

ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Can State Employment Declines Foretell National Business Cycles?

by Randall W. Eberts

Recent media accounts have suggested that the employment performance of states may offer early signs of a downturn in the national economy. Some have even hinted that as few as six states experiencing employment declines simultaneously is enough to push the entire U.S. economy into a recession. For analysts seeking another leading indicator of national business cycles, the possible existence of bellwether states is intriguing.

This interest has been heightened by the perception that, during the 1980s, the economy was characterized by rolling recessions in which some states or regions appeared to run counter to the national trend. If national business cycles affected states in the same way, all states would enter and leave recessions at the same time—resembling a string of boats moored in a harbor, bobbing up and down in unison as a wave passes below.

Instead, it appears that states enter and leave national recessions at different times, and that some states can even remain untouched by national downturns. For instance, while the U.S. economy fell into a recession between 1980:IQ and 1981:IIIQ, the energy-producing states of Texas, Louisiana, and Oklahoma showed no significant downturn. The same held true during the subsequent—and much deeper—recession between 1981:IIIQ and 1982:IVQ. Yet, as the rest of the nation began to climb out of the second recess-

sion, the oil states slipped into their own. After enjoying a short recovery within a year after the national trough, these three states again descended into a period of employment decline, which lasted well into 1987.

Recent episodes of state employment loss during periods of national business expansions involve several New England states, centered around Massachusetts. After years of seemingly unprecedented growth, that state's economy abruptly changed course in June 1986, subsequently entering a protracted period of employment decline that still persists. Rhode Island and New Hampshire immediately joined Massachusetts, and Vermont and Maine were pulled into the regional recession soon thereafter.

Clearly, the economic performance of states and regions differs throughout a national business cycle. It is reasonable to ask, then, if some pattern develops among changes in state employment levels that could offer clues concerning turning points in the national economy. This *Economic Commentary* explores state employment fluctuations since 1950 to ascertain whether any such regularities have indeed occurred. The approach taken here is simple: States are classified each month as having either employment growth or employment decline, with growth being measured as the year-over-year percent-

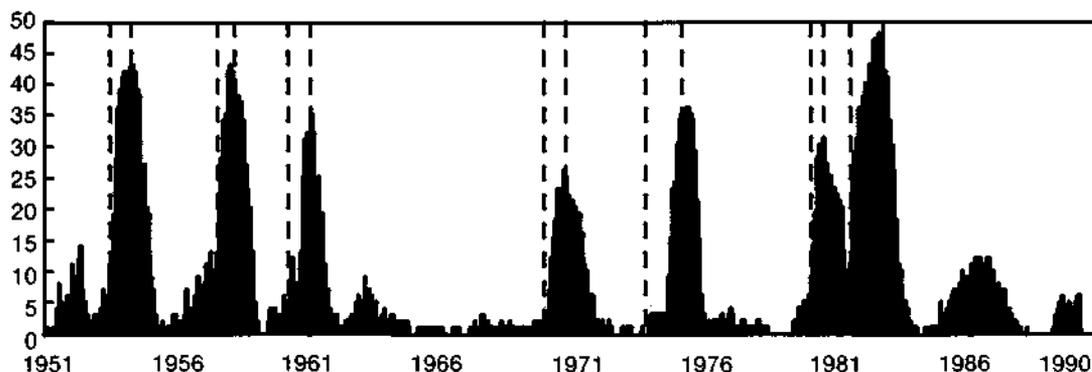
Is it possible to predict national recessions by following the employment performance of specific states or regions? The author investigates this question from a historical perspective by comparing the employment patterns of states to the health of the national economy over the post-WWII period.

age change in total nonagricultural employment.¹

■ Tracking State Employment Declines

A monthly plot of the number of states showing no year-to-year employment growth closely tracks national downturns, as measured both by declines in the U.S. employment level and by the peaks and troughs of a national business cycle, assigned by the National Bureau of Economic Research (figure 1).² For each of the seven national recessions since 1950, the trough coincided (within two months or less) with the maximum number of states that would eventually experience employment loss during that specific downturn. At least half of the states (Alaska and Hawaii are not considered here) participated in each recession, although not necessarily the same states. Furthermore, according to past cycles, it takes at least 20 states posting employment declines concurrently before a national

FIGURE 1 NUMBER OF STATES EXPERIENCING EMPLOYMENT DECLINES



NOTE: Dashed lines indicate the peaks and troughs of national recessions. Last month plotted is May 1990.
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

recession occurs. Since 1950, there have been three separate incidents in which a significant number of states (nine to fourteen) have registered employment downturns simultaneously without an ensuing national recession.

One barometer of the severity of a business slide is the number of states that lack employment growth at the trough. For instance, during the 1969:IVQ-1970:IVQ recession—the least severe since WWII as measured by real GNP decline—17 states escaped employment downturns. By contrast, every state experienced declines during the 1981:IIIQ-1982:IVQ recession—the worst since WWII.

