Market Research on Michigan's Forest Product Sectors: Competitive Advantage and Structural Path Analyses

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October 28, 2015

Michigan Forest Products Industry Summit 2.0

East Lansing, Michigan

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for Collaborative Science

In 2013, MI Governor Snyder hosted a Forest Products Industry Summit 1.0 in which participants helped identify five priorities for the state's forest products industry

1. Increase the industry's economic impact on state and regional economies from $14 billion to $20 billion.
2. Increase its export of value added by 50 percent.
3. Increase its jobs by 10 percent.
4. Support existing industry.
5. Encourage regionally-based industry development.

MI DEPTS OF AGRICULTURE AND RURAL DEVELOPMENT AND NATURAL RESOURCES—RFP: MI FOREST PRODUCT INDUSTRY

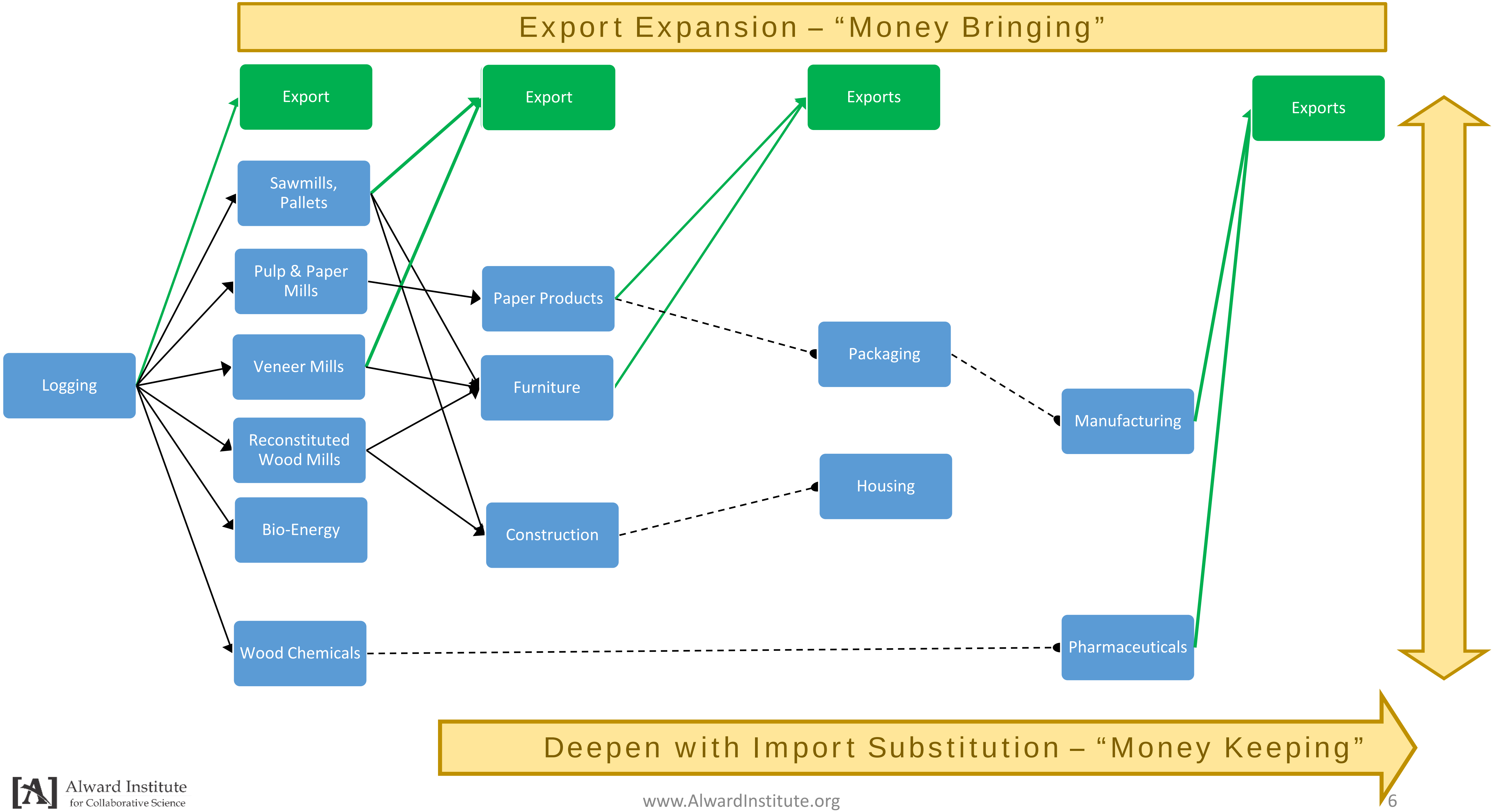
1. Identify past and current
   - supply chain and practices,
   - purchasing trends and market growth
2. Identify future
   - potential new markets and customers
   - predict their growth
   - target opportunities
3. Make recommendations
   - identify the challenges
   - suggest ways to address them

