



## Mind the Regional Output Gap

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The Federal Open Market Committee has attempted to reduce national unemployment and stimulate aggregate economic growth through a highly accommodative monetary policy stance. Despite the Committee's efforts, the recovery has been slow: Unemployment remains high and output remains below trend. And yet this national outlook masks significant variation among states in their paths to recovery. This essay quantifies the contribution of each state to the observed national output gap, measured in terms of deviations from historical trend growth. It also analyzes the performance of each state relative to its own output gap.

Decomposing the national output gap into state output gaps allows us to determine the contribution of each state to the national economic recovery. The empirical analysis compares the relative macroeconomic performance of U.S. states using all-industry real per capita gross domestic product (GDP), as measured by the Bureau of Economic Analysis. This measure considers the value of goods and services produced only in a certain state. Within this framework, a permanent shock to the output of a given state generates a permanent effect on aggregate output. The magnitude of this effect on aggregate output depends on the relative contribution of that state to aggregate output. The importance of the state's contribution can change depending on the type of shocks it receives relative to other states. Therefore, aggregate changes can be the result of a composition effect (changes in the relative importance of each state), a performance effect (changes in the production level of states), or a combination of both.

Since 2006, the data suggest that a state's share of real GDP has been relatively unaffected by the recession, suggesting that most of the variation in the distribution of the state's output gap is due to the performance effect. The importance of this effect is illustrated in the chart, which shows the distribution of output gaps across the states for the 2006-12 period. As the chart shows, there was a significant change in the distribution of state output gaps during the past six years.

