Small Business Development and Rising Self-Employment: Opportunities for Land Grant Universities

Stephan J. Goetz

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Outline for Today

1. Entrepreneurship, Self-Employment and Economic Development Stages
2. Entrepreneurial Ecosystems and Networks
3. Data sets and what they show
4. Implications for LGUs: Public vs. Private Goods
From December 2007 through November 2008, rural counties lost just under 15,000 jobs. In December 2008 alone, rural counties lost 282,000 jobs.
“Ex-G.M. Workers Try to Reboot Their Lives”

2,500 jobs lost at the plant, and another 1,500 in the community of Janesville, Wisc.

“...those laid off have returned to school, ... studying welding, nursing, cooking and other fields...”

The New York Times
February 13, 2009
Alternatives to working for others?

- Small Business development,
  self-employment,
  entrepreneurship

- Wage-and-salary employment
## [1.] Entrepreneurship in Economic Development

<table>
<thead>
<tr>
<th>Feature of Economic Development</th>
<th>Factor-based</th>
<th>Efficiency-based</th>
<th>Innovation-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic organizational form</td>
<td>Self-employment / proprietorships</td>
<td>Wage-and-salary employment (firm)</td>
<td>Entrepreneurship of opportunity, vs. necessity</td>
</tr>
<tr>
<td>Income level</td>
<td>Lower</td>
<td>Medium</td>
<td>Higher</td>
</tr>
<tr>
<td>Sector dominance</td>
<td>Natural resources</td>
<td>Manufacturing</td>
<td>Services</td>
</tr>
<tr>
<td>Sources of growth</td>
<td>Abundance of resources</td>
<td>Input-completing; gap-filling; copy-cat</td>
<td>New products, processes, services</td>
</tr>
<tr>
<td>Firm sizes</td>
<td>Smaller</td>
<td>Larger</td>
<td>Small and large</td>
</tr>
</tbody>
</table>

*Adapted from Acs et al. 2008*
[1.] Entrepreneurial Pipelines

• Pipelines with small firms entering and few firms of varying sizes exiting

• Examples: Nokia, Gerber Products, Wal-Mart, Hewlett-Packard, Ford

• Distribution of firm sizes in a community has important implications for policy

References: Loveridge and Nizalov (2007); Lichtenstein and Lyons (2006)
Illy thought up the coffee pod, but Nestle turned it into a phenomenon, and a brand.

[1.] What qualifies as “entrepreneurial”?

<table>
<thead>
<tr>
<th>Sub-Dividing Entrepreneurial Firms (OECD, 2008)</th>
<th>Rate of innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rate of growth</strong></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>High-growth replicators</td>
<td>High-growth innovators</td>
</tr>
<tr>
<td>Low</td>
<td>Low-growth replicators</td>
</tr>
</tbody>
</table>
## [1.] Entrepreneurial Performance

<table>
<thead>
<tr>
<th>Firm-based</th>
<th>Employment-based</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer firm birth rate</td>
<td>High-growth firm rate by employment</td>
<td>High-growth firm rate by turnover</td>
</tr>
<tr>
<td>Employer firm death rate</td>
<td>Gazelle rate by employment</td>
<td>Gazelle rate by turnover</td>
</tr>
<tr>
<td>Business churn</td>
<td>Ownership rate start-ups</td>
<td>Value-added by young firms</td>
</tr>
<tr>
<td>Net business population growth</td>
<td>Ownership rates business population</td>
<td>Productivity contribution, young firms</td>
</tr>
<tr>
<td>Survival rate at 3 and 5 years</td>
<td>Employment in 3 and 5 year old firms</td>
<td>Innovation, performance, young or small firms</td>
</tr>
<tr>
<td>Proportion 3 and 5 year survival</td>
<td>Average firm size after 3 and 5 years</td>
<td>Export performance, small firms</td>
</tr>
</tbody>
</table>

Source: OECD, 2008
[2.] Foundations of Entrepreneurial Economies

Entrepreneurial Ecosystems and Networks
[2.] Entrepreneurial Ecosystems and Networks

“...public policy needs to be informed by the dynamics of entrepreneurship and economic development, as well as relevant local institutional conditions and context-specific variables.” Acs et al. 2008 p. 220. [emphasis added]
[2.] Determinants of Entrepreneurship (OECD’s Framework)

