECTORIES!

SIMULTANEOUS CHANGE OF LABOUR SUPPLY AND JOBS

PREDICTING URBAN CHANGE



(1) PREDICTION WITH UNCHANGED ACCESSIBILITY, (2) PREDICTION WITH NEW ACCESSIBILITY PATTERN, (3) CALCULATE DIFFERENCES FOR EACH URBAN AREA, AND MAKE A SUMMATION TO OBTAIN RESULTS FOR THE FUR

ACCESSIBILITY

- ACCESSIBILITY MEASURES REACT TO CAPACITY TENSIONS THAT AFFECT TIME DISTANCES
- TIME DISTANCE INFORMATION HAVE IMPLICATIONS FOR THE IDENTIFICATION OF REGIONAL BOUNDARIES

- CENTRAL CITIES IMPOSE **CHRISTALLER SHADOWS** ON EACH OTHER
- A CENTRAL CITY RESPONDS PRIMARILY TO ITS OWN INTERNAL ACCESSIBILITY
- ALL URBAN AREAS RESPOND POSITIVELY TO THEIR INTRA-REGIONAL ACCESSIBILITY

