Lecture 11

A "first-cut" critique of NIS

1. Over-emphasis of I-O relations (i.e. traded interdependencies)?

2. Different types of industrial complexes?

3. Limited to localities/industries which have been successful?

4. Too much focus on SMEs?

5. Zero-sum nature?

Emergence of a New Economic Geography (Krugman?)

Krugman's Explanation of Industrial Agglomerations

Two faces on Krugman's NEG:

- Regional specialization result of accidents of history
- Regional agglomerations sustained by external economies of scale (depend on size of market)

Key factors (going back to Marshall):

- i. Creation of specialist suppliers (i.e. input-output efficiencies)
- ii. Labour market pooling

Little attention paid to technological spillovers (too difficult to model?)

On the importance of technological change

- Yet TC increasingly seen as primary determinant of long term economic growth!
    - Solow, 1956; Romer, 1986; Lucas, 1988
- Explanations of differences in national (regional) economic growth patterns now focus on innovative capacity of firms and the nation (region)
    - I.e. transactional and institutional framework of conventions and relations in which firms and workers are embedded
    - Regional specific knowledge and institutional setting
- What forces drive TC?
    - In capitalism, firms compete for profits: uncertainty and incapacity to control markets is impetus for technological change
- General definition of technology: the social pool of knowledge of the industrial arts (Schmookler)
- Technological process (=expansion of this pool of information) and TC occurs when agents use new parts of this knowledge pool
- TC governed by:
    - 1. Production of knowledge (invention and learning)
    - 2. How it is applied to the economy (innovation)
    - 3. How it spreads or diffuses (imitation) throughout the economy
- These 3 processes operate at a firm level. For an industry or region, TC is produced through selection (entrance of new firms and exit of older firms); governed by competition.
- Regions are composed of various economic actors embedded within a set of institutional and organizational structures

- Regions are repositories of accumulated knowledge (both codified and tacit) which incorporate behaviroual conventions and relations
- These shape the way knowledge is produced and how learning takes place. Pools of knowledge therefore differ over space!

Adding a new dimension: focus on untraded interdependencies

- More to agglomeration dynamics than simply traded interdependencies: is there really 'something in the air'?
- Agglomeration as source of industrial dynamism: knowledge generated in and through agglomerations
- Thus importance of Storper's untraded interdependencies: sets of conventions, rules, practices, and institutions embedded in the social fabric of the region
    - I.e. non-economic social relations and structures embedded in regional growth
    - Highly reflexive (i.e. human agency)

Case study: the British Motor Sport Industry (BMSI)

All the hallmarks of a NIS:

- Over 75% of single-seat racing cars are British-built (Formula One, Indy Cars, and Rally Cars)
- 50,000 employees across mainly small and medium-sized (SME) firms
- SMEs specialize in various aspects of parts production (gearboxes, brakes, engines, suspensions)
- Vertically disintegrated 'flexible' production, industrial agglomeration

Why Britain in the first place?

- In care of BMSI, important to tap into the locally embedded generation of knowledge
- BMSI's origins (post-WWII): much of the knowledge, physical inputs, and skilled workers required to design and build race cars derived from aerospace sector
- Historical accident? Not really!

Culture-Economy Nexus

- Incentives to agglomerate: tap into thick and rapidly circulating flows of knowledge and technological innovations
- Local diffusion of innovations:
    - "Job-hoping" designers, engineers, and technicians
    - As they move from one team to the next, they bring with them considerable knowledge of how things are done with rival teams
- Factors behind knowledge dissemination
- Industrial spying and McLaren

Lecture 12 – The economic geography of talent

Deconstructing Florida's ("best-selling") work on the creative class
Florida's Main Thesis:

Logic of his argument:

1. Recognize that economic growth powered by knowledge economy (i.e. innovation, creativity)
2. Knowledge-based economy rests on shoulders of creative class, i.e. highly-skilled individuals who create new knowledge
    a. Also on process innovations
3. What attracts highly talented individuals to certain places?
    a. Not so much job opportunities or financial incentives
    b. Rather, quality of place (open, diverse, tolerant, authentic, and culturally vibrant)
4. Key policy issues focus on how to attract creative class to communities
5. Hi-tech industries want to locate close to creative class labour pools; thus attractive cities generate growth
    a. A new fad? Remember hexagons
        i. Florida advances this thesis (2002), but not reinventing the wheel

Setting the Scene

- **1. Thinking about the creative economy**
    - Creative economy: "one in which advanced nations are shifting to information-based, knowledge-driven economies" (Florida, 2002)
        - Sort of a given – regulation theorists argued similar ideas.
        - Changing regimes of accumulation – changing to knowledge intensive
    - Intellectual antecedents:
        - Bell (1973) and Drucker (1993): "the basic economic resources – the 'means of production,' to use the economist's term is no longer capital, nor natural resources… nor 'labour.' It is and will be knowledge"
        - This was widely accepted already in economic sociology (importance of knowledge)

Difficulty:

- How to measure knowledge creative economy?
    - That's where debate is in late 1990s, early 2000s.
    - So Florida looks at different economic indicators – as proxy variables to look at evolution of the knowledge based economy over time (approximate indicators of particular phenomenon)
    - Many indicators, including:

    - **R&D activity** is the key indicator of the 'explosion in creativity'
        - Across different countries
        - Expenditures in industry-led R&D the highest (in US) – drives R&D
        - University levels consistent, growing at a much slower pace compared to private sector
            - Shift in the way that businesses use resources (more R&D)
    - **Patent Data**

        - US data from 1990s
        - By end of decade, amount almost doubled
        - Cities more unequal, tend to be more innovative – so dark side to creative class thesis: emphasize creativity, but maybe make income more unequal?
    - **R&D expenditure**
        - Total US share – almost half of R&D investment
        - General trend: US dominates in terms of knowledge based economies

    - Importance of institutions that make up the '*social structure of creativity*':
        1. New systems of for technological creativity and entrepreneurship (e.g. university linkages, venture capital system)
            a. Importance? US huge advantage (R&D investments) – have been able to develop important role in R&D industry. Venture capital – American entrepreneurs, targeting technological areas
        2. New more effective models for producing goods (e.g. JIT inventories, quality control, outsourcing)
            a. Another example of how these systems evolved to be more flexible production systems.
        3. Emergence of social, culture, and geographic 'milieu' conducive to creativity (e.g. all supporting 'life-style' and cultural institutions)
            a. Goes back to Grenoble (France), and the importance of un-traded interdependencies
            b. Milieus also support lifestyles, social/cultural institutions

    - **A Milieu?**
        - Innovative/creative milieu:
            - "set of relationships occurring within a geographical area, which unify a production system, different actors, an industrial culture, and a self-representation, cumulatively generating a localized dynamic process of collective learning" (Camagni, 1993)
            - The physical of social setting in which people live or in which something happens or develops
        - Problems with definition:
            - Gets at intangibles, but problems still
            - Circularity problem? What comes first? Encourage creative class growth, then that generates agglomeration/economic growth? Or generate employment growth, then bring in creative? Doesn't bring in causality
            - Important to recognize milieu, but where do we start? Important for policy
        - Main drivers of growth: spillovers between firms or connections between individuals?
            - Not identified – where do we emphasize policy interventions?

- **2. Defining the creative class**
    - Fundamental basis of creative class = economic, i.e. members of this class add economic value through their creativity

        - Redefining class structure – no longer P vs B – but about owners of knowledge (not capital) – those that add value are those that add through creativity
    - For Florida, "people organize themselves into social groupings and common identities based principally on their economic function"
        - In 19th century Marx could apply this by workers organizing vs owners organizing
    - Social and cultural preferences, consumption habits flow from this
        - Once we have new class structure, new dynamics evolve
        - Creative core, service class, then everyone else
    - Moving political framework forwards by creating new class

- **New class structures**

Move from binary (Marx) – but Florida's could still be binary (creative vs everyone else)

- The **creative class**
    - **1. Super-creative core:**
        - Engaged in the creative process producing transferable and widely useful new forms and designs (e.g. scientists, engineers, professors, writers, artists, entertainers, actors, designers, architects)
        - Paid to solve and create new problems to be solved!
            - Wide range of individuals, but share similarities (problem solving)
            - Paid for capacity to create new knowledge
    - **2. Creative professionals:**
        - Work in knowledge intensive industries solving specific problems (e.g. physicians, lawyers, managers)
        - Deal with issues that require much knowledge

- The **service class**
    - Low-end, typically low-wage occupations
        - This class grows in response to demands of the creative class
        - Require little in terms of formal knowledge, training, skills
        - Class made up of individuals to service the needs of the creative class individuals
- The **working class**
    - Consists of individuals occupied in production operations, transportation, repair and maintenance, construction, also public utilities.

New class structure: more nuanced than white vs. blue collar dichotomy

Florida looks at labour market

- Employment for US (20th century)
    - Beginning of 20th: two most important things: working class and agricultural
        - Working class continues to grow, tapers at 1980s
        - Agricultural transitions out
        - Explosion of creative and service class
            - Not necessarily core, but creative professionals
    - At transition from Fordism to post Fordism – growth in service

- Percent of work force
    - Bulk of creative class in professionals
    - Also indication of class relationships between creative and service – inequality
- Wages
    - Creative class earning more than double service class
        - Core – earns less
    - Significant questions of inequality (which Florida doesn't mention in 2002) – argues service there as an artifact because of creative class creation
        - Thesis all about encouraging innovation in cities (and therefore cannot address inequality)

- **New trends in values:**
    1. Individuality: strong preference for self-statement and individuality
        a. Yuppie in post-Fordism
    2. Meritocracy: favours those who hard work, take up challenges
    3. Diversity and openness: strong affinity for "organizations and environments in which… anyone can fit and get ahead"
        a. Creative class favours where they can fit in nicely
        b. This is the point Florida emphasizes in early writings. Key criterion that we should focus on as policy makers – how to attract people in the first place
    - The latter, according to Florida, is key criterion when it comes to attracting talented individuals to certain places

- **Floridian Metrics: Playing with Indices:**
    - **Indicators of 'attractiveness to talent':**
    - **1. Gay Index:** city's concentration of gay people (proxy for openness, diversity, and tolerance). Is it an open city?
    - **2. Bohemian Index:** city's concentration of artistically creative people (proxy for cultural amenities and vibrancy) – how many writers, performers, etc
    - **3. Coolness Index:** percentage of a city's population aged 22-29, nightlife, and culture
    - **4. Melting Pot Index:** city's concentration of foreign-born (proxy for diversity and tolerance)
        - Developed mosaic index (Canada) – percent of visible status
    - **5. Tech-Pole Index:** concentration of specific high-tech industries (proxy for city's level of knowledge-based activity)
        - Tied to Rand Corporation

    - **Correlations**
        - Educated individuals (those with BA/BSc or more)
            - Measures for each city the percentage of total population with a degree
    - **Correlation Analysis**
        - Number of cultural amenities vs talent
            - Clear positive correlation
            - Higher levels of talent along with higher levels of cultural amenities
            - NY outlier (more cultural)

        - Not a bad correlation
    - Coolness index and talent
        - Higher fit
    - Diversity
        - Highest positive correlation index
    - All statistically significant
- Robust support of thesis?
    - Could be…

- **Multivariate**
    - Key table Florida produced
    - Ranking of cities based on talent (university degree or more)
    - Circularity huge problem here – especially Calgary – best example of causality

- **The Geography of Talent in Montreal**
    - Montreal = top of 'super-creative' core
    - Policy focus:
        - 1. Increase connections between technology sector and arts/creative community (e.g. Cirque du Soleil)
        - 2. Increase opportunities for linguistically related innovation (bilingualism = ideal test market)
        - 3. Take advantage of Montreal's geographic and cultural composition (appealing to immigrants)
            - All well known things
    - Local governments can facilitate dense, creative environment by promoting these linkages

Technology, talent, and tolerance: the 3 Ts of regional economic development

What's the problem with this approach?

Cannot take away that Florida shone spotlight on urban economic geography – must recognize his huge contribution… But:

- **Major Caveats:**
    - Florida's approach intuitively appealing, but:
        1. Is it really new or simply a revamped form of 'boosterism' (hexagons) and 'place martketing' (cities rebranded themselves)
        2. Methodologically: wooly concepts/metrics?
            a. Thesis rests on correlations based on metrics that are not very concrete
        3. Correlation is not causation!
            a. BIGGEST CAVEAT – What comes first?!
        4. Causal linkages may actually go in the wrong direction: a city's quality of place (i.e. attractiveness) may not cause, but rather be caused by strong local growth (i.e. Calgary)
        5. What about inequality?
            a. In all fairness, this is what he is coming back to today. Trying to reconcile what he is seeing and his own theory

6. What about the production system (DoL)?
    a. Very little is said about the working class
    b. Where is the production system in Florida's work?
    c. Input/output? Traded interdependencies?
    d. Ignored by creative class thesis
    e. Most economists argue people follow jobs and not the other way around
        i. People studying migration flows to biggest cities

Florida tried to bolster empirical analysis in response

- But can't get over causality

Lecture 13 and 14 – Neoclassical (Mainstream Economics) Approaches II

As social scientists – without critique, things do not progress

Exploring Krugman's NEG

Space: the final frontier in economics?

- Krugman (1991): "gives birth to something called the new economic geography (NEG)"
    - "Geography and trade"
        - Could have location and trade – but what is taught is narrow geometric tricks (Weber/Christaller) – but after inter-dependent spatial decisions. Location too restrictive – location theory part of economic geography.

- Proclamation boils down to saying that:
    - 1. New project beginning →
    - 2. 'Economic geographers' sleeping at the wheel?
- NEG has commonalities with past neoclassical approaches (i.e. location theory, CPT, regional science)
    - But also represents a new departure (from partial to general equilibrium models)
    - Also represents actual innovations – modeling capacity
    - From hexagons/triangles – looking at partial equilibrium models, static, no feedback loops – to general equilibrium
    - Krugma brings more complex mathematical models, capable of reflecting endogenous loops

- NEG origins = new trade theories (1980s) developed to explain:
    - STM (Standard Trade Model) – specialize in production of comparative advantage and trade between those – therefore everything rests on national difference in endowment.. BUT:
    - Growing share of intra-industry trade, and
    - Predominance of trade flows between larger, developed countries (goes against other model)
    - Krugman brings in the needed model that can track those trade flows

- Do bigger regions (countries) enjoy competitive advantages because they have bigger local/home markets (or better access to wider markets)?
    - Agglomeration effects, economies of scale, of scope external to firm
- Bigger markets → external commodities of scale, better wages, cumulative causation?
    - Krugman says efficient to produce in larger places because more actors located there – minimize transaction costs between firms if clusters highly developed: if roundaboutness greater there
    - Cumulative causation? – feedback loops, like Verdoon
- 'Home market effect' as explanation of geographical clustering of certain industries
    - Krugman emphasizes cluster dynamics to explain trade flows (home market effects)

Circular and Cumulative Causation

- Certain regions get a head start;

    - Why doesn't matter so much, Krugman not a big believer in evolutionary theory, just accident of history
- Once established with head start, growth further enhance by process of circular and cumulative causation – agglomeration effects deepen and feed off each other
    - "the law of circular and cumulative causation stresses the tendency of industrial growth to focus on already established areas" (Myrdal, 1957; Pred, 1966)
    - Growth process enhanced
        - Similar to Lochen
        - More difficult for small firms to catch up
        - Explains the differences in growth trajectories in lagging regions vs high growth
- What drives cumulative causation?
    - Footloose labour (drawn to growing region – migration to jobs)
    - Intermediate goods producers (I-O linkages, cost efficiencies)
    - External economies (of scale/scope – untraded interdependencies: knowledge spillovers)
        - Marshall's THREE FORCES OF AGGLOMERATION

NEG: Modeling Strategy

- Recognizes significance of agglomerations and makes predictions as to how patterns of regional competitive advantage change over time
    - Static or dynamic?
- Agent of change: transportation costs!
    - Changes over time, from regional perspective
    - Originally Krugman: barriers changing across countries for trade
    - But at regional level: falling transportation costs
- Tug-of-war
    - Centripetal (concentration) forces
        - Market size
        - Labour pools
        - External economies
    - Centrifugal (dispersion) forces
        - Immobile factors
        - Land rents
        - Pure external diseconomies

Stylized models

- "To conduct analytical work necessary to cut through the complexities of the real world… pick one from the list"
- <u>Market size-effects:</u> "a large local market creates":
    1. Backward linkages (good access to upstream suppliers)
    2. Forward linkages (facilitates concentration of downstream producers, lower costs)
        a. Like I-O of NIS, but Krugman doesn't acknowledge economic geographers

Past neoclassical approaches: partial equilibrium models (static)

Could explain comparison, but not temporal happenings

- Weber's triangle assumed prices and location of inputs were given: perfect competition and constant returns to scale
- Christaller: market competition → spatial outcomes converge to ideal landscape

NEG: general equilibrium models (dynamic)
- Demand and supply (i.e. prices) and population are endogenous (feedback processes)

New developments and modeling tricks
1. Dixit-Stiglitz (1977) model: captures increasing returns and monopolistic competition
2. Icebergs: fractions of any good shipped simply 'melts away' in transit
3. Evolutionary dynamics: Pred's cumulative process of self-reinforcing spatial concentration (bifurcations? – accidents of history)
4. Computers: complex numerical simulations
    a. Can solve with more than one optimal outcome, largely because of computers. All these model simulations before computers were too tedious to solve systems of equations