- Regulatory framework
- Market conditions
- Access to finance
- R&D and Technology
- Entrepreneurial capabilities
- Culture
“Innovation Ecosystems”: The Building Blocks or Determinants of Entrepreneurship and Self-Employment

<table>
<thead>
<tr>
<th>Individual-level determinants</th>
<th>Community-level determinants</th>
<th>Individual-level determinants</th>
<th>Community-level determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed&lt;sup&gt;+&lt;/sup&gt; Education</td>
<td>Ca&lt;sub&gt;i&lt;/sub&gt;&lt;sup&gt;+&lt;/sup&gt; Capital</td>
<td>Ra&lt;sup&gt;-&lt;/sup&gt; Risk aversion</td>
<td>Ca&lt;sub&gt;j&lt;/sub&gt;&lt;sup&gt;+&lt;/sup&gt; Community Capital</td>
</tr>
<tr>
<td>Nw&lt;sup&gt;+&lt;/sup&gt; Networks</td>
<td>HC&lt;sup&gt;-&lt;/sup&gt; HealthCare Cost</td>
<td>Bb&lt;sup&gt;+&lt;/sup&gt; Broadband</td>
<td>Bs&lt;sup&gt;+&lt;/sup&gt; Business Services</td>
</tr>
<tr>
<td>Pa&lt;sup&gt;+&lt;/sup&gt; Patents</td>
<td>BC&lt;sup&gt;-&lt;/sup&gt; Business Climate</td>
<td>Un&lt;sup&gt;-&lt;/sup&gt; Unemployment rate</td>
<td>Sc&lt;sup&gt;+&lt;/sup&gt; Social Capital</td>
</tr>
<tr>
<td>RD&lt;sup&gt;-&lt;/sup&gt; $ R&amp;D spending</td>
<td>Ed&lt;sup&gt;+&lt;/sup&gt; Education</td>
<td>Sp&lt;sup&gt;-&lt;/sup&gt; Specialization</td>
<td>Ag&lt;sup&gt;+&lt;/sup&gt; Age</td>
</tr>
<tr>
<td>Ed&lt;sup&gt;+&lt;/sup&gt; Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
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</tr>
</tbody>
</table>

Factors determining the Number of self-employed:
- Radical (opportunity)
- Reactive (necessity)

Nature of the self-employment:
- Reactive (necessity)

Earnings ($) of the self-employed:
- Dc<sup>+</sup> Daycare centers
- CC<sup>+</sup> Community Colleges
- BS<sup>+</sup> Business Services
- FB<sup>+</sup> Foreign-born
- Bx<sup>-</sup> Bigboxes
- SC<sup>+</sup> Social Capital
- Ed<sup>+</sup> Education
- Ag<sup>+</sup> Age
- Pa<sup>+</sup> Patents
- Bx<sup>-</sup> Bigboxes
- RD<sup>-</sup> $ R&D spending
- Ca<sub>c</sub><sup>+</sup> Community Cap. (banks)
- BC<sup>+</sup> Business Climate
- Un<sup>+</sup> Unemployment rate
- Sp<sup>-</sup> Specialization
- Ed<sup>+</sup> Education
- Ag<sup>+</sup> Age
Do regions control their own destinies?

Initial Entrepreneurial Activity Index ($K_I^{2006}$) vs. Entrepreneurial Climate

Do regions control their own destinies?

Good climate, high activity

Poor climate, high activity

Climate

Source: Goetz (2008)
Do regions control their own destinies?

“It’s a lot easier to go out and attract a new company, or even build a new stadium, than it is to alter the psychological makeup of a region. Regional leaders must become more aware of how their region’s collective personality shapes the kinds of economic activities that it can do and the kinds of people it can attract, satisfy and retain.”

R. Florida (2008:213), Who’s Your City?

One distinguishing feature – the kinds of networks formed by firms and individuals...
[2.] Classifying (social) networks

Four network structures examined by Bevalas and colleagues at MIT. Each node represents a person; each line represents a potential channel for interpersonal communication. The most central node in each network is colored red. Source: Borgatti et al., “Network Analysis in the Social Sciences,” Science, 13. Feb. 2009, Vol. 323, pp. 892-5.
[3.] What the data show

- Wages
- Jobs
- Firms

Economic Conditions
[3.] What the data show

Private sector gross job gains and gross job losses, seasonally adjusted
March 1998 – March 2008

Wisconsin

Note: Shaded area represents NBER defined recession period.

## WISCONSIN Averages 2005-2007

<table>
<thead>
<tr>
<th></th>
<th>Establishments</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U.S.</td>
<td>WI</td>
</tr>
<tr>
<td>Noncommercial</td>
<td>7.2%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Nonresident</td>
<td>5.4%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Resident</td>
<td>87.5%</td>
<td>87.5%</td>
</tr>
<tr>
<td>Stage 1 (1-9)</td>
<td>88.3%</td>
<td>86.0%</td>
</tr>
<tr>
<td>Stage 2 (10-99)</td>
<td>11.0%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Stage 3 (100-499)</td>
<td>0.62%</td>
<td>0.88%</td>
</tr>
<tr>
<td>Stage 4 (500+)</td>
<td>0.08%</td>
<td>0.12%</td>
</tr>
</tbody>
</table>
## Growth - WISCONSIN from 2005 – 2007

<table>
<thead>
<tr>
<th></th>
<th>Establishments</th>
<th></th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>298,551</td>
<td>12,124</td>
<td>3,150,000</td>
</tr>
<tr>
<td><strong>Noncommercial</strong></td>
<td>21,808</td>
<td>69</td>
<td>464,485</td>
</tr>
<tr>
<td><strong>Nonresident</strong></td>
<td>14,456</td>
<td>-1,081</td>
<td>576,903</td>
</tr>
<tr>
<td><strong>Resident</strong></td>
<td>262,287</td>
<td>13,136</td>
<td>2,108,612</td>
</tr>
<tr>
<td><strong>Stage 1 (1-9)</strong></td>
<td>226,380</td>
<td>12,692</td>
<td>551,789</td>
</tr>
<tr>
<td><strong>Stage 2 (10-99)</strong></td>
<td>33,344</td>
<td>440</td>
<td>804,431</td>
</tr>
<tr>
<td><strong>Stage 3 (100-499)</strong></td>
<td>2,250</td>
<td>14</td>
<td>392,059</td>
</tr>
<tr>
<td><strong>Stage 4 (500+)</strong></td>
<td>313</td>
<td>-10</td>
<td>360,333</td>
</tr>
</tbody>
</table>
2005 – 2007: Net new jobs came from:

<table>
<thead>
<tr>
<th>Established</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opened establishments (opened - closed)</td>
<td>-2.1%</td>
</tr>
<tr>
<td>Expanded establishments (expanded - contracted)</td>
<td>1.8%</td>
</tr>
<tr>
<td>Relocated establishments (moved in - moved out)</td>
<td>0.0%</td>
</tr>
<tr>
<td>Net New Jobs:</td>
<td>-0.23%</td>
</tr>
</tbody>
</table>

Resident Job Growth by Stage (positive growth only)

Stage 1 (85.8% of estabs) created **56.7%** of job growth
Stage 2 (13.2% of estabs) created **30.8%** of job growth
Stage 3 (0.9% of estabs) created **7.8%** of job growth
Stage 4 (0.13% of estabs) created **4.8%** of job growth

Ratio: Non-farm Proprietorships to Wage-and-Salary Jobs

Pre-recession (2001) trend

Wage-and-salary jobs

Non-farm Proprietorships (Self-employment)

Farm Proprietorships
Ratio of Self-Employed to Wage-and-Salary Workers, Wisconsin

Average Self-Employment Earnings, per self-employed, Wisconsin
INC5000™ Fastest-Growing Firm Locations, 2008
[3.] Do small businesses, or the self-employed, make a difference?

• Goetz and Shrestha (2007)
• Deller and McConnon (2008); (Deller) 2008
• Rupasingha and Goetz (2007)
• Loveridge and Nizalov (2007)
• Acs, et al. (2008)
• Walzer, ed. (2007)

The evidence is mixed...
[3.] Data Sources

• BEA Regional Economic Information System (Census Bureau); 1969-2006 – counties
  – https://www.bea.gov/regional/reis/
• YourEconomy.org – 1993-2007, county-level (Dun and Bradstreet/NETS data)
  – http://www.youreconomy.org/
• ES 202, State Employment Securities series (requires confidentiality waiver)
• Business Dynamics Statistics (Kauffman Fdn. and Census Bureau) – 1977-2005; state-level only
  – http://www.ces.census.gov/index.php/bds
• County Business Patterns (Census web-site)
• Kaufman Index of Entrepreneurial Activity (state-level)
[4.] LGUs & Entrepreneurship, private vs. public goods: Implications

Types of research:
- Basic/pure
- Applied
- Problem-solving

(G. Johnson)
LGUs & entrepreneurial development: Three areas of intervention

- Lab-based inventions
  - No known application
  - IP Office / R&D transfer
  - Proof of Concept Center

- Small business development
  - Innovation Center
  - Spin-offs (Degree-Minors)
  - Multiple market failures: innovation and adoption

- Entrepreneurial communities
  - Classroom instruction (Degree-Minors)
  - Outreach/Extension
  - Public goods
  - New Local Business Development, Spin-offs

- Philanthropy

Product, service and process Innovation

- Funding
[4.] Understanding Networks

- New York Certified Organics
- Tuscarora Organic Growers, PA
- Chesapeake Fields, MD
- Women’s Agriculture Network, PA

NYCO Network Map
TOG Network Map
CF Network Map
PA WAgN Network Map
## 4. Understanding Networks

### Network Statistics for Select Clusters

<table>
<thead>
<tr>
<th></th>
<th>TOG</th>
<th>CF</th>
<th>PA WAgN</th>
<th>NYCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey response rate</td>
<td>63.8%</td>
<td>65.2%</td>
<td>52.0%</td>
<td>54.7%</td>
</tr>
<tr>
<td>Density</td>
<td>0.06</td>
<td>0.08</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>Out-Degree centralization</td>
<td>27.2%</td>
<td>32.1%</td>
<td>39.1%</td>
<td>24.5%</td>
</tr>
<tr>
<td>In-Degree centralization</td>
<td>24.2%</td>
<td>35.8%</td>
<td>8.8%</td>
<td>38.5%</td>
</tr>
<tr>
<td>Betweenness</td>
<td>5.6%</td>
<td>14.7%</td>
<td>6.5%</td>
<td>2.1%</td>
</tr>
</tbody>
</table>
# Teaching: Entrepreneurship competency model
(Consortium for Entrepreneurship Education)

<table>
<thead>
<tr>
<th>(TBD) Entrepreneurial Focus Areas (TBD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth Entrepreneurship</td>
</tr>
</tbody>
</table>

## Entrepreneurship Technical Competencies

|--------------------------------|-------------------------|----------|-----------|----------------------|--------------------|-----------------------------|

## Workplace Competencies

<table>
<thead>
<tr>
<th>Creative Thinking</th>
<th>Networking</th>
<th>Planning &amp; Organizing</th>
<th>Problem Solving &amp; Decision Making</th>
<th>Checking, Examining, &amp; Recording</th>
<th>Business Fundamentals</th>
<th>Computer Applications</th>
</tr>
</thead>
</table>

## Academic Competencies

<table>
<thead>
<tr>
<th>Reading</th>
<th>Writing</th>
<th>Mathematics</th>
<th>Science &amp; Technology</th>
<th>Communication: Listening &amp; Speaking</th>
<th>Critical &amp; Analytical Thinking</th>
</tr>
</thead>
</table>

## Personal Effectiveness Competencies

<table>
<thead>
<tr>
<th>Interpersonal Skills</th>
<th>Initiative</th>
<th>Ambition</th>
<th>Adaptability &amp; Flexibility</th>
<th>Willingness to Take Risks</th>
<th>Willingness to Learn</th>
</tr>
</thead>
</table>

The Institutional genetic code of Universities

Innovative, high risk

Large scale

Conservative, low risk

Small scale

Leading Edge Innovative Universities

American Research Universities

Land Grant Universities

German Research Universities

European Medieval Universities

Greek Academies

Conservative, low risk

Crow (2008:14)
Examples of Success?

• “Proof of Concept Centers” (Kauffman Fdn., Jan. 2008)
  – The von Liebig Center, UCSD: 16 start-ups, 4 licenses
  – The Deshpande Center, MIT: 10 start-ups, 1 license*

• MIT claims “The 25,800 currently active companies founded by MIT alumni employ 3.3mn people... and generate sales of $2tn” (Kauffman Foundation, Feb. 2009)

• Arizona State University as an emerging model?

*With $10mn (2001) and $17.5mn (2002) initial start-up funding, respectively.
Conclusion: Opportunities

• Reduce barriers to university R&D transfer
• Modify/fine-tune existing business courses
• Provide strategic support to local small businesses
• Understand and nurture local entrepreneurial eco-systems, building public values