

Workforce and Economic Development: The Competitive Position of NYS Regions



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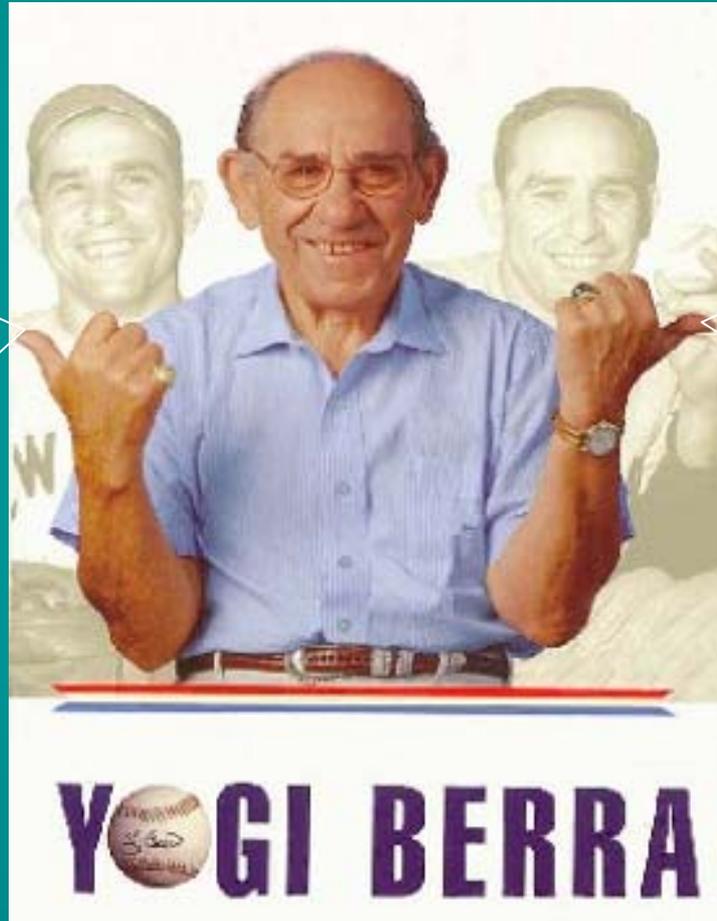
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Presentation Outline

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- Tools of the Trade:
 - ❖ Location Quotients
 - ❖ Hachman Diversity Index
 - ❖ Shift-Share Analysis
- Regional Analysis
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Introduction

“You can observe a lot by just watching.”



“The future ain’t what it used to be.”

NOTED REGIONAL ECONOMIST

What We Hope to Avoid Today



No Greek Today

$$\begin{bmatrix} C_t^* \\ u_t^* \\ C_{t-1} \end{bmatrix} = \begin{bmatrix} \delta \\ 0_{(p+nk) \times 1} \end{bmatrix} + \begin{bmatrix} \phi^* & 0 & 0 \\ 0 & D^* & 0 \\ Z_c & 0 & 1 \end{bmatrix} \begin{bmatrix} C_{t-1}^* \\ u_{t-1}^* \\ C_{t-2} \end{bmatrix} + \begin{bmatrix} Z_c' & 0 \\ 0 & Z_u' \\ 0 & 0 \end{bmatrix} \begin{bmatrix} \eta_t \\ \epsilon_t \end{bmatrix}$$

where:

$$C_t^* = [\Delta C_t \quad \Delta C_{t-1} \quad \cdots \quad \Delta C_{t-p+1}]'$$

$$u_t^* = [u_t' \quad u_{t-1}' \quad \cdots \quad u_{t-k+1}']'$$

$$\phi^* = \begin{bmatrix} \phi_1 & \cdots & \phi_{p-1} & \phi_p \\ & I_{p-1} & & 0_{(p-1) \times 1} \end{bmatrix}$$

$$D^* = \begin{bmatrix} D_1 & \cdots & D_{k-1} & D_k \\ & I_{n(k-1)} & & 0_{n(k-1) \times n} \end{bmatrix}$$

$$Z_c = [1 \quad 0_{1 \times (p-1)}]$$

$$Z_u = [I_n \quad 0_{n \times n(k-1)}]$$



Methods

Methods



Quarterly Census of Employment and Wages (QCEW)

- Data are derived from quarterly employer Unemployment Insurance tax records, which cover about 97 percent of non-farm employees.
- Notable exceptions include the self-employed, domestic workers, and many college student jobs (not covered by UI).
- Data are reported by place of work and NAICS industrial classification code.
- Data are available 6-9 months following the end of the reported quarter.