- **<u>4 key developments that allow for flourishing of NEG</u>**

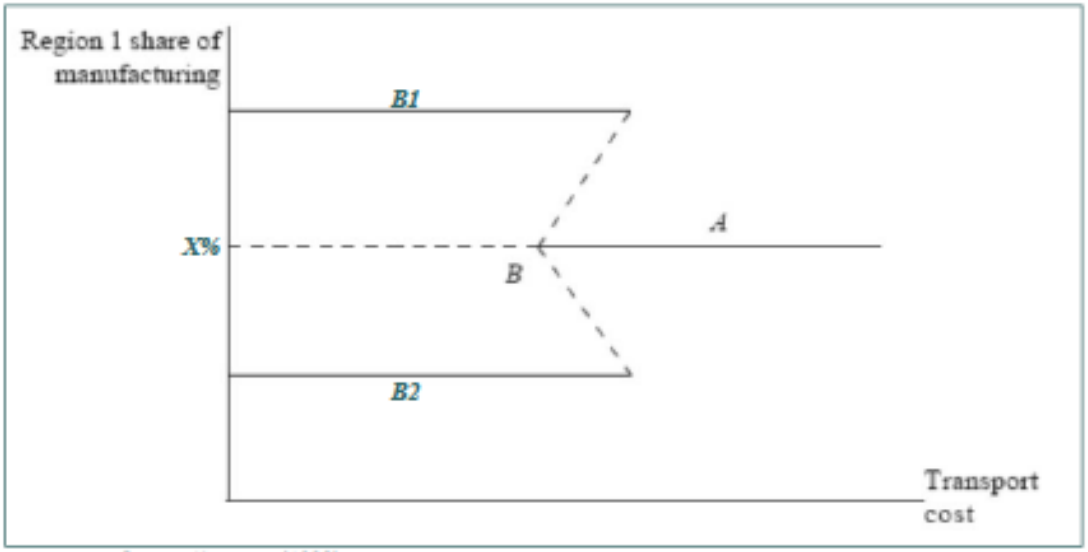
A Simple NEG Model: Key Assumptions

1. Economy consists of two regions (simplify reality)
2. Each regions has two industries
    1. Agriculture (perfectly competitive, immobile → centrifugal force)
    2. Industry (imperfectly competitive, mobile → centripetal force)
3. Consumers in each region (same tastes) purchase a fraction of every firm's output:
    1. $U = M^{\mu}A^{1-\mu}$ where μ is expenditure share of manufactured goods
4. Historically, high transport costs:
    1. → Low inter-regional trade flows
    2. → Consumers purchase locally (i.e. local consumption = local production when trade costs high)
    3. → Regions have own suppliers
    4. → Larger regions can have market size advantage… If more producers, more options? Lower costs of own transportation… (i.e. head start, but…)
5. This changes as transportation costs decrease

A simplified version of the core-periphery model

KRUGMAN'S BIFURCATION DIAGRAM (CORE-PERIPHERY)

- NEG models ⇒ predictions of how regional competitive advantage can change over time!



Source: Krugman (1998)

- Start at right hand side of diagram – at A, transport cost high, region 1 has certain share of overall manufacturing activity.

Summary of Graph:

1. Falling transportation costs
    a. Driving force of all these types of models
    b. In international trade setting, falling trade barriers
2. At stage A: high transportation costs, with region 1 having X% of manufacturing, region 2 have 1-X% - the residual
    a. Solid line represents a stable outcome, where regions consume what they produce – Autonomous entities, little inter regional trade
3. Transport costs fall – production and consumption capable of separating
    a. They decouple – will be a bifurcation, manufacturing will shift and concentrate in one of the two regions.
4. May mean that manufacturing activities relocate
    a. But where? This is the accident of history part – doesn't matter why, just that that there's movement
    b. When there is movement/relocation: bifurcation point
    c. Hashed mark depicts situation of instability
        i. Once decoupling occurs, transport momentarily increases to absorb relocation costs
        ii. Interregional trade flows increase once transport costs back down

5. B1 and B2 – new equilibrium in system – stability achieved again with one region being dominant manufacturing sector
    a. B1 vs B2 – trading, increased inter-regional trade flows – more importantly, can now explain the new spatial structure of regional economies
    b. By default, because only two industrial sectors, one relegated to agriculture
6. One region has competitive advantage – consolidates this
7. Bifurcation can happen suddenly
8. Model not without limitations

Some issues?

- **Strengths:**
    - Imperfect competition and increasing returns: first time these are formally modeled!
    - Geography still matters (despite decreasing transportation costs); not 'triumphalists' accounts of the end of geography or the world is flat!
        - Core-periphery
        - Frostbelt-Sunbelt shift
        - Capitalist space economy is dynamic
- **Limitations:**
    - NEG = spatial application of mathematical economics
    - Stylized models fine → but impose 'straitjacket' on one force of agglomeration (look at only market-size effects)
        - What about labour markets?
        - Spatiality of knowledge spillovers conspicuously absent!
        - Doesn't allow for creative class!
    - Black box? Only agglomerative (centripetal) forces at work?

- Comparing Krugman's NEG with NIS

COMPARING KRUGMAN'S NEG WITH NEW INDUSTRIAL SPACES

	Krugman	New Industrial Geography
Externalities	Marshallian, especially labor pooling, specialist suppliers "Pecuniary" market-size effects	Marshallian trio Labor market Specialist suppliers Technological and knowledge spillovers
Agglomeration	Local clusters Interregional center-periphery pattern	Industrial districts Craft-based High-tech Financial centers
Competition	Imperfect: monopolistic and oligopolistic; economies of scale	Competitive flexible specialization; economies of scope
Transfer costs	Transport, including trade barriers	Transactions costs
Technological spillovers	Not typical, but important in some industries; local and international	Local and fundamental to innovatory success in high-tech clusters
Labor market pooling	Strategy of insurance against risk (both employers and employees)	Form of local social embeddedness
Social and cultural characteristics of clusters	Difficult to formalize and assumed a priori; best left to sociologists	Key preconditions for successful localization

Source: Martin and Sunley (1996)

Porter's 'competitive advantage' and cluster concept

- The latest fad in 'cluster theory'
- With NEG, Porter repopularises work of Marshall amongst economists
- Porter's cluster attractive to policymakers: seen as powerful took for economic development
- Yet discursive, not discrete theory; cluster as a heuristic concept!!

