The determinants of metro-level economic resilience: an empirical investigation

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Outline

- Deep Recession, Tepid recovery
- What Makes a Metro Economy Resilient?
- Categorizing Economic Resilience
- Local Determinants or Employment Resilience
- Model Triangulation
- Synthesis and Policy Implications

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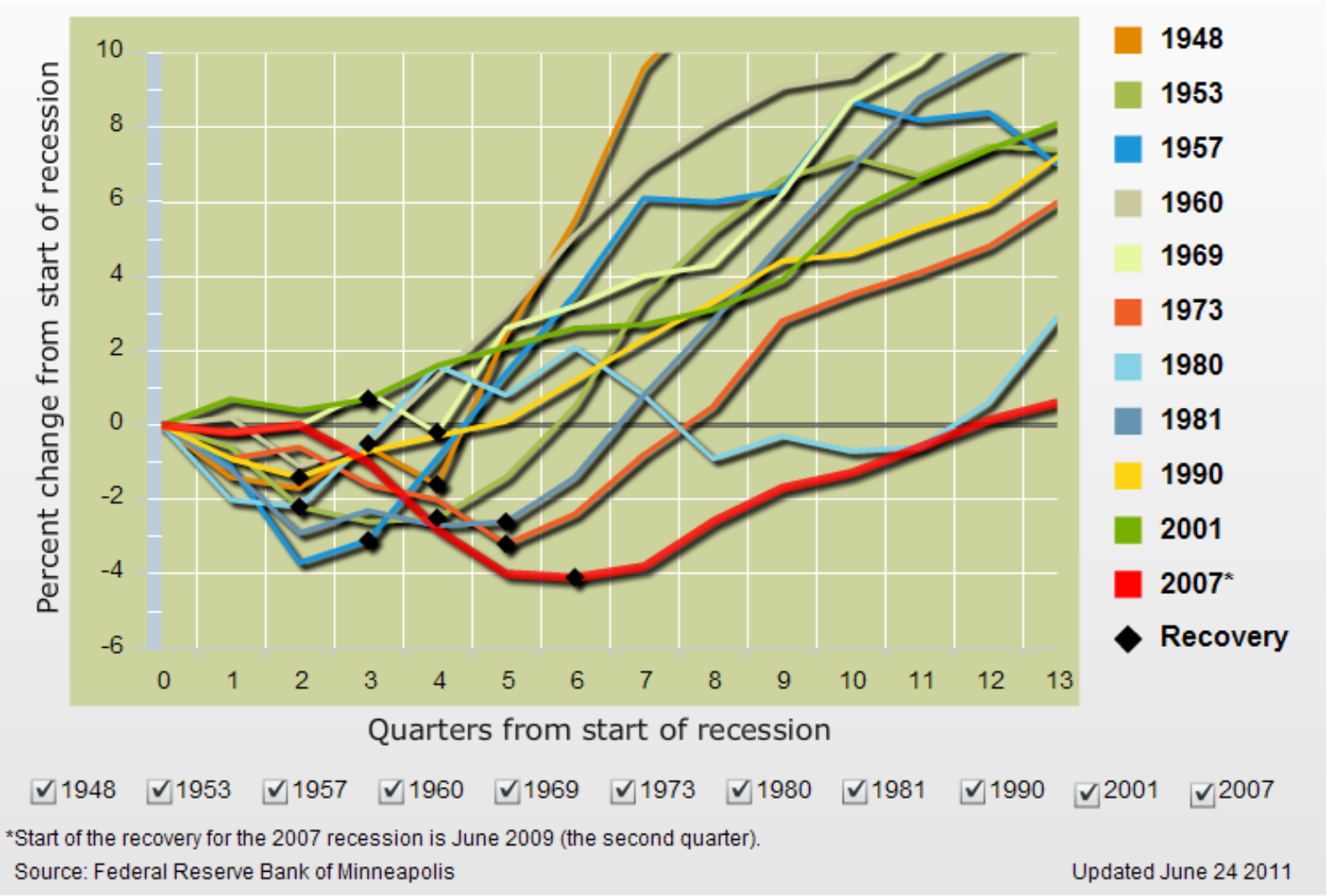
A Deep Recession & Tepid Recovery