Economic Models plus Stakeholder Interviews

- Gross and Base Structure of the Forest Products Economy (Model I)
  - Economic dimensions: Import Substitution, Export Expansion, Productivity & Efficiency
- Michigan's Competitive Advantages in Forest Products (Model II)
  - Strengths, Weaknesses, Opportunities, Threats (SWOT)
  - Produce what you are relatively good at producing, export it and use the money to import what you are not good at producing.
- Structural Paths within Michigan's Economy (Model III)
  - Breadth and depth of internal Forest products markets
  - Identify supply chain bottlenecks that could prevent expanding value added in these promising forest-product sectors

Structure of the Forest Products Economy

- What we'd like to see:
  - Low-wage low-value added import substitution sectors providing inputs for the high-wage high-value added exporting sectors – in Michigan
  - Deepen and broaden the economy – more internal markets, more economic activity
- What we observe:
  - "Money Bringing" / Export-Enhancing forest-product sectors are:
    - Office (wood) furniture, Paper mills, Paperboard containers, Show case & partitions, Paperboard mills and Institutional furniture
  - "Money Keeping" / Import-Substituting sectors:
    - Sawmills, Wood Containers and Pallets, Veneer and Plywood, and Commercial Logging
- Michigan is turning its raw forest products into value-added finished wood products and exporting them.



Export Expansion – “Money Bringing”
Export
Export
Exports
Exports
Sawmills, Pallets
Pulp & Paper Mills
Veneer Mills
Reconstituted Wood Mills
Bio-Energy
Wood Chemicals
Logging
Paper Products
Furniture
Construction
Packaging
Housing
Manufacturing
Pharmaceuticals
Deepen with Import Substitution – “Money Keeping”

MI Ten Important Forest Products Sectors: 2012

	Sector ID and Label	Base Employ.	Gross Employ.	Base TVA	Gross TVA	Base <> Gross
	Michigan--Forest Products Total	75,058	54,614	7,740	5,690	>
1	300 Office Furniture	26,077	12,303	2,895	1,914	>
2	105 Paper mills	8,621	2,512	1,290	909	>
3	299 Institutional furniture manufacturing	5,004	2,046	586	353	>
4	302 Showcase, partition, shelving, locker manuf.	5,866	2,802	583	333	>
5	107 Paperboard container manufacturing	5,365	5,746	497	577	<
6	106 Paperboard Mills	3,398	896	409	242	>
7	095 Sawmills and wood preservation	1,779	2,199	100	101	≈
8	096 Veneer and plywood manufacturing	1,299	1,068	88	75	>
9	016 Commercial logging	2,029	3,180	81	79	≈
10	100 Wood container and pallet manufacturing	1,225	2,071	73	98	<

Michigan's Competitive Advantages

- What we'd like to see:
  - Produce what you are relatively good at producing, export it and use the money to import what you are not good at producing

- What we observe:
  - Wood office furniture manufacturing stands out for its performance along both time and place dimensions for both export and import substitution.
  - Paper, paperboard and paperboard container sectors show positive though modest improvements in comparative advantage for import substitution, but falls in the threat quadrant for export expansion.
  - Commercial logging shows modest strength in both exports and import substitution, but ironically this may pose a bit of a problem because logs are a necessary input to all other forest products in the state.

Definition of Competitive Advantage

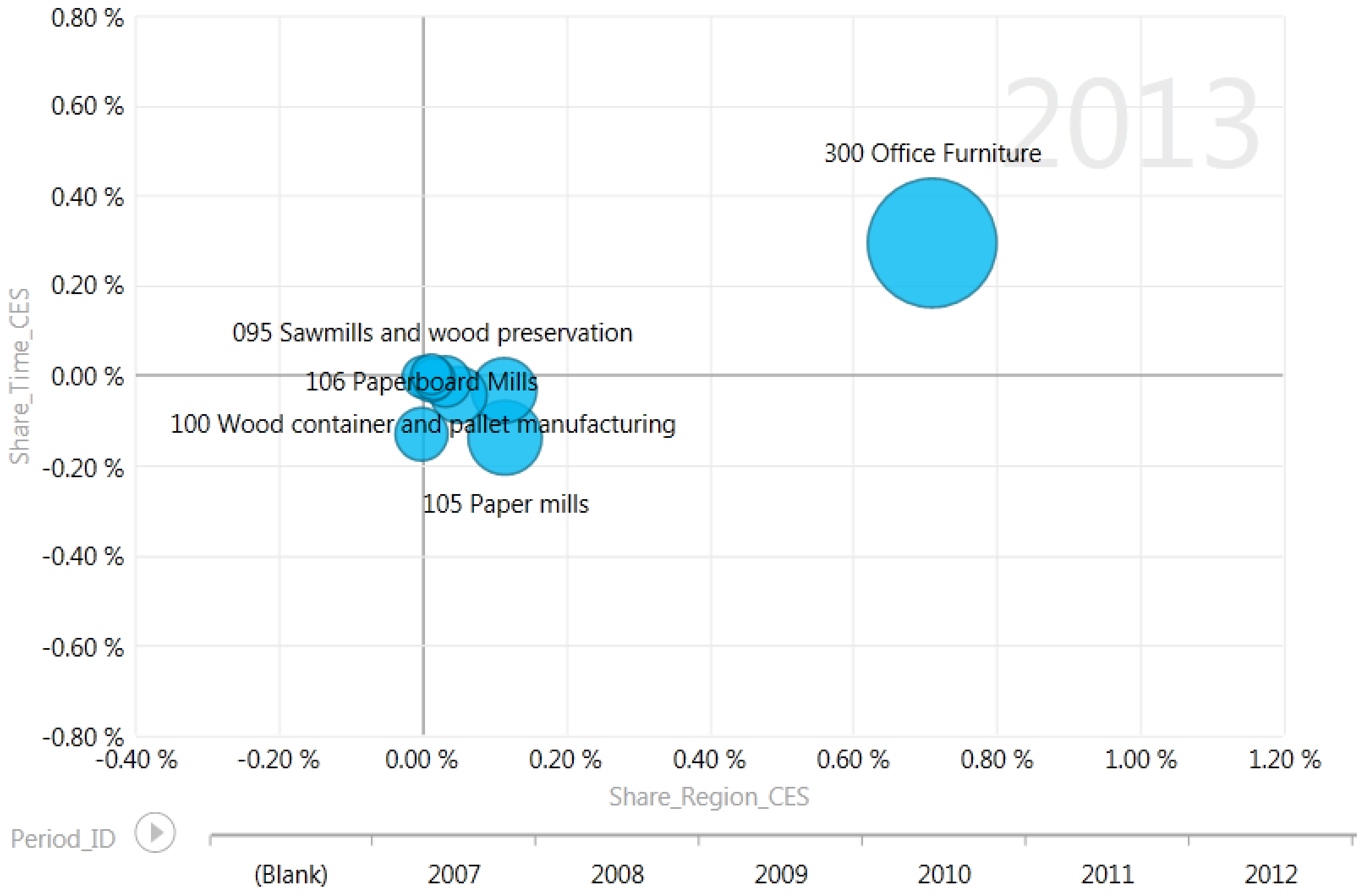
"A competitive advantage exists when the firm is able to deliver the same benefits as competitors but at a lower cost (cost advantage), or deliver benefits that exceed those of competing products (differentiation advantage)."