Porter = business economist, interested in trading dimensions between countries

- Book: geared towards why certain countries doing well, in terms of economic development
- Difference between Krugman and Porter: Krugam emphasis on formal mathematical models, Porter more informal: discursive approach
- Both first focus on international, then go on to explain regional dynamics
- Porter starts with Marshall's three forces – **big difference**: Porter develops concept on competitive advantage
- Adam Smith old trade model – absolute advantage – country more efficient at producing good
- Eduardo: comparative advantage, only one comparative advantage
- Porter: new ground – his contribution. Defines what role competition plays in 'advantage'

- Hooks policymakers because easy to understand, no sophisticated mathematical models

- **Cluster** (definition): "is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities" (Porter, 1998).
  - Fairly general definition of a cluster – echoes NIC/NIS… industrial agglomerations
- Transcends Fordist and post-Fordist eras (industrial and service/knowledge economies)
  - For Porter, clusters exist pre- and post-Fordism
  - Difference in terms that we can apply cluster to Fordism. Dynamics may be different, but can still apply to look at spatial distribution of industries (any industry)
  - Bit more generalist, but chaotic

- **Competition**: driving force behind clusters and regional competitiveness: = **KEY**
  - **Reasons clusters exist is because of competitive dynamics, rivalries between firms**
  - Location of firms not driven by comparative advantage (i.e. differences in factor endowments – old model of international trade economies)
  - … But by competitive advantage (making more productive use of inputs) → requirement for continual innovation
  - Competition drives systems – firms need to survive, in order to, need to continually innovate – otherwise competing firms will out-compete other firms, by finding newer, more efficient ways of producing goods

Proximity and Competition

- Spatial proximity (cluster) engenders mutual visibility between competitors (i.e. see what other firms are doing) → spurs firms to innovate and improve own competitiveness
  - Question of survival: need to know, otherwise no longer competitive
- Specifically, clusters affect competition via:
  1. Productivity (access to inputs, information, institutions)
  2. Innovation (learning about new technologies) – untraded interdependencies
  3. New business information (identify gaps, opportunities)
- Evolutionary (economics) aspect to Porter's theory

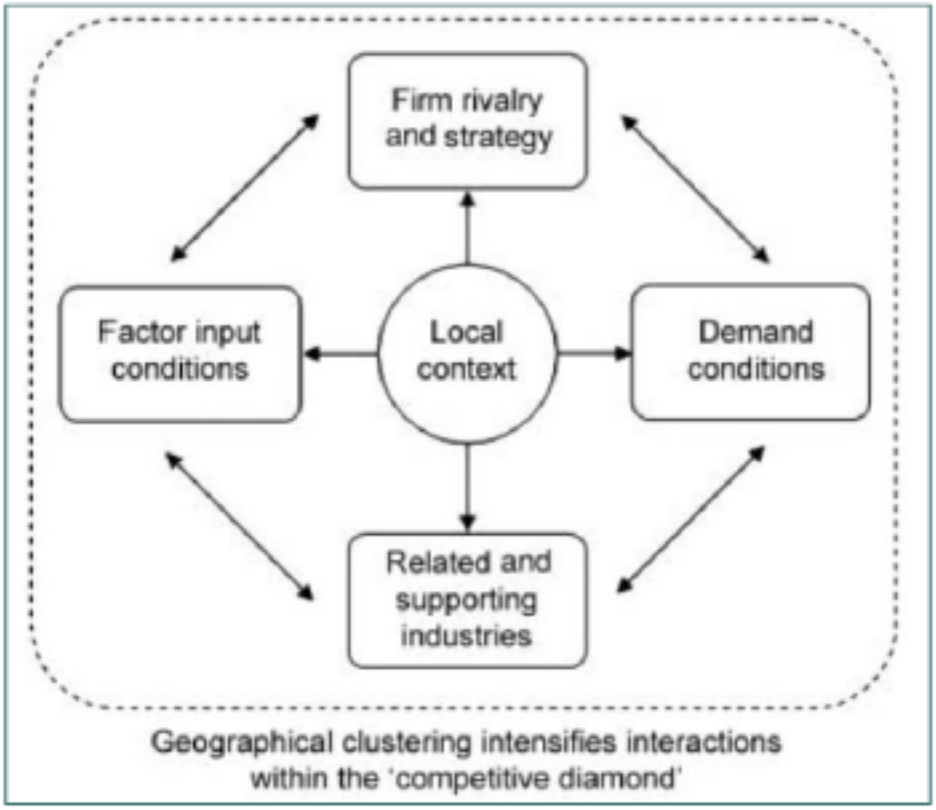
Porter's Competitive Diamond

The four determinants of regional (national) competitiveness (initially explained to address national competitiveness)

1. Factor Conditions
   a. Availability of resources and skills (key specialized factors are created, not inherited – what kind of human capital exists?)
   b. Initially, lack of factors can be good?
      i. If factors missing, government can target and therefore increase or train certain types of labour to certain clusters – stimulates economic growth
2. Demand Conditions
   a. How demanding/sophisticated are consumers?
      i. Can they ask for better and better products? Or just happy with whatever they have

        ii. This can stimulate innovation – product refinement
3. Related/supporting industries
    a. Upstream and downstream flows (spillovers)
    b. Where are suppliers? Are there a large number, or limited/narrow supply range? Who are potential buyers? Wholesalers? Larger number facilitate development of supporting industries
4. Firm rivalry, strategy, and structure
    a. Forces firms to innovate (through competition)
    b. Free-market, easy access? Or barriers?

Taken together, the 4 determinants diamond as a self-reinforcing system! Like Verdoon effects – circular and cumulative causation. If something happens to one pillar, may drag others down.



Source: Vorley (2008); adapted from Asheim et al. (2006)

- Local context underpins
- Porter emphasis on functional linkages that tie four determinants together
- Question of space harder to define – nebulous

Leading footwear clusters

- Porter looked for evidence of clusters across the world
- OEM: original equipment manufacturers – subcontracters for big companies
- Porter indentifies clusters based on determinants

Across US:

- Look at big matrices, at flows – where do the outputs go?

- Transaction matrices define functional linkages

California Wine Cluster

- Connects various actors
- Two key actors: growers and wineries
- Problems: do we include certain clusters, like food/tourism?

Government Policy

- Government's can influence all 4 of Porter's determinants:
    - Subsidies to firms: direct (money) or indirect (infrastructure)
    - Tax policies: regulations (environmental, labour codes) – to encourage certain firms to relocate there?
    - Educational policies: worker skills (factor conditions)
    - Choose to focus on specialized factor creation? (factors that are seen as essential?)

