Social Dynamics of Economic Performance: Conceptual Overview of Quantitative Analysis

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Innovation Systems Research Network

From Clusters to City-Regions: Primary Research Question

How do local social characteristics and processes in *city-regions* shape their economic vitality and dynamism as centres of innovation and creativity?

3 Dimensions

- Social learning dynamics & knowledge flows between economic actors

- Social dimensions of talent attraction and retention (quality of place, including diversity, openness, inclusion)

- Social nature of civic engagement and governance processes

Theme I: Social Dynamics of Innovation

- **Primary H:** the economic and creativity performance (ECP) of city-regions depends on
  - Strength of local knowledge circulation *within clusters*
  - Strength of local knowledge circulation *between clusters* (local knowledge diversity)
  - Strength of knowledge-based linkages *between local and non-local actors* (geographical knowledge diversity)

Theme II: Social Foundations of Talent Attraction and Retention

- **Primary H:** ECP of city-regions depends on quality of place characteristics:
  - Cultural dynamism
  - Social diversity
  - Openness/tolerance
  - Social inclusion/cohesion

Theme III: Inclusive Communities and Civic Engagement

- **Primary H:** ECP of city-regions depends on:

  – Their ability to generate effective new forms of associative governance, collaborative leadership

  – Social inclusiveness of new governance forms

Quantitative Analysis

- Examine the hypotheses related to Theme I and Theme II

- Macro level using Indicators database at the cluster and city-region level

- Micro level (individuals, firms) using other Statistics Canada datasets

Quantitative Analysis

	Innovation and Economic Performance	**Talent Attraction**
Macro-level (places)	Indicators database (patents, employment growth)	Mobility matrices and Indicators database
Micro-level (firms, individuals)	Survey of Innovation (SOI)	Longitudinal Employment Analysis Program (LEAP)

Theme I: Quantitative Analysis

- Use Indicators database to explore relationship between ECP of cities and
  - Diversity of internal economic structure
  - Relative strength of local K linkages
  - Relative strength of external K linkages
  - [K in disembodied and embodied forms]
- Use StatCan (SIEID) innovation survey data for similar (micro) analysis

Theme II: Quantitative Analysis

- Use Indicators database to explore relationship between ECP and QoP, with some new wrinkles:
  - Measures of social inclusion/exclusion
  - New measures of diversity (beyond foreign-born)
  - Large vs. mid-size, smaller urban centres?

- Objectives:
  - Is it possible to pursue a talent-based ED strategy while enhancing social inclusion?
  - Do 'big city' relationships hold in S, M cities?

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Talent Attraction: Questions

- What place characteristics and dimensions of quality of place are important in attracting and retaining talent?

  – What determines the mobility (M) of workers in a particular occupation (o) from one place (i) to another (j)?

    - M_{ijo} = f (origin, destination, differences)

  – Are there differences between inter-urban (domestic) and global (international) mobility patterns by occupation?

Talent Attraction: Explanatory Variables

- Economic & social characteristics of the place
  - Economic diversity (related and unrelated variety)
  - Social/cultural diversity, openness/tolerance
  - Income, cost of living, levels of inequality, provision of public goods
- Quality and investment in regional innovation system
  - University enrolment, patents, tri-council funding, educational attainment
- Quality and investment in local arts and culture scene
  - Artists, arts funding
- Career opportunity / local career 'buzz'
  - Critical mass of people in same occupation
  - Diversity of work opportunities

Talent Attraction: Data

- Census data at the city-region level
  - 140 Census Metropolitan Areas and Census Agglomerations
  - Detailed information on 60 occupational categories
  - Flow matrices (gross migration b/w cities)
- Unable to capture shifts b/w firms, industries, not longitudinal / dynamics

Talent, Mobility and Knowledge Flows

- Mobility of highly educated / creative workers → (embodied) knowledge flows
  - Potential for cross-sectoral knowledge flows and knowledge exchange when workers cross sectoral and/or geographic boundaries
  - Hypothesis: cross-sectoral knowledge flows are more likely to occur in large, economically diverse city-regions (esp. when related variety is high)

Talent, Mobility and Knowledge Flows

- Type I: 'Marshallian' mobility
  - Same industry, **different firm**, same place
  - Classic cluster dynamic

- Type II: 'Pipeline' mobility
  - Same industry, **different firm, different place**
  - Builds network between different clusters/ places

- Type III: 'Knowledge enablers'
  - Same industry, same firm, **different place**
  - Employees of multi-locational / multinational companies
  - Also a form of pipeline mobility

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Talent, Mobility and Knowledge Flows

- ## Type IV: 'Jacobs' mobility
  - **Different industry, different firm,** same place
  - Related variety? (how 'different' is industry)?

- ## Type V: ?
  - **Different industry, different firm, different place**
  - Least likely form of mobility

- ## Hypotheses
  - Clusters (specialized-introverted): Types I
  - Clusters (specialized-connected): Types I, II, III
  - Diverse city-regions: Type IV

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Talent, Mobility and Knowledge Flows

- Data: Longitudinal Employment Analysis Program (LEAP)
    - T4 slips from employers and tracks employees through time using Social Insurance Number (SIN)
        - Firm, industry, location, wages
    - (Prospective) Link to ESIS via SIN
        - Educational attainment
    - Able to construct employment histories and trace mobility patterns through time, differentiating by educational background

Economic and Innovation Performance

- What place characteristics and dimensions of quality of place are related to high…

  – Growth in the proportion of highly educated / creative workers?

  – Employment growth?

  – Income / productivity growth?

  – Innovative performance (patents, growth in patents)?

Economic and Innovation Performance

- How important are place-based characteristics and relationships to the innovative performance of manufacturers?

- What role do the internal resources and capabilities of the firm and plant, as well as their external knowledge-based relationships, play in this context?

Economic and Innovation Performance

- Facilitated access project with Statistics Canada

- Data: Survey of Innovation, 2005
  - 8,000 establishments in manufacturing, natural resources

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Economic and Innovation Performance

- **H:** The degree of innovativeness will be greater for manufacturing plants that:

    - are located in larger metropolitan areas
    - are located in more sectorally diverse metropolitan areas
    - engage in internal R&D activities
    - dedicate a higher proportion of their in-house human resources to R&D
    - have a higher proportion of highly educated workers in-house
    - develop a broader range of external knowledge-based interactions
    - utilize a broader range of external sources and types of knowledge (codified and tacit)
    - cooperate/collaborate more with local external innovation partners
    - cooperate/collaborate more with non-local external innovation partners

Quantitative Analysis: Timeline

	Innovation and Economic Performance	**Talent Attraction**
Macro-level (places)	Indicators database (Fall 2007)	Mobility matrices, Indicators database (Fall 2007)
Micro-level (firms, individuals)	Survey of Innovation (Winter 2008)	LEAP + ESIS (Summer 2008?)

Questions?