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Markets, networks and productivity: Some suggestions

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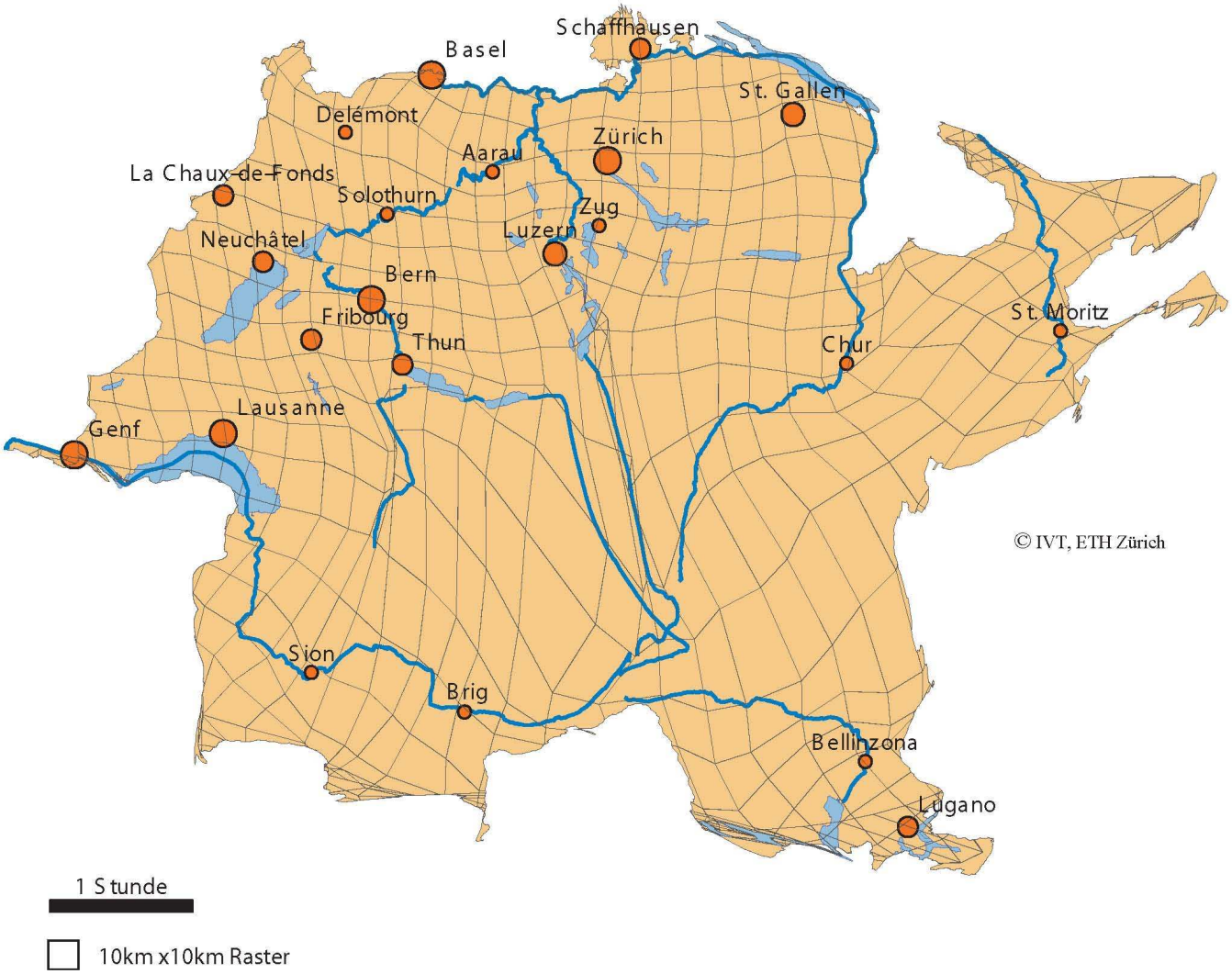
Overview

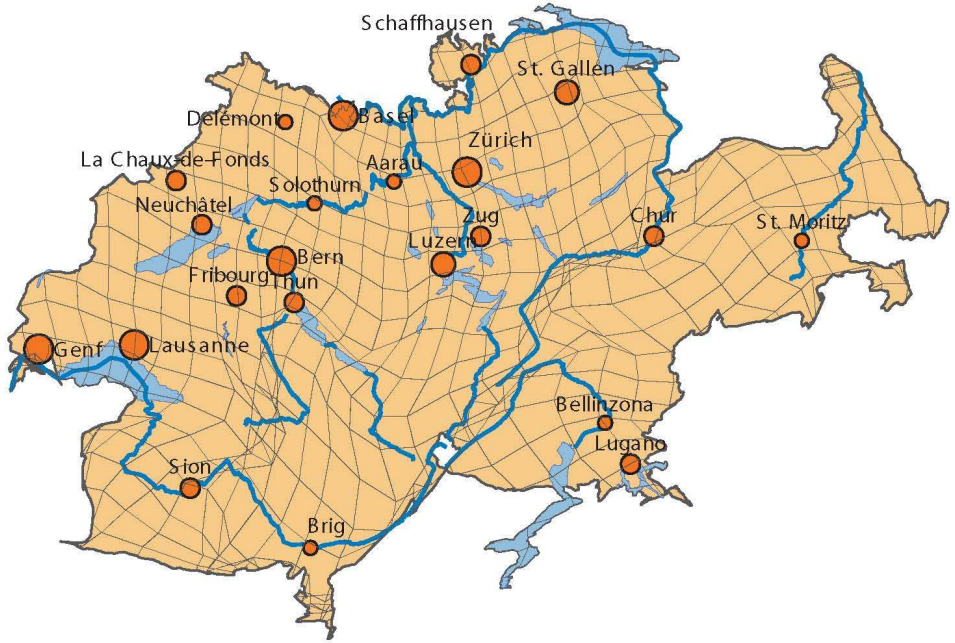
- Goods markets and infastructure networks
- Personal activity spaces and infrastructure networks
- Social networks and travel
- Research issues

Markets: “road-based” - Switzerland (1950)



Scherer, 2004

Markets: “road-based” - Switzerland (2000)



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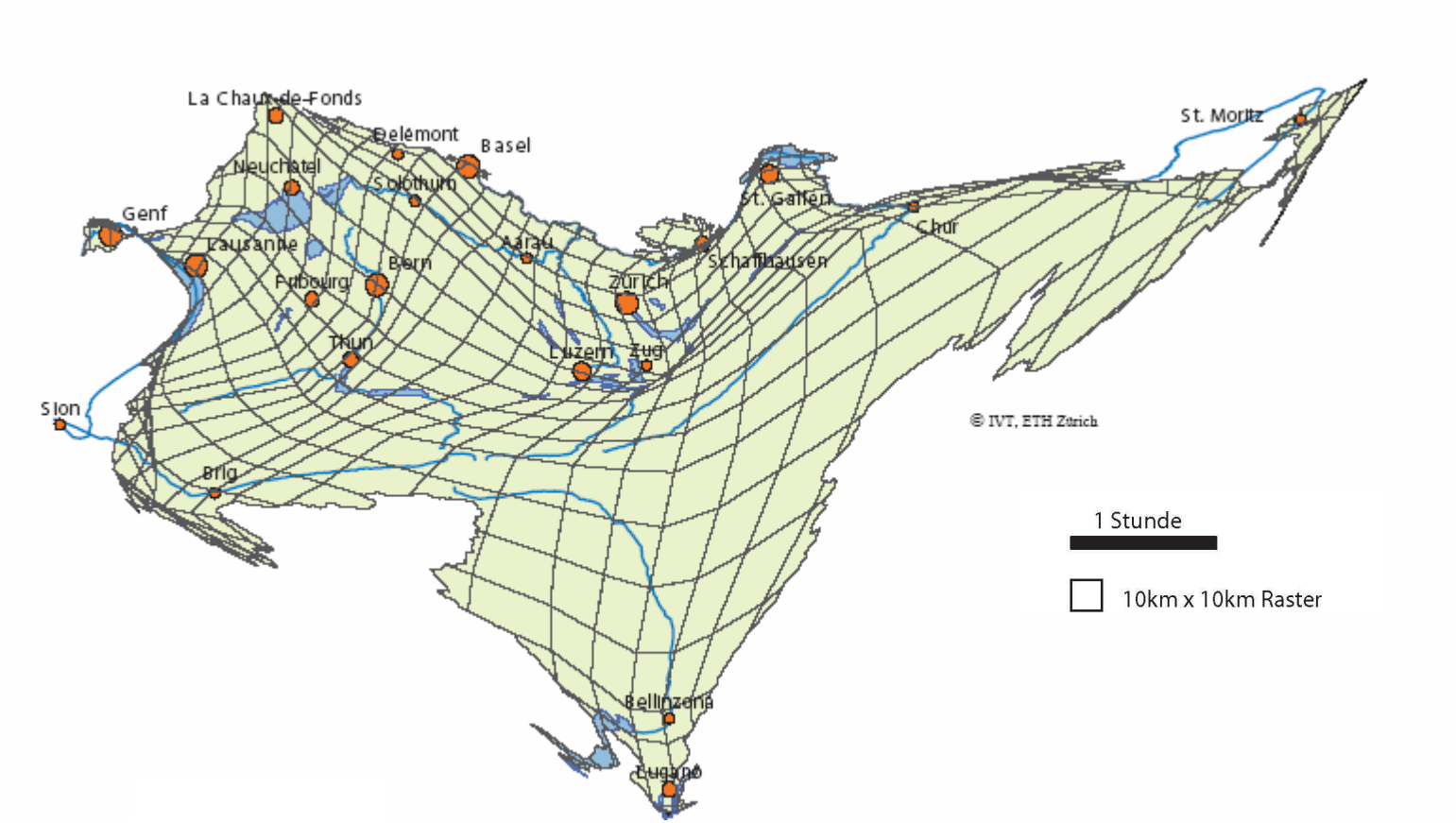
Markets: “rail-based” - Switzerland (1950)