- Example: biopharmaceutical cluster in Atlantic Canada
    - How government latched onto diamond model
    - Can be summarized with Porter diamond
    - Big problem: lack of critical mass, agglomeration
        - If there is potential for cluster dynamics, limited to Halifax

Some Criticisms

- Case studies limited to successful clusters
- Focus on 'going-local'
    - Downplays role of extra-local linkages, i.e. influence of factors outside of the home region: role of MNCs, exports, broader institutional matrix
- Cluster = elastic/chaotic concept (geographical boundaries ill-defined); no discussion of scale
- Heuristic, not technical concept → cannot provide universal model, no policy panacea
- Danger of jumping from associations to causality (concentration of high-growth industries → regional growth) – how to pick the right industrial cluster for governments to invest in?
    - Which industries should the government innovate?
    - What methods should gov't choose?
    - What happens if the gov't picks the wrong industries?

A multi-perspective approach?

- Constellation of cluster ideas:
    - New Industrial Spaces:
        - Framed in RT, flexible specialization debates
    - New Economic Geography
        - Framed in new international trade theories
    - Porter's Competitive Diamond
        - Framed in economics of 'business strategy'
    - At least reassertion of the local/regional!

Lecture 15 – Regional Development Policy: A Canadian Perspective

History of Regional Development Policy in Canada

Twists and Turns Shaped By:

1. **Country's geography**
2. **Importance of federal-provincial relations**

Focus on post-1960s policy developments: alphabet soup!

Questioning the efficiency of regional policies?

Current/future state of regional development?

Early Developments: identifying the problem

- **1867-WWII**: Canadian government has no explicit policy of regional development
  - Economic policy = "National Policy"
    - Nation building: government policies focus on economic ties that make up new nation

- **1937**: Rowell-Sirois Commission looks at growing imbalance in fiscal capacity of provinces
  - Citizens across provinces do not receive a comparable and acceptable level of public services
  - First time government officials recognize disparities across Canadian landscape
  - Canadian citizens, regardless of province, should have access to same level of standards in services such as education, communications, technology, etc
  - Recommendations put forth

- **1957**: Establishment of federal equalization program (still exists today) FEP
  - Provision of services but not regional economic growth
  - So called 'haves' put more money in federal pot than they get back, so redisual money put into have-nots to maintain standards
  - 1970s onwards: have provinces Alberta, Ontario, BC
  - Today: Alberta, (Ontario receives), new "have" kid: Newfoundland?
  - But all about ensuring provision of public services
  - FEP does not target regional economic development policy – not in scope

- **1957**: Gordon Commission → special measures improve economic fortunes of the Atlantic region
- **1960**: federal budget → higher rates of capital-cost allowance for corporations locating in designated regions (i.e. high URs and slow growth)
  - Also got to look at economic development, especially in terms of Atlantic provinces (laggards in economic growth)
  - Outcome: implemented for first time in federal budget in 1960. First set of concrete policies to encourage/stimulate economic development in lagging regions. Blunt instruments in terms of policy
    - Firms have higher rates of *capital cost allowances* in designated regions

        - Highest levels of unemployment/slowest growth
    - CCA: has to do with how corporations deal with depreciation rates in terms of corporate income taxes. Each year, allowed certain percentages of devaluation of capital (machinery and equipment) – tax reimbursement on devaluation
    - Policy: if you locate in high UR areas, allowed to recoup twice as much on depreciation costs than in other area (like Toronto)
        - Tax incentives
        - No regional specificity in policy – all over country. Geographically unspecific

- **1960**: Agricultural Rehabilitation and Development Act (ARDA-I)
    - Stimulate agriculture to boost rural incomes
    - Created to stimulate agricultural activities in order to boost economic development in more rural parts of the country
    - Some level of geography: distinction between economic development in rural vs urban areas

- **1966**: ARDA renamed "Agriculture and Rural Development Act" (ARDA-II)
    - Extended to non-agricultural measures to promote economic growth
    - Also use funds to encourage development of non-agricultural activities (forestry, mining, industrial) – should all lead to economic growth in rural parts of country

- *The problem so far: both ARDAs not regionally specific: i.e. lack geographical focus to be truly effective*

- **1966**: Fund for Rural Economic Development (FRED)
    - Targets specific designated areas
    - n=5: Interlake region of Manitoba, Gaspesie in Quebec, Mactaquac and northeastern regions of New Brunswick, and PEI
    - Focus on stimulus placed on developing infrastructure and industry in these regions
    - Funds from FRED cannot be applied to rural parts in other regions
    - Focus on investment tools: building infrastructure
        - Building from ground up! If firms foing to locate there, need good infrastructure then we can think about industrial growth

- Politicians becoming nervous because spending funds on certain MPS and not others
- Growing debate: drawing the line between economic needs vs. economic potential

- **1969:** Trudeau establishes Department of Regional Economic Expansion (DREE)
    - n = 23: Nothern Quebec/ Ontario / Western provinces
    - Political gesture to satisfy 'have' provinces
    - Huge budget – politics important
    - Losing geographic specificity
    - Done for political reasons!

- Within slow-growth regions, funds to go towards promoting economic development in specific 'growth-poles'

- **1955**: Francois Perroux
  - "Growth does not appear everywhere at the same time; it becomes manifest at the poles of growth, with variable intensity; it spreads through different channels, with variable effects on the whole economy"
  - Propulsive industry: "induces in the totality of a system an increase in total output much greater than the increase in its own output"
  - Focus interventions on those propulsive industries
  - Early agglomerations ideas – Perroux arguing that we have to find anchor firms
    - Like hub and spoke model
    - Certain industries can act as catalysts
  - Bricklin Automobile: regional development experiment – went horribly wrong
    - Manufactured in NB: nothing to do with Ontario auto cluster
    - Wanted to create a growth pole in NB
    - Invested millions (provincial and federal)
    - Bringing together assembly plant – 18 were made/sold
    - Example of growth pole theory gone bad – wasteful dollars

- Problem: some growth-poles are experiencing sub-par growth (e.g. Montreal)
  - Some weren't performing so well (Montreal)
  - Mirebell airport: regional economic development experiment (federal invested hundreds of millions)
    - Propulsive industry
  - Air transport hub in Quebec
  - At time – world's largest airport (not in terms of hangers or passengers – but amount of land occupied)
    - So air transportation cluster could grow around passenger terminal
  - Why it didn't work: logistics – domestic terminal separate

- **1972-1974**: DREE is overhauled, decentralized, and specially designated areas are scrapped!
  - Regions scrapped
  - All regional development efforts go back to GDA – when province negotiates for share of equalization
  - Loss of geographic specificity

- Back to flexible federal-provincial agreements (GDAs: General Development Agreements), loss of geographic specificity!

