

Is U.S. Structural Unemployment on the Rise?

Marcello Estevão & Evridiki Tsounta*

International Monetary Fund

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A unique recession...

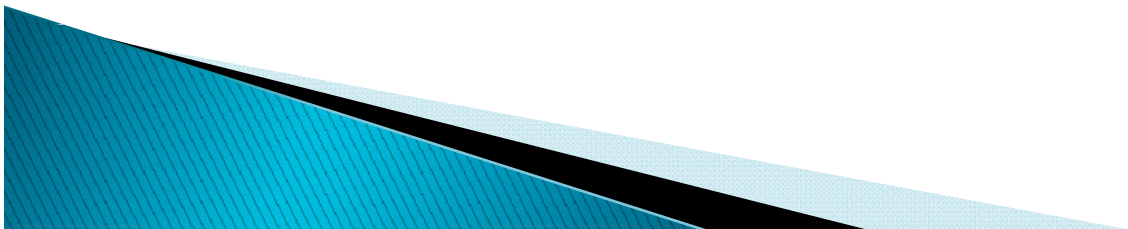
- ▶ Financial crisis coupled with a housing collapse
- ▶ Unemployment rate reached a 27-year high
 - Second highest rate on record
 - A record 5.5 million jobs lost in 2009
 - Historically high for youth and men
 - 1:6 with no-high school diploma is unemployed
 - 1:10 high-school graduates is unemployed
 - Historically high unemployment duration
 - All measures of underutilization at historic highs



...with a regional flavor

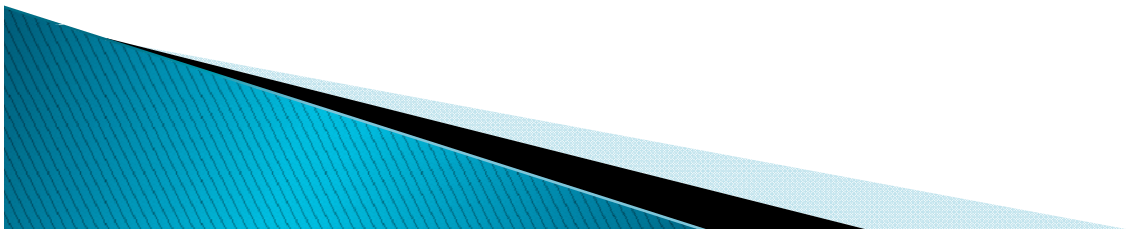
Large regional disparities in:

- ▶ Unemployment rates:
 - North Dakota=3.7 percent
 - Nevada=14.4 percent
- ▶ Housing market performance:
- ▶ Skills allocations:
 - Ohio and Michigan (manufacturing)
 - New York and Delaware (financial services)
 - Hawaii (tourism)



Objective of the study

- ▶ Investigate what was the impact of the current recession on U.S. NAIRU
 - Construct a Skills Mismatch Index for 50 states and DC
 - Investigate importance of skills mismatches and housing market hurdles to explain state-level unemployment rates after correcting for cyclical and other effects
 - Panel state-level analysis



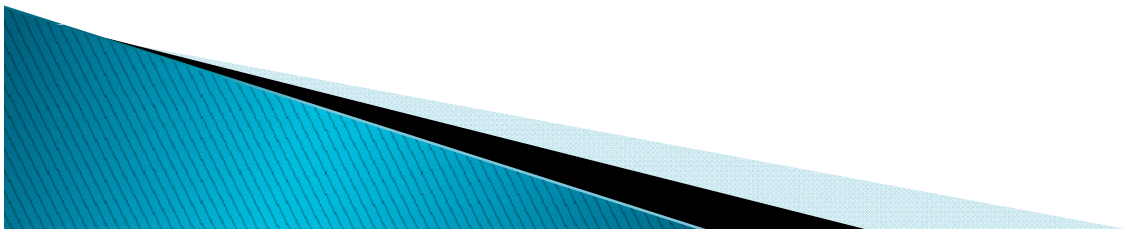
In a nutshell...

- ▶ Structural unemployment has risen by between 1 and 1 $\frac{3}{4}$ percentage points due to the crisis.
 - NAIRU is now around 6 $\frac{1}{2}$ versus 5 percent pre-crisis
 - Skill mismatches explain only $\frac{1}{2}$ pp. of the increase in NAIRU; housing conditions and interactions explain the rest.
- ▶ Skills mismatches have risen significantly during this recession
 - Disproportionate increases in hard-hit areas
- ▶ Disparities in housing market performance also drive the increase in the NAIRU
- ▶ Our empirical model suggests that interaction effects would amplify the isolated impact of each of these variables on unemployment



Outline

- ▶ Are Skill Mismatches on the Rise?
- ▶ Modeling Structural Unemployment
- ▶ Structural Unemployment Has Risen
- ▶ Is policy Intervention Warranted?
- ▶ Conclusions




Are Skills Mismatches on the Rise?

- ▶ Skills mismatch index for each state i at time t

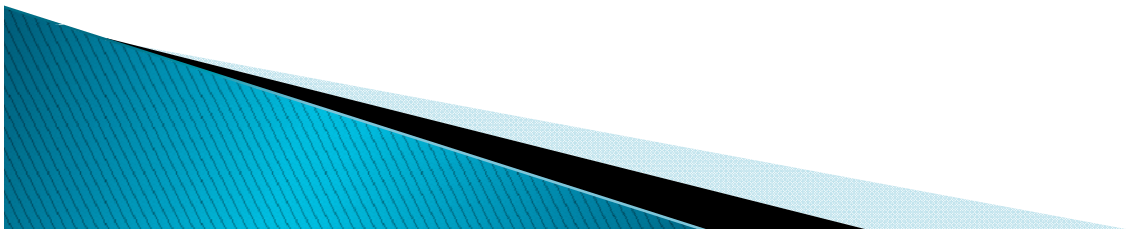
$$\text{Skill Mismatch Index}_{it} = \sum_{j=1}^3 (S_{iji} - M_{ijt})^2$$

where:

- ▶ j =skill level
 - ▶ t =time
 - ▶ i = state
-
- ▶ S =percent of population in the state with skill level j (“*skill supply*”)
 - ▶ M =percent of employees in the state with skill level j (“*skill demand*”)
- 

Skills Supply by State

- ▶ Proportion of pop. 25+ years old with:
 - Low skilled: less than high school diploma
 - Semi skilled: High school diploma but less than bachelor
 - High Skilled: Bachelor and above