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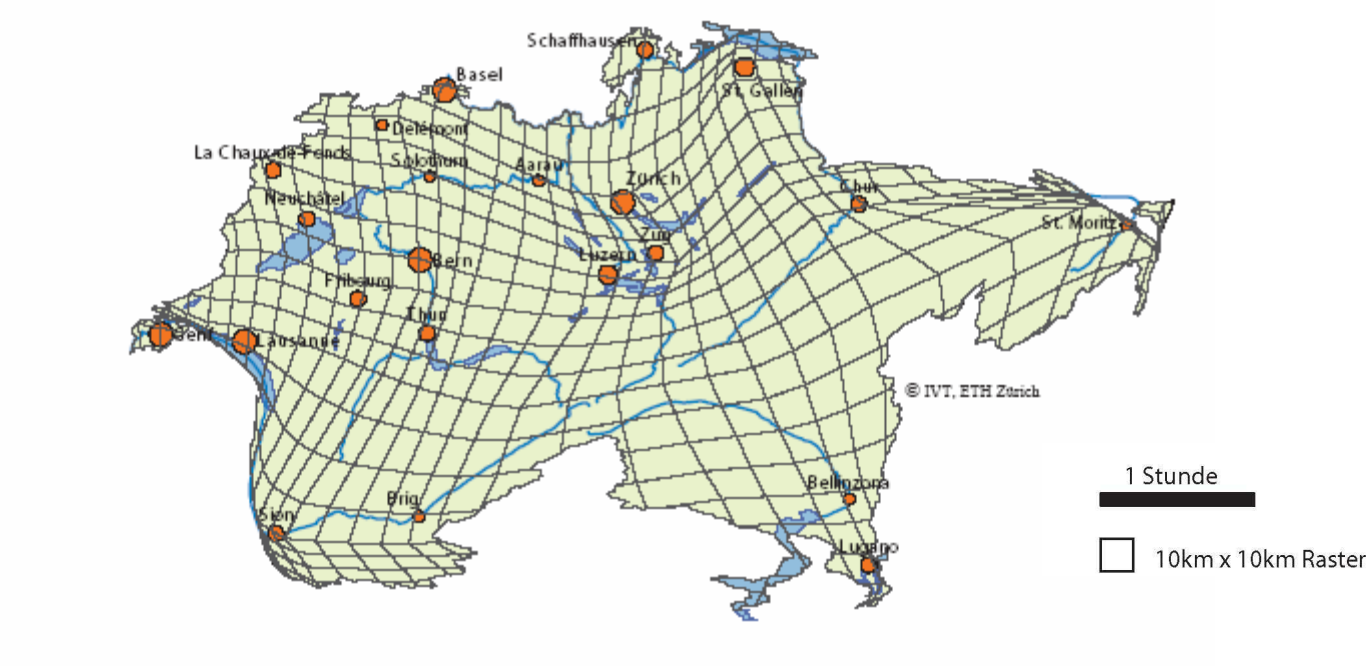
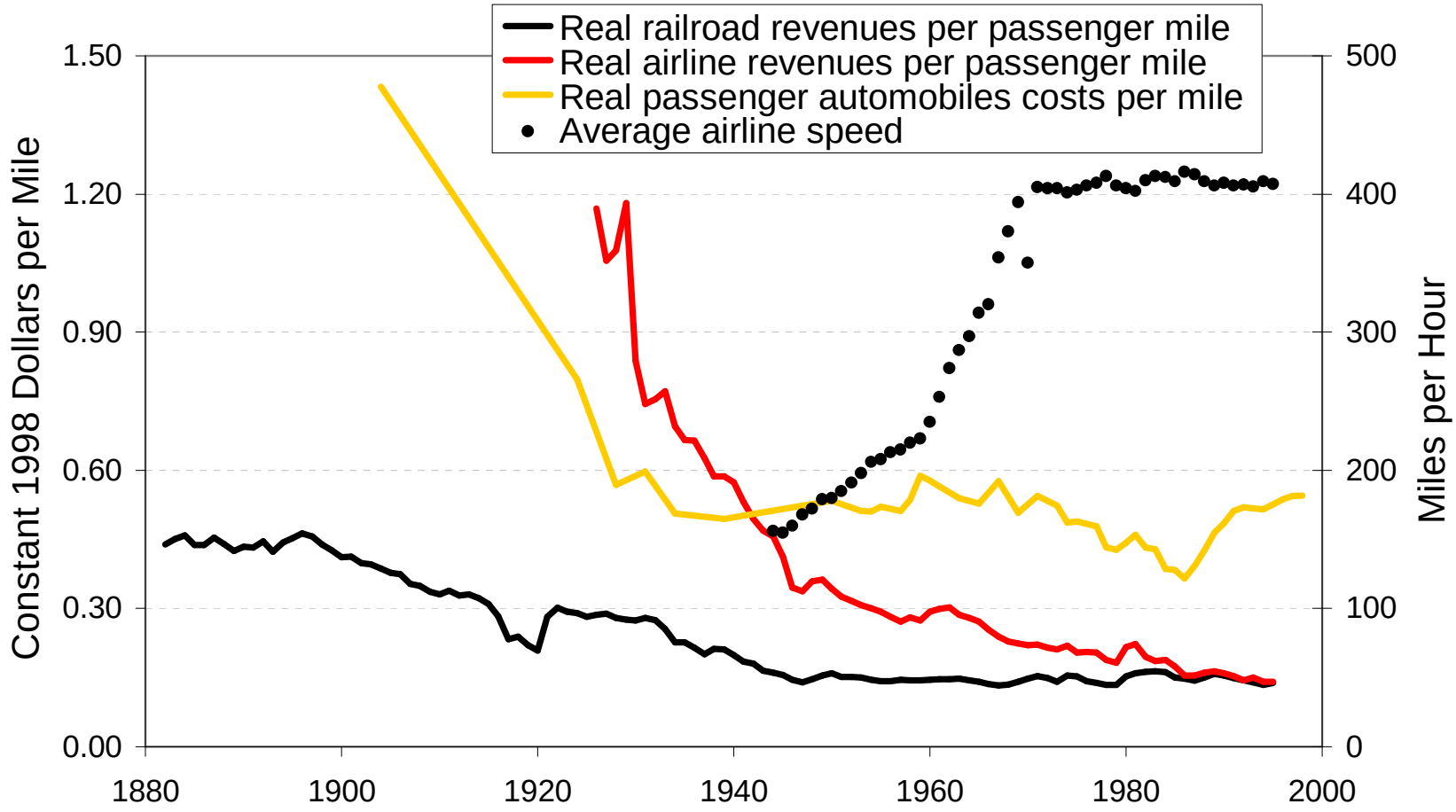


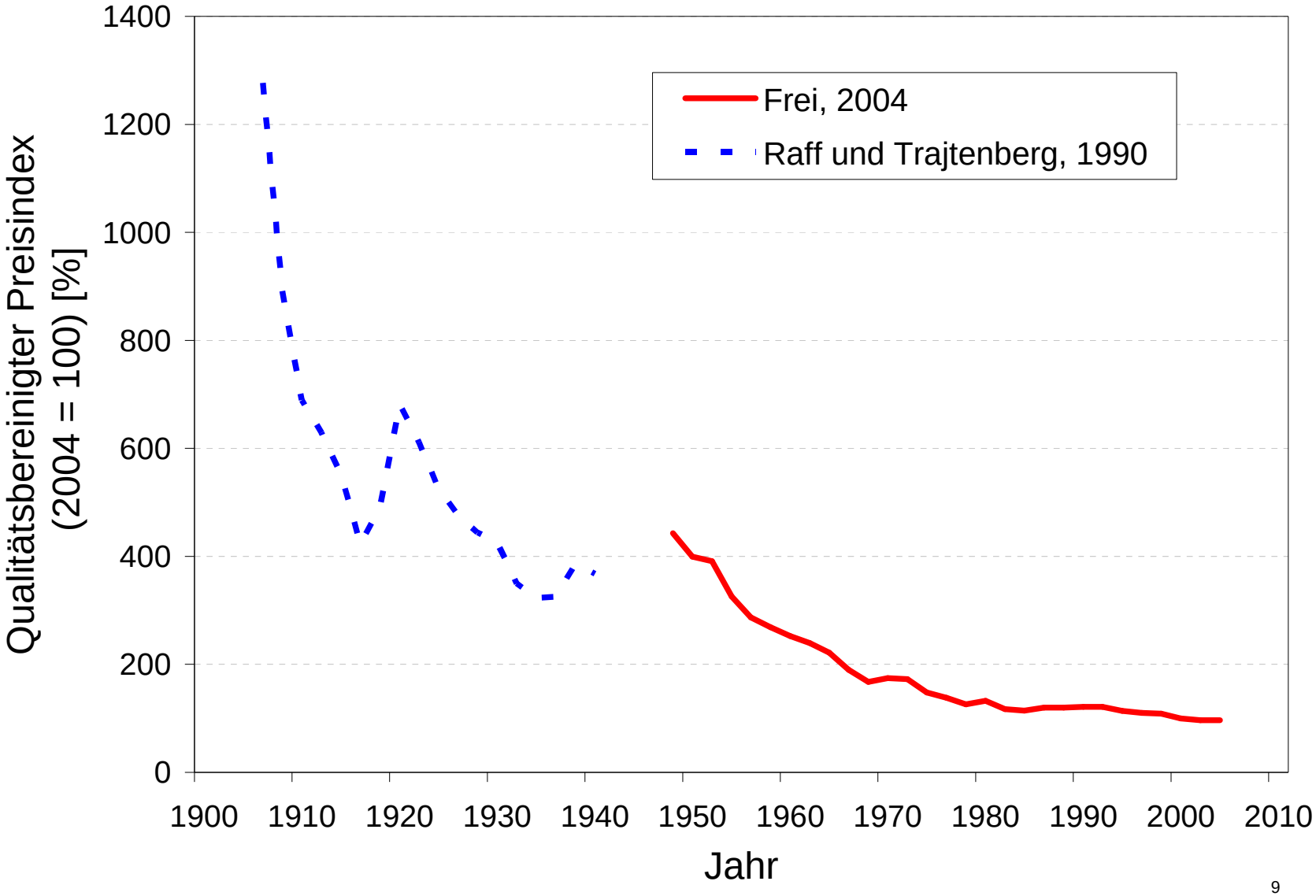
Scherer, 2004

Markets: price deflation in transport

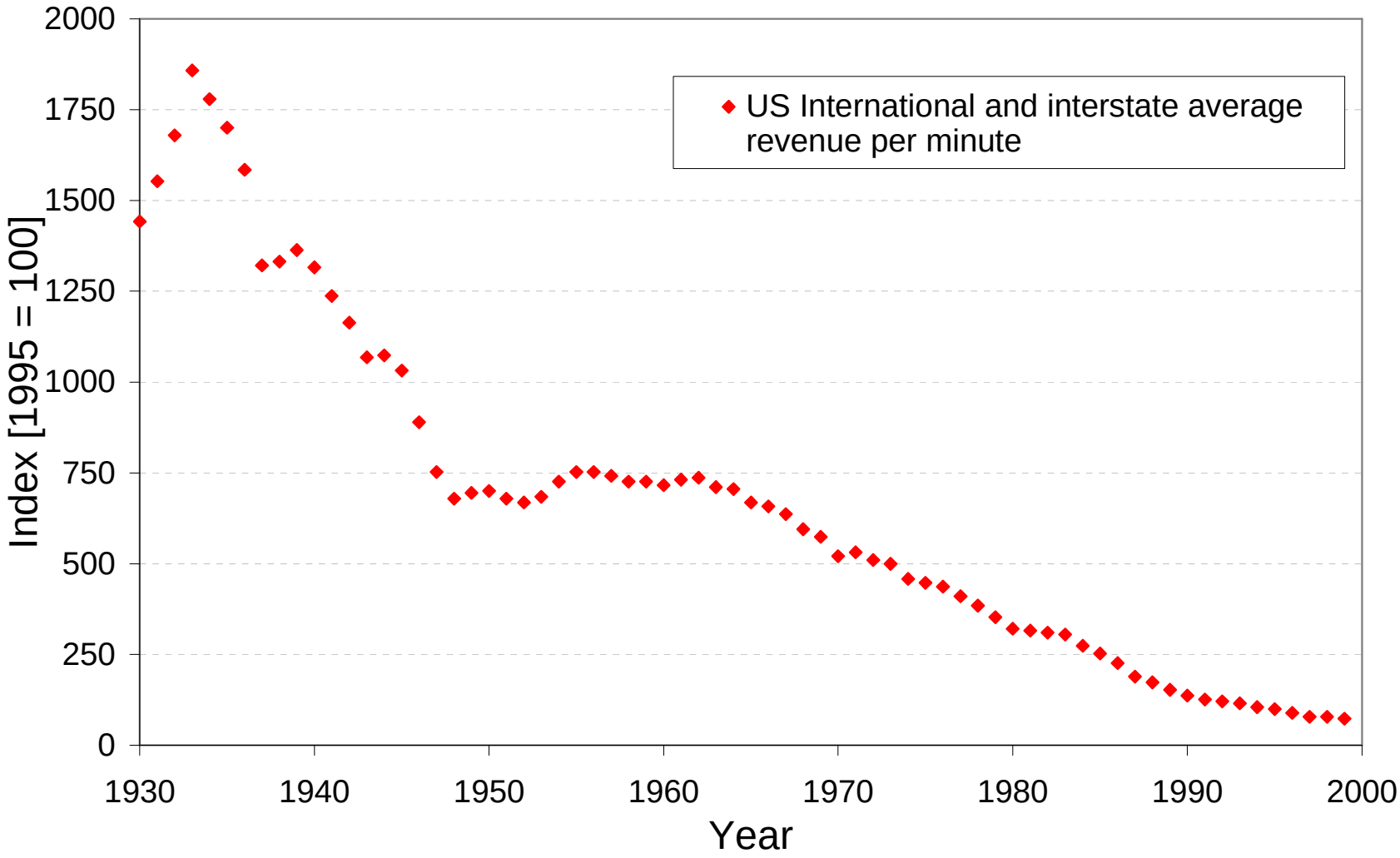


Aus Rhode und Strumpf (2003)

Markets: price deflation for cars

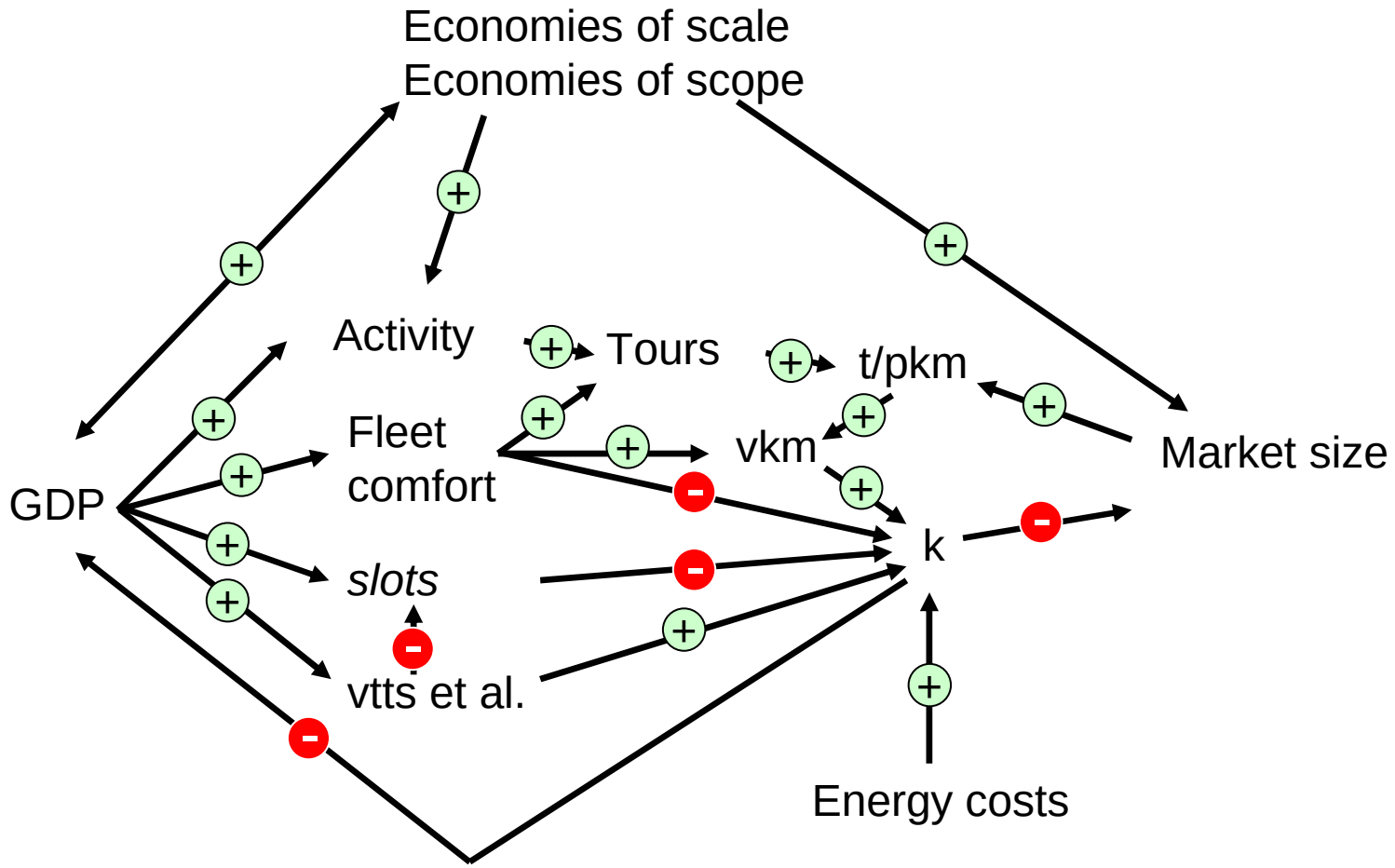


Markets: price deflation for telecommunication



Nach FCC (2001)

Size of goods markets and productivity: A hypothesis

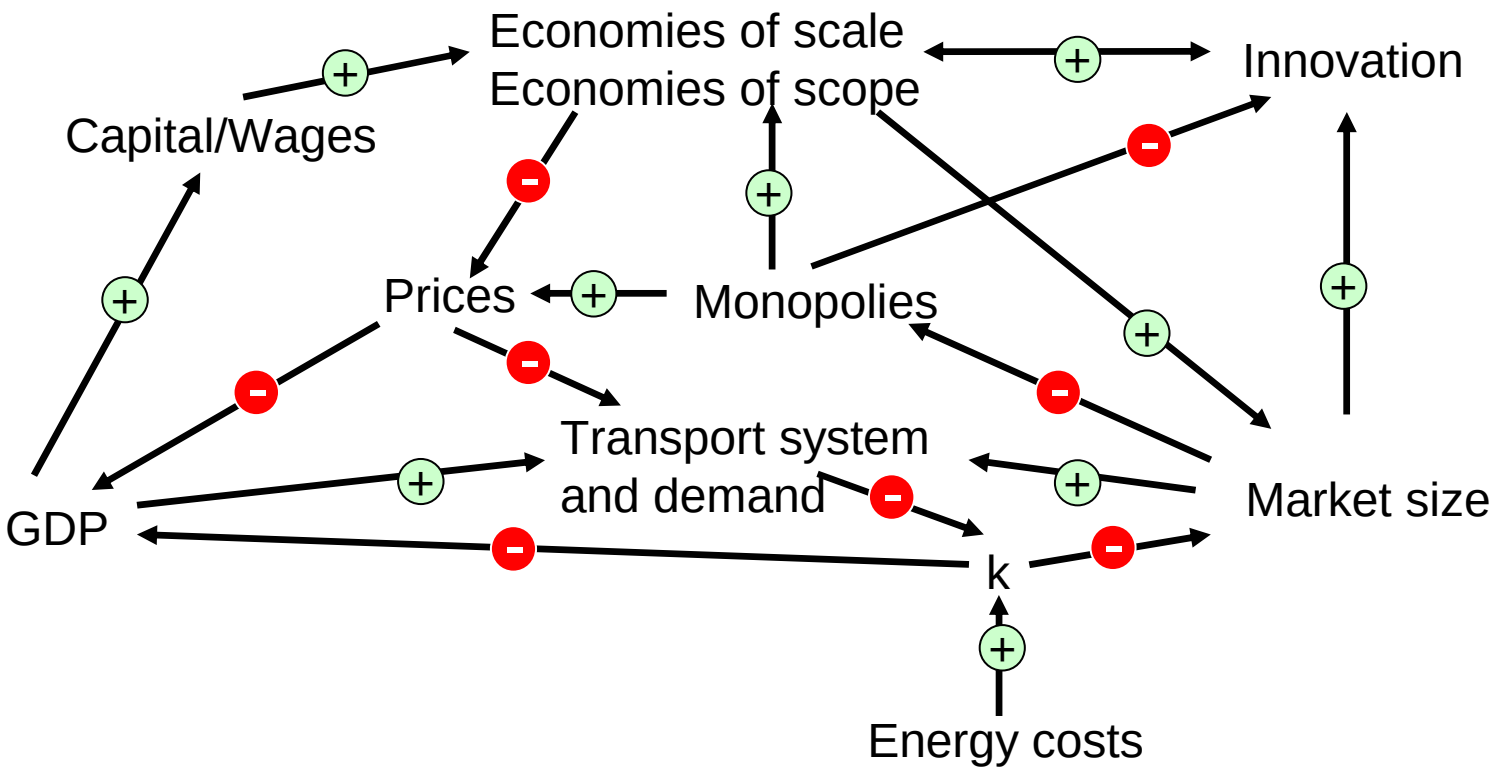


+ Elasticity > 0

- Elasticity < 0

Slots: possibilities to move goods or people
For a given infrastructure and commercial and private fleet

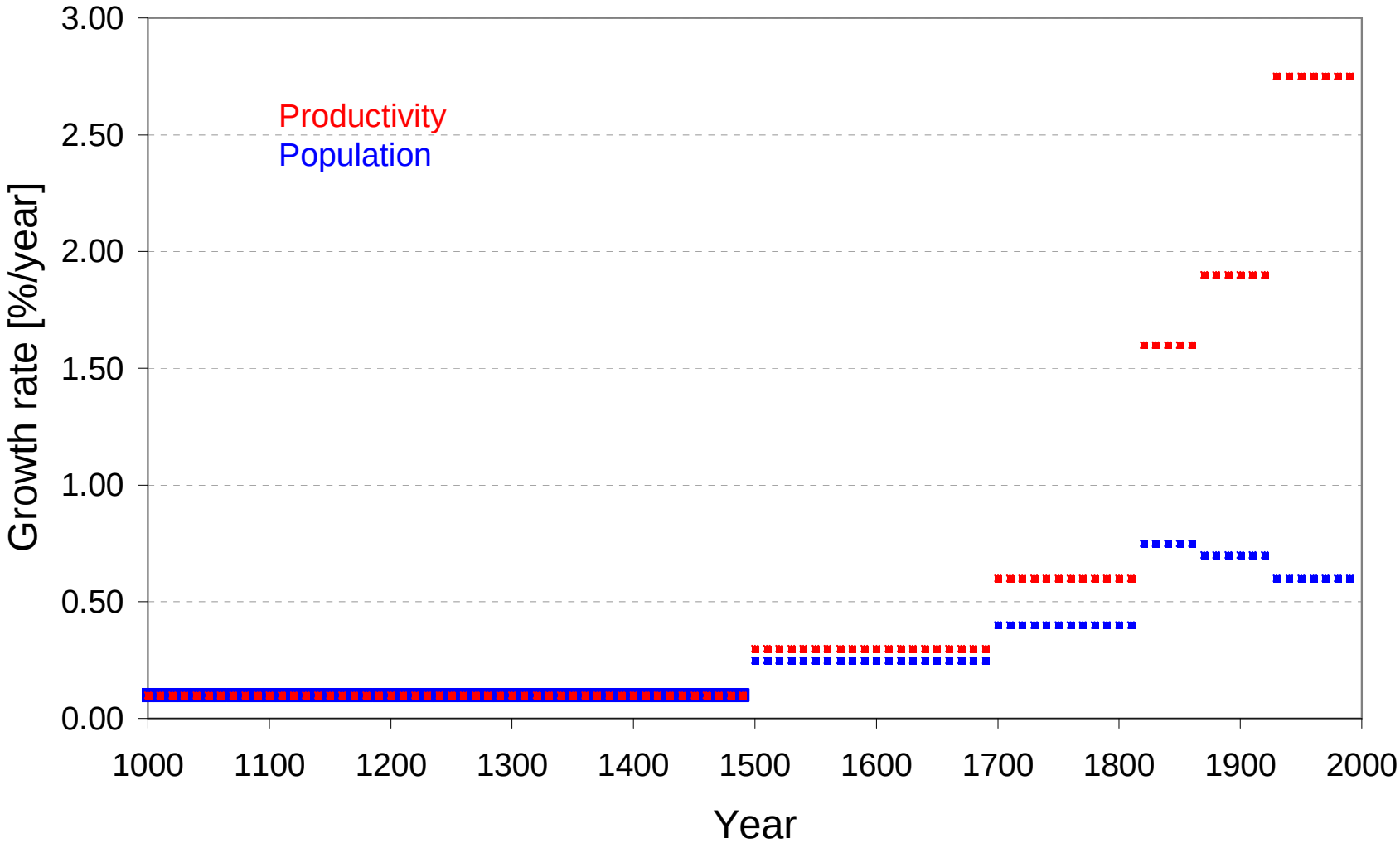
Size of goods markets and productivity: A hypothesis