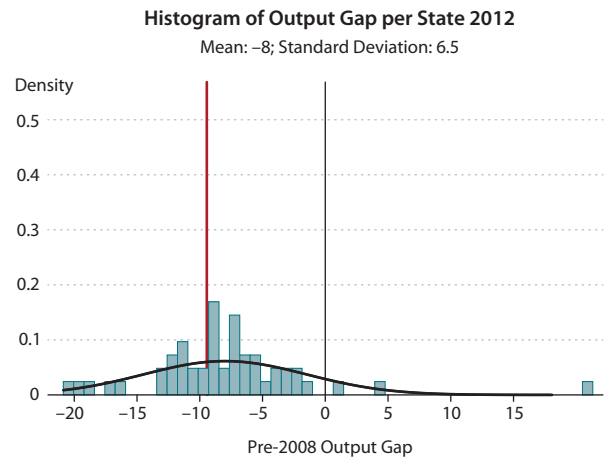
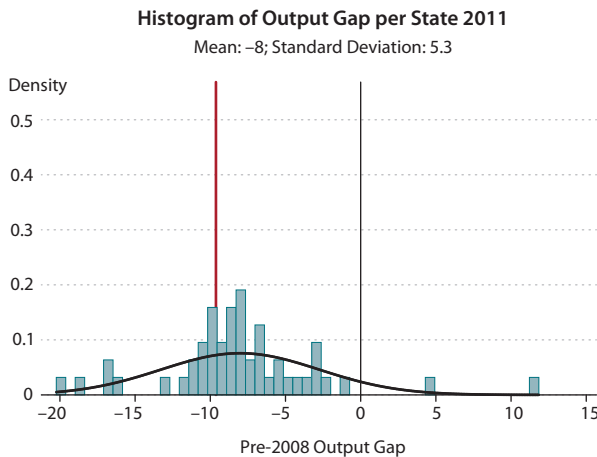
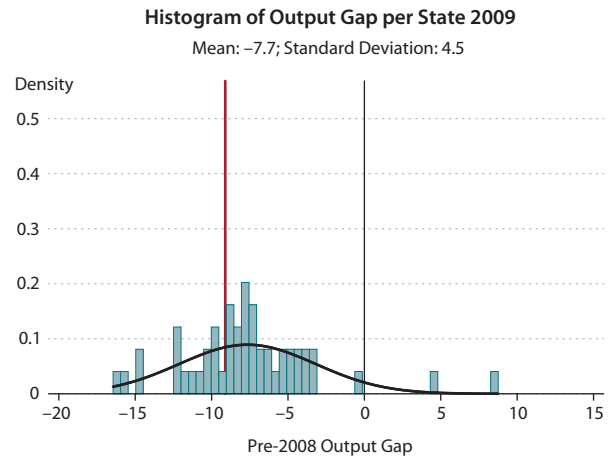
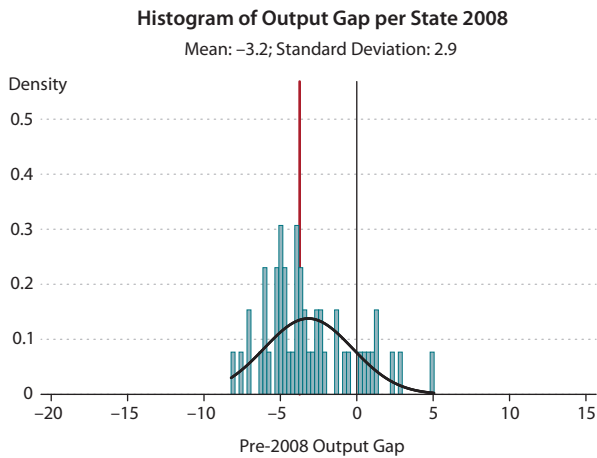
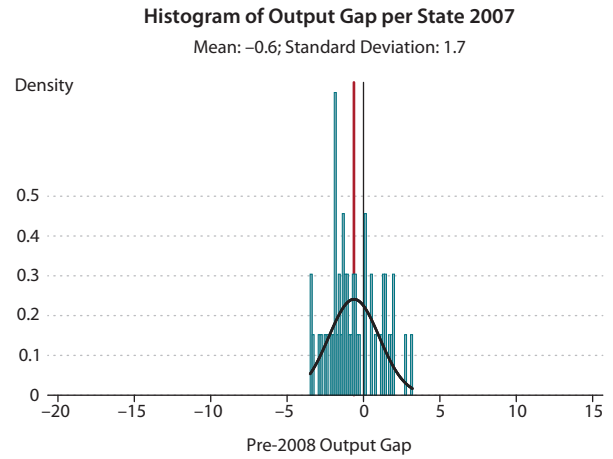
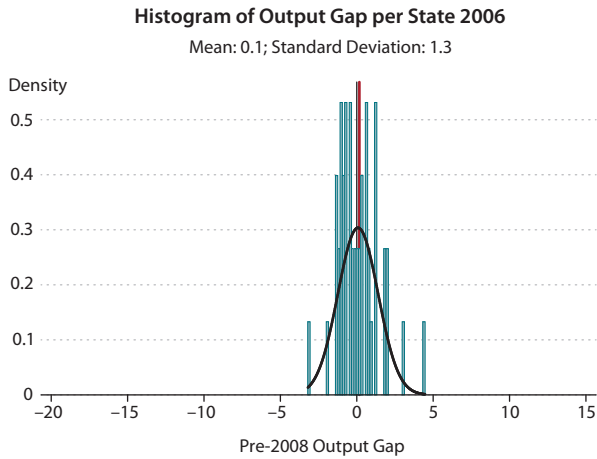
In 2006, state real GDP per capita on average was 0.08 percent above potential, with a standard deviation of 1.3. Since 2006, the average output gap and the dispersion across states have increased considerably. Indeed, the mean and standard deviations have increased (in absolute value) nearly monotonically since 2006. In the last data released for 2012, the state real GDP per capita was on average 8 percent below potential, with a standard deviation of 6.5. The data suggest that before the recession, state economic performance was concentrated around the mean. In the wake of the recession, states have shown much greater variability in economic performance (as evidenced by greater dispersion about the mean).

**This national outlook masks significant variation among states in their paths to recovery.**

In 2012, only three states are above the historical potential: North Dakota (21 percent), Alaska (4.5 percent), and West Virginia (1.2 percent). The majority of the states are scattered around the new measure of potential with the four main outliers in the lower tail of the distribution. These are the states that suffered the largest decline in house values and include California (16 percent), Nevada (17 percent), Florida (18 percent), and Arizona (20 percent). A similar analysis can be conducted using real per capita personal income, but the results are essentially the same.

The empirical analysis suggests that the aggregate performance of the national economy masks interesting distributional effects. Poorer/smaller states have experienced a more rapid recovery than wealthier/larger states, but the majority of the states are still far from the historical potential. This situation raises two questions: Are states responding poorly to current monetary policy? Or does the measurement of potential need to be revised downward? ■

**Distribution of Output Gap by State**



NOTE: The red line represents the national output gap. Data for 2010 are available but omitted here.