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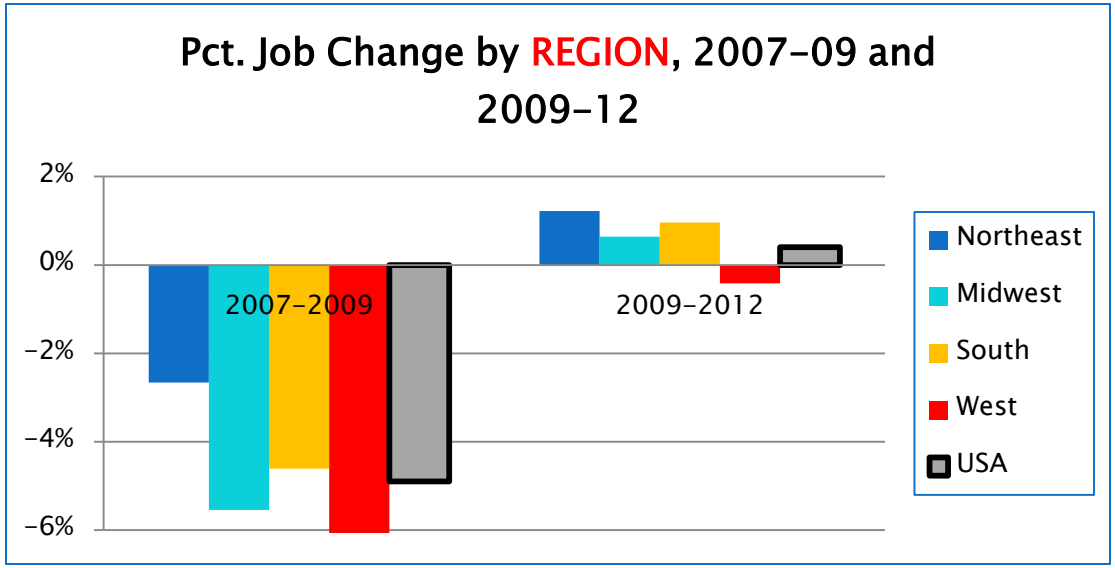
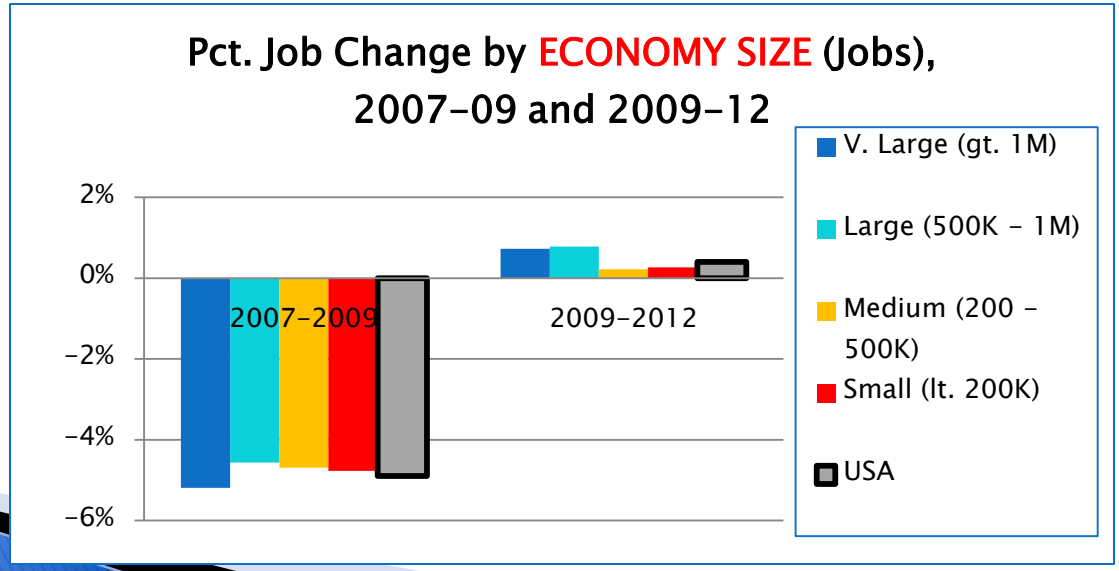
A Deep Recession & Tepid Recovery