+ Elastizität > 0
- Elastizität < 0

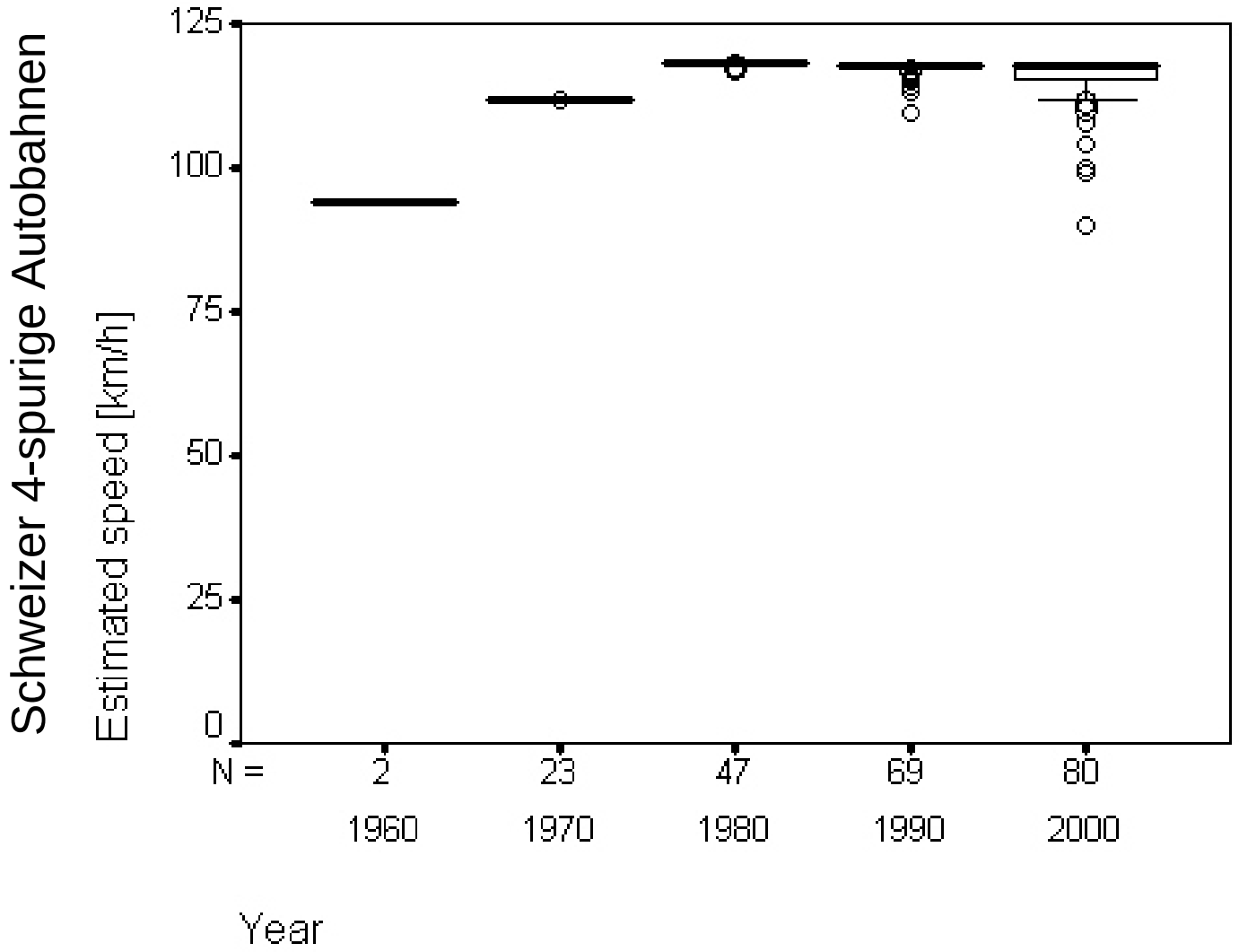
k: Generalisierte Kosten

Evidence: Western European productivity growth



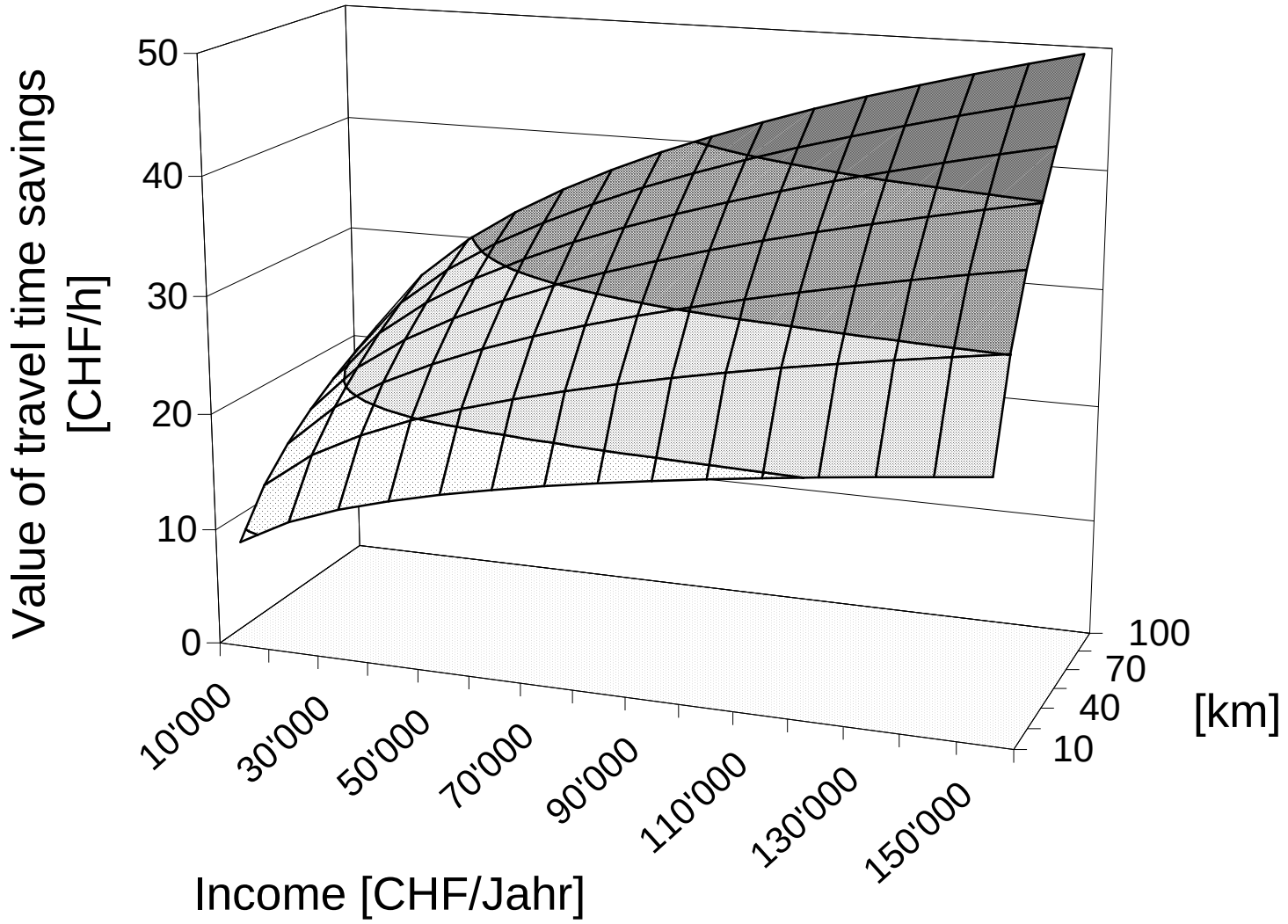
Nach Galor und Weil (2000)

Evidence: speeds = f(vkm, fleet size, regulation)

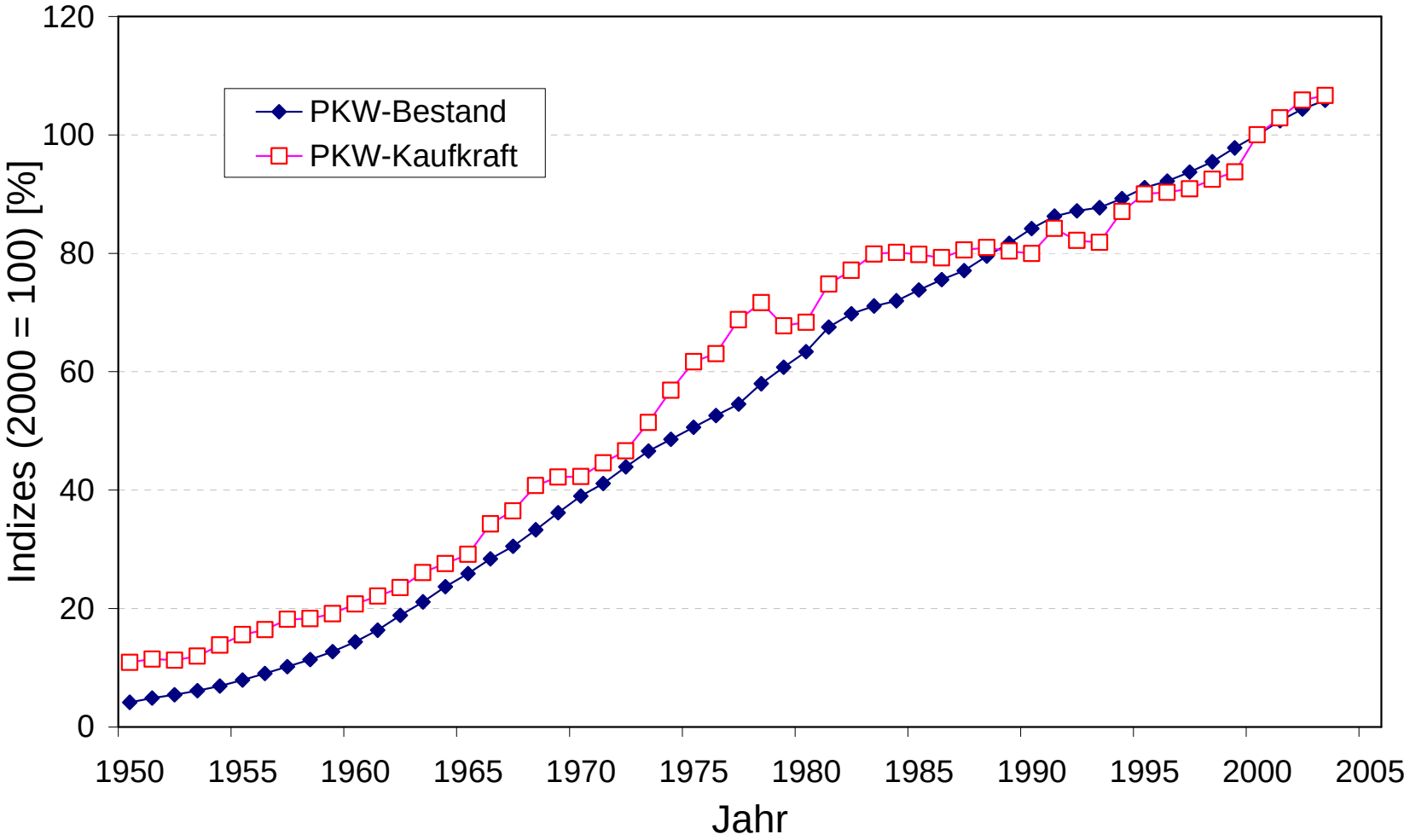


Axhausen und Fröhlich, 2004

Evidence: VTTS = f(income, distance) (CH, commuters)

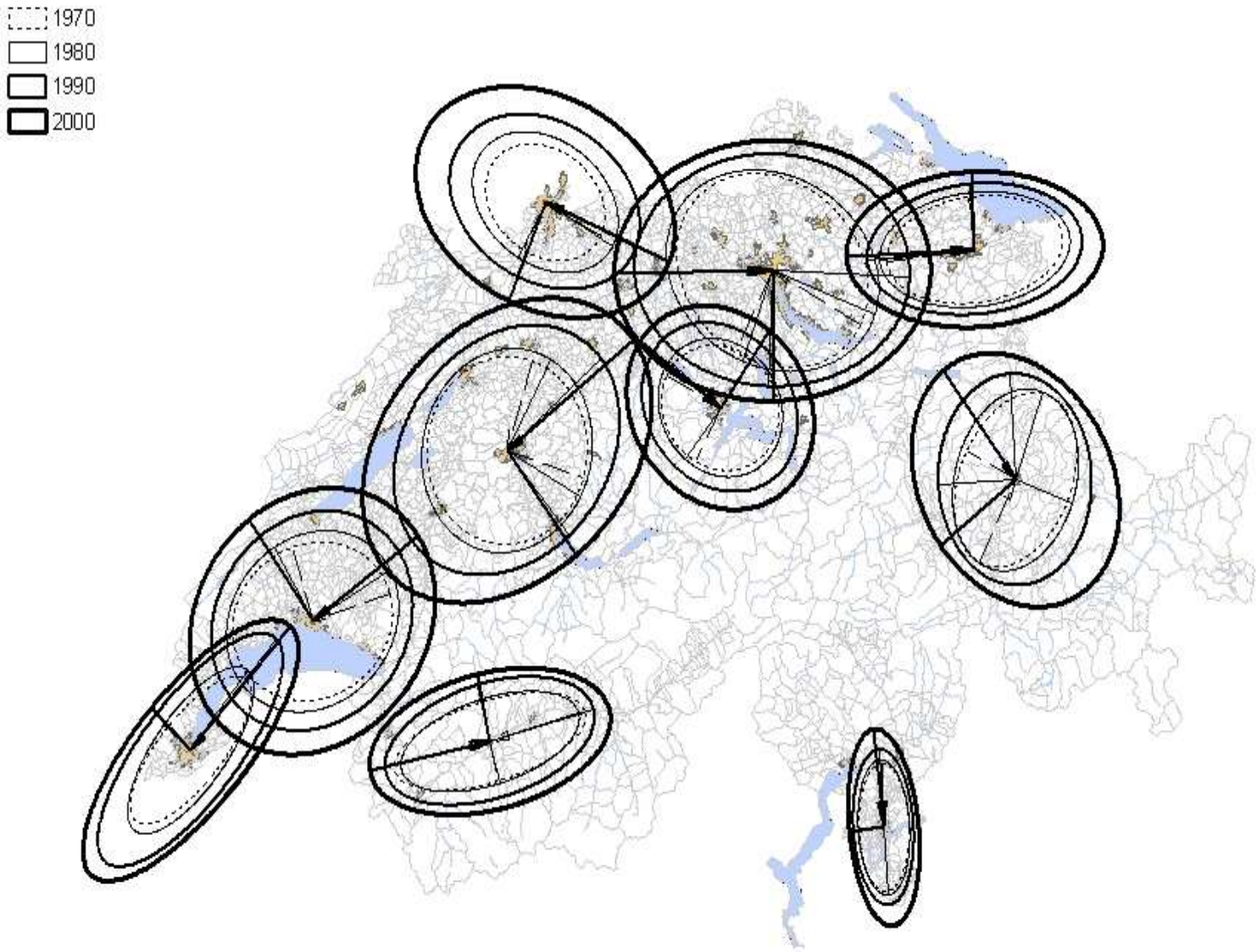


Evidence: car demand = f(purchasing power) (CH)



Frei, 2005

Evidence: market size (Swiss commuter sheds)



Nach Botte, 2003

First summary

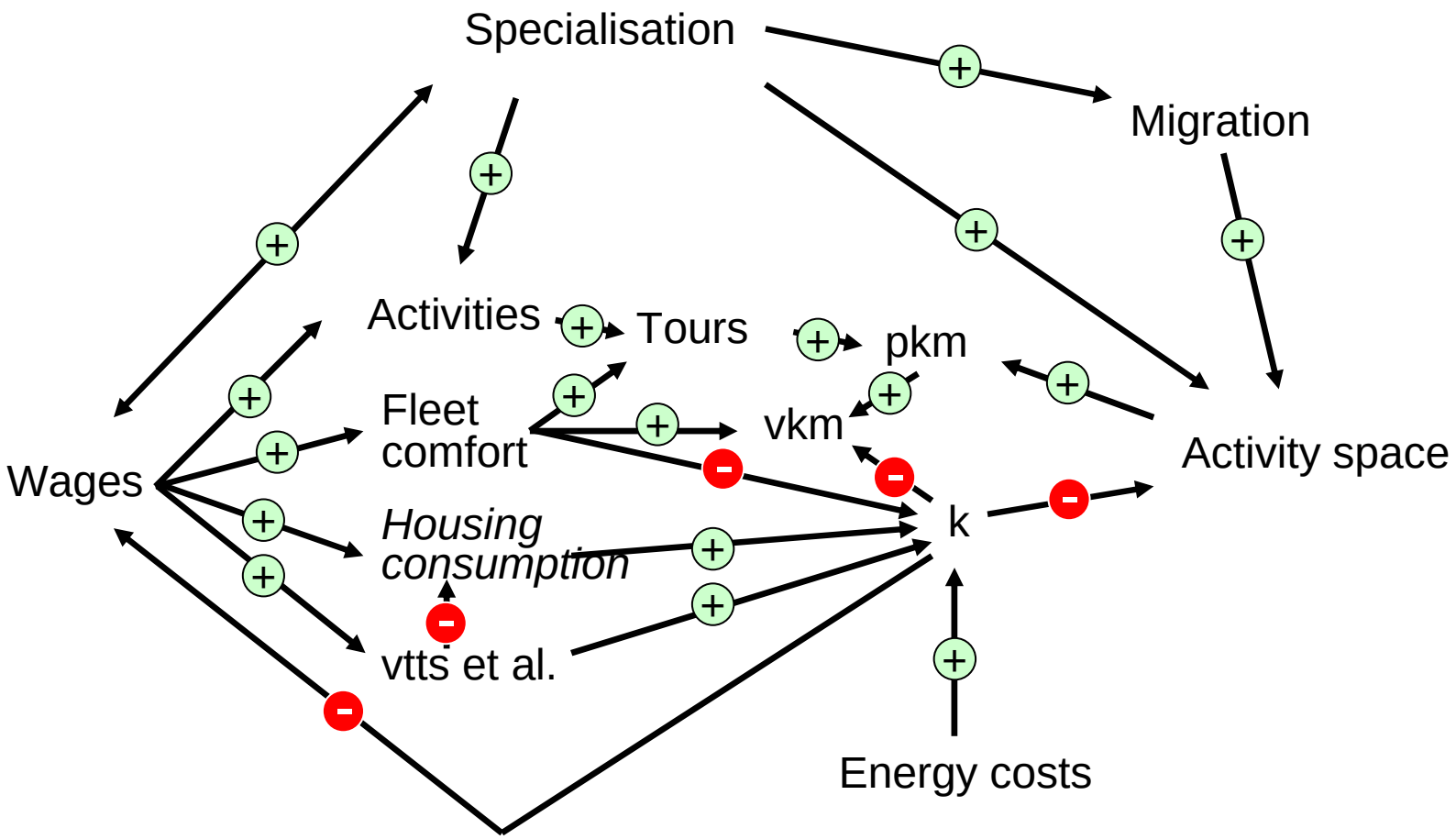
Decoupling commercial traffic from economic growth is difficult

Transport system and economic system co-evolve to lower generalised cost of transport