http://www.quickmba.com/strategy/competitive-advantage/

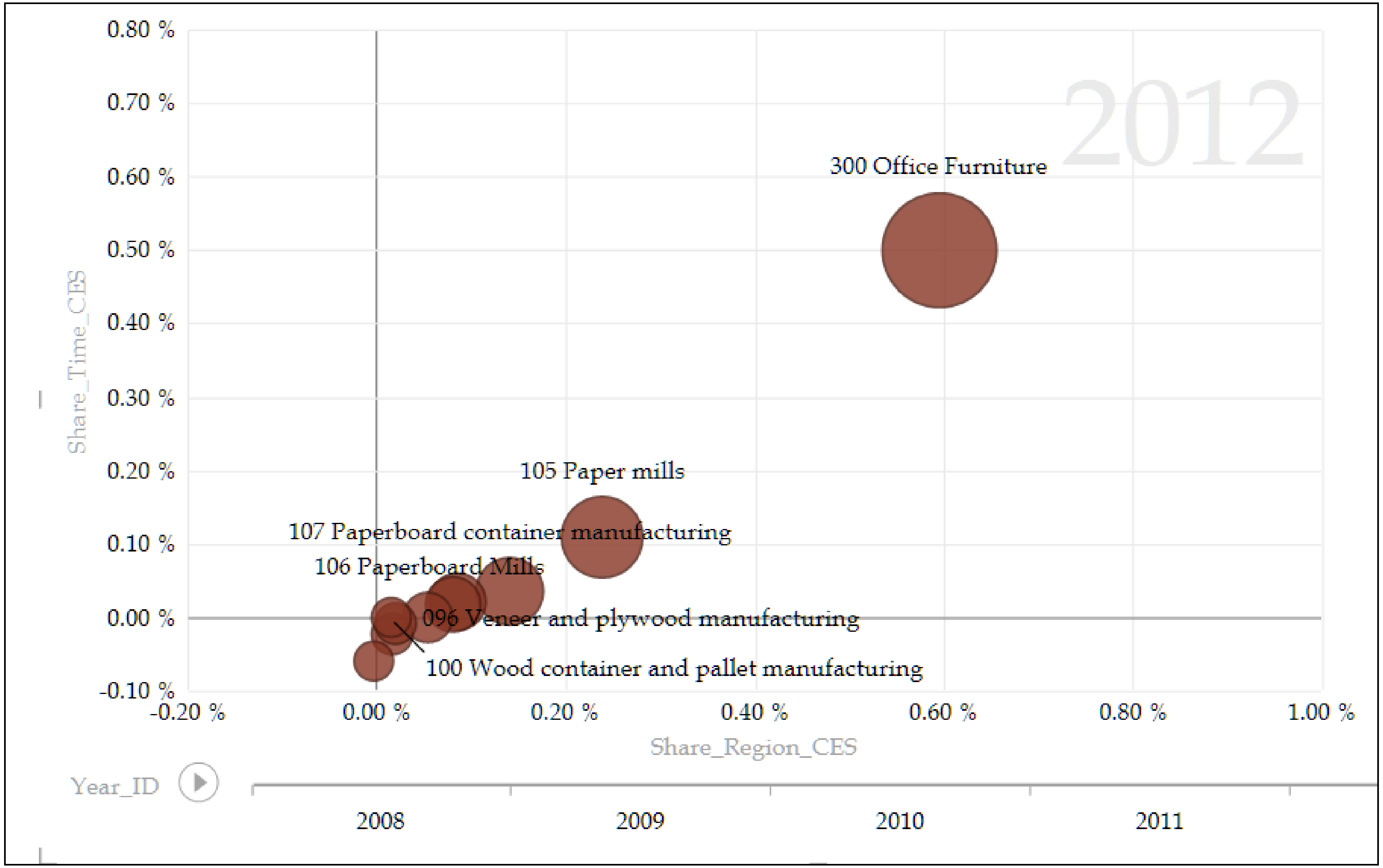
SWOT

- Shares
  - **Increasing** (Time)
  - *Decreasing* (Place)
- Shares
  - **Increasing** (Time)
  - **Increasing** (Place)
Threat
Strength
Weakness
Opportunity
- Shares
  - *Decreasing* (Time)
  - *Decreasing* (Place)
- Shares
  - *Decreasing* (Time)
  - **Increasing** (Place)

