

# The Post-Recession Resilience of Legacy Regions

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# Motivation

**What:** We model the the relationship between the **pre-recession characteristics** and **post-recession *outcomes*** of U.S. metropolitan economies. We apply this model to subsets of the universe—into several “clusters” of MSAs—to identify the heterogeneity in economic resilience across metro areas in the years following the Great Recession.

**How:** OLS Regression (comparative statics)

**So What?:** The impact of the recession differed across the various types of metropolitan economies. We want to see what differentiates the performance of “legacy regions” from the performance of other MSAs.



# Legacy Regions

The *existing* conceptualization of “Legacy Cities” — places where a complex mixture of **assets** and **challenges** provide a unique variety of opportunities and hurdles toward urban revitalization

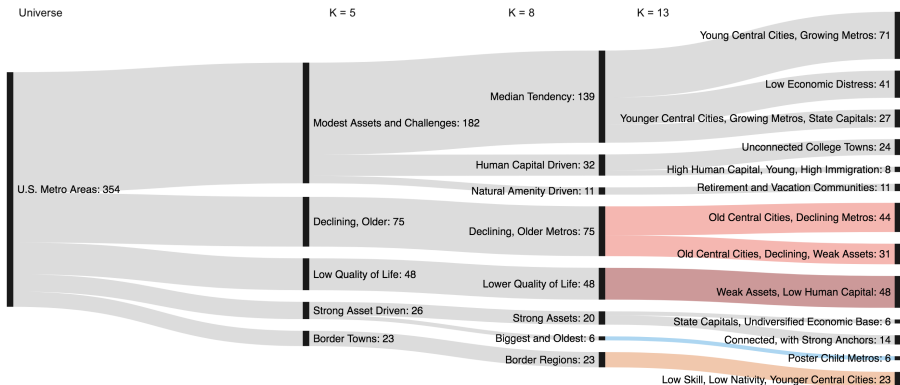
In a previous paper, we:

Used statistical technique to divide the 354 MSA into homogeneous groups

Measured a majority of variables at the geographic level of the metropolitan area; legacy cities / legacy *regions*



# Cluster Tree





# Legacy Regions

## So What?

Popularly branded constructs can become rhetorical tools but are not necessarily public policies; our analysis took some of the “fuzziness” out of the legacy city construct.

Dividing the universe of 354 MSAs into 13 coherent clusters helps researchers understand meaningful differences between different types of metropolitan economies.

However, further analysis is required if we are to identify meaningful differences in economic performance.

We are interested in measuring the degree to which different clusters of MSAs are resilient in the aftermath of a major economic shock



# Resilience

## Metropolitan Economies in the Aftermath of the Great Recession=

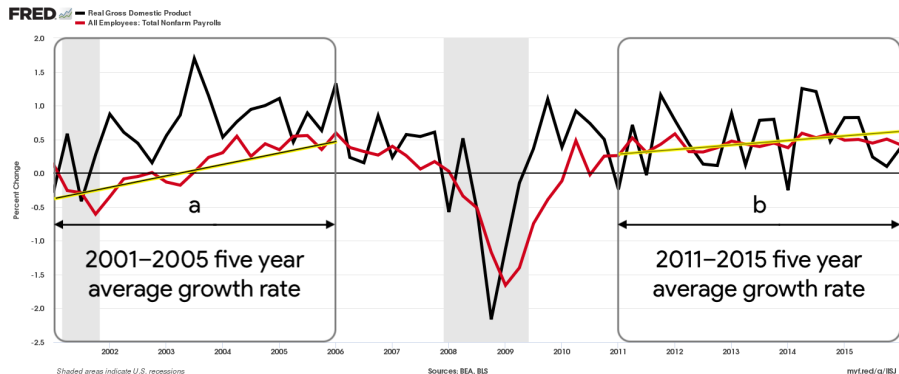
**Resilience:** the ability of a metropolitan economy to recover successfully from shocks that throw it off its growth path

Economies can be thrown off their growth paths through cyclical or secular change. Resilience is an indicator that change was not structural.