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Looking Deeper at Individual Metros

Top 12 Percentage *Job Losers*, *2007 – 2012*

1.	Reno, NV	-15%
2.	Ocala, FL	-14%
3.	Ft. Myers, FL	-13%
4.	Naples, FL	-13%
5.	Port St. Lucie	-13%
6.	Sarasota, FL	-12%
7.	Las Vegas, NV	-12%
8.	Hickory-Lenoir, NC	-11%
9.	Eugene, OR	-10%
10.	Riverside, CA	-10%
11.	Daytona Beach, FL	-10%
12.	Sacramento, CA	-10%

Top 11 *Percentage Job Gainers, 2007 – 2012*

1.	Lafayette, IN	+11%
2.	Fargo, ND	+10%
3.	Austin, TX	+8%
4.	Killeen, TX	+7%
5.	Anchorage, AK	+7%
6.	Corpus Christi,TX	+6%
7.	McAllen, TX	+6%
8.	Houston, TX	+6%
9.	El Paso, TX	+5%
10.	Sioux Falls, SD	+5%
11.	San Antonia, TX	+5%

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What makes a metro economy resilient?

- The now-popular concept of resilience mostly comes out of ecology (Hollings, 1993), although it has long been used as a normative concept by flood and earthquake disaster planners.
- Most empirical studies of metropolitan economies focus on employment growth and/or decline, and not on possible combinations of the two, such as resilience.
- Most regional economists and geographers who study regional or metropolitan growth focus on either the role of **industrial structure** (Glaeser, Kallal, Schenkman and Schleifer 1992) or **labor force/human capital characteristic**s (Glaeser and Saiz 2004; Florida 2004, 2012).

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What makes a metro economy resilient?

- Some researchers such as Hill, et al. (2012) have focused on both: In a study of employment change from 1970 through 2007 for 361 US metros, they found metro areas with larger numbers of export-oriented industries and health care employment to be more recession-resistant, while those with less well-educated workforces to be less recession-resistant.

- Benner and Pastor (2013) took a slightly different approach: they characterized economic resilience as staying on a positive employment growth path during both boom and bust periods. Using Cox regression, they found **longer growth durations** to be positively associated with workforce education, negatively associated with dependence on manufacturing, and negatively associated with higher levels of income inequality, racial segregation, and political fragmentation.

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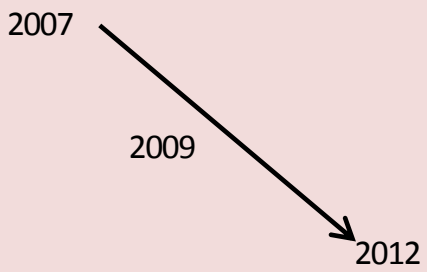
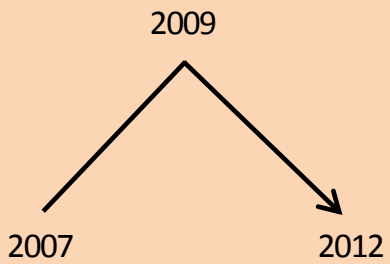
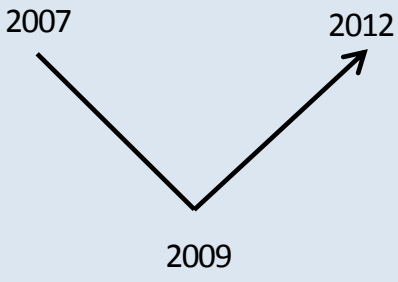
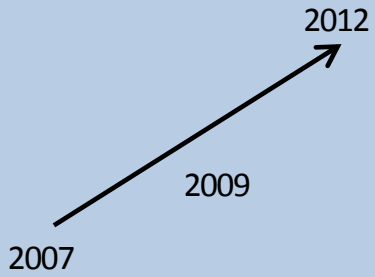
Categorizing Economic Resilience