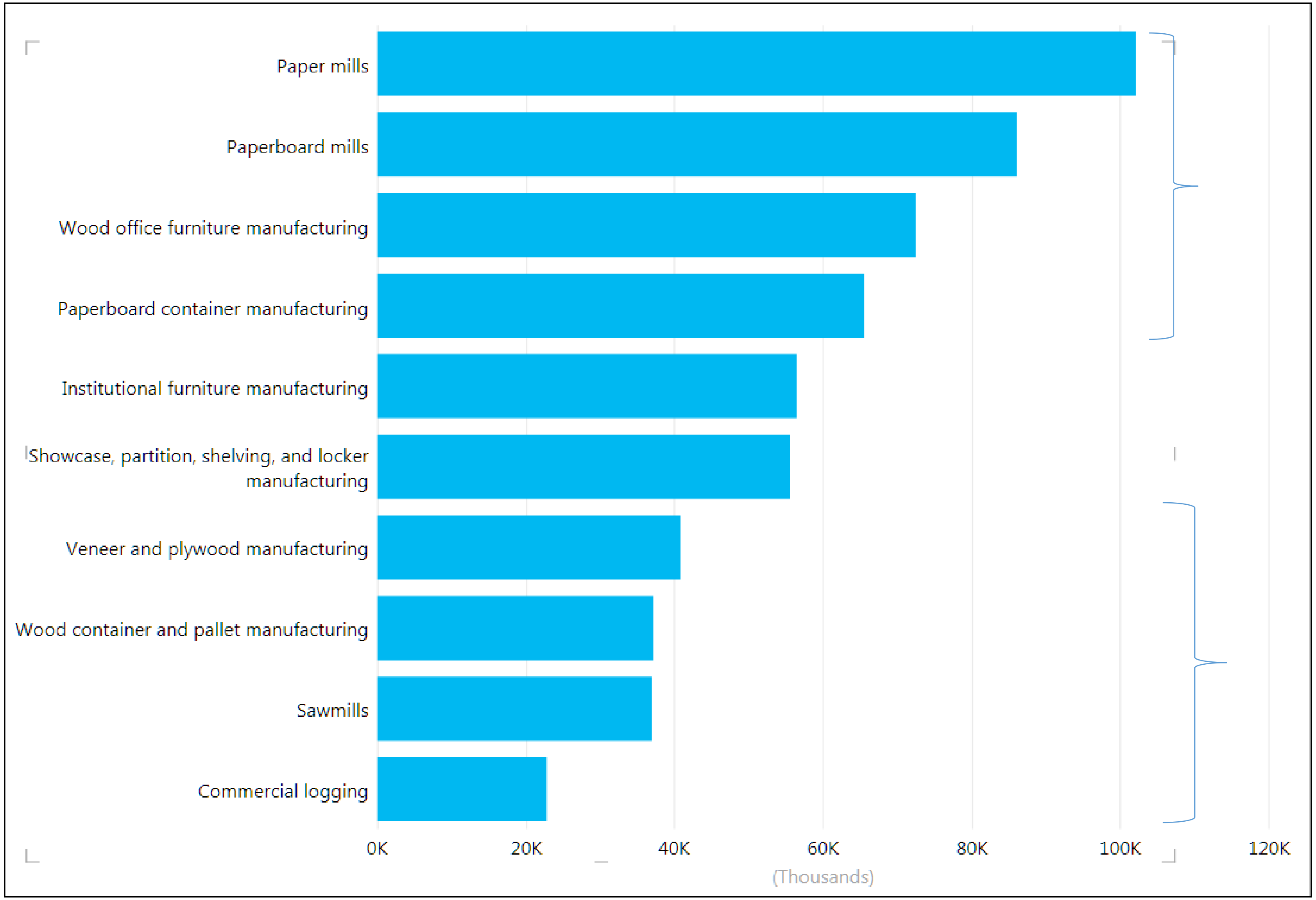
MI Ten Important Forest Products Sectors: SWOT Analysis, Base TVA vis-à-vis 2007



MI Ten Important Forest Products Sectors: SWOT Analysis, Gross TVA vis-à-vis 2008



MI Forest Products: Avg. Wage for Important Sectors, 2013



High skill (s)
High wage

Low skill (u)
Low wage

Sector Bias: Two examples

- A high-skill equilibrium economy
  - firms producing high-quality, specialized goods and services sectors that require
  - a well-qualified workforce capable of rapid adjustment in the work process and
  - continual product innovation