- **1982**: DREE disbanded:
  - Resources allocate to DREE split into two:
    - Ministry of State for Economic and Regional Development (MSERD) → fed-pov agreements
    - Department of Regional Industrial Expansion (DRIE) → industrial incentive programs, industry level policy

    - Split: all regional emphasis goes to MSERD and industrial separate envelope at federal level with no regional emphasis
    - 1982: where we see split in terms of industry and regional focus
    - 1988: transition to post Fordism

- Canada's economic geography changing:
    - Buoyancy in West (energy mega-projects)
    - Ontario and Quebec manufacturing woes

- DRIE increases focused efforts on Central Canada to detriment of Atlantic Canadian provinces
    - Shift in emphasis to alleviate central Canadian problems in manufacturing – done to detriment of lagging Atlantic provinces

- **1987**: DRIE replaced by new regional agencies
    - Atlantic Canada Opportunities Agency (ACOA)
    - Western Economic Development (WED)
    - Federal Economic Development Northern Ontario
    - Author of paper (?! – find) – asked to write the white paper that saw the creation of these agencies
        - Godfather of regional development in 1980s

- **1988**: Department of Industry, Science, and Technology
    - Became Industry Canada!
    - Actually goes back to 1982 (split between regional and industrial)
    - Reponsible for science, tech, space agency, statistics Canada, etc
    - All western regional development agencies fall under this now

- **1991/98**: Canada Economic Development for Quebec Regions (CED-Q)
    - For Quebec, from federal perspective – HQ in Montreal

- **2008**: Canadian Northern Economic Development Agencies (CANNOR): the 'new' frontier
    - Help with development of economic growth policies in northern Canada

- **2009**: Federal Economic Development Agency for Southern Ontario (FEDDEV-ON) in response to the crisis of 2008-2009
    - Direct outcome of 08 recession (auto industry hit hard)
    - Help growth in other industrial sectors
    - Used to be engine of Canadian economy

- **Federal Spending**
    - Biggest: WED – but they're the wealthiest provinces!
    - Sum numbers: regional envelope – 1/1.2 billion
    - Industrial development: much bigger than sum for regional
    - Reflects shift in government focus/attitude on regional vs broader national/industrial level policy

        - All IC money contributing to further regional disparities – because political question

Other Factors to Consider

- Factors not directly tied to regional development policy but that have implications for regional development efforts:
    - Ottawa's increasingly difficult fiscal problems (1990s, major cutbacks/program review exercise)
        - Slaying federal deficit
        - Major cutbacks to all kinds of problems, in particular regional development ones
    - Rise of neo-conservatism: role of government comes under attack!
        - Trade flows: more trading relationships between provinces and US states than across Canada
        - Globalization: from east-west trade flows ("National Policy") to north-south flows; NAFTA: North American Free Trade Agreement

Geographical Reorientation of the Canadian Economy?

- Gravity-model analysis of Canadian merchandise trade flows:
    - 1988: inter-provincial flows 20 times > than cross-border flows
    - 1998: inter-provincial flows 12 times > than cross-border flows

Taking Stock

- Success of regional development efforts?
    - Still large disparities within and across regions
    - Still important regional differences in terms of employment opportunities
    - Some income convergence (through Atlantic provinces lag)
        - Micro-successes: Halifax, Moncton, St. John's
    - Regional patterns show shirt towards divergence
        - Anything to do with the lack of success of regional development agencies at federal level? Or lack of policies?
    - Difficult to point finger at specific problem – difficult to measure
        - How can you relate outcomes to government spending?
    - Within lagging regions, some cases of success (micro successes – above)
        - Those that are still lagging: mostly resource dependent towns (paper mills, etc)
- Direct link to federal regional development spending as the catalyst?
- Each regional agency emphasizes different approach?
    - Complicates things – significant difference in what is emphasized
- Generally speaking, less appetite for regional economic development today than 1960s/1970s
- Purse strings are tight at the federal level!
- Coming back full circle: refocusing regional development policy into an urban/rural divide
    - Not necessarily on specific areas, but we're seeing federal policy developing on urban/rural divides
- In the end, changing program acronyms will not solve the problem:

    - "it is a political matter to be resolved at the political level" (cabinet, decentralization, senate reform)
- Solution:
    - Political question: if there a political will, we can try things
    - If not: disparities will converge

KNOW: key dates, generally know all events. Summary of Savoir paper – good timeline for policy development

Lecture 16 – On the Relationship Between Innovation and Wage Inequality: New Evidence from Canadian Cities

Motivation and research question

Motivation:

- Increasing income inequality!
    - Canada always held as Scandinavian country of NA – always better distribution that US
- GINI coefficient
    - Percentage of income held by different shares of the population
    - In theory, 45 degree angle/curve depicts situation of perfect equality – reference
    - GINI = 0 = perfect equality
    - GINI = 1 = perfectly unequal distribution of income
    - Measure difference between Lorenz curve (that is below 45 deg line)
        - Residual area covered A/A+B – further away Lorenz curve is from 45, large the level of inquality
    - Canada recently: 0.33
    - Level of inequality in Canada getting to be amongst highest in OECD countries
    - Something happens in late 1980s, by mid 1990s, really taking over
    - Inequality at global scale – have to compare same measures
        - Two ways to think about global: between countries and within
        - E.g. China GDP getting closer to other developed nations, but within country inequality getting bigger
        - In Brazil, slightly declining inequality within country
        - Difficult to compare patterns
        - Between country decreasing globally, but a lot of countries experiencing within country inequality
        - OECD countries: growth of ineqalities is 2nd fastest in Canada, now growing at a faster rate than US. Level higher in US, but growth faster in Canada
    - For a while, the Canadian inequality didn't gain much attention
    - In US, Obama trying to drive this point to American population
        - Inequality with climate change to be the greatest social challenge of 21st century

Research Questions:

1. How are the earnings distributed across metropolitan areas in Canada and how have these patterns changed over the 1996 to 2006 period?
2. How can differences observed in the distribution of earnings across metropolitan areas be explained?
    a. Spotlight: is innovation one of the key determinants of earnings inequality in Canadian cities?