Methods

QCEW data from these Upstate NY metro areas were analyzed:

- **Albany-Schenectady-Troy** (Albany, Rensselaer, Saratoga, Schenectady, and Schoharie counties)
- **Buffalo-Niagara Falls** (Erie and Niagara counties)
- **Rochester** (Livingston, Monroe, Ontario, Orleans, and Wayne counties)
- **Syracuse** (Madison, Onondaga, and Oswego counties)



Tools of the Trade

Tools of the Trade



Tool #1: Location Quotients

- Definition: Measure of an area's industrial specialization (employment concentration) relative to some base area, usually the U.S.
- Calculation for Local Industry LQ:
=
$$\frac{(\text{Industry's Local Employ.})/(\text{Total Local Employ.})}{(\text{Industry's U.S. Employ.})/(\text{Total U.S. Employ.})}$$

Tools of the Trade



Tool #1: Location Quotients

- Interpretation:
 - ❖ $LQ > 1$: Industry is producing more than is consumed locally (i.e. exporting). Area is “specialized” in that industry.
 - ❖ $LQ < 1$: Industry is producing less than is consumed locally (i.e. importing).
 - ❖ $LQ = 1$: Local production meets local demand.
- In practice:
 - ❖ Most economists use a LQ cutoff of 1.20 (or higher) for designating an “export industry.”

Tools of the Trade



Tool #2: Hachman Diversity Index

- Compares industry mix of the local economy with that of U.S. economy. Essentially a weighted LQ across all industries in the local economy.
- Developed at the University of Utah.
- Hachman Index ranges in value from 0 to 100.
 - ❖ Interpretation:
 - 100: local area's industry mix exactly matches the U.S. mix and is considered most diversified.
 - 0: local area's industry mix is totally unlike the U.S. mix and is considered not diversified at all.

Tools of the Trade



Tool #2: Hachman Diversity Index

- Important because less-diversified local economies *tend* to experience higher employment volatility (analogous to having a non-diversified financial portfolio).
- However, more diversified does *not* necessarily translate into stronger local job growth.
- A study of NYS counties in 2002 found index values that ranged from a high of 92.3 (Erie Co.) to a low of 12.6 (Tioga Co.).

Tools of the Trade



Tool #3: Shift-Share Analysis

- Typically used to compare a county or metro area economy to the U.S. economy.
- Rule of thumb is to use two time periods, 5 or fewer years apart.
- Results are sensitive to both the time period selected -- current analysis looks at 2003 (beginning of latest expansion) and 2006 (last full year of data) -- and the level of industry detail (more detailed is better, but QCEW data may be withheld due to confidentiality restrictions).

Tools of the Trade



Tool #3: Shift-Share Analysis

- One way to account for a region's economic competitiveness.
- Provides a picture of how well a region's mix of industries is performing.
- Also, shows how well an individual industry is doing.
- Can be used to analyze individual industries or the whole economy.

Tools of the Trade



Tool #3: Shift-Share Analysis

- Breaks down regional employment growth into three main components:
 - ❖ National Growth (NG)
 - ❖ Industry Mix (IM)
 - ❖ Regional Competitiveness (RC)

Tools of the Trade



Tool #3: Shift-Share Analysis

- National Growth (NG) Component
 - ❖ What share of regional job growth is attributable to growth of the national economy.
 - ❖ Asks question: “What would happen if total employment in the region grew at the same rate as overall employment in the nation?” (note: U.S jobs grew by 5.3% over the 2003-2006 period, based on QCEW data)

Tools of the Trade



Tool #3: Shift-Share Analysis

- Industry Mix (IM) Component
 - ❖ How much regional job growth can be attributed to the region's mix of industries?
 - ❖ Estimates the change in employment in a local industry that is attributable to the growth or decline of that industry nationally.
 - ❖ Isolates the fact that nationwide, some industries have grown faster or slower than others.

Tools of the Trade



Tool #3: Shift-Share Analysis

- Regional Competitiveness (RC) Component
 - ❖ Describes the extent to which factors unique to the local area have caused changes in a region's industry employment.
 - ❖ Typically linked to some *local* advantage – natural resources (e.g. hydro power in Niagara Falls), transportation, linked industries (clusters), educational institutions (e.g. high-tech spin-offs), or favorable local labor situations.

Tools of the Trade



Tool #3: Shift-Share Analysis

- Regional Competitiveness (RC) Component
 - ❖ Perhaps the most important component to examine for workforce and economic development purposes.
 - ❖ Helps to identify a region's leading and lagging industries.
 - ❖ Serves as a diagnostic, NOT a forecasting tool.



