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# Path-Dependency, Externalities and Related Variety in Regional Innovation Systems

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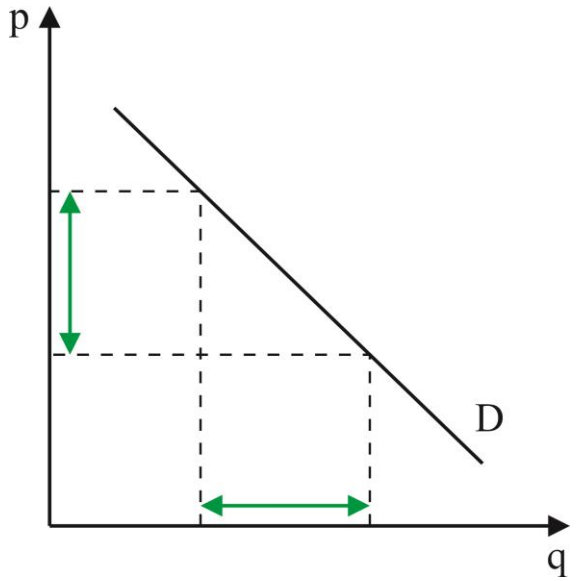
# Background

- Expanding application of path-dependency in economic theory.
- Evolutionary economics, an influential theory of the economics of innovation, explicitly relies on it.
- Related variety has promising results in analyzing inter-sectoral knowledge spillovers.

- The relationship between path dependency and related variety has hardly been analyzed.

- Many laws in physics, like Newtionian mechanics share time-symmetric features.
- In mainstream neoclassical economic theory, time-symmetry is also present.



# Structure of presentation

1. Path-Dependency
2. Related variety
3. Policy implications

**Research question**: *What are the implications of path-dependent technological change based on agglomeration economies and related variety to policymaking?*

# Path-Dependency

*"Usually lying behind the notion of path-dependence is a series of factors that together add up to a directional bias."* (Glasmeier 2000, pp. 269–270.)

**„History-friendly" evolutionary economics**

- History is embodied in the present.
- Specific historical context in the application of general evolutionary theory.

**„Weak" and „strong" interpretation**

- Past decisions limit future choices.
- Search routines are bounded by past experience.

**Path-dependency phases**

- Pre-formation phase.
- Path creation phase.
- Path lock-in phase.
- Path dissolution phase.

**Critique**

- „Clean slate".
- Equilibrium reasoning.
- External schock in path dissolution phase.

# Related Variety

*related variety* – related and supporting industries, knowledge spillovers

*unrelated variety* – portfolio of sectors, regional resilience

| Agglomeration economies | Proximity | Variety | Effect | Path-Dependency |
|---|---|---|---|---|
| localization economies (MAR externalities) | geographical proximity; relational proximity | relatedness without variety | knowledge spillovers within the sectors | reinforcing existing pathways |
| Jacobs externalities | | related variety | knowledge spillovers between the sectors | widening existing pathways |
| urbanization economies | geographical proximity | unrelated variety | regional resilience | facilitating path-dissolution |
| | relational proximity | related variety | bifurcation of technological trajectories | preventing technological lock-in |

*Table 1*. Agglomeration economies, proximity, variety and path-dependency.
*Source*: Own construction.

# Policy implications

**Unique regions**

- Differentiated innovation policy.
- History-friendly approach.

**Learning based policymaking**

- Experience appearing in routines and institutions.
- Search routines defining perception and possible solutions of problems („strong” interpretation)

**Irreversible processes**

- Present decisions narrow down the range of future options.

**Path-dependent trajectories**

- Context-dependent options of policy.
- Policy focus inside trajectory
  - less uncertainty
  - decreased flexibility
- Policy focus outside trajectory
  - more uncertainty
  - increased flexibility

  ↓
- Uncertainty and the range of options can change in the same direction.

# Policy implications

**Policy mechanism**

- Discontinuous and delayed effects.
- Path-dissolution as „internal shock”, resilience **against** policy.

**Policy focusing on variety**

- Increasing related variety
  - increasing knowledge spillovers and innovation
  - increasing the risk of negative lock-in
- Increasing unrelated variety
  - increasing regional resilience
  - decreasing knowledge-externalities (alternative use of policy resources)

**Hungarian experience**

- Dissolution of CMEA and industrial specialization.
- Decline of rural regions, specialized in agriculture.
- Centralized policymaking limited adaptability.
- Regional economies were insufficiently resilient to the external shock of entering the global market.

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# Thank you for your attention!

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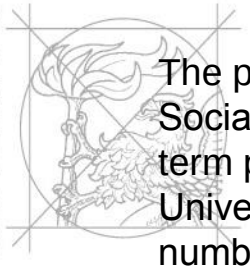

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