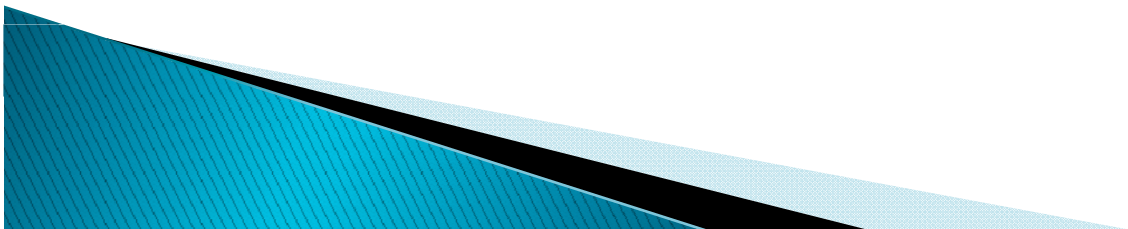


Skills Demand by State

- ▶ Proportion of employees by skill level
 - Divide industries by skill level (based on proportion of employees by skill level in 2006 from the Current Population Survey)

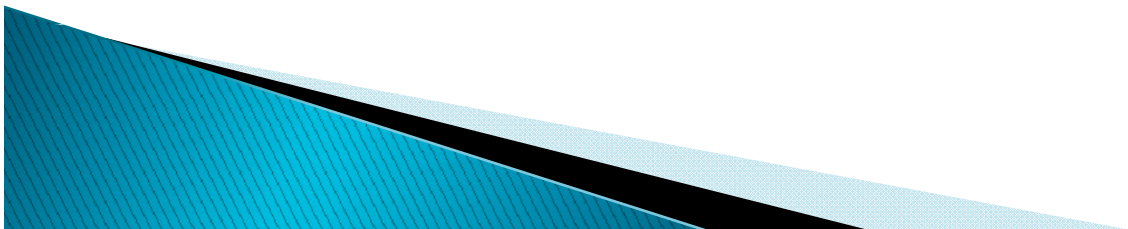
Low Skilled	Semi Skilled	High Skilled
Mining and Logging	Manufacturing	Information
Construction	Trade, Transportation, and Utilities	Financial Activities
	Leisure and Hospitality	Education and Health Care
	Other Services	Professional and Business Services
		Government

- Employment data from *Current Employment Statistics* database.



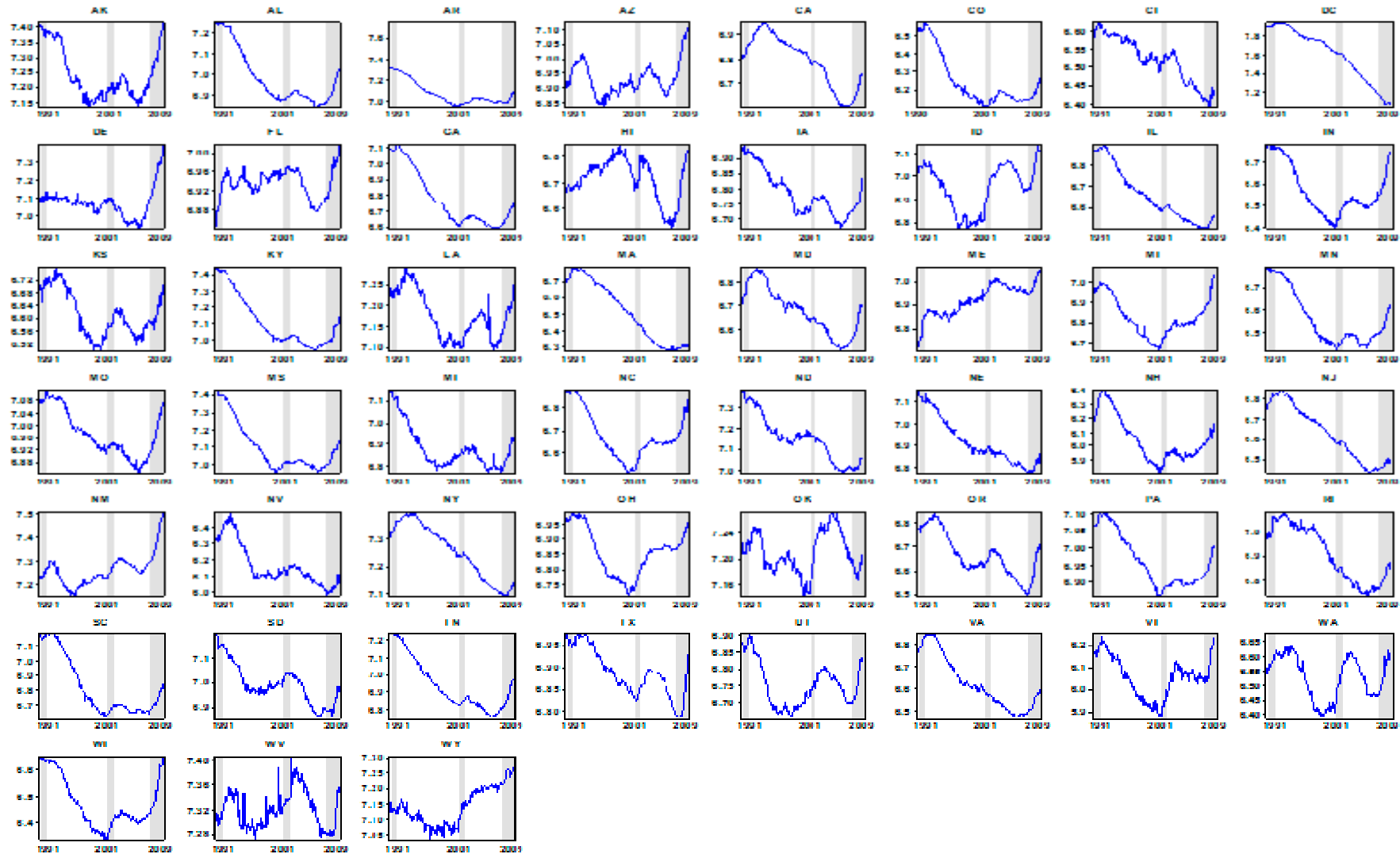
Are Skill Mismatches on the Rise?

- ▶ For numerous states (e.g., Alaska, Arizona, Delaware, Florida, Michigan, Ohio) SMI is at/near historic highs.
- ▶ Much disparity in SMI across states
- ▶ Disparities in *increases* in SMI during recession (e.g., Hawaii, Michigan, Delaware).



- SMI exhibits cyclicity
- At/near record high for numerous states (e.g., DE, FL, MI, OH)

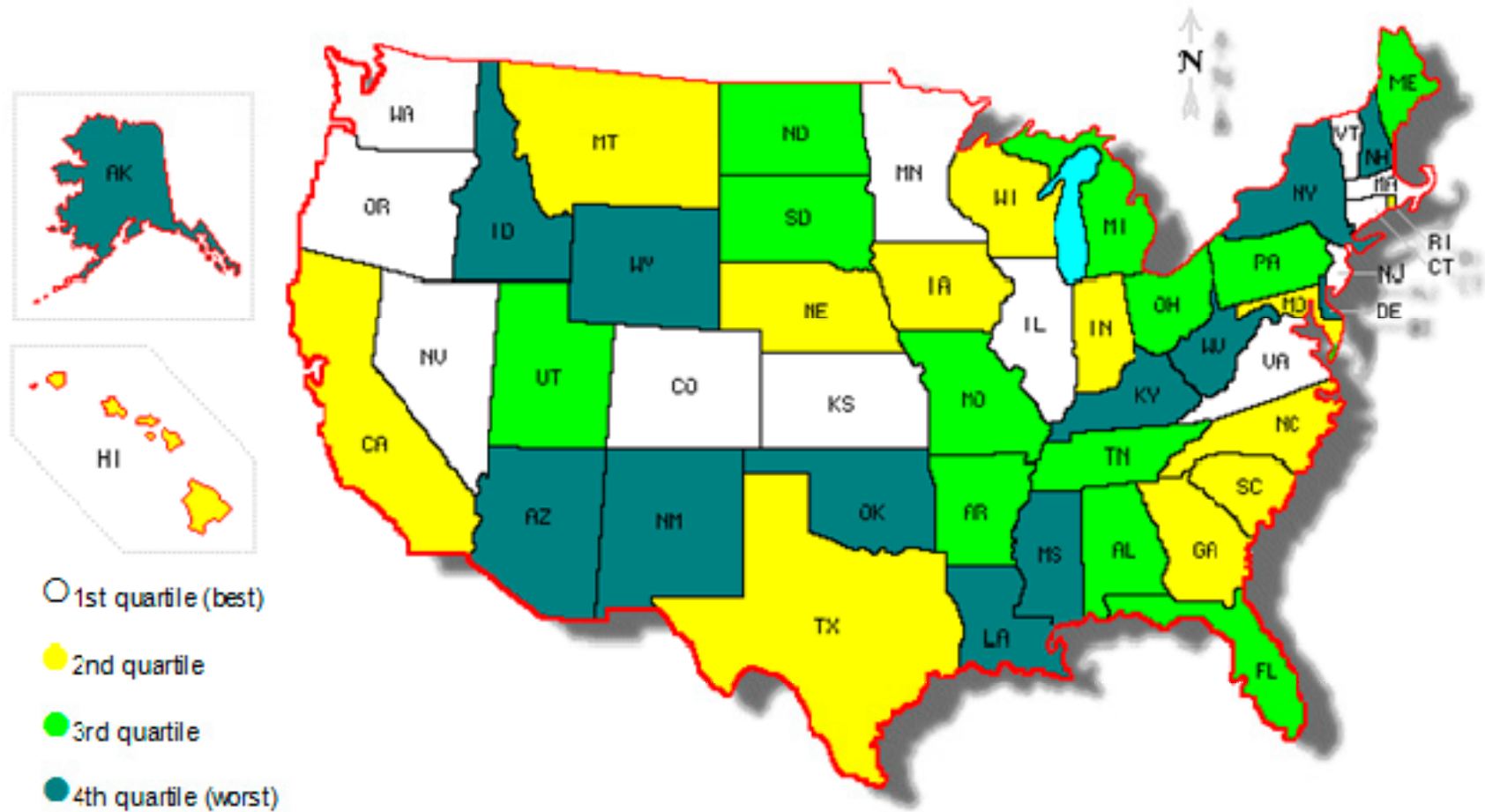
Figure 3. Skills Mismatch by State, 1990-2009



Source: Haver Analytics, U.S. Bureau of Labor Statistics, U.S. Bureau of the Census, and authors' calculations.

Large Disparities across states...

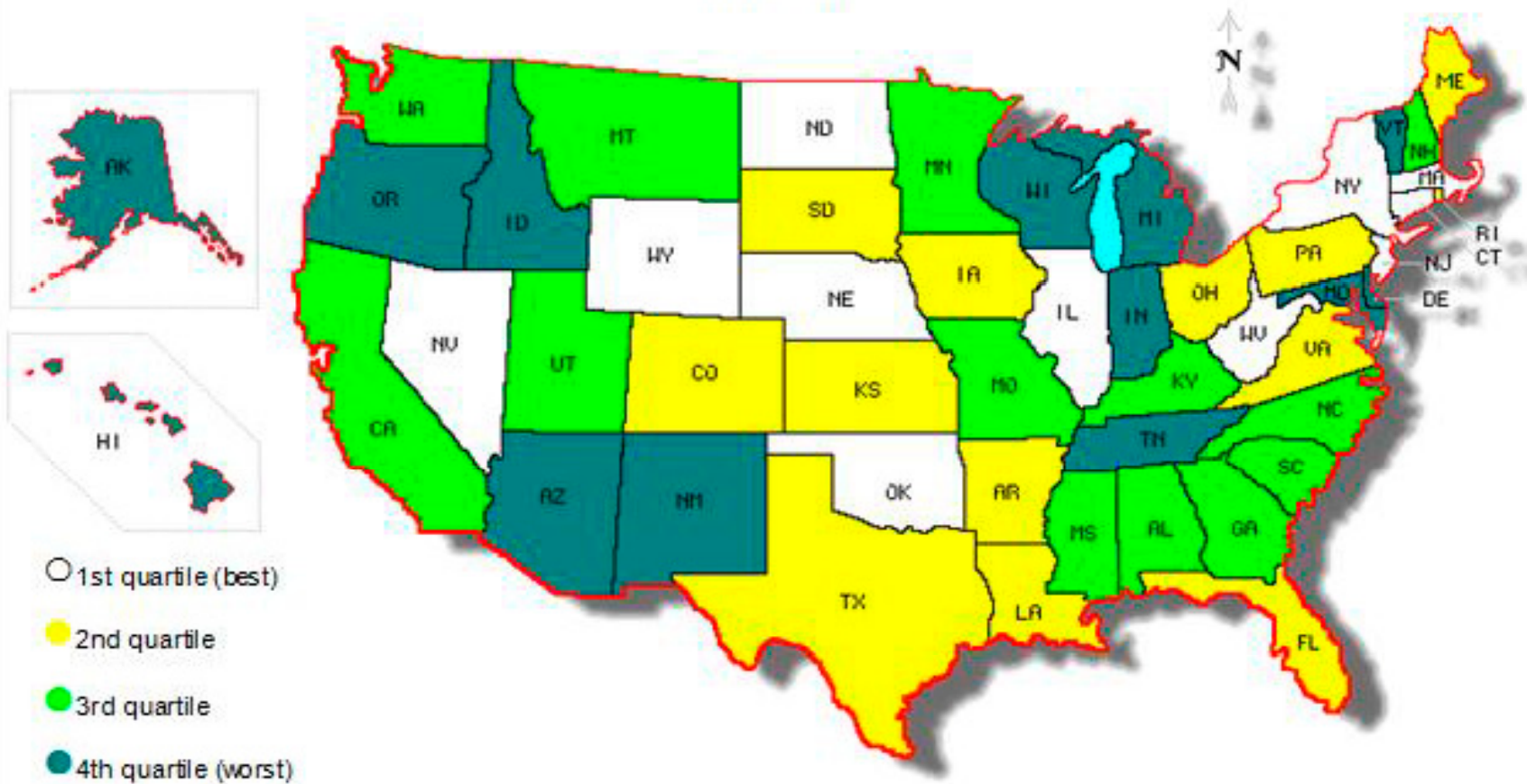
Figure 4. Skill Mismatch Index by State, 2009



Sources: Haver Analytics, U.S. Bureau of Labor Statistics, U.S. Census Bureau, and authors' calculations.
Notes: 1st quartile [430.4,798.6], 2nd quartile [740.9,971.1], 3rd quartile [1010.8,1189.4], 4th quartile [1202.4,1742.6]. Calculated as the percent change from 2007-2009. Annual levels are the average of 12 months.