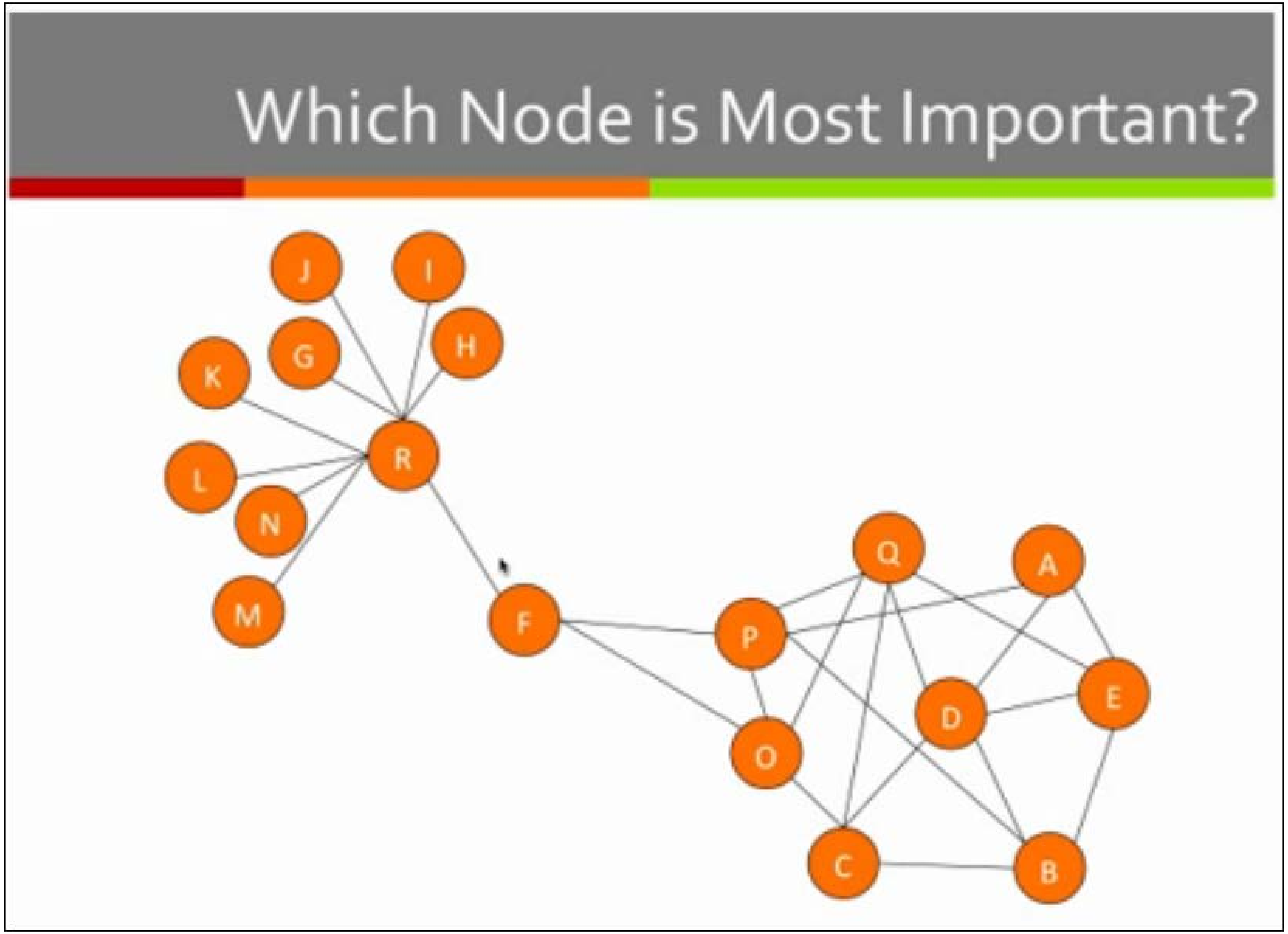
- A low-skill equilibrium economy
  - firms produce undifferentiated commodities that require
  - fewer high-skill jobs across sectors,
  - a labor force with below-average education and training,
  - low labor productivity and low wages.

Structural Paths in the Forest Products Economy

- What we'd like to see:
  - A resilient, efficient network of interdependent marketing channels for forest-product sectors.
  - "Bottleneck" sectors in the supply chain networks are efficient, high capacity

- What we observe:
  - Within the forest products marketing chains, some sectors interact between the initial sectors and households more than others—for example, labor is often an important intermediary between a sector's generation of value added and household spending.

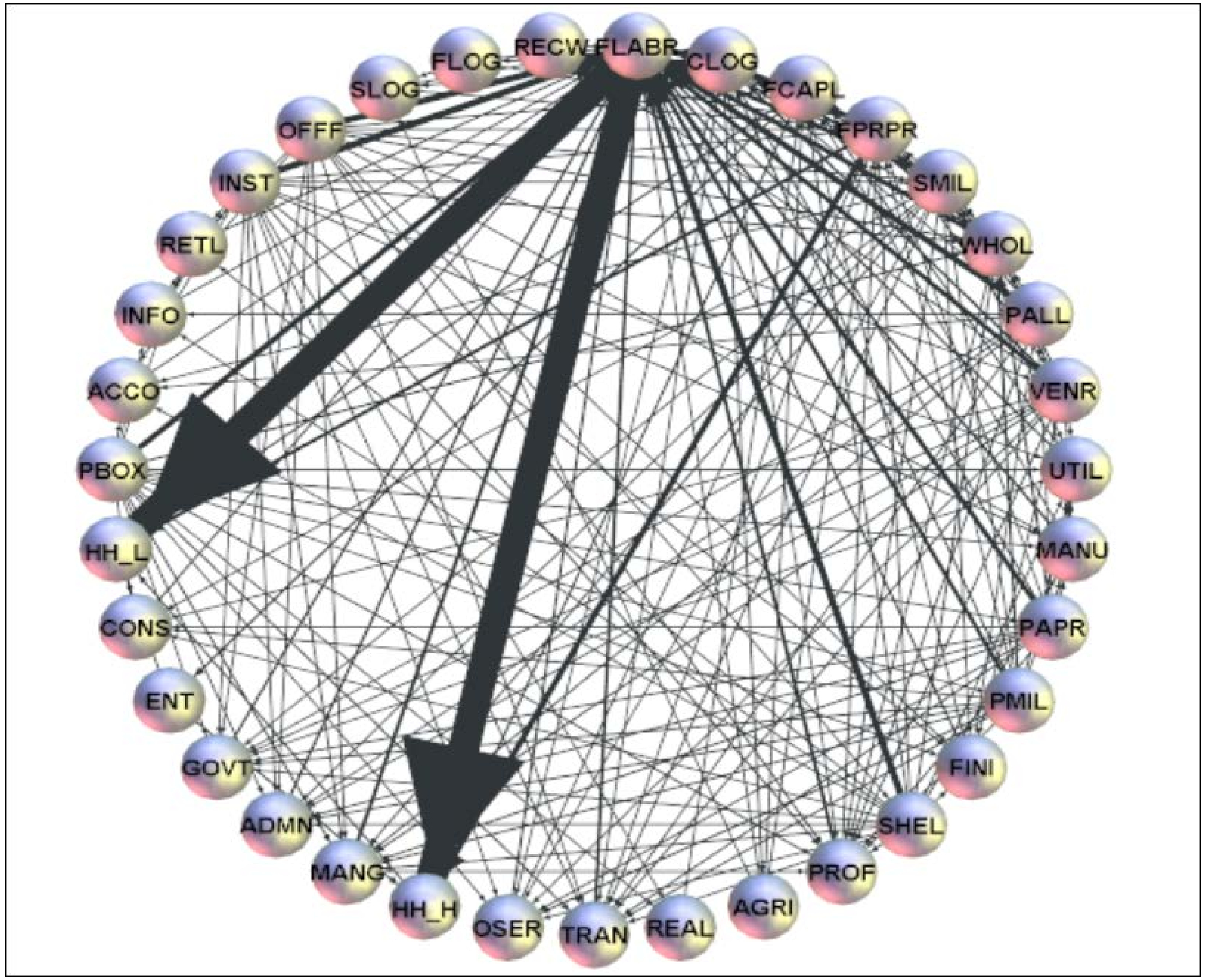
  - Sectors and Institutions with the greatest potential bottleneck positions:
    - Logging and Sawmills
    - Labor, Capital (Corporate and Proprietors)
    - The wholesale function in forest products (e.g., log brokers) serve as "channel masters" to organize the flow of timber from small wood lot owners to the sawmill proprietors



