Modernization and Increasing Competitiveness – Manufacturing Challenges in the State of Georgia

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Summary of Preliminary Findings

- Innovative strategies are associated with higher returns to the firm and the community compared with strategies based on low price
- Rural and urban manufacturers – comparable adoption rates of technology
- But rural manufacturers have less use of “soft” enablers of innovation
Overview

Manufacturing and the Georgia Context
The Georgia Manufacturing Survey
Innovative Strategies and Returns
Adoption of Technologies and Techniques
Innovation Enablers
Conclusions
Setting the Context: The Georgia Economy and Manufacturing

Manufacturing is:
- 10,000+ establishments, 98% = SMEs
- Almost 450,000 manufacturing jobs, 66% = SMEs
- 14% of GSP
- Jobs are relatively high wage – 1.7 times retail worker pay

Rural* manufacturers:
- 23% establishments, 27% of jobs
- Have more workers – 20% more than urban
- Pay lower wages (80% urban wages)
- Less concentrated
- More manufacturing dependent

*Defined as counties not in a metropolitan area.

Source: Georgia Department of Labor, U.S. Bureau of Economic Analysis
Not Thought of as a Traditional Place for Innovation

- Economic transition: Agriculture → Branch Plants
- 52% rural manufacturing employment is in “traditional industries” textiles, food processing, pulp and paper
  - Rest transportation, fabricated metals, plastics, chemicals, etc.
- Productivity: 20% higher in 2002 than 1998
- R&D: more public/defense than private
- Not a k-12 education leader

Source: Georgia Department of Labor, U.S. Bureau of Economic Analysis
Georgia Lost More than 100,000 Manufacturing Jobs from 1997 to 2004

Rural Georgia lost 45k – 28% of the manufacturing base.

Source: U.S. Bureau of Labor Statistics
Georgia Manufacturing Survey
2005

Process
- Conducted every 2-3 years since 1989
- Mail survey sent to manufacturers with 10+ employees
- Currently being administered (20% response)
- General Manager
- Preliminary results of 635, weighted to reflect ES-202 size, industry distribution

Objectives
- Identify needs, issues, challenges
- Understand trends in product, process innovations and manufacturing technologies, techniques
- Examine the use of programs to assist manufacturers
- Define operational, performance, and strategic benchmarks

http://www.cherry.gatech.edu/survey
Few Georgia Manufacturers Compete through Innovation

- But firms using innovation as a strategy to compete for customers earn higher profits, pay higher wages than those competing on low price
  - Average return on sales nearly **twice** as high
  - Wages **$10,000** higher

Source: Georgia Manufacturing Survey 2005, preliminary weighted results of 635 manufacturers with 10+ employees.
General Model of Innovation

<table>
<thead>
<tr>
<th>CAPABILITIES</th>
<th>PRODUCT/SERVICE OUTCOMES</th>
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<tbody>
<tr>
<td>(a) Enablers</td>
<td>(a) Innovative processes</td>
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<tr>
<td>• Talent</td>
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<td>• Infostructures</td>
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<td>• Investment</td>
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<td>(b) Information</td>
<td>(b) New Outputs – Product, Services</td>
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<tr>
<td>• Idea generation</td>
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<td>• Sharing, utilization</td>
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<td>EXTERNAL FACTORS</td>
<td>(c) (Innovation driven) Economic growth</td>
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<tr>
<td>▪ Business climate</td>
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<td>▪ Demand conditions</td>
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<td>▪ Market and industry structure</td>
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Rural and Urban Manufacturers Have Comparable IT Adoption...

Source: Georgia Manufacturing Survey 2005, preliminary weighted results of 635 manufacturers with 10+ employees.
...and Comparable Adoption of Manufacturing Techniques

Manufacturing Techniques
- ISO 9000
- Six sigma
- SPC
- Pull system
- Recycling
- ISO 14000
- Customer surveys
- Employee surveys
- Teamwork
- Mass customization

Source: Georgia Manufacturing Survey 2005, preliminary weighted results of 635 manufacturers with 10+ employees.
Similar Restructuring Forces Impacting at the Margins

Source: Georgia Manufacturing Survey 2005, preliminary weighted results of 635 manufacturers with 10+ employees.
But Rural Manufacturers Show Less use of “Soft” Innovation Capabilities

Source: Georgia Manufacturing Survey 2005, preliminary weighted results of 635 manufacturers with 10+ employees.
Capital Investment Per Employee

Rural Areas Invest in Traditional Capital at roughly same rate as Urban Areas.......

...but Lag Urban Areas in Investment in Human Capital

Source: Georgia Manufacturing Survey 2005, preliminary weighted results of 635 manufacturers with 10+ employees.
Implications

- There is a “soft” as well as “hard” component to innovation
- Rural and urban manufacturers in Georgia share many commonalities
- Trade-off between technology and human capital by manufacturers in rural Georgia
- This may limit innovation capability on the demand side
Recommendations

- Establishment level – Place attention on developing talent and ability to generate and use information
- Local level – Identify and promote innovation needs of existing manufacturers
- Regional level – Develop opportunities to link manufacturers with common problems and interests
- State level – Encourage statewide attention to the need to foster innovation in existing industries
- Federal level – Federal programs should encourage innovation capabilities
  - Example – not just technical assistance with selection of technologies, but information generation, acquisition, sharing, use, and management