Structurally-Lagging MSAs	Cyclically-Lagging MSAs	Resilient MSAs	Robust MSAs
			
2007-2009 MSA Job Growth Rate **<** US Rate; 2009-2012 MSA Job Growth Rate **>** US Rate	2007-2009 MSA Job Growth Rate > US Rate; 2009-2012 MSA Job Growth Rate < US Rate	2007-2009 MSA Job Growth Rate **<** US Rate; 2009-2012 MSA Job Growth Rate > US Rate	2007-2009 MSA Job Growth Rate **>** US Rate; 2009-2012 MSA Job Growth Rate **>** US Rate
30 metros	**49 metros**	**30 metros**	**27 metros**

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Typical
67 metros

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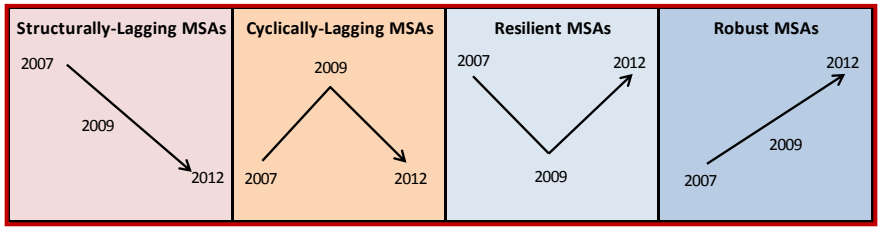
Categorizing Economic Resilience



Top 10 Metro Areas in Each Resilience Category

Structurally-lagging Metros	Pct. Job Change, 2007-2012	**Cyclically-lagging Metros**	Pct. Job Change, 2007-2012	**Resilient Metros**	Pct. Job Change, 2007-2012	**Robust Metros**	Pct. Job Change, 2007-2012
Reno	-15%	Fayetteville	2%	Barnstable	2%	Lafayette	11%
Ocala	-14%	Amarillo	2%	Boulder	2%	Fargo	10%
Ft. Myers	-13%	Brownsville	2%	Holland-Grand Haven	2%	Austin	8%
Naples	-13%	New Orleans	1%	Salt Lake City	1%	Killeen	7%
Port St. Lucie	-13%	Trenton	1%	Provo-Orem	1%	Anchorage	7%
Sarasota	-12%	Cedar Rapids	1%	Fort Wayne	0%	Corpus Christi	6%
Las Vegas	-12%	Des Moines	0%	Erie	0%	McAllen	6%
Hickory-Lenoir	-11%	Utica-Rome	0%	Seattle	-2%	Houston	6%
Eugene-Springfield	-10%	Springfield	0%	Canton	-2%	El Paso	6%
Riverside	-10%	Madison	0%	Grand Rapids	-2%	Sioux Falls	5%

▲

Typical
67 metros

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SIDEBAR: MEASUREMENT SCALE MATTERS

Unemployment Rate Category (2007-2012)

Percent Employment Change Category (2007-2012)

	Structurally-lagging	Cyclically-lagging	Typical	Resilient	Robust
Structurally-lagging	**10**	4	1	1	0
Cyclically-lagging	0	**36**	18	1	24
Typical	1	5	**23**	5	1
Resilient	19	3	17	**12**	0
Robust	0	1	8	1	**2**

	Statistic	Prob
Chi-squared:	142.91	0.00
Lambda	0.267	0.057
tau-b	0.07	0.313
Gamma	0.089	0.313
Diagonal Pct.	**43%**	

Gross Metropolitan Product Category (2007-2011)

Percent Employment Change Category (2007-2012)

	Structurally-lagging	Cyclically-lagging	Typical	Resilient	Robust
Structurally-lagging	**15**	2	3	3	0
Cyclically-lagging	0	**12**	18	2	3
Typical	3	22	**30**	5	12
Resilient	10	6	8	**10**	2
Robust	2	7	8	0	**10**

	Statistic	Prob
Chi-squared:	98.205	0.00
Lambda	0.134	0.04
tau-b	0.173	0.009
Gamma	0.221	0.009
Diagonal Pct.	**40%**	

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Local Determinants

CONTROL VARIABLES

- 2007 Total Employment
- Avg. Manuf. Empl.
- # Int'l. Air carriers
- Regional Dummies

POLICY VARIABLES

- Total Stimulus Spending
- Per capita Stimulus Spending
- Local Governments /100,000 Pop
- State Business Tax Index
- State Income Tax Index

LABOR FORCE VARIABLES (2007)

- Median Age
- % native-born
- % White
- % African-American
- % Asian
- % Hispanic
- % Moved from Diff. State Last Year
- % with High School Diploma
- % with Bachelor's Degree
- % with Graduate Degree
- % Adults in Poverty
- Median Household Income
- Household Income Gini Coefficient

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Local Metro Factors

INDUSTRIAL STRUCTURE, 2007

- Mining & Construct. LQ
- Manufacturing LQ
- Retail Trade LQ
- Prof. & Business Services LQ
- Wholesale Trade & Transport LQ
- Finance LQ
- Eds and Meds LQ
- Federal Government Jobs LQ
- State Government Jobs LQ
- Local Government Jobs LQ
- Avg. LQ for Mfg, WTTU & Eds & Meds
- Herfindahl Diversity Index

HOUSING COST VARIABLES

- Median Home Value, 2006
- Med. Monthly Homeown. Cost
- Median Monthly Rent
- Median Monthly HO Cost Burden
- Median Monthly Renter Burden
- Owner-to-Renter Cost Ratio

CENTRAL CITY-TO-METRO RATIOS

- 2000-to-2010 Population Growth Rate
- Median Age
- % Bachelor's Degree
- Median Household Income

Local Factors – Selective Descriptives

	Measure (all years are 2007 unless otherwise noted)	Average Value	Std. Deviation	Coef. Of Variation
Control Variables	Total Employment	550,760	930,470	0.6
	Average Hourly Manufacturing Wage	$20.62	$3.40	6.1
	Number of Foreign-flag Air Carriers, 2014	2.00	6.75	0.3
	Share of "Non-cyclical" Years between 1990 and 2007	23.4%	18.0%	1.3
Policy Measures	Federal Stimulus (ARRA) Spending (millions)	$1,116	$2,086	0.5
	Per Capita Federal Stimulus (ARRA) Spending	$1,253	$2,928	0.4
	State Business Tax Climate Index, 2012 (1=worst, 10=best)	5.10	0.95	5.4
	(State) Individual Income Tax Climate Index, 2012 (1=worst, 10=best)	5.56	2.54	2.2
	Number of Local Governments per 100,000 population	8.3	9.1	0.9
Industrial Structure	Manufacturing Employment (MFG) LQ	1.03	0.56	1.9
	Wholesale Trade, Transportation & Utilities (WTT) Employment LQ	0.93	0.26	3.6
	Information Services Employment LQ	0.90	0.37	2.4
	Finance Employment LQ	0.94	0.32	2.9
	Educational & Medical Services Employment (Eds & Meds) LQ	1.05	0.28	3.8
	Local Government Employment LQ	0.96	0.27	3.5
	Herfindahl Industrial Diversity Index	0.12	0.01	12.0