https://www.youtube.com/watch?v=89mxOdwPfxA

MI Network of Structural Paths for Top Ten Forest Products Sectors, Ranked Clockwise by Betweenness Centrality: 2013

aagri	11 Ag, Forestry, Fish & Hunting
aflog	Forestry, forest products, and timber tract production
aclog	Commercial logging
aslog	Support activities for agriculture and forestry
amine	21 Mining
autil	22 Utilities
acons	23 Construction
amanu	31-33 Manufacturing
asmil	Sawmills
awpre	Wood preservation
avenr	Veneer and plywood manufacturing
atrus	Engineered wood member and truss manufacturing
arecw	Reconstituted wood product manufacturing
adoor	Wood windows and door manufacturing
aplan	Cut stock, resawing lumber, and planing
aomil	Other millwork, including flooring
apall	Wood container and pallet manufacturing
amobl	Manufactured home (mobile home) manufacturing
apref	Prefabricated wood building manufacturing
amisc	All other miscellaneous wood product manufacturing
apulp	Pulp mills
apapr	Paper mills
apmil	Paperboard mills
apbox	Paperboard container manufacturing
apbag	Paper bag and coated and treated paper manufacturing
astat	Stationery product manufacturing
asany	Sanitary paper product manufacturing
aoppr	All other converted paper product manufacturing



aboat	Boat building
akitn	Wood kitchen cabinet and countertop manufacturing
aupld	Upholstered household furniture manufacturing
anupl	Nonupholstered wood household furniture manufacturing
aoupl	Other household nonupholstered furniture manufacturing
ainst	Institutional furniture manufacturing
aofff	Wood office furniture manufacturing
amill	Custom architectural woodwork and millwork
ashel	Showcase, partition, shelving, and locker manufacturing
awhol	42 Wholesale Trade
aretl	44-45 Retail trade
atran	48-49 Transportation & Warehousing
ainfo	51 Information
afini	52 Finance & insurance
areal	53 Real estate & rental
aprof	54 Professional- scientific & tech svcs
amang	55 Management of companies
aadmn	56 Administrative & waste services
aeduc	61 Educational svcs
aheal	62 Health & social services
aarts	71 Arts- entertainment & recreation
aacco	72 Accommodation & food services
aoser	81 Other services
agovt	92 Government & non NAICs
flabr	Employee Compensation
fprpr	Proprietor Income
fcapl	Other Property Type Income
ftopi	Tax on Production and Imports

Ten sectors make up over 80 percent of gross and base value added in forest products

- Furniture manufacturing—wood office furniture, institutional furniture and shelving—are the most important forest-product sectors in Michigan. The wood office furniture manufacturing sector stands out for its performance along both time and place dimensions for both export enhancement and import substitution—growing in value added share more than any other state in the U.S.

- Paper products manufacturing—paper, paperboard and paperboard containers—are the other major base value-added sectors in Michigan. These sectors show positive though modest improvements in comparative advantage for import substitution, but fall in the threat quadrant for export expansion.

- Sawmill, veneer manufacturing, pallets, and commercial logging sectors together make a relatively modest contribution to value added, but these sectors play an important role in Michigan's forest products economy as key input sectors and, therefore, potential bottlenecks.

Summary

- Deepen supply chains so that low-wage low-value added import substitution sectors provide inputs for the high-wage high-value added exporting sectors.
  - Substitute Michigan wood for imported wood in furniture manufacturing
- Increase the capacity of bottleneck sectors logging & sawmill to feed deeper and broader supply chains;
  - training to increase skills and capital to proprietors
- An integrated sector growth strategy that includes identifying obstacles and their potential solutions is as follows:
  - If employment across the forest-product sectors increases by ten percent, then base output (but not gross output) increases to over $20 billion.

Expand Exports

- Increases GDP
- Increases Jobs
- Diversify Structure of the Economy

Lengthen Value- & Supply-Chains

- Import Substitution - Local Wood
- Local wood in Furniture
- Recruit & Retain Value-Added Manufacturers

Strengthen Bottlenecks

- Access to Capital for Logging Sector – path to better jobs
- Firm Retention – path to more jobs
- Job Training to enhance KSAs – path to better wages

Thank You!

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