Brief survey of the literature

- National-level studies: extensive literature

- "heavy lifting" done by economists who tend to limit their analytical focus to national patterms – Myles, 2003
- Economists do a lot, but focus analytical interest at national level

- Few sub-national studies
  - Provincial, regional, city-level
    Regional: only one that is (in?) 15 years
  - City-level: some more recent for city, but none focus on inequality/innovation link. Florida has to be at heart of regional/city growth – doesn't talk about income

- What's missing?
  - Comprehensive analysis of the determinants of earnings inequality across Canadian regions and cities with focus on <u>inequality-innovation link</u>

The conceptual framework – Thinking about the inequality-innovation link

1. Skills biased technological change: changes in the demand for skills
   a. Those workers who are highly educated will benefit from introduction of new technologies in workplace, to the detriment of those who do not have the skills. Explanation for growing inequality
2. Local productivity effect: stemming from reorganization of production activities within the firm
   a. Reorganization of production activites in firms
   b. Post Fordism: from mass to specialized – those firms that are more flexible/specialized – more innovative, thus pay workers premium – increase wage inequality
3. 'Sorting' of highly skilled and 'colocation' of personal services
4. Implicit in Florida's thesis:
   a. Creative class growing – but service class growing to meet demands/needs of creative class – polarization argument
   b. Colocation of personal services

Other factors to consider:

1. City size (+)
   a. Inequality higher in larger urban areas – diversity effects, agglomeration, etc
2. Economic variables
   a. Manufacturing employment (-)
      i. Associated with lower levels of inequality (dampens inequality)
   b. Public sector employment (-)
      i. Wages tend to be fairly compact, no super star salaries
   c. Unemployment rate (+)
      i. Positive rate
3. Socio-demographic characteristics
   a. Female labour force participation rate (-)
      i. Inequality depends on where the enter the workforce for wages
      ii. Higher should lead to lower rates of inequality (if enter high), in US, increases in inequality because enter at low end
   b. Age cohort effects (mixed) (%<15m %>65)
   c. Educational inequality (+)
   d. Visible minorities and immigration (+)

4. Institutional factors
    a. Unionization rates (-)
        i. Wage inequality dampening effect
    b. Minimum wage (-)

Data and methods

1. Long-form Census of Population (20% sample)
    a. 1996, 2001, 2006
    b. Benefits: large sample (n=6,000,000+), stable and reliable over time, income data not top-coded and detailed information on individual workers (including place of residence/work
    c. In US: lumped together (everyone over $350,000/year, etc). In Canada each individual has to report income – amazing data
    d. Listen!?
2. Establish correspondence in geographical boundaries across censuses
    a. ArcGIS intersect tool used to aggregate 1996 and 2001 CSDs according to 2006 CMA/CA boundaries (85 CMAs/CAs)
3. Measures of inequality
    a. Focus on active labour force (i.e. 25 to 65 who report > $1,000 in earnings)
    b. Gini coefficient, Theil index
4. The Canadian Patent Database (PATDAT, Kogler, 2010)
    a. Information on patents registered by Canadian inventors filed with US Patent and Trademark Office (USPTO)
    b. Inventor's residential address geocoded and allocated to CMA/CA
5. Measure of innovation: number of patents registered per million residents for each CMA/CA (2006 boundaries)
    a. Can be different proxies
    b. Using patent data
        i. US data – Canada has equivalent, but use US because much larger. Canadian inventors file more frequently in US than with CA, because it gives them protection in larger market
        ii. Standardized for a million residents

INEQUALITY

- GINI change huge: 7%
- Urban – 9% little difference between rural
- 10 years on, income inequality higher in urban
- More variation
- Higher levels of inequality in larger cities compared to smaller
- Geographical divides
- Map: darker = higher levels. All largest cities: only 1 has relatively lower level = Ottawa! Many government employees – all others have high level of inequality
- Geographical divide between West and East
- All in west – high levels of inequality
- East: many more with low levels
    - Of 20 lowest, 14 in Quebec

INNOVATION

- Bulk of growth in innovation from large cities
- Hotbeds: top 13 – Toronto highest
    - Represent about half of Canada's population
    - Innovation: these 13 represent about 85% of patents
    - So innovation incredibly concentrated in very few cities
- Graph: general positive relationship – those more unequal have higher level of innovation activity
- Larger cities also higher inequality and higher innovation

Model specifications

Fixed-effects panel regression model:

- Model estimated across 85 cities
- ECON: % manufacturing, % public sector employment, UR
- SOCDEMOG: female participation rate, % young and % senior, education ratio
- INST: % union membership, minimum wages

Models 1,2,3: results for GINI
Models 4,5,6, results for Thail

- Start with control (1/4)
- Then add economics (2/5)
- Add socio-demographic and institutional (3/6)
    - Two stars = significant results

Results and discussion

Results:

- Even with influence of all variables – innovation inequality always positive and significant
- More innovative also more unequal
- Same impact for city size
- Manufacturing: negative! Lower levels
- Visible minorities: higher levels of inequality

1. **Key Findings:**
    a. Growing geographical divides: urban vs. rural; large vs. small cities; western vs. eastern cities
    b. More innovative cities are also more equal!
        i. Robust to different measures of inequality and innovation
2. Other explanatory factors:
    a. City size is influential!
    b. Deindustrialization, % public sector employment, and % visible minorities
    c. Little evidence of declining unionization/minimum wage impact
3. Policy implications: cautious about 'amenities-based' theories unabashedly promoting creativity and innovation as guiding principles for urban growth
    a. Why skeptical of Florida's argument

- Pulling apart:
  - Using GIS etc
  - intra-metropolitan
    - Median income level across census tracts
    - Red: clusters of higher than average income levels
    - Blue: poorer
    - How have these changed over time?
    - Spatially: high levels of income segregation in Montreal
    - Polarization of incomes at the neighborhood levels
      - Observe in States also
    -