New Indexes Track the State Of the States

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Have recessions lasted longer in Pennsylvania than in the nation? When did the most recent recession begin in New Jersey? Did Delaware avoid the recessions of the early 1980s altogether? Questions about how business cycles differ from state to state are raised frequently in the popular press and in business commentaries. The answers are seldom clear, but the questions are not idle ones. Some industries, such as construction and retail trade,

are particularly sensitive to the local business cycle. Since people tend to live close to their jobs and shop close to where they live, sales of new homes, cars, and many consumer items depend on the prospects for jobs and income in the local area. If the local economy is weakening, these prospects are poor; if the economy is strengthening, the prospects are better. So knowledge about where the region is in the business cycle can be critical for managers in many businesses. But economic data are often ambiguous and sometimes contradictory; one indicator may be showing improvement while another shows decline. For example, the unemployment rate may be up at the same time job levels are increasing. Composite indexes, constructed from a number of individual indicators, can help clear up the ambiguity. There are

commonly accepted composite indexes for the national economy, such as the index of leading indicators, but composite indexes are not readily available at the regional level, making it more difficult to track regional business cycles. This article introduces new composite indexes for the three states in the Third Federal Reserve District that make use of statistical techniques previously used for national indexes but not regional ones.

COMPOSITE INDEXES CAN HELP TRACK BUSINESS CYCLES

Between 1970 and 1990 real output in the U.S. grew at an average annual rate of 2.7 percent, and employment increased 2.2 percent a year. But output and employment fluctuated widely around these trends as the economy went through several business cycles. Economic trends vary from region to region, but all regions are affected by national business cycles, and some regions have exhibited cycles of their own.

Almost 50 years ago, Arthur Burns and Wesley Mitchell fashioned the commonly accepted description of a business cycle:

> *Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle . . . ; in duration business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles . . . [that exhