
David B. Audretsch
What is Entrepreneurship Research?

• Organizational Context
  --Small Firm (SME)
  --New Firm (Startup)
  --(Nascent) Individual
  --Business Owner

• Behavior
  --Opportunity Recognition/Creation
  --Opportunity Exploitation

• Performance
  --Innovation
  --Growth (Gazelles)
Organizational Context

- Small Firm (SME)
- New Firm (Startup)
- (Nascent) Individual
- Business Owner
Behavior

- Opportunity Recognition
- Opportunity Creation
- Opportunity Evaluation
- Opportunity Exploitation
Performance

• Innovation
• Growth (Gazelles)
• Social Goals (Social Entrepreneurship)
An Overview of Entrepreneurship Literature


What Creates Value in (Economic) Research
What Generates Demand & Supply

- Basic Research
- Entrepreneurship
- Spillover Mechanisms
The Historical Perspective

• Entrepreneurship as a Marginal or Invisible Field
• Small Business Research
• *Mittelstandsforuschung* in Germany
• KMU Forschung
The Historical Perspective


The Demise of Entrepreneurship

“Since capitalist enterprise, by its very achievements, tends to automize progress, we conclude that it tends to make itself superfluous – to break to pieces under the pressure of its own success. The perfectly bureaucratic giant industrial unit not only ousts the small- or medium-sized firm and ‘expropriates’ its owners, but in the end it also ousts the entrepreneur and expropriates the bourgeoisie as a class which in the process sands to lose not only in its income but also, what is infinitely more important, its function.”

Joseph Schumpeter, 1942, *Capitalism and Democracy*
Policy Mandate for Entrepreneurship to Promote Innovation & Economic Growth

“Our lacunae in the field of entrepreneurship needs to be taken seriously because there is mounting evidence that the key to economic growth and productivity improvements lies in the entrepreneurial capacity of an economy”

EU President, Romano Prodi

2002
Innovation at the Firm Level


The Model of the Knowledge Production Function

• $I = f(K)$
• $I = \alpha RD^\beta \cdot HK^\eta \cdot \epsilon$

Where $I$ is innovative output and $K$ is Knowledge, and RD is R&D, HK is human capital.
Testing the Schumpeterian Hypothesis

- Firm Innovative Output is Positively Related to Firm Size
- Empirical Evidence $\beta \geq 0$
- Measurement Issues
- Innovation -- Inputs (R&D), Intermediate Outputs (Patents), Outputs
The Schumpeterian Paradox

• Empirical Evidence for Innovative Output Measures find $\beta \leq 0$


Resolving the Schumpeter Paradox: Knowledge Spillovers

• $E_i = f(K_j)$

Where $E$ is the startup of a new firm $i$ and $j$ refers to an incumbent organization.

• The knowledge production function reconsidered – the knowledge is exogenous and the creation of a new firm is endogenous
How is Knowledge Different?

• Non-excludable & non-exhaustive (Arrow, 1962)

• Hyper uncertainty, asymmetries & transactions cost (Arrow, 1962)
The Knowledge Filter

“A wealth of scientific talent at American colleges and universities – talent responsible for the development of numerous innovative scientific breakthroughs each year – is going to waste as a result of bureaucratic red tape and illogical government regulations…What sense does it make to spend billions of dollars each year on government-supported research and then prevent new developments from benefiting the American people because of dumb bureaucratic red tape?”

U.S. Senator Birch Bayh, 1980
Xeorx PARC’s Discarded Inventions
Apple Computer Founders
Knowledge Spillover Theory of Entrepreneurship

Entrepreneurship - Innovation - Growth

Behavior - Organization - Performance
Where Do Entrepreneurial Opportunities Come From?

• **Knowledge Spillover Theory of Entrepreneurship**: Knowledge embedded in economic agents is *exogenous*, and in an effort to appropriate the returns from that knowledge, the spillover of knowledge involves *endogenously* creating a new firm.
Endogenous Entrepreneurship

• Appropriation Problem – Firm vs. Knowledge Agent

• New firms are endogenous response to knowledge not completely & exhaustively commercialized

• Knowledge exogenous and embedded in economic agents who endogenously start new firms to appropriate knowledge endowments
Knowledge Spillover Entrepreneurship


Two Dimensions of Knowledge Spillovers

• **Geography** – Clusters within Close Spatial Proximity to Knowledge Source

• **Organizational** – Role of Entrepreneurial New Firms as Conduit of Knowledge Spillovers
The Geography of Innovation


The Cluster Context

• Cluster: “The location of complementary and interacting firms, individuals and institutions within close geographic proximity”

• Michael Porter, “firms in downstream industries (that is channels or customers); producers of complementary products; specialized infrastructure providers; government and universities, think tanks, vocational training providers); and standards/setting agencies”

Stylized Facts for Geographic Clusters

- **Emergence of Knowledge-Based Clusters**

- **Innovative Activity Clusters within Close Geographic Proximity Around Knowledge Sources**
Stylized Facts for Geographic Clusters - 2

• **Knowledge-Based Clusters Exhibit Higher Rates of Economic Growth**  

• **Cluster Growth is Promoted by Diversity Rather than Specialization of Knowledge Resources**  
Stylized Facts for Geographic Clusters - 3

- **New-Venture Growth Greater in Cluster Context than in Non-Cluster Context**
  
Stylized Facts for Geographic Clusters - 4


Stylized Facts of Entrepreneurship Dynamics

- New Firm Survival positively related to age and size
- New Firm Growth negatively related to age and size
- Survival and Growth effects more pronounced in knowledge industries


Sutton, John, 1997, “Gibrat’s Legacy,” *Journal of Economic Literature*
Entrepreneurship & Growth

Performance
- Returns
- Wages

Survival Trajectory

Incumbent Firm

Failure Trajectory

Time
Linking Entrepreneurship to Economic Growth


The Romer Model

\[ Q = \alpha K \beta L \phi R \eta \]
Economic Growth Hypothesis

• \( Q_i = h(t)f(C_i, L_i, K_i, E_i) \)

  – Given a level of knowledge investment and severity of the knowledge filter, higher levels of economic growth should result from greater entrepreneurial activity, since entrepreneurship serves as a mechanism facilitating the spillover and commercialization of knowledge.
Entrepreneurship Capital’s Role

\[ Q_i = \alpha K_i^\beta L_i^\phi R_i^\eta E_i^\varepsilon \]
Regional Differences by Growth

- **High Growth Regions**
  - High knowledge investments
  - Low knowledge filter
  - High level of Entrepreneurship Capital

- **Low Growth Regions**
  - Low Knowledge Investments
  - High knowledge filter
  - Low level of Entrepreneurship Capital