Local Factors – Selective Descriptives

	Measure (all years are 2007 unless otherwise noted)	Average Value	Std. Deviation	Coef. Of Variation
Labor Force and Socio-economic Characteristics	Median Age (years)	36.5	3.3	10.9
	Percent Native-born	90.7%	7.5%	12.2
	Percent White	79.1%	12.1%	6.6
	Percent African-American	11.9%	10.6%	1.1
	Percent Hispanic	12.2%	15.3%	0.8
	Moved Last Year from Different State	3.0%	1.4%	2.1
	Share of 25+ year olds with a College Degree	17.5%	4.0%	4.4
	Percent of Adults in Poverty, 2006	8.7%	2.7%	3.2
	Median Household Income	$50,710	$8,901	5.7
	Household Income Gini Coefficient	0.40	0.02	20.0
	Median Monthly Homeownership Cost	$1,136	$361	3.1
	Median Monthly Rent	$718	$114	6.3
	Median Monthly Housing Cost Burden (Owners)	21.0%	3.4%	6.2
	Median Monthly Housing Cost Burden (Renters)	31.0%	3.2%	9.7
	Owner-to-Renter Median Monthly Cost Ratio	1.47	0.23	6.4
Central City-to-	2000-to-2010 Central City-to-Metropolitan Population Growth Rate	0.96	0.12	8.0
	Ratio of Central City-to-Metro Median Age	0.91	0.08	11.4
	Ratio of Central City-to-Metro Bachelor's Degree Share	0.93	0.26	3.6

Metro-Level Stimulus Disbursements

Top 10 Per capita Stimulus Disbursements, 2010 – 2011	
Springfield, IL	$27,490
Tallahassee, FL	$17,481
Olympia, WA	$12,002
Lansing, MI	$11,350
Albany, NY	$11,263
Trenton, NJ	$7,897
Harrisburg, PA	$7,813
Sacramento, CA	$7,007
San Luis Obispo	$5,350
Austin, TX	$5,251

Bottom 10 per capita Stimulus Disbursements, 2010-2011	
Daytona Beach, FL	$78
Grand Rapids, MI	$78
Cedar Rapids, IA	$76
Green Bay, WI	$74
Boise, ID	$43
Birmingham, AL	$0
Huntsville, AL	$0
Champaign, IL	$0
Greensboro, NC	$0
Hickory-Lenoir, NC	$0
Scranton, PA	$0

Average = $1,253

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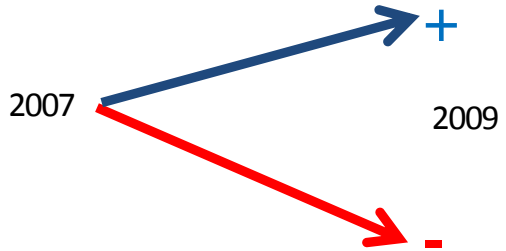
1. Regression Results

2007-2009 Pct Employment Change

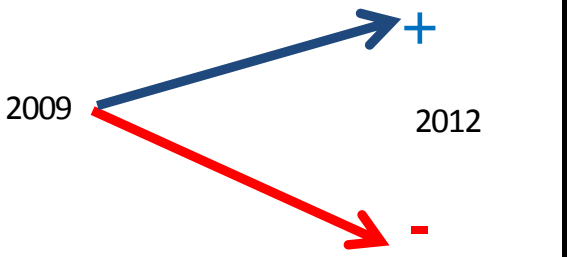


+ % Bachelor's Degrees ▲
+ % Hispanic Population ▲
+ Fed. Gov. Jobs LQ ▲
+ Local Gov. Jobs LQ ▲
+ Employment Diversity Index ▲
+ LQ Diversity Index ▲
+ Owner-Renter Cost Index ▲

+ % Non-cyclical Years (1990-2006) ▼
+ Higher Business Tax Index ▼
+ Manufacturing Jobs LQ ▼
+ Homeowner Cost Burden ▼
Midwest Region (0/1) ▼
West Region (0/1) ▼

R^2 = .70

2009-2012 Pct Employment Change

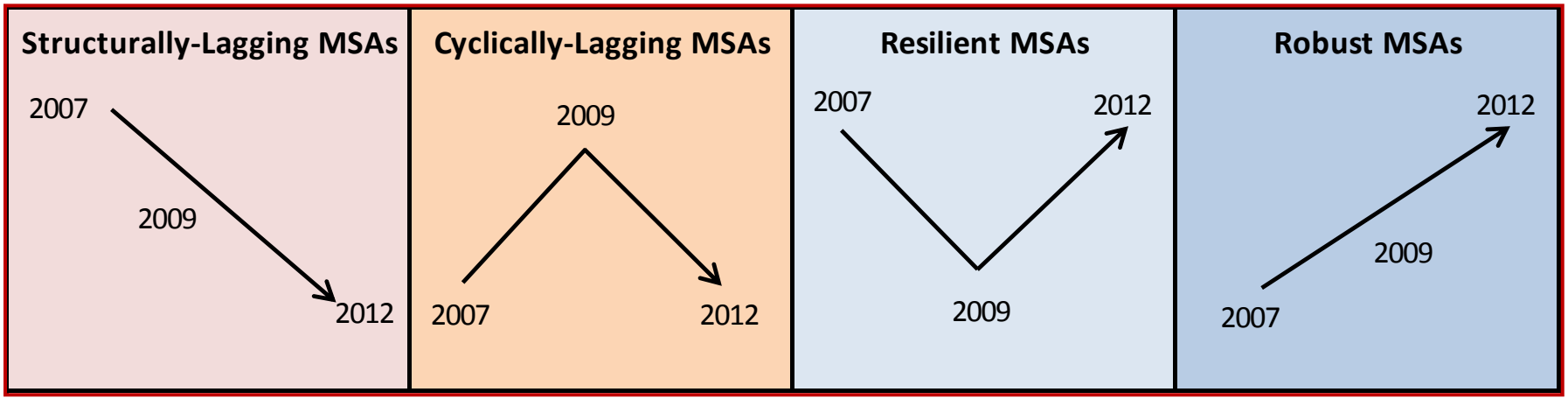


+ % Non-cyclical Years (1990-2006) ▲
+ % Bachelor's Degrees ▲
+ % Hispanic Population ▲
+ Manufacturing Jobs LQ ▲
+ Local Gov. Jobs LQ ▲
+ Employment Diversity Index ▲

West Region (0/1) ▼

R^2 = .32

2. Multinomial Logit Results



+ Poverty Rate ▼
+ % Bachelor's Degr. ▼
+ State Gov. Jobs ▼ LQ

West Region (0/1) ▲
+ Median Age ▲
+ Right-to-Work (0/1) ▲
+ Stimulus Funding ▲

+ Local Gov. Jobs LQ ▲
+ State Gov. Jobs LQ ▲

+ Right-to-Work (0/1) ▲
Lower State Income Tax Index ▲

South Region (0/1) ▼
+ Manuf. Jobs LQ ▼

+ Right-to-Work (0/1) ▲
+ Lower State Inc.Tax Index ▲

South Region (0/1) ▼
West Region (0/1) ▼
+ Median Age ▼
+% Bachelor's Degrees ▼
+ Housing Price Index (1997=0) ▼

Percent Correctly Classified					
Struc.Lag	Cycl. Lag	Typical	Resilient	Robust	Total
43%	**51%**	**73%**	**25%**	**52%**	**62%**

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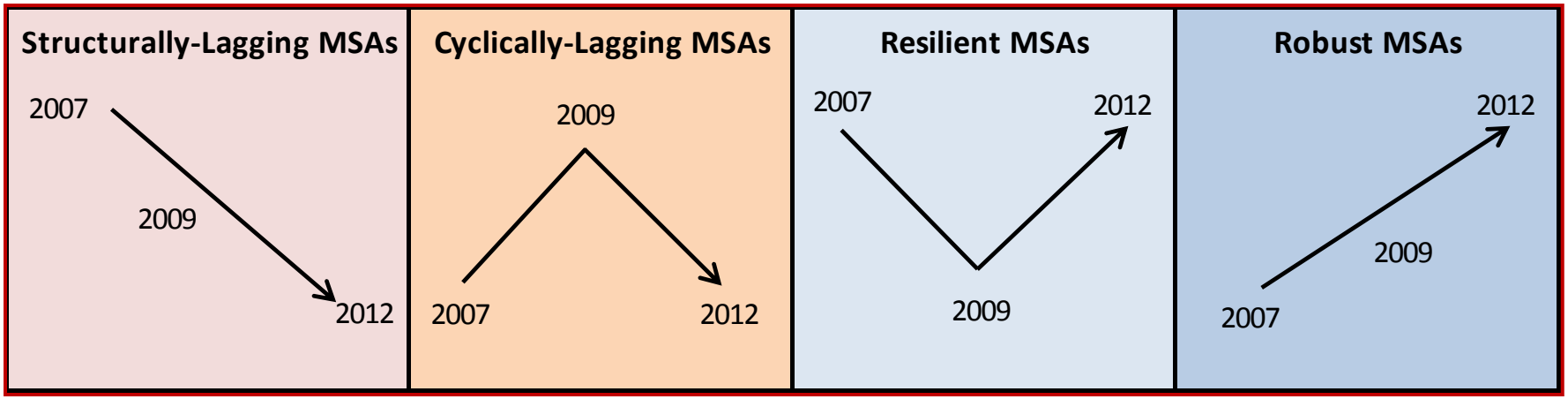
3. Ordinal Logit Results



◄ Midwest Region (0/1)
◄ South Region (0/1)
% Bachelor's Degrees ►
◄ Median Age
◄ Median Homeowner Cost Burden
◄ State Government Jobs LQ
◄ Right-to-Work Dummy Variable

Percent Correctly Classified					
Struc.Lag	Cycl. Lag	Typical	Resilient	Robust	Total
47%	**25%**	**70%**	**0%**	**30%**	**42%**

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Synthesis & Policy Implications

- **Modeling ATYPICAL economic performance is difficult:** Of the four "full-specification" models tested—including two regression models, one multinomial logit model, and one ordinal logit model—only one, the regression model of employment losses during the 2007-2009 period, does a convincing job explaining metropolitan level job performance.

- **An EDUCATED WORKFORCE is key:** Metros with a higher shares of adults with Bachelor's degrees lost proportionately fewer jobs between 2007 and 2009 , gained proportionately more jobs between 2009 and 2012; were less likely to be classified as structurally or cyclically-lagging, and were far more likely to be classified as robust.

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Synthesis & Policy Implications

- Other key relationships:
  - **Oh youth**: Metros with older populations were more likely to be classified as structurally lagging, and much less likely to be classified as robust.
  - **Manufacturing matters:** Metros with higher concentrations of manufacturing jobs lost proportionately more total jobs between 2007 and 2009; gained back proportionately more between 2009 and 2012; and were thus more likely to be classified as resilient.
  - **Shelter, not speculation:** Metros with higher homeownership cost burdens or those with higher housing prices lost proportionately more jobs between 2007 and 2009; and were less likely to perform in a resilient or robust manner compared to other metros.

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Synthesis & Policy Implications

- Other key relationships:
  - **Right to work laws:** Metros located in states with right-to-work laws were economically atypical. Most were underperformers relative to the average, but a few, curiously did better than average.
  - **(Some) taxes matter more than others:** Metros in states with less onerous income taxes were more likely to be classified as resilient or robust. Not so for metros in states with less onerous business taxes: compared to their higher tax counterparts, they lost proportionately more jobs between 2007 and 2009.
  - **The stimulus wasn't large enough to matter:** Metros which received proportionately more stimulus funding under the federal ARRA program were slightly less likely to be classified as typical, but otherwise neither underperformed nor outperformed their counterparts in terms of job growth between 2009 and 2012.

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The Image that Sticks: "Let's be Texas"

- Competitive (and less regulated)
- housing markets ► Less likelihood of an asset price bubble.
- Reduced social and economic safety net, *but easy to start a business.*
- OK (not great) university system partially funded by a resource extraction tax; partially privatized prison system ► low state income taxes.
- Communities and services that appeal to young people and families alike ► high-in-migration, low out-migration.
- Urban areas as centers of immigrant diversity

Top 11 *Percentage Job Gainers*, 2007 – 2012

1.	Lafayette, IN	+11%
2.	Fargo, ND	+10%
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