Dematerialisation of the economy lowers costs of transport further

Dematerialisation will increase the importance of face-to-face to contacts

Size of activity spaces: A hypothesis

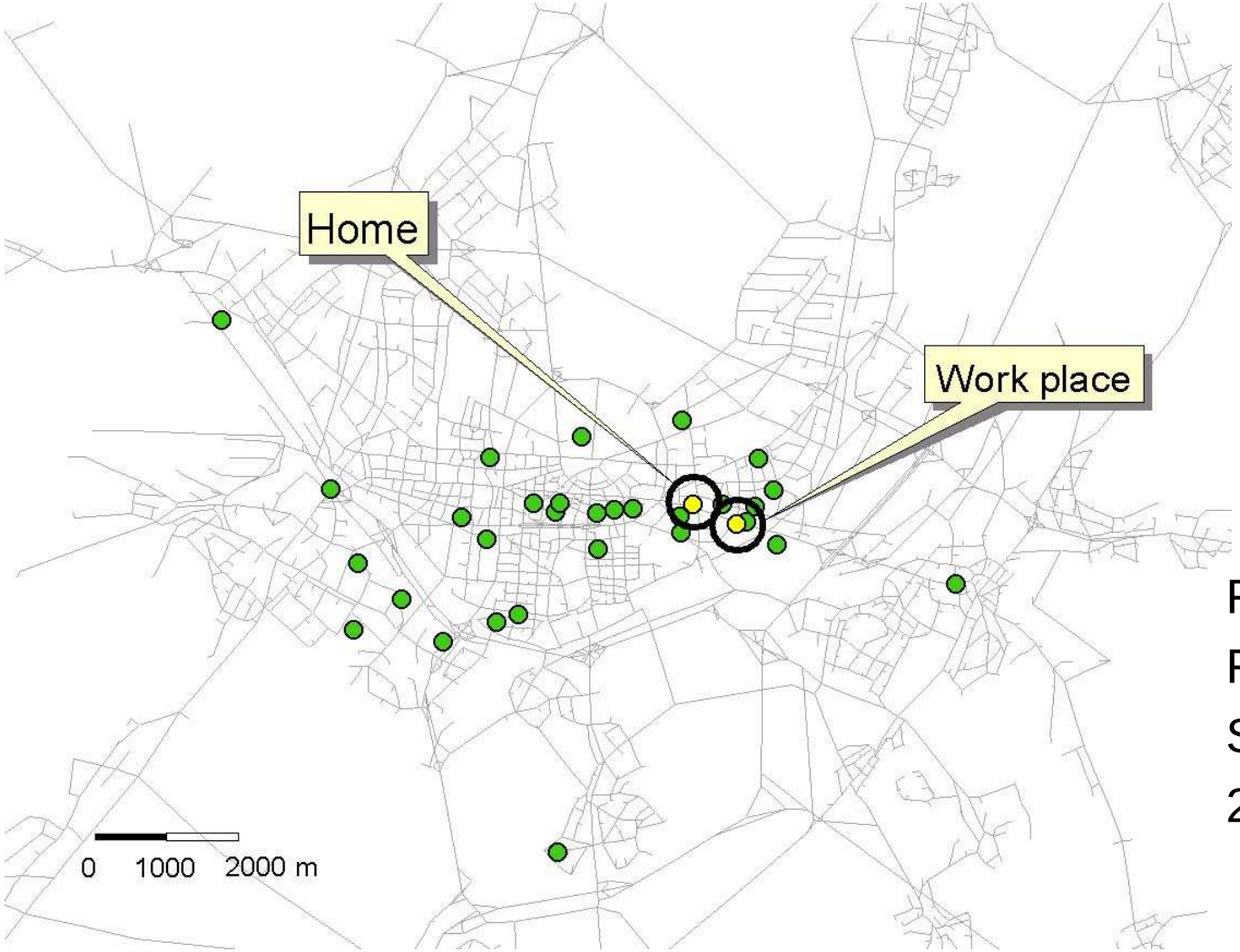


+ Elasticity > 0

- Elasticity < 0

k: personal short term generalised costs of travel

Example of local activity space



Female, 24

Full time

Single

216 trips / 6 weeks

Schönfelder

12000761

Example of a local activity space

Male, 50

Full time

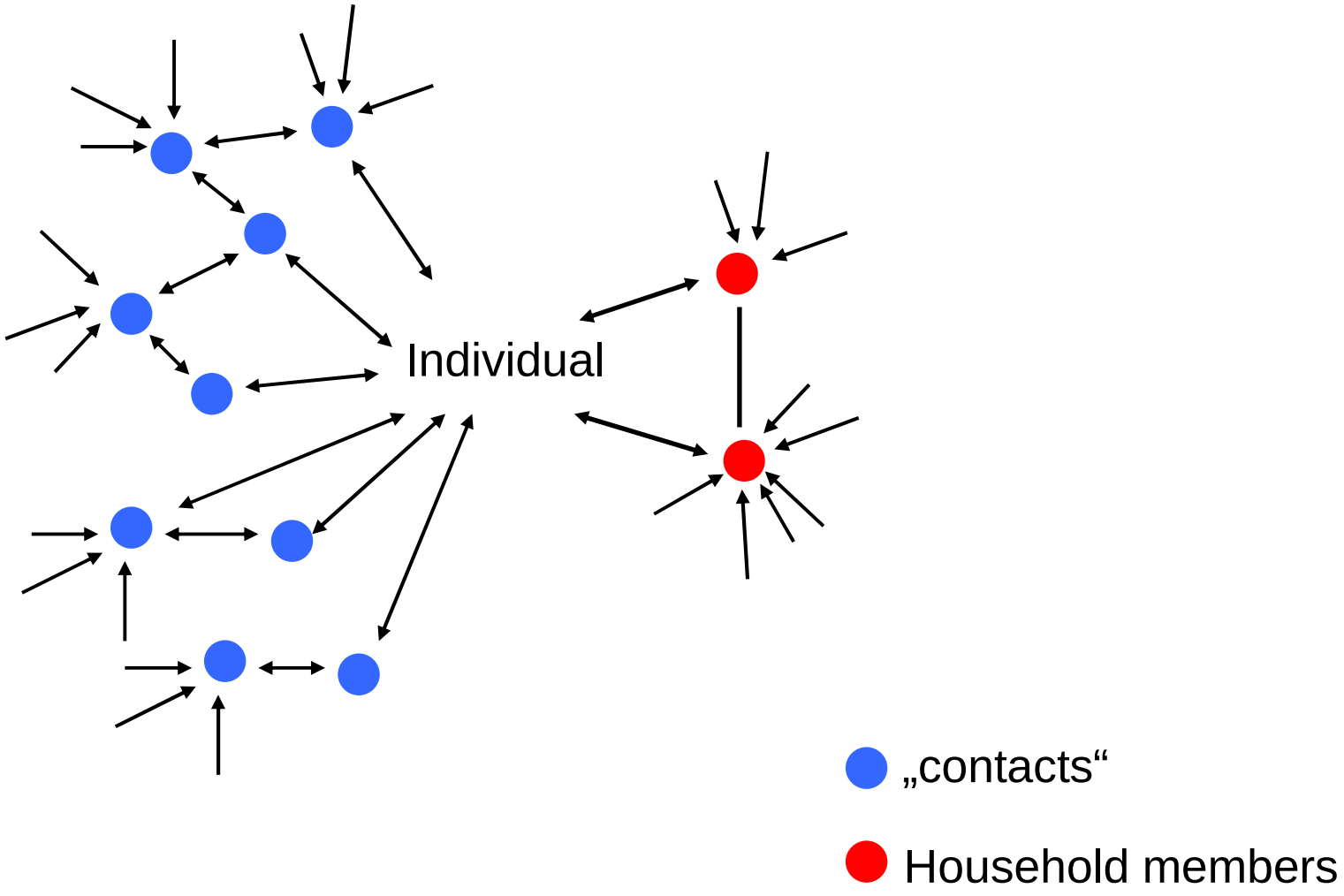
1 child

120 trips / 6 weeks

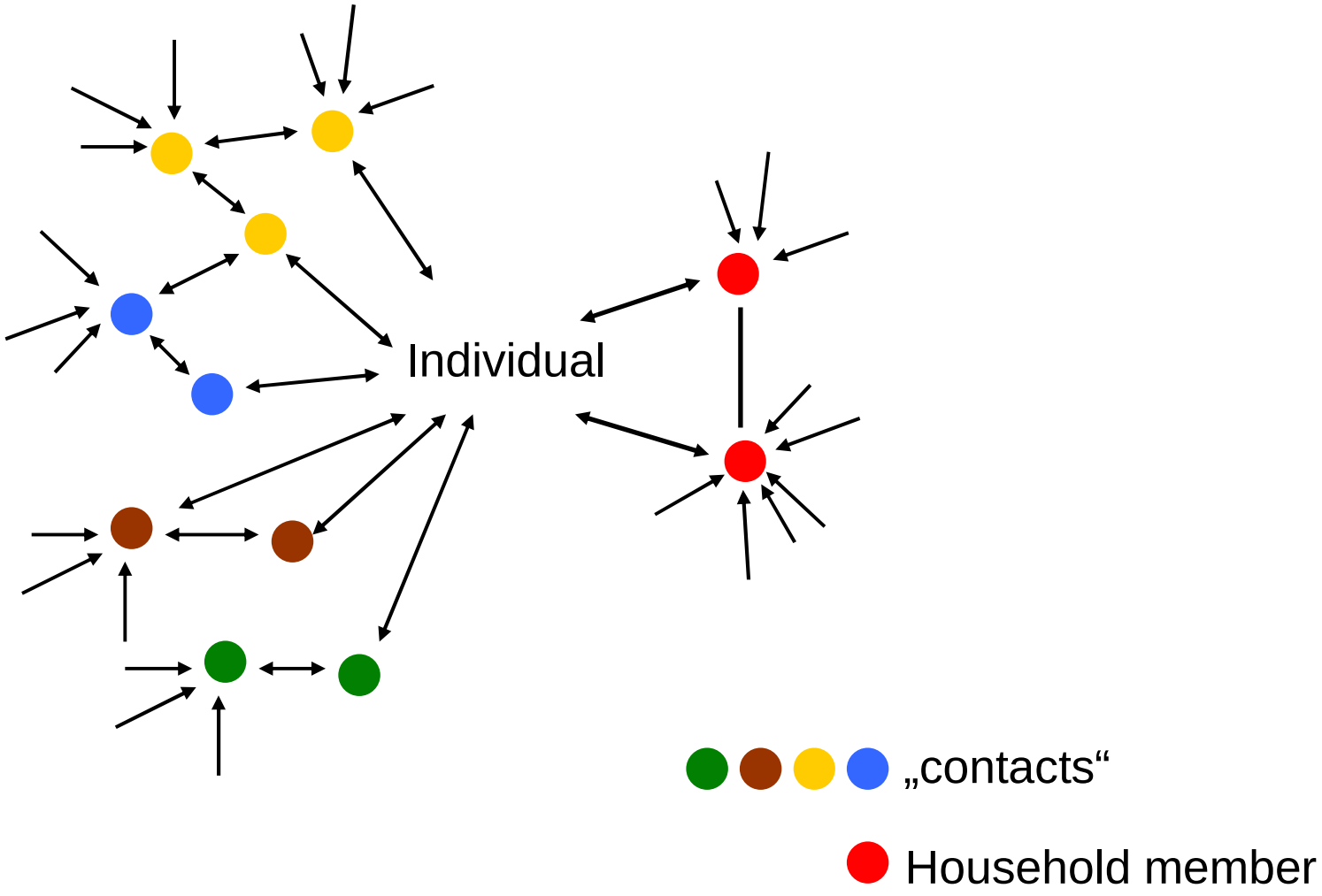
Schönfelder

1201051

Position: Person as a network member



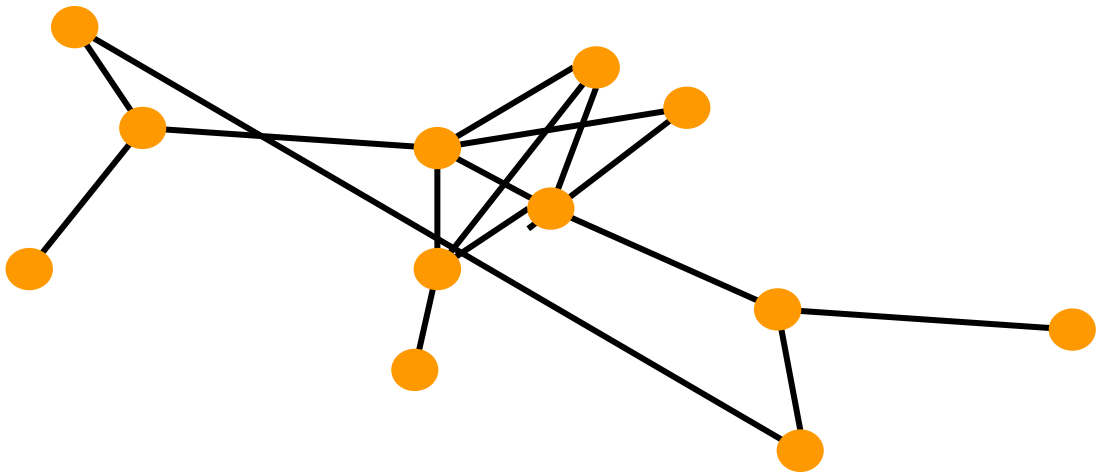
Position: Person as a member of networks