Regional Analysis

Location Quotients: Large Export Industries



Albany-Schenectady-Troy MSA

	LQ	Employment
Professional, Scientific, and Technical Services	1.24	26,300
Hospitals	1.30	16,300
Educational Services	2.32	14,700
Insurance Carriers	2.04	12,600
Religious, Grantmaking, Civic & Professional Orgs.	2.12	8,000

Buffalo-Niagara Falls MSA

Nursing and Residential Care Facilities	1.57	17,600
Food and Beverage Stores	1.45	15,800
Credit Intermediation and Related Activities	1.21	13,700
Educational Services	1.45	12,400
Transportation Equipment Manufacturing	1.28	8,700

Location Quotients: Large Export Industries



Rochester MSA

	LQ	Employment
Hospitals	1.41	22,700
Educational Services	2.78	22,600
Food and Beverage Stores	1.52	15,800
Chemical Manufacturing	4.80	15,200
Management of Companies & Enterprises	1.75	11,500

Syracuse MSA

Educational Services	2.09	10,200
Insurance Carriers	1.79	8,500
Computer and Electronic Product Manufacturing	1.86	5,400
Utilities	3.04	3,700
Primary Metal Manufacturing	2.68	2,800

Regional Analysis: Hachman Diversity Index



Metro Area	Index Value (2006)
Albany-Schenectady-Troy	84.2
Buffalo-Niagara Falls	91.6
Rochester	73.8
Syracuse	86.1

The Rochester metro area has the least diversified economy due, in part, to its heavy employment concentration in chemical manufacturing (includes Eastman Kodak), which was almost 5 times the U.S. average in 2006.

Regional Analysis: Shift Share Analysis

Metro Area (Net & % Job Change, 2003-2006)	NG Factor	IM Factor	RC Factor
Albany (+8,033 jobs/+2.5%)	16,699	-107	-8,559
Buffalo-Niagara Falls (+2,661 jobs/+0.6%)	22,921	21,713	-41,973
Rochester (+4,238 jobs/+1.0%)	21,715	18,612	-36,089
Syracuse (+2,878 jobs/+1.2%)	13,034	12,223	-22,379

Shift-Share Analysis: Albany-Schenectady-Troy MSA

Largest Regional Competitiveness Gains

Industry	Regional Competitiveness (Jobs)
Management of Companies & Enterprises	+990
Food and Beverage Stores	+461
Educational Services	+381
Furniture and Related Manufacturing	+318

Largest Regional Competitiveness Losses

Industry	Regional Competitiveness (Jobs)
Merchant Wholesalers, Nondurable Goods	-1,562
Social Assistance	-1,344
Food Services and Drinking Places	-1,484
Professional, Scientific & Technical Services	-1,383

Shift-Share Analysis: Buffalo-Niagara Falls MSA

Largest Regional Competitiveness Gains

Industry	Regional Competitiveness (Jobs)
Insurance Carriers	+1,250
Nursing and Residential Care Facilities	+654
Food and Beverage Stores	+470
Wood Product Manufacturing	+318

Largest Regional Competitiveness Losses

Industry	Regional Competitiveness (Jobs)
Transportation Equipment Manufacturing	-3,110
Food Services and Drinking Places	-2,567
Social Assistance	-2,145
Hospitals	-1,833

Shift-Share Analysis: Rochester MSA

Largest Regional Competitiveness Gains

Industry	Regional Competitiveness (Jobs)
Hospitals	+884
Educational Services	+828
Insurance Carriers	+776
Miscellaneous Manufacturing	+601

Largest Regional Competitiveness Losses

Industry	Regional Competitiveness (Jobs)
Chemical Manufacturing	-3,401
Food Services and Drinking Places	-1,881
Machinery Manufacturing	-1,622
Ambulatory Health Care Services	-1,491

Shift-Share Analysis: Syracuse MSA

Largest Regional Competitiveness Gains

Industry	Regional Competitiveness (Jobs)
Nursing and Residential Care Facilities	+882
Computer and Electronic Product Manuf.	+351
Amusement, Gambling, and Recreation Ind.	+315
Primary Metal Manufacturing	+294

Largest Regional Competitiveness Losses

Industry	Regional Competitiveness (Jobs)
Machinery Manufacturing	-1,434
Specialty Trade Contractors	-1,077
Administrative & Support Services	-1,058
Food Services and Drinking Places	-1,057

Summary and Conclusions

The methods of regional economic analysis discussed today have both pluses and minuses:

- On the (+) side:
 - ❖ Easy to calculate with spreadsheet applications.
 - ❖ Most employment data are readily available on the web sites of government statistical agencies.

Summary and Conclusions

The methods of regional economic analysis discussed today have both pluses and minuses:

- On the (-) side:
 - ❖ These techniques tend to minimize the impact of business cycles, which is a consideration as we enter into a recession.
 - ❖ Results sensitive to time period and industry detail selected; do not actually identify a region's comparative advantages.

Summary and Conclusions (continued)

- Shift-share is useful for identifying a region's "strategic" industries with the greatest growth potential.
 - ❖ Helps to separate the role of local and national effects on current regional employment trends.
 - ❖ Ideally, focus on industries with both a positive industry mix and positive regional competitiveness.

Summary and Conclusions (continued)

- All four metro areas experienced modest job growth (lagging the U.S.) between 2003 and 2006.
- Health care and educational services anchor most of the MSAs analyzed.
- Manufacturing industries tend to be among those with the largest negative regional competitiveness components.
- Bigger Issue: All four MSAs analyzed had negative economy-wide RCs over the 2003-2006 period.

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