Research interest motivated by observing the aftermath of 2007-09 recession. We care about the **relationship between pre-recession industry structure and post-recession resilience.**



# Outcome Variable



Revised outcome variable =  $b_i a_i$  (for MSA  $i$ )



# Model

## Hypotheses

### Hypotheses:

MSAs with heavier reliance on the auto manufacturing, home construction, and financial services industries were associated with less economic resilience

MSAs with a more diversified economic base were associated with greater economic resilience

**Universe:** 354 metropolitan areas, subset 13 clusters

**Analytical Groupings:** True Legacy Regions, Asset-Deficient Legacy Regions, Non-Legacy Regions



# Model

## Specification

$$GMP_{it} = \alpha_0 + \alpha_1 R_{i;t = 2005} + \alpha_2 P_{i;t = 2005} + \alpha_3 C_{i;t \leq 2005} + \epsilon_{it}$$

$$EMP_{it} = \alpha_0 + \alpha_1 R_{i;t = 2005} + \alpha_2 P_{i;t = 2005} + \alpha_3 C_{i;t \leq 2005} + \epsilon_{it}$$

*R*: Vector of variables associated with triggering the **recession**

*P*: Variables associated with the **portfolio** of the economic base

*C*: Geographic, demographic, institutional, and structural characteristics **controlled** for in the model

Both models identical except for outcome variable: employment or gross metropolitan product



# The Event

Previous paper used ordered logistic regression; not possible with subsets due to loss of statistical power

Comparative statics approach: new *continuous* outcome variable generated by comparing long-term growth paths of metropolitan economies before and after the recession.

## Omits three potentially distorting time frames:

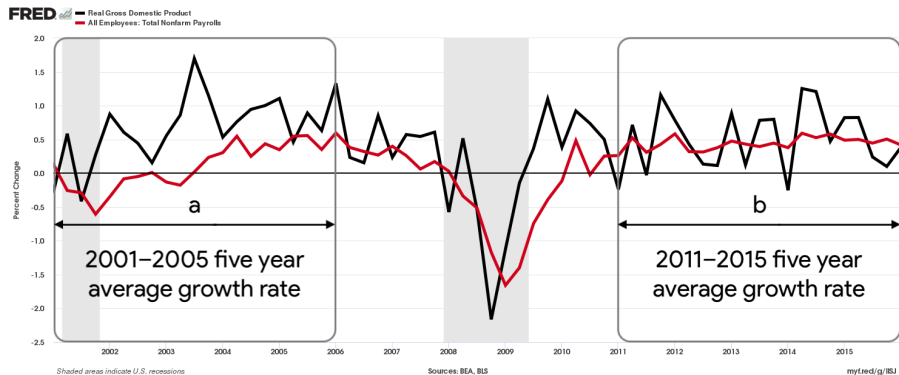
Housing bubble of 2006-07

Recession of 2008-09

Slow recovery year in 2010



# Outcome Variable



Revised outcome variable =  $b_i a_i$  (for MSA  $i$ )

# Empirical Approach

Model cannot reliably be applied to clusters with  $n < 30$

Cluster analysis produced groups of relatively homogeneous MSAs, *some* variation is need in order to apply the model (especially for dummy variables).

We only pay attention to three subsets:

- Cluster 2 (“**true**” legacy regions)

- Cluster 6 (**asset-deficient** legacy regions)

- The rest<sup>1</sup> of all U.S. metro areas (**non**-legacy regions)

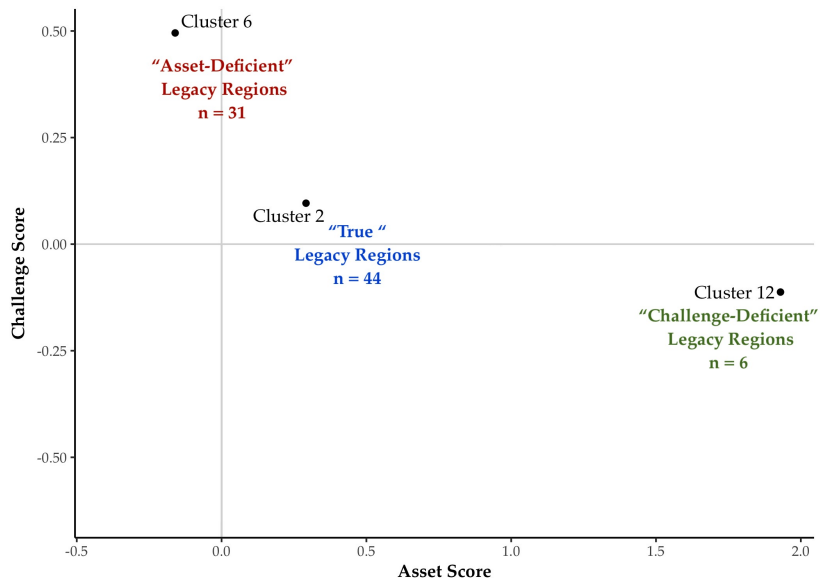
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<sup>1</sup>Omits the 6 MSAs that make up Cluster 12