Definition of a social network

The topology of a social network describes

- Which person/firm (node) is linked to which other persons/firms
- By contacts (links) of a certain quality (impedance or cost)



Closeness ~ 1/Impedance

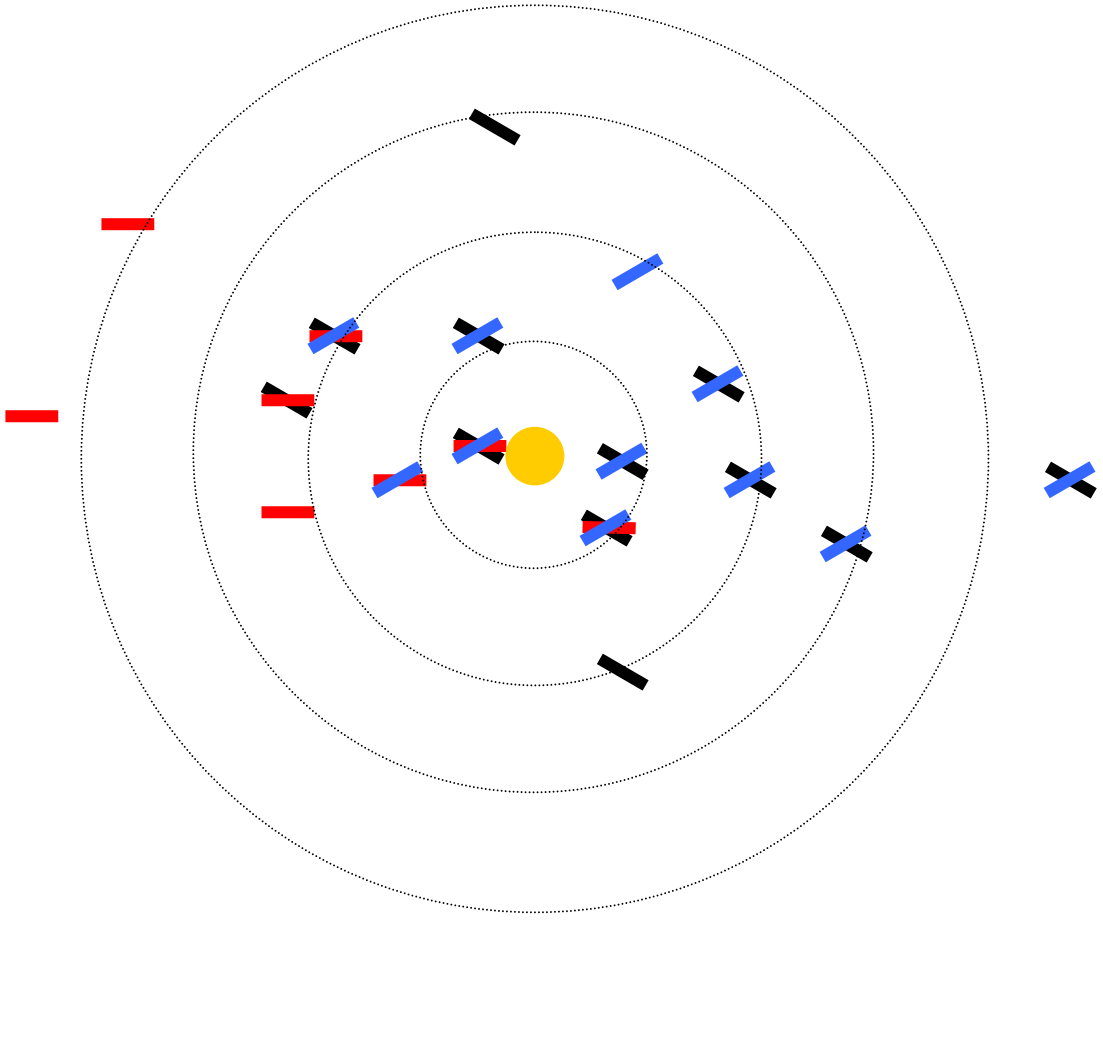
Social networks: Hypothesis 1

The size of spread (geography) of the social networks is inversely proportional to the generalised costs of communication (travel and telecommunication)

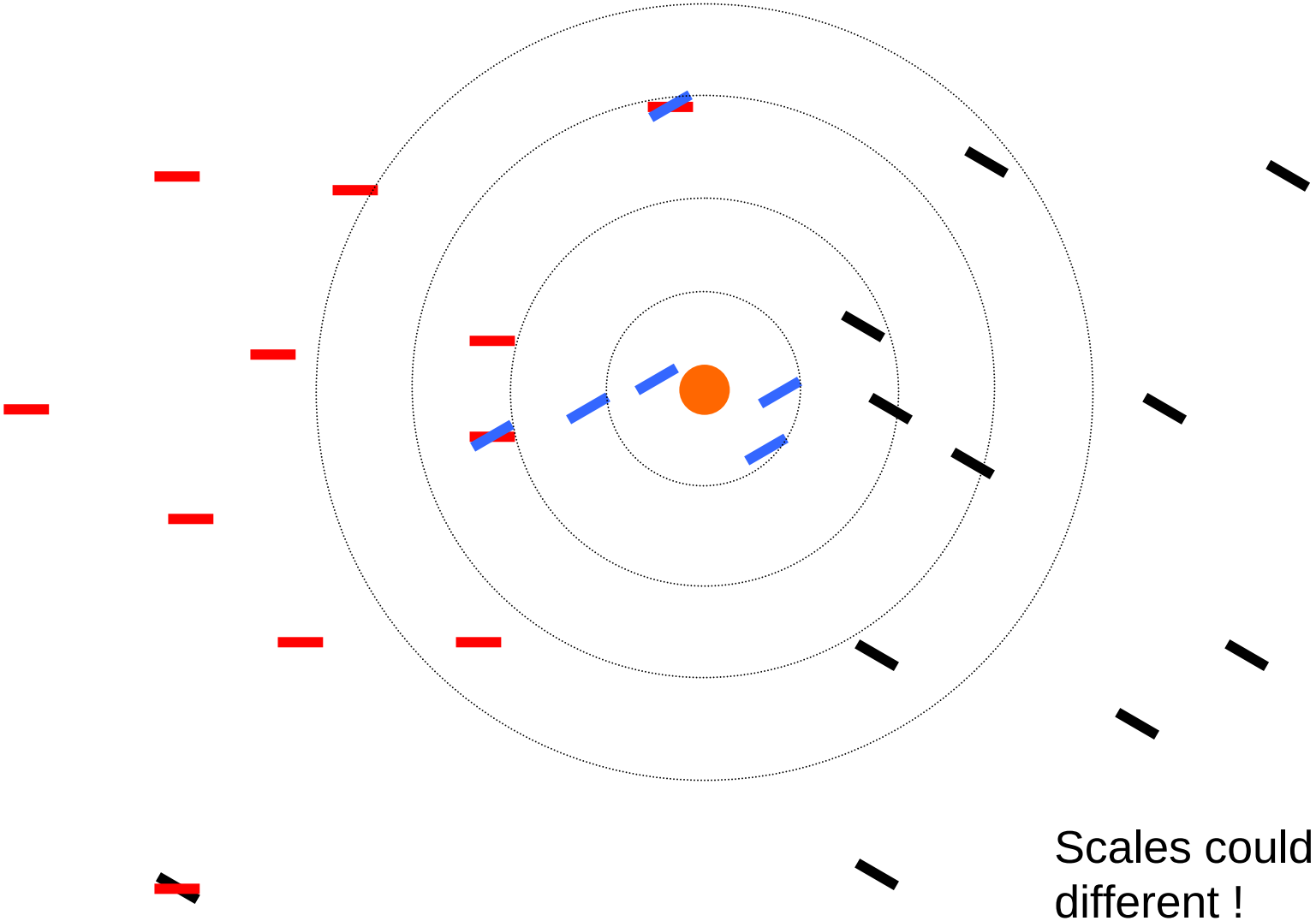
Additional result: Small geographies make it more likely that any two persons are linked through multiple networks

Corollary: The feeling of personal safety (“eyes on the street”) is proportional to the density of local links

Locally coherent networks (of the past ?)



Spatially non-coherent networks (today ?)



Scales could be different !

Social networks: Hypotheses 2a and b

Persons belong to more networks today

Persons keep more contacts alive then earlier

- More leisure time over the life cycle
- Drastically reduced costs of communication
- Copying of messages has become nearly free

Social networks: Hypotheses 3

Contacts have become more selective

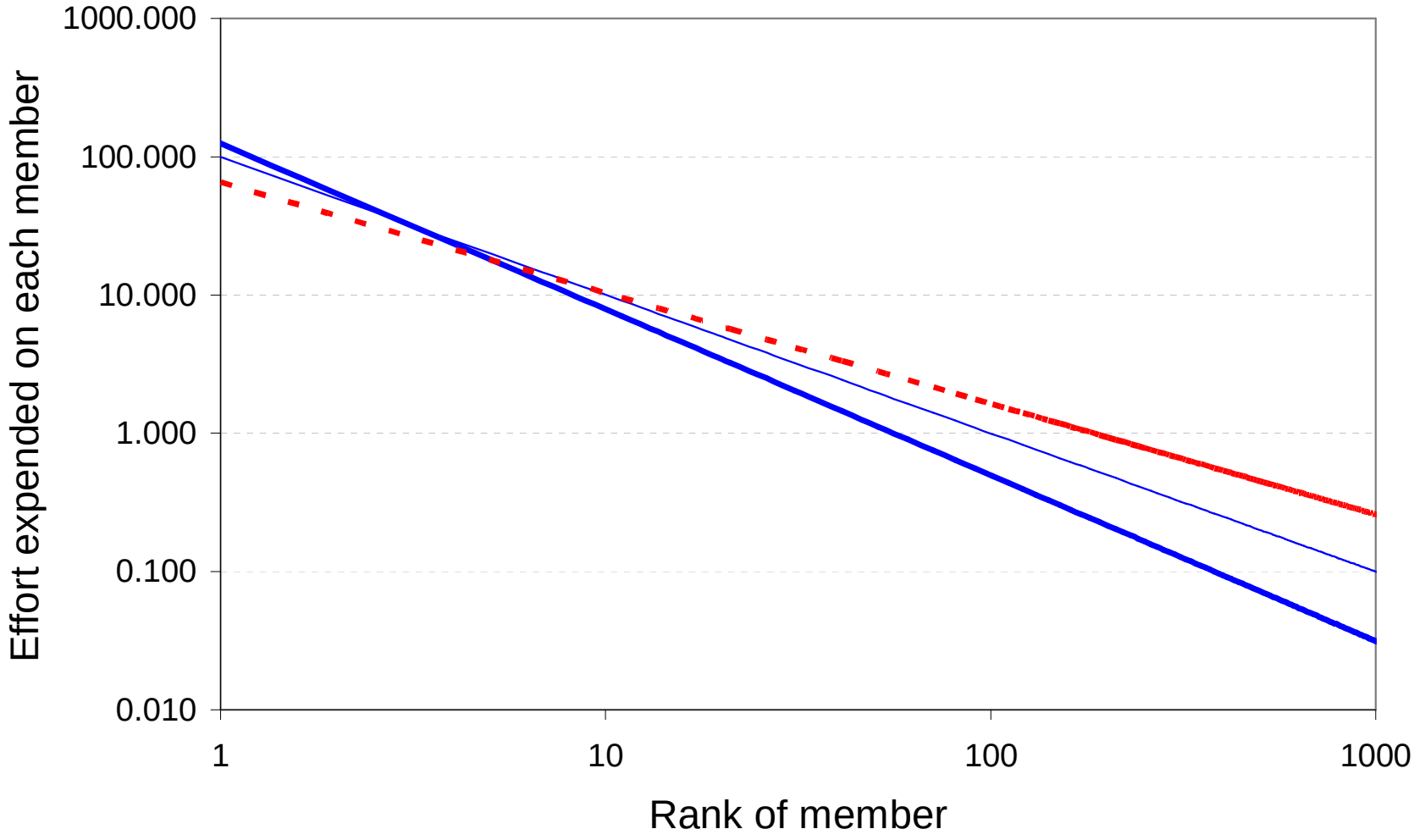
- No need to make do with the „neighbours“