Large *increases* in SMI during current recession (e.g., HI, MI, DE).

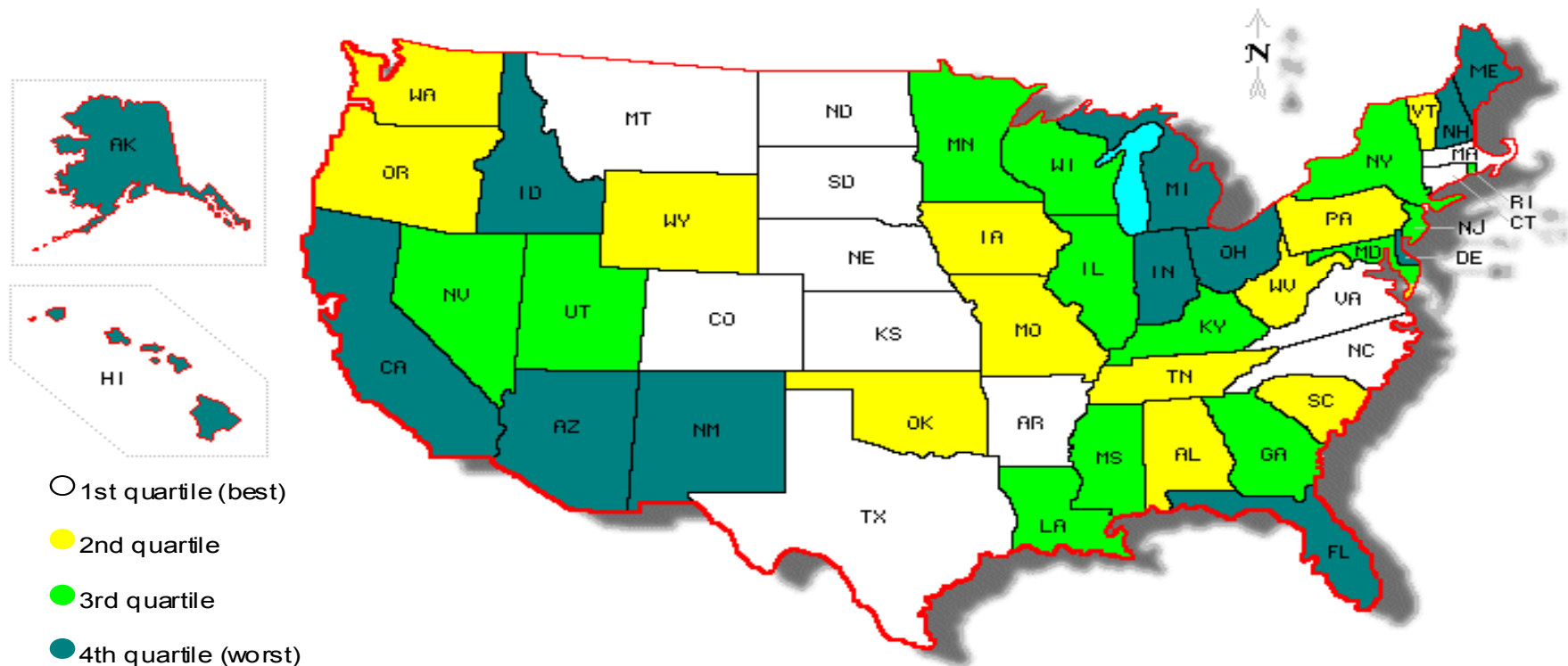
Figure 5. Increase in Skill Mismatch Index Since Onset of Recession
(in percent)



Sources: Haver Analytics, U.S. Bureau of Labor Statistics, U.S. Census Bureau, and authors' calculations.
Notes: 1st quartile [-11.1,5.7], 2nd quartile [6.3,11.6], 3rd quartile [12.3,16.9], 4th quartile [17.2,29.4].
Calculated as the percent change from 2007-2009. Annual levels are the simple average of 12 months.

Hard hit areas by housing and skill mismatches...

Figure 10. Composite Effect of the Crisis Since Onset of the Recession



Sources: Haver Analytics, Mortgage Bankers Association, U.S. Bureau of Labor Statistics, U.S. Census Bureau, and authors' calculations.

Notes: 1st quartile [46,78], 2nd quartile [80,101], 3rd quartile [106,127], 4th quartile [132,176]. Composite score is calculated by ranking each of the 50 states plus D.C. in four categories and summing them across the following indicators: 2009 SMI, 2009 foreclosure rate, percent change in SMI (peak to trough), and percentage point change in foreclosure rate (peak to trough).

Modelling Structural Unemployment

▶ The Model

- State panel analysis
- Sample: 1991–2008
- OLS and 2SLS specifications

$$\Delta u_{it} = \beta_S S_i + \beta_T S_t + \beta_Y \Delta y_{it} + \beta_m \Delta m_{it} + \beta_h \Delta h_{it} + \beta_{mh} \Delta m_{it} * \Delta h_{it} + e_{it}$$

Change in
UR

State
dummy

Time
dummy

Log diff.
state GDP
“Okun”

Log diff.
SMI

Log diff.
housing

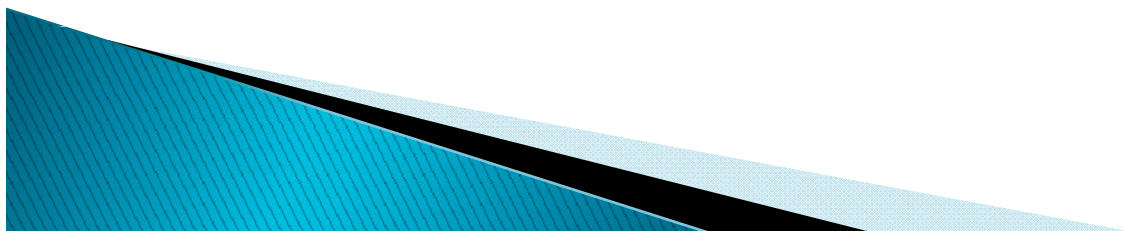


Table 1. Explaining Changes in State-Level Unemployment Rates 1/

	(1)	(2)	(3)	(4)	(5) 2/	(6) 3/
	OLS				2SLS	
Dependent variable: percentage-point change in unemployment rate (numbers in parentheses are p-values)						
Log-change in real GDP 4/	-0.05*** (0.0)	-0.05*** (0.0)	-0.04*** (0.0)	-0.04*** (0.0)	-0.05*** (0.0)	-0.03*** (0.0)
Log-change in skill mismatch index	3.2*** (0.0)		2.6*** (0.0)	2.4*** (0.0)		1.7*** (0.0)
Percentage-point (pp.) change in foreclosure rate		0.3*** (0.0)	0.3*** (0.0)	0.3*** (0.0)	0.4** (0.0)	0.5** (0.0)
Log-change in skill mismatch*pp. change in foreclosure rate				1.9* (0.1)		1.4 (0.6)
Time effects 5/	Yes	Yes	Yes	Yes	Yes	Yes
Fixed state effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.6	0.6	0.6	0.6	0.7	0.6
Number of states, including D.C.	51	51	51	51	51	51
Observations	918	918	918	918	918	867

*Significant at a 10 percent level of significance, **significant at a 5 percent level of significance, ***significant at a 1 percent level of significance.

1/ Panel approach; annual data for the period 1990-2008 for 50 U.S. states plus the District of Columbia.

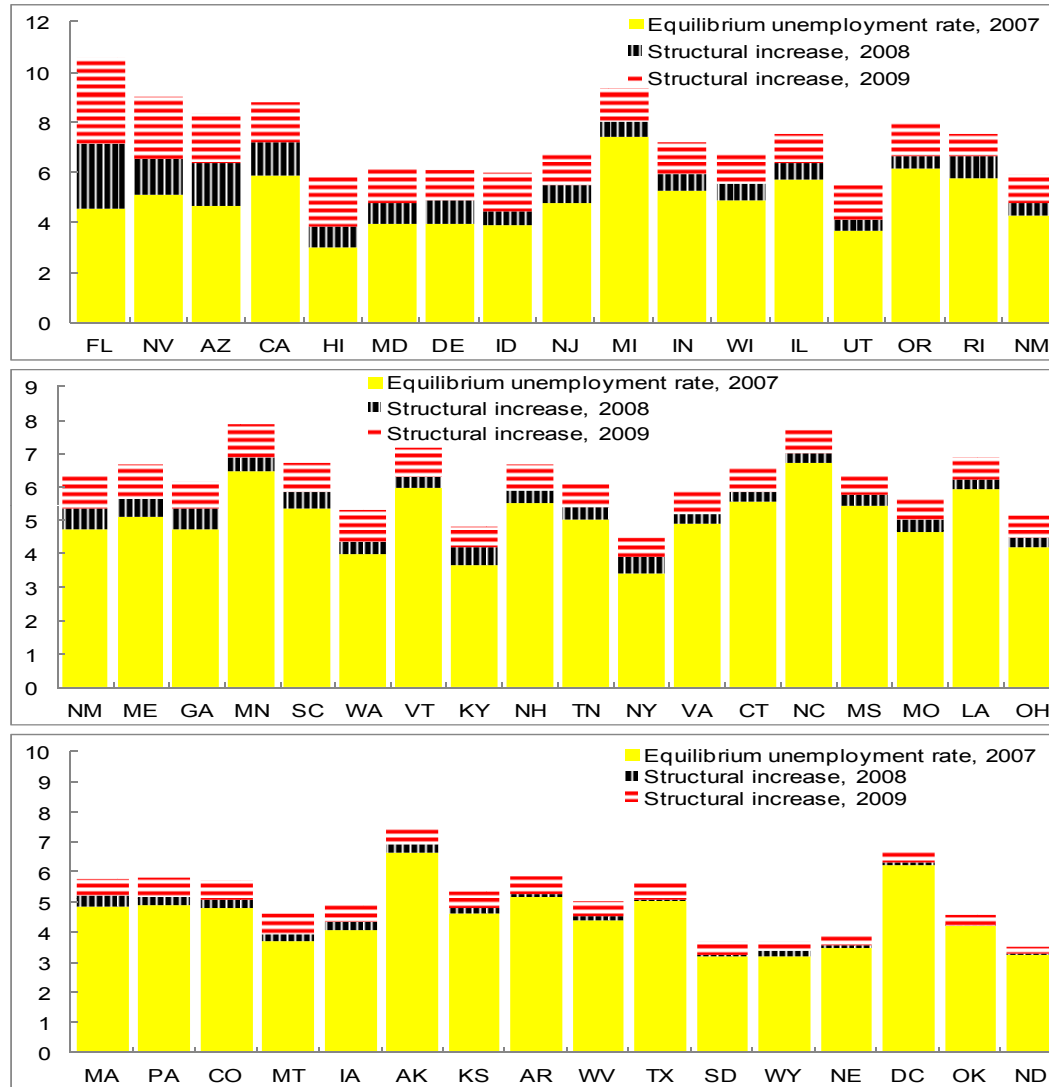
2/ Instruments used: subprime share of mortgages (contemporaneous and 1 period lag).

3/ Instruments used: subprime share of mortgages (contemporaneous and 1-period lag), log-change of skill mismatch*share of subprime mortgages (contemporaneous and 1 lag).

4/ The estimates are below those typically found in cross-country regressions (see Chapter III of this Selected Issues Paper), as expected when using a panel of U.S. states and time dummies. In this setup, changes in state GDP above and beyond the country average would pick up the ensuing labor mobility across states (a minor effect in cross-country regressions), which serves to equalize unemployment rates. State-by-state regressions, which would minimize (albeit not eliminate) this effect, produces an average Okun's coefficient for the country as a whole of -0.22.