# Clusters in the Model



Outcome variables (GMP, EMP) from Moodys Analytics

Industry employment data from Upjohn Institute's Whole Data set

Control variables from Census/ACS, IPUMS NHGIS, NOAA, BEA, FAA, FDIC, IPEDS, others

$$LQ_i = \frac{e_j}{E_j} \frac{e}{E}$$

If an industry's LQ  $\geq 1.8$ , it is considered to be in the MSA's base





# Data

## Key Variables

Type	Variable
Pre-Recession Reliance	Auto Sector LQ Home Construction LQ Home Construction Emp. Growth Bank HQs
Pre-Recession Concentration	Four Industry Concentration Ratio <b>or</b> Base Dominance
Controls	MSA Age Right to Work



# Findings

## Employment

	Legacy (1)	Legacy, Weak (2)	Non-Legacy (3)	All MSAs (4)
Auto Sector LQ	0.34 (0.09)	-0.10 (0.12)	0.13 (0.02)	0.12 (0.02)
Home Construction LQ	0.61 (0.87)	-1.92 (1.83)	-0.11 (0.22)	-0.10 (0.20)
Home Construction Emp. Growth	-0.54 (1.04)	1.72 (1.68)	-2.26 (0.41)	-2.17 (0.37)
Bank HQs	-0.003 (0.01)	-0.04 (0.07)	-0.002 (0.01)	-0.002 (0.005)
Four Industry Concentration Ratio	-5.83 (3.28)	-3.45 (4.44)	-2.16 (0.97)	-2.58 (0.87)
MSA Age	0.03 (0.04)	0.06 (0.06)	0.07 (0.02)	0.04 (0.02)
Right to Work	-0.63 (0.53)	-0.02 (0.89)	0.23 (0.16)	0.29 (0.13)
Observations	44	31	271	354
<i>Note:</i>	p<0.1;	p<0.05;	p<0.01	

# Findings

## Gross Metropolitan Product

	Legacy (1)	Legacy, Weak (2)	Non-Legacy (3)	All MSAs (4)
Auto Sector LQ	0.35 (0.17)	-0.23 (0.19)	0.19 (0.05)	0.17 (0.05)
Home Construction LQ	1.61 (1.65)	-0.18 (2.93)	-0.74 (0.47)	-0.62 (0.42)
Home Construction Emp. Growth	-1.24 (1.96)	2.64 (2.68)	-2.04 (0.88)	-2.39 (0.77)
Bank HQs	-0.002 (0.02)	-0.18 (0.12)	-0.0001 (0.01)	-0.004 (0.01)
Base Dominance	-2.29 (5.96)	-4.54 (5.91)	2.14 (1.58)	0.89 (1.40)
MSA Age	0.05 (0.09)	0.11 (0.10)	0.18 (0.05)	0.11 (0.04)
Right to Work	-0.45 (1.02)	-3.89 (1.43)	-0.33 (0.34)	-0.38 (0.28)
Observations	44	31	271	354
<i>Note:</i>	p<0.1;	p<0.05;	p<0.01	

# Conclusion

The stimulus worked in the 'true' legacy regions. Saved auto industry throughout the country, but not in 'asset-de cient' legacy regions. Finance industry not a factor.

Higher 'bubble' of home construction employment had a strong negative association with resilience *except* in legacy regions (both).

Right to work: might be biased by homogeneity of cluster subsets, but potential reasoning theoretically makes sense.

## Meta Points:

Inductive description of a "universe" (e.g., metro areas in the U.S.) should be paired with empirical deductive analysis in order to be useful.

Distinction between MSAs (i.e., clustering) provides clarity in accounting for heterogeneity in the associations between pre-recession characteristics and post-recession outcomes



# Thank you!

## Contact

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