Social networks: Hypothesis 4

The distribution of contacts intensity has become more left skewed

- Selectivity of contacts
- Time requirements for acquiring the background knowledge about the references of the other persons
- Less gossip
- Fewer random meetings

Shift in contact intensity



Social networks: Hypothesis 5

The average knowledge about the contacts of one's contacts is reduced by the increasing skew of the contact intensity:

- Less knowledge about everyday life and contact
- Lower visibility of many technologically enabled contacts

Corollary 1: The impact of gossip/news can be less well predicted

Corollary 2: The distance decay of "network supervision" should be less steep then in the past; the friends of ones friends are likely to be present in the same milieux independent of location.

Social networks: Assumption

The selectivity is being increased by the general availability of mobile phones:

- More spontaneous patterns of time use
- Fewer predictable availabilities at certain (time-space) locations

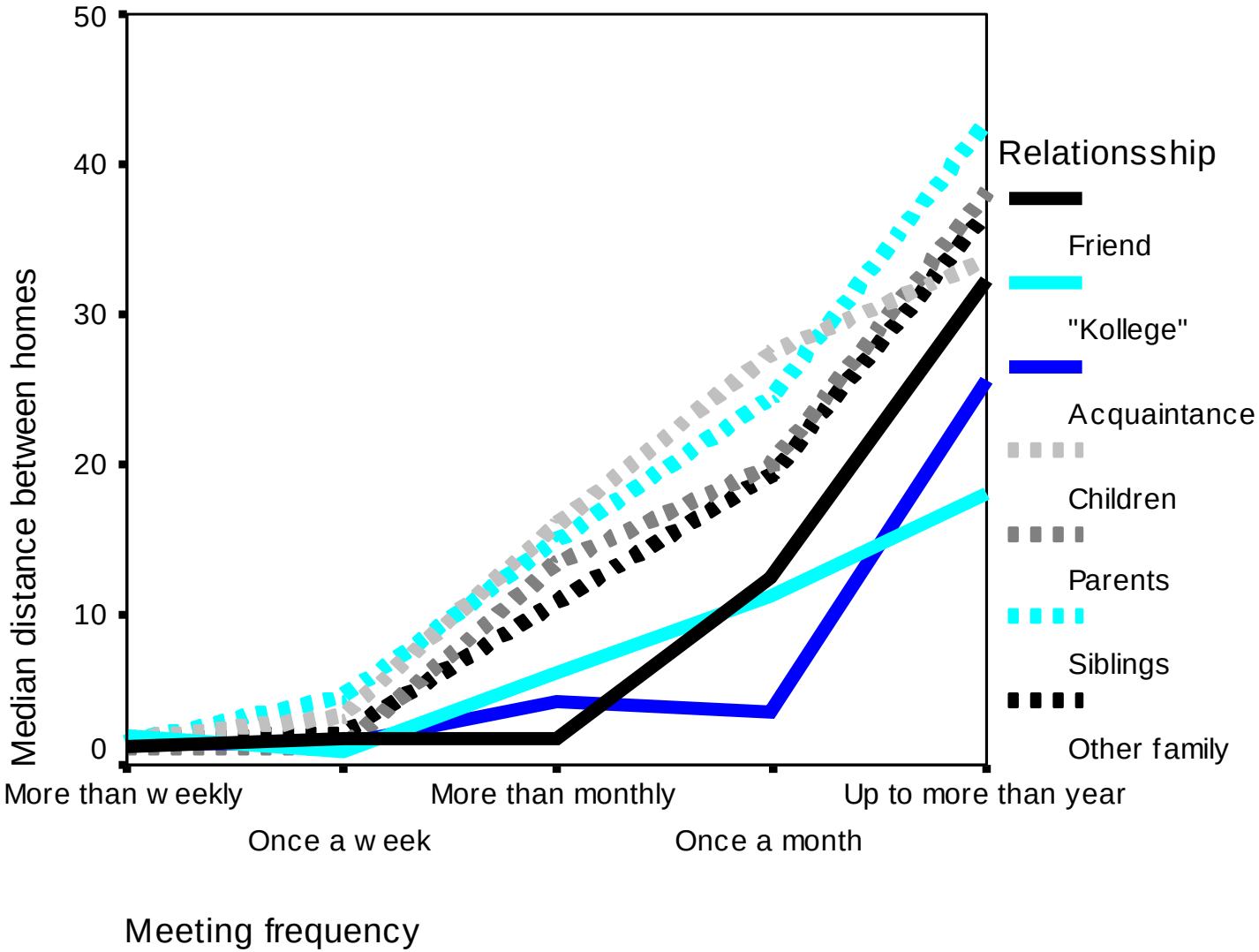
Expected impacts: Travel behaviour

Activity spaces should be larger then earlier

Regular long distance travel is required

Fast modes will remain popular

Distance and meeting frequency



Expected impacts: localised anomie

Reduced number and intensity of local contacts should reduce the local level of trust:

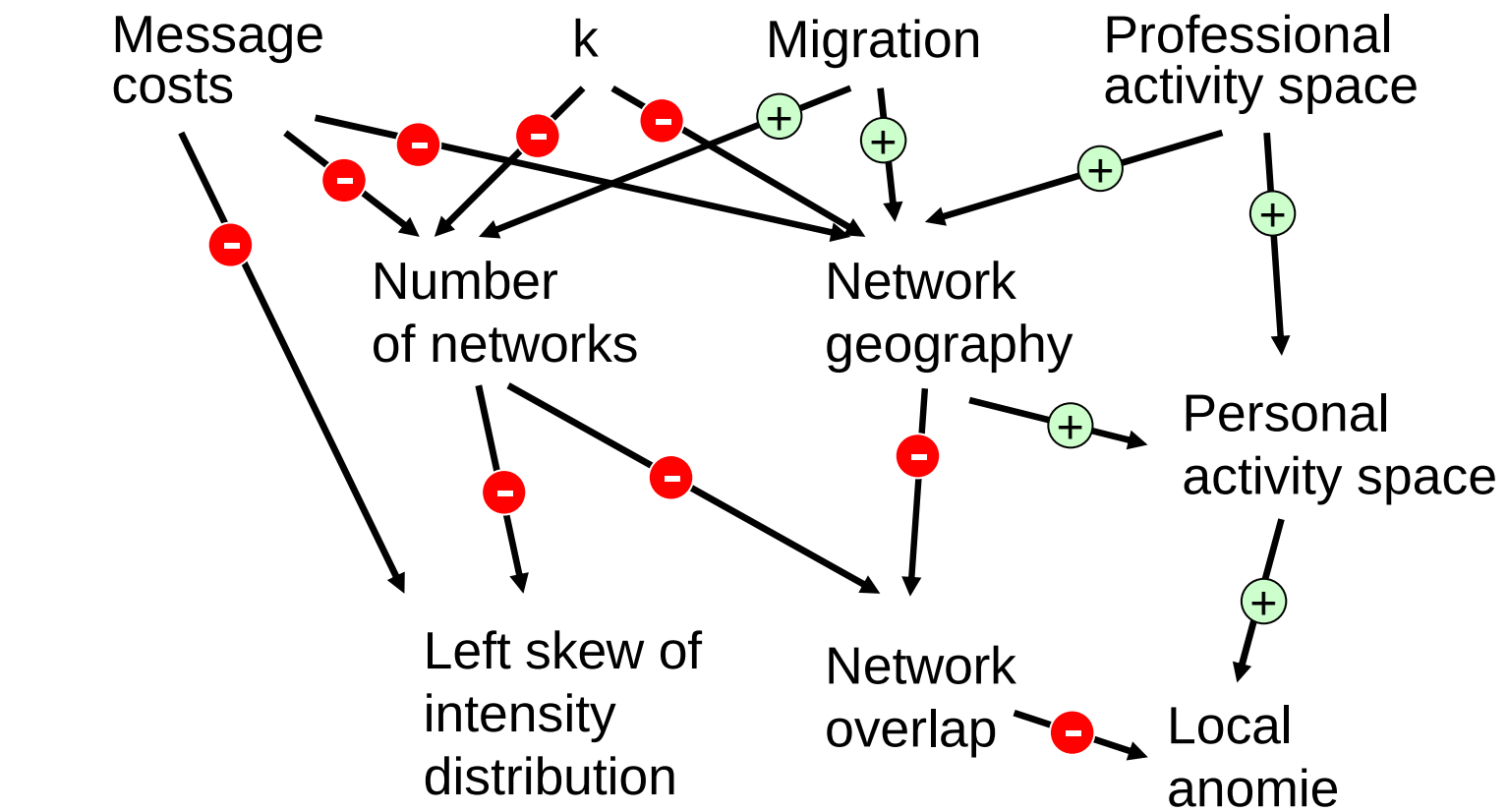
- Growing investment into safeguarding the person and the home
- Reduced exposure to risk during travel, i.e. less travel by public transport, cycling and walking

Expected impacts: Improved welfare

The social networks should be more homogeneous and therefore more productive for their members

But, the selectivity excludes the „less attractive“ persons who are disadvantaged through a reduced ability to travel or a reduced ability to participate in activities

Summary


Message costs
k
Migration
Professional activity space
Number of networks
Network geography
Personal activity space
Left skew of intensity distribution
Network overlap
Local anomie
+ Elasticity > 0
- Elasticity < 0

Research issues

- Measurement of the activity spaces (geographies, markets)
- Estimate of historical activity spaces ...
- Connection between welfare and the size of the activity spaces
- Stability of the geographies under pressure
- Elasticities to policy (or environmental) change
- Time to trend change

When will the marginal benefits become zero ?

…. the localised anomie stresses the other mechanism of social inclusion too strongly

…. the costs of private protection become too high

…. the environmental impacts become too threatening

…. the trend in the costs of travel changes

Back to the future ?

home.t-online.de/home/k-j.lebus/cdf-hgw.htm

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