It is also true that most states experience employment growth during national upswings. Over the last 40 years, no more than 14 states have shown a dip in employment rates during a national economic expansion; in most instances, that figure has been closer to zero. An excellent example is the extended period of growth between February 1961 and December 1969, when generally only one or two states sustained sinking employment levels at any given time.

Other decades have had periods in which more states ran counter to national trends than occurred during the 1960s. Although the current expansion has now surpassed the 1961-69 upswing to become the longest period of peace-

time growth since WWII, two episodes in which a relatively large number of states faced employment drop-offs have blemished the otherwise excellent record. The first wave of decline was caused by the effects of falling oil prices in the oil-producing states and by low agricultural prices in the Farm Belt. The second was associated with the repercussions of defense spending rollbacks and financial industry downsizing on the New England economy. Such instances of employment declines during economic expansions may represent secular rather than cyclical shifts, since some states have undergone extended periods of significant economic restructuring.

■ **Patterns of Entry and Exit**

State employment performance has followed a fairly regular pattern during each national recession. Sometime around the peak of each national business cycle, one or two states (usually not the same ones) will slip into a downturn. Within a few months, these states are joined by others, so that by midway between peak and trough, at least 50 percent of the states that will eventually undergo employment loss have already done so. Once a state's employment level changes direction from either growth to decline or vice versa, it usually continues on that path for several months.

The pattern of states' entry into and exit from a national recession typically fol-

lows a "first in—last out" scenario—the first state to enter a period of employment decline is usually the last to leave it. Consequently, the timing of turning points from employment growth to sustained employment loss predicts how severely a state will be affected by a downturn.

The 1973-75 recession provides a good example. Delaware was the first state to enter that downturn, two months after the national peak. New York followed one month later. Both states subsequently experienced comparable durations of employment loss: Delaware's decline lasted 22 months, while New York's slump stretched to 26 months. By contrast, South Dakota, which was the last state to enter the recession (18 months after Delaware), sustained a spell of employment decline of only two months.

While state employment changes followed similar patterns during the other post-1950 recessions, the average spell of an employment slump differed from one recession to the next. Aside from the twin recessions of 1980, which many states experienced as one continuous decline, the longest average period of employment loss was 13.5 months, which occurred during the 1953-54 recession. The spells of employment loss grew successively shorter during the next three recessions, bottoming out at slightly more

TABLE 1 STATE MANUFACTURING CHARACTERISTICS AND MONTHS OF EMPLOYMENT DECLINE

State	Months of employment decline	Labor productivity	Share of manufacturing	State	Months of employment decline	Labor productivity	Share of manufacturing
1. West Virginia	171	1.49	14.30	25. Connecticut	85	4.51	21.44
2. Rhode Island	143	3.91	23.54	26. New Hampshire	85	8.95	21.64
3. Pennsylvania	140	2.90	20.53	27. North Dakota	84	2.61	6.34
4. Michigan	137	1.43	24.78	28. Alabama	82	3.77	24.17
5. Indiana	127	2.59	26.03	29. Idaho	82	4.94	16.50
6. Illinois	124	2.94	18.95	30. Nebraska	80	3.82	13.44
7. Ohio	120	3.02	23.31	31. Tennessee	74	4.30	24.32
8. New York	119	4.01	14.43	32. South Dakota	70	3.46	11.55
9. Massachusetts	115	5.61	18.08	33. New Jersey	67	3.64	17.62
10. Missouri	114	3.04	19.02	34. Arkansas	65	3.91	25.80
11. Iowa	113	4.29	19.49	35. Mississippi	65	3.49	26.42
12. Louisiana	107	.76	11.47	36. South Carolina	65	5.13	26.01
13. Montana	107	-.34	7.56	37. Texas	63	2.75	14.24
14. Wisconsin	107	3.67	24.95	38. Maryland	59	3.62	9.73
15. Wyoming	106	-2.92	4.52	39. North Carolina	59	3.00	28.29
16. Maine	103	4.42	19.55	40. California	56	4.18	17.24
17. Oregon	98	2.22	18.00	41. Virginia	52	2.47	14.95
18. Kentucky	95	1.88	19.80	42. Colorado	51	3.56	13.11
19. Vermont	93	5.70	18.43	43. Georgia	49	3.99	19.29
20. Kansas	92	3.23	17.30	44. New Mexico	48	5.51	7.51
21. Washington	92	.91	17.67	45. Utah	48	5.71	14.85
22. Minnesota	90	5.22	19.08	46. Arizona	32	3.05	12.90
23. Delaware	89	2.12	21.14	47. Nevada	25	2.90	4.37
24. Oklahoma	87	4.04	14.12	48. Florida	19	4.49	10.26

NOTE: States are ranked by the number of months of employment decline between January 1950 and May 1990. Labor productivity is measured as the average annual rate of change of manufacturing output per worker between 1979 and 1986. Manufacturing's share of total employment is the 1990 average.
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

than seven months. After that, however, the duration began to increase: The combined average length of employment loss for the twin 1980 recessions was 25 months.

