

*The Role of The Corporation in the 21st
Century: Public and Private Policies*



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- Introduction
- Entrepreneurship and Agglomeration
- The Empirical Modeling Framework
- Empirical Results
- Public and Private Policies

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- **Introduction**
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Introduction



- The Story of Entrepreneurship
 - Silicon Valley
 - Boston Route 128
- The Theory of Economic Growth
 - Accumulation of knowledge
 - Knowledge spillovers

Introduction

- The new growth theory offered no explanation of, “What is the role of agglomeration and entrepreneurship in technological change?”
- The answer to this question can be pursued through the lens of:
 - The new economic geography
 - The new entrepreneurship

Introduction



- Entrepreneurship and technological change.
 - What is the role of entrepreneurship in technological change?
- Geography and technological change.
 - What is the role of spatial structures in technological change?

Introduction

- I make four original contributions.
 - 1. Extend the new growth theory to account for entrepreneurship and agglomeration effects.
 - 2. Develop a novel empirical framework to test this relationship.
 - 3. Use a new and novel data set from GEM.
 - 4. Discuss the policy framework

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Entrepreneurship and Agglomeration

- Technological change is the single most important factor in long-run macroeconomic growth.
- Recently published findings in entrepreneurship research and in the studies of geography of innovation suggest that the extent to which a country is “entrepreneurial” and spatially agglomerated could be a factor that explains technological change.

Entrepreneurship and Agglomeration

- Entrepreneurship and technological change
 - Individual – Opportunity Nexus
 - Technological Opportunity
 - Opportunity is increased by R&D

Entrepreneurship and Agglomeration

- Entrepreneurship and technological change
 - Theory of firm selection
 - Markets in Motion
 - Empirical Support
 - Silicon Valley
 - Bangalore
 - Austin

Entrepreneurship and Agglomeration

- Entrepreneurship and technological change
 - Theories of entrepreneurship and growth are still relatively new even though R&D is an important source of technological opportunity.
 - How knowledge spills over is exogenous.

Entrepreneurship and Agglomeration

- Entrepreneurship and technological change
 - “the inventor produces ideas, the entrepreneur gets things done..an idea or scientific principle is not by itself of any importance for economic practice”.
 - Schumpeter (1947)
 - The Knowledge Filter

Entrepreneurship and Agglomeration

- Agglomeration and technological change
 - For the transmission of tacit knowledge personal interaction is necessary.
 - This is why firms move their research facilities.
 - The spatial context of knowledge spillovers

Entrepreneurship and Agglomeration

- Agglomeration and technological change
 - Proximity is necessary but not sufficient
 - Spillovers positively related to the size of the region.
 - More firm connections
 - Richer networks

Entrepreneurship and Agglomeration

- Agglomeration and technological change
 - The new economic geography provides a general equilibrium framework
 - Real breakthrough because it treated spatial structures as endogenous.
 - No spillovers in these models.

Entrepreneurship and Agglomeration



- Agglomeration and technological change
 - Empirical investigation of this is is few.

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The Empirical Modeling Framework



- Our empirical framework is based on the New Growth Theory
- The total set of knowledge consists:
 - non-rival partially excludable.
 - rival excludable (tacit).

The Empirical Modeling Framework

- Interaction of the two types of knowledge in the production of new knowledge:

$$(1) \quad \dot{A} = \delta H_A^\lambda A^f,$$

where:

H_A : number of researchers

A : total set of publicly available knowledge

δ, λ, f : parameters

The Empirical Modeling Framework

- Endogenizing λ :

$$(2) \quad \lambda = (\beta_1 + \beta_2 \log(\text{ENTR}) + \beta_3 \log(\text{AGGL}))$$

where:

ENTR: measure of entrepreneurship

AGGL: measure of agglomeration

- Implementing (1) into (2):

$$(3) \quad \log(\text{NK}) = \delta + \beta_1 \log(\text{H}) + \beta_2 \log(\text{ENTR}) \log(\text{H}) + \beta_3 \log(\text{AGGL}) \log(\text{H}) + f \log(\text{A}) + \varepsilon$$

- Selected industrial sectors (7) and European countries (9), 2001
- NK: number of patent applications (OECD)
- H: R&D expenditures (Eurostat)
- A: total number of available patents (OECD)
- AGGL: Spatial Herfindahl index (Eurostat)
- ENTR: TEA (GEM)

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The Empirical Results

	Final Model with TEA Opportunity	Final Model with TEA	Final Model with TEA Necessity	Final Model with TEA High Potential
Constant	+++	+++	+++	+++
Log (H)	+++	++	+++	+++
Log(H)*Log(AGGL)	++	+++	+++	+
Log(H)*Log(ENTR)	0	0	0	++
Log(A)	+++	+++	+	+++
DUMGER	++	++	+	
R ² -adj	0.93	0.93	0.93	0.93
F-statistic	159	157	156	199

The Empirical Results

- Agglomeration effect significant, entrepreneurship effect marginally significant
- Parameter stability, regression fit
- The estimated research spillover effect:

$$(4) \quad \lambda = 0.34 + 0.06 * \text{Log}(\text{AGGL}) + 0.09 * \text{Log}(\text{ENTR})$$

The Empirical Results

- Country Coefficients with and without Extension for Entrepreneurship and Agglomeration

	AGGL	ENTR	Coefficient (Mod 6)	Coefficient (Mod 2)	Coefficient Ratio
Belgium	0.11	3.60	0.33	0.30	1.12
France	0.02	3.80	0.29	0.30	0.97
Germany	0.01	4.80	0.27	0.30	0.91
Hungary	0.09	7.90	0.36	0.30	1.20
Ireland	0.19	9.20	0.38	0.30	1.28
Italy	0.02	7.80	0.32	0.30	1.09
Poland	0.03	7.80	0.33	0.30	1.10
Spain	0.05	5.50	0.33	0.30	1.11
United Kingdom	0.03	5.00	0.31	0.30	1.05

The Empirical Results

- Significant variations in AGGL and ENTR
- “coefficient ratio”: France and Germany vs. Ireland and Hungary
- Weak entrepreneurship effect:
 - measurement
 - entrepreneurship less important in Europe than in the U.S

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Policy Options for the 21st Century



- Economic Growth in Europe could be raised by reducing the “knowledge filter” between research input and technological change via entrepreneurship promotion.

Policy Options for the 21st Century: Underlying Forces

- Entrepreneurial Economy: 21st Century
 - Localization
 - Change
 - Jobs and high wages
- Managed Economy: 20th Century
 - Globalization
 - Continuity
 - Jobs or high wages

Policy Options for the 21st Century: External Environment

- Entrepreneurial Economy: 21st Century

- Turbulence
- Diversity
- Heterogeneity

- Managed Economy: 20th Century

- Stability
- Specialization
- Homogeneity

Policy Options for the 21st Century: How Firms Function

- Entrepreneurial Economy: 21st Century
 - Motivation
 - Market exchange
 - Competition and cooperation
 - Flexibility
- Managed Economy: 20th Century
 - Control
 - Firm transaction
 - Competition or cooperation
 - Economies of Scale

Policy Options for the 21st Century: Government Policy

- Entrepreneurial Economy: 21st Century

- Enabling
- Input targeting
- Local locus
- Entrepreneurial

- Managed Economy: 20th Century

- Constraining
- Output targeting
- National locus
- Incumbent