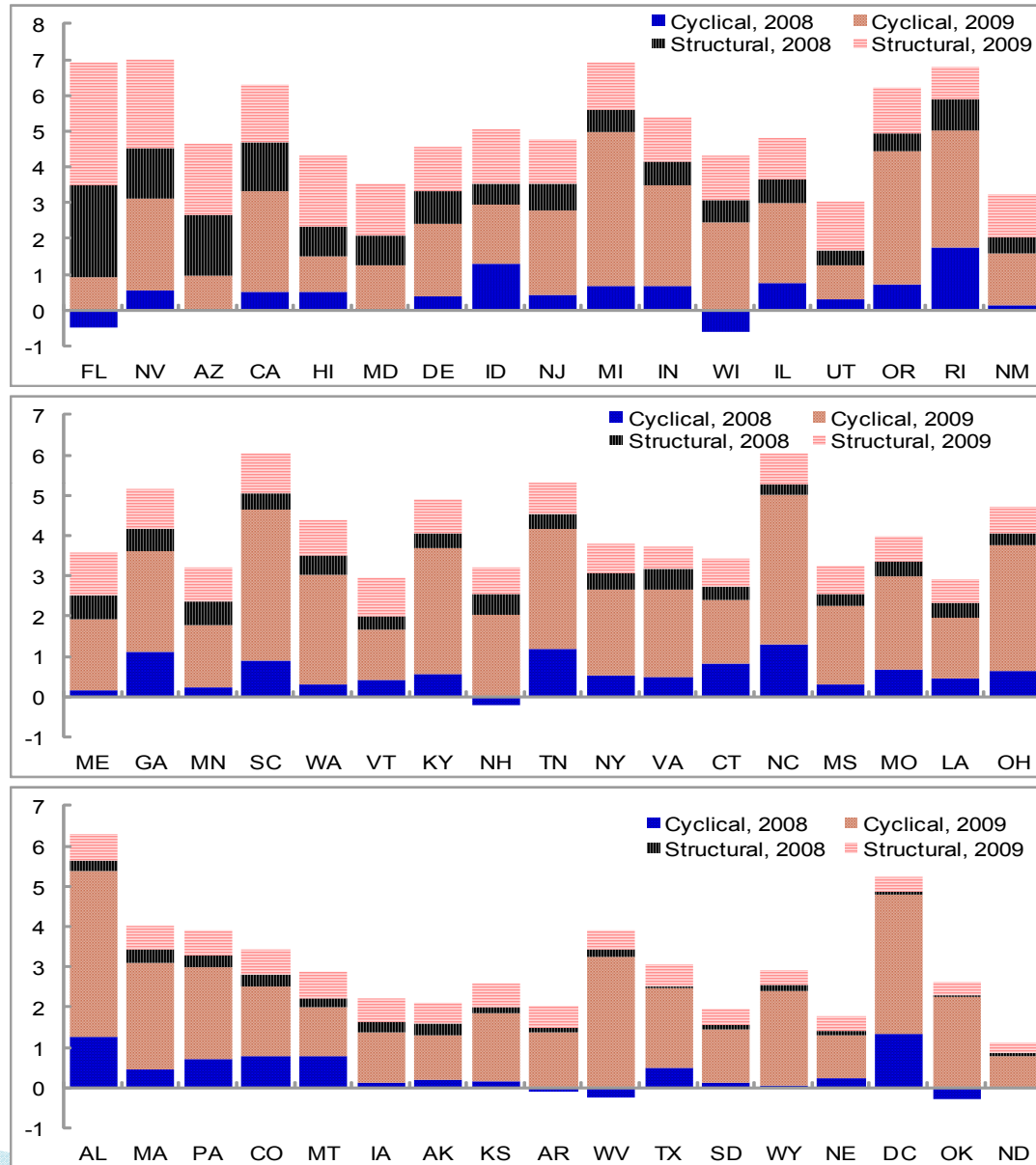
5/ Controls for business cycle variations and changes in national policies, e.g., policy interest rates.

Figure 12. Estimated Equilibrium Unemployment Rate at End-2009 By State 1/
(in percent)



Sources: U.S. Bureau of Labor Statistics and authors' calculations.
 1/ Equilibrium unemployment rate in 2007 is estimated using an HP-filter for the period 1990-2007 for each state. The structural increase in the unemployment rate in 2008 and 2009 is the increase in the fitted unemployment rate value, as predicted by the model, from the increases in skills mismatches and housing hurdles.
 States are ordered based on the cumulative structural increase in the period 2008-2009.

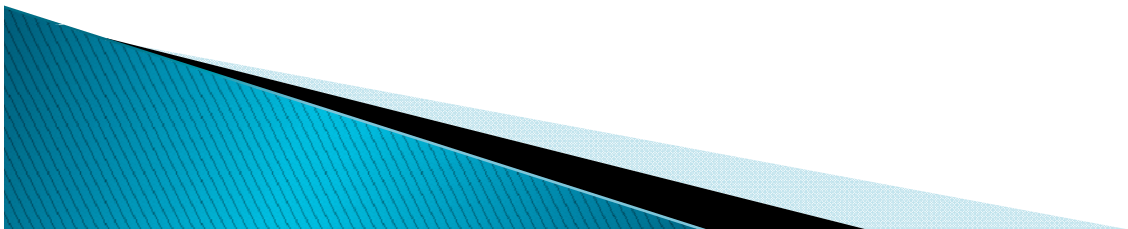
Figure 13. Decomposition of Change in Unemployment Rate by State
(2007-09, in percentage points)



Source: U.S. Bureau of Labor Statistics and authors' calculations.
Note: States are ordered based on the cumulative structural increase 2008-2009.

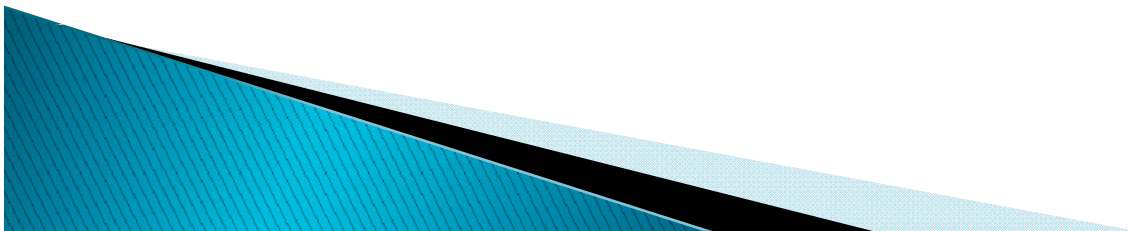
Impact at the National Level

- ▶ NAIRU has increased by $1 - 1\frac{3}{4}$ pp at the national level.
 - 0.5 pp explained by SMI

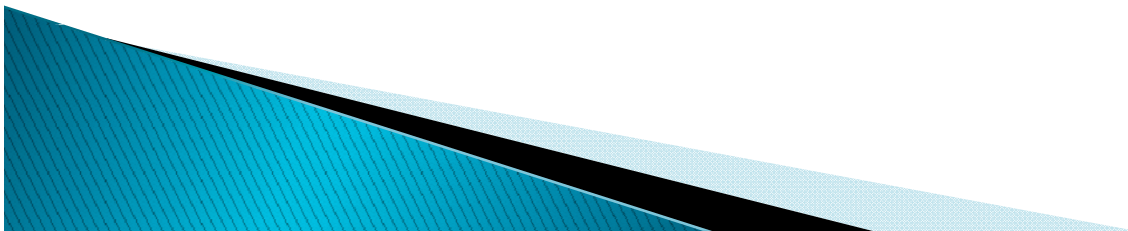


Is Policy Intervention Warranted?

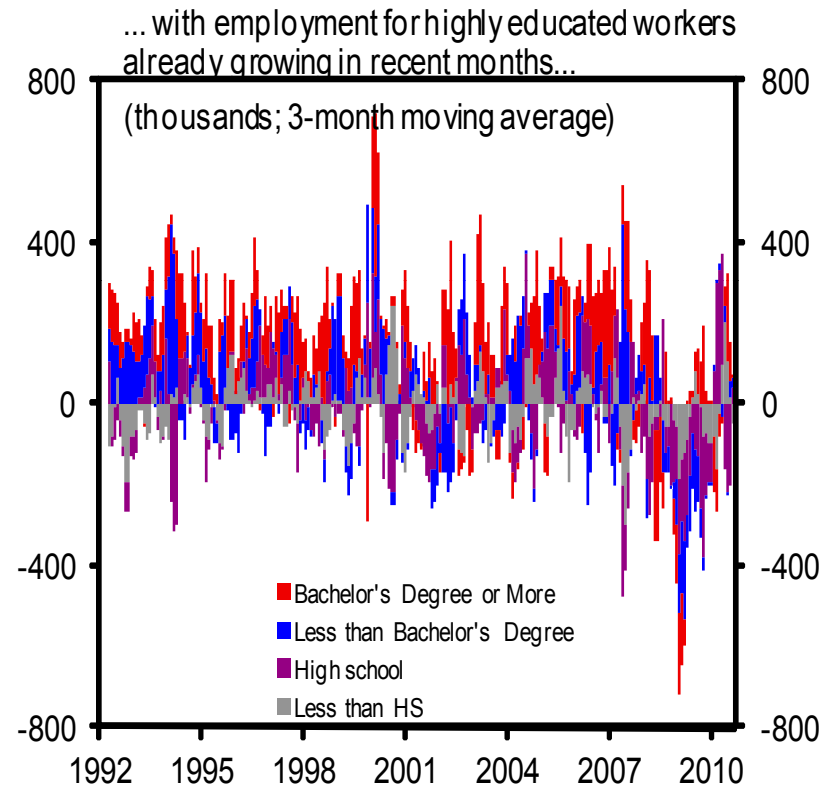
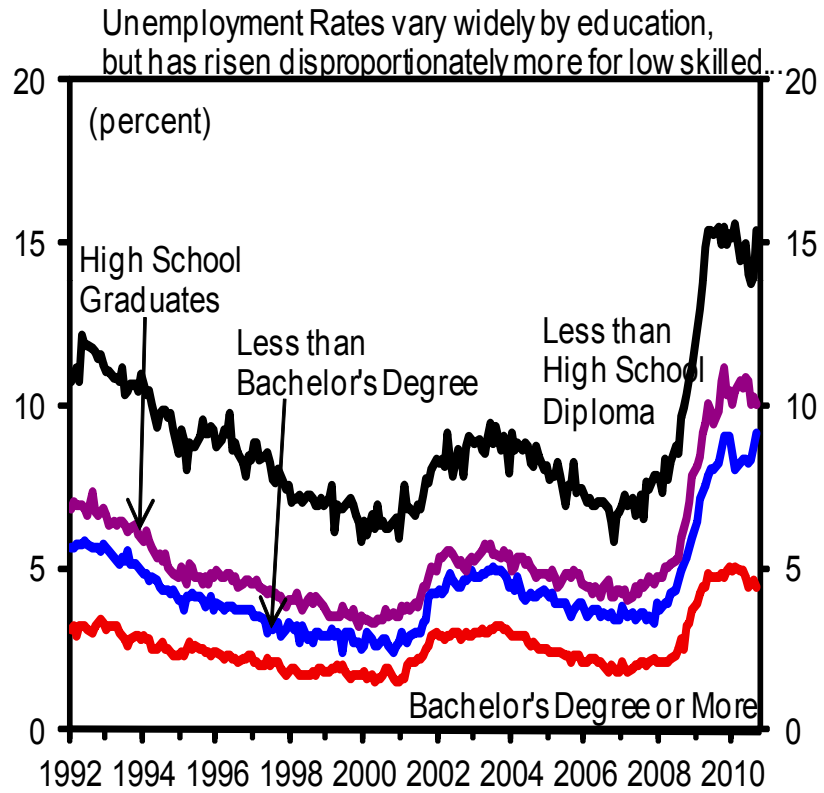
- ▶ Still large cyclical component, so broad policy stimulus is welcome.
- ▶ Subsidies for hiring could also help.
- ▶ Policies to assist structurally unemployed are fragmented and inefficient.
- ▶ Policies to tackle housing market could also be important.
 - Mortgage modifications
 - “Cramdowns”



Questions?



Low skilled particularly hit...