Although many states participated in each recession at the trough, no one state or group of states ushered in every national downturn, a fact that dismisses the notion of a bellwether state or region. The Midwest has been well represented in each of the seven recessions since 1950, however. Michigan introduced three of them, and all of the mid-western states experienced employment slumps during each of the national recessions. The Midwest's close ties to national cycles do not stem simply from the fact that the region employs a large share of the nation's workers. California, Texas, and Florida also have large employment bases, but they are typically the last states to enter a recession; in some cases, they have been able to avoid recessions entirely.

■ Why the Difference in Employment Changes among States?
What, then, explains the variation in state employment cycles? State employ-

ment changes are a combination of cyclical and secular trends. Secular trends are associated with structural shifts across industries and across regions. For instance, many mid-western states have lost their share of national manufacturing employment and population to states in the south and southwest as a result of shifts in regional comparative advantage. Consequently, their employment patterns could result partly from factors that are not necessarily associated with business cycles.

Business cycles, on the other hand, are thought to be caused by more temporary factors. One commonly held view is that shocks—such as escalating oil prices, precipitated in the past by OPEC policies and more recently by the Iraqi conflict—trigger national recessions. Other types of shocks, including inventory excesses or technology and demand shocks, may also influence the business cycle, but oil shocks appear to be the most identifiable. Higher oil prices and even oil shortages adversely affect industrial output by raising production costs and, in some instances, by depressing production. The severity of the economic consequences

of these shocks for individual industries, and consequently for states, depends on the intensity with which they use oil and oil-based products.

According to the oil-shock view of business cycles, variation in state employment depends on the sensitivity of state industries to such disturbances, which in turn is related to the productivity and composition of a state's industries. States with less-efficient industries may be more susceptible to shocks such as higher oil prices, for example, because firms located there cannot absorb increased energy costs without losing their competitive advantage to regions with more-efficient businesses. Productivity can differ across states as a result of the age of equipment and facilities and the skill of the labor force, among other factors. Manufacturing productivity, measured as output per worker, varies greatly among states. As shown in table 1, between 1979 and 1986, New Hampshire posted the highest productivity gains, while Wyoming recorded the lowest. Analysis shows that states with higher-than-average labor productivity growth had lower-than-average periods of employment loss.

Another factor affecting a state's susceptibility to shocks is its composition of industries. Specific industries follow different cyclical patterns and show various degrees of sensitivity to shocks. For instance, durable manufacturing historically has exhibited wide swings in performance, stemming in part from the durable nature of the product. The industry is also heavily dependent on energy in the production process, making it vulnerable to higher energy costs.

Therefore, it is not surprising that, during the 1980s, those states with a higher-than-average percentage of workers employed in durable goods manufacturing sustained a greater-than-average number of months of employment loss. Conversely, the number of months of employment decline was negatively correlated with the share of workers in the service industry—a sector that shows few cyclical tendencies. As shown in table 1, the share of manufacturing employment ranges from a high of 28.29 percent for North Carolina to a low of 4.37 percent for Nevada.

Table 1 also ranks states according to the number of months of total employment decline since 1950, thereby illustrating the relationship between a state's concentration in manufacturing and the duration of employment loss. West Virginia wins the unenviable first-place position, with 171 months of

employment loss, or a total of 14 years. Except for Rhode Island, the next seven states on the list—Pennsylvania, Michigan, Indiana, Illinois, Ohio, and New York—are all concentrated in the nation's industrial heartland.

■ Conclusion

In recent months, the number of states experiencing overall employment loss has risen from zero in April 1989 to six in June 1990. Because all states enjoyed employment gains during most of 1988 and the first half of 1989, the obvious question is, are we entering a period of national recession? This *Economic Commentary* provides some historical perspective. Based on employment patterns over the last 40 years, six states experiencing a slump concurrently does not necessarily lead to a national recession. Moreover, the six states currently posting employment losses are concentrated in the Northeast—a region that has never led any national recession.

The analysis also highlights the regional dynamics of national business cycles. Shocks hit different regions at different times, causing state employment cycles to vary in timing and in duration of employment slumps. Although this tendency may have been more pronounced during the 1980s, rolling recessions in particular regions also occurred in the 1950s and 1970s. Some shocks permeate enough regions to effect a national

downturn, while others remain contained in a specific area. The severity of a state's employment downturn depends on the composition and health of its industries (particularly manufacturing), which vary considerably across states. Therefore, to view the national economy as a monolith rather than as a mosaic of individual economies would misrepresent the diverse experiences of certain areas of our nation over national business cycles.

■ Footnotes

1. This approach corresponds to the definition used to date national recessions. A different approach would be to examine state employment changes in relation to state employment trends.
2. The National Bureau of Economic Research defines a recession as two successive quarters of decline in the GNP.

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