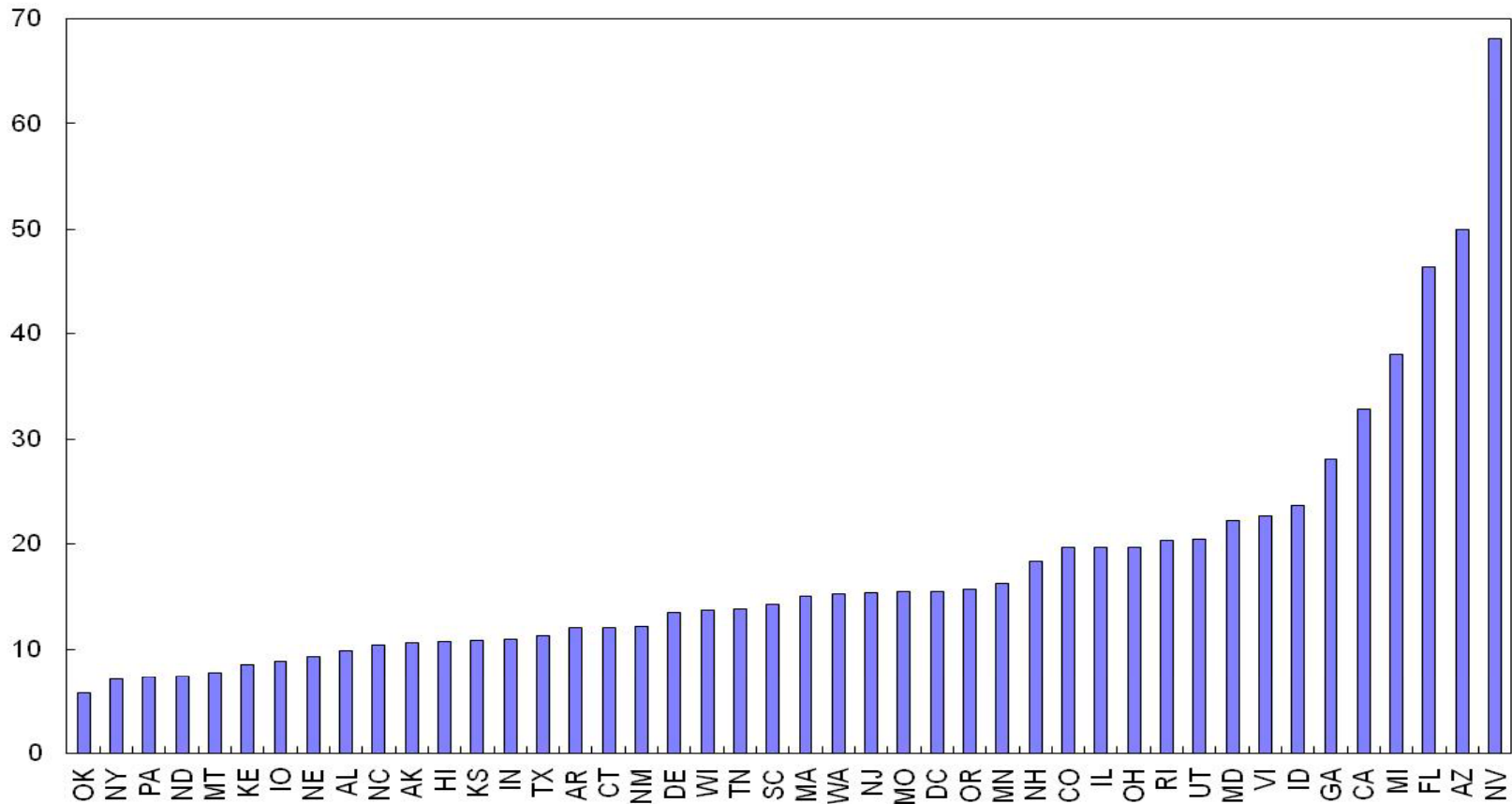


Sources: Bureau of Labor Statistics, Haver Analytics, and authors' calculations.

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Regional disparities in housing...

Negative Equity by State, percent of mortgages

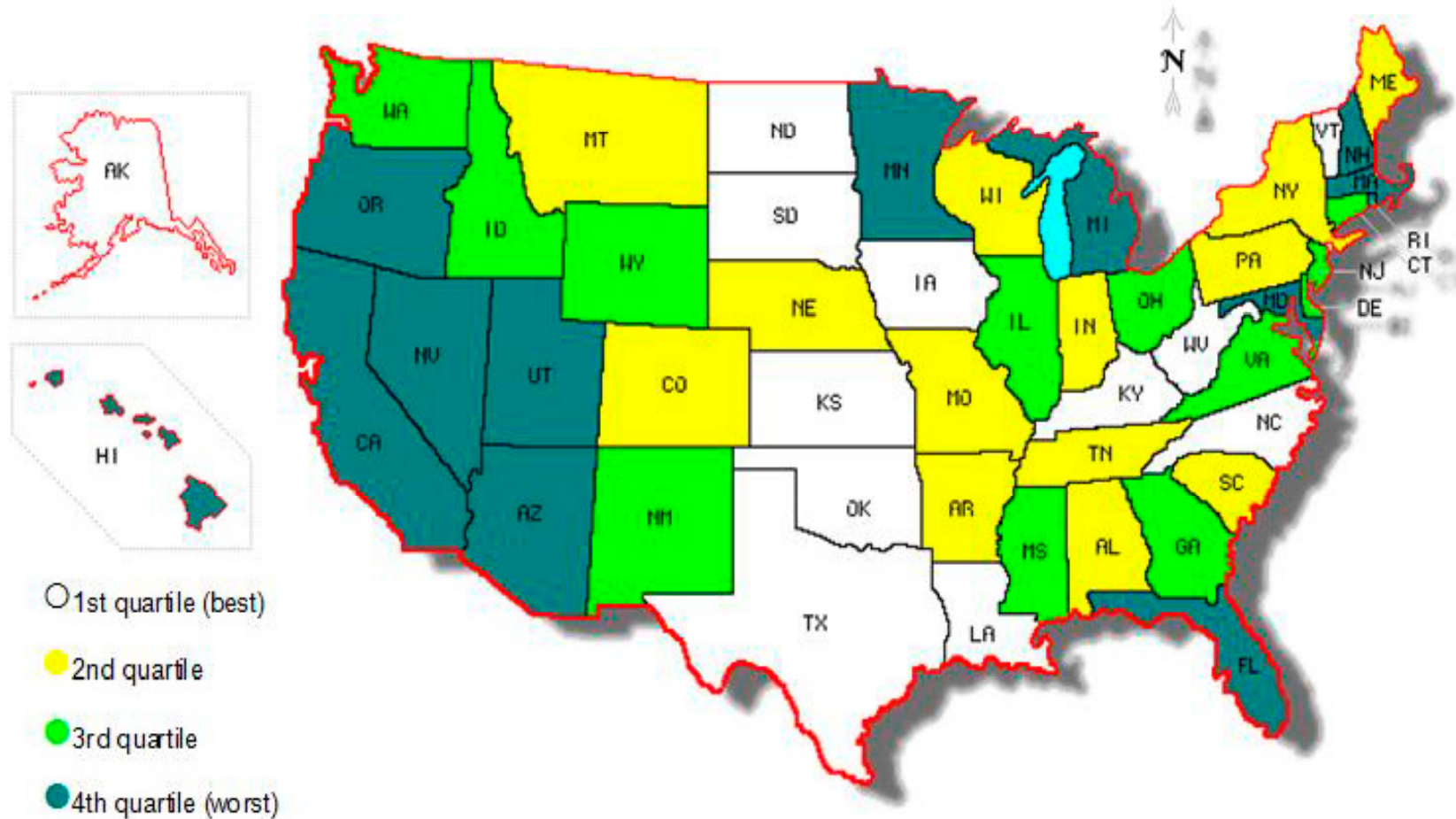


Source: CoreLogic (2010).



Regional disparities in housing...

Figure 7. Percent Change in FHFA House Prices Since Peak
(in percent)



Sources: Federal Housing Finance Agency and authors' calculations.

Notes: 1st quartile [0, -1.9], 2nd quartile [-2.1, -4.5], 3rd quartile [-4.7, -10.8], 4th quartile [-11.0, -47.1].

Calculated as the percent change from the peak (2005-2007) to 2009 FHFA House Price Index (SA). Annual index is a simple average of 12 months. Index: 2000=100.

Figure 3. Change in Foreclosure Rates, 2005–2009
(in percentage points)



Back

Sources: Mortgage Bankers Association, and authors' calculations.

Notes: 1st quartile [0.6,0.96], 2nd quartile [0.97,1.56], 3rd quartile [1.6,2.69], 4th quartile [2.7,11.7].

Calculated as the percentage point change from 2005-2009. Annual levels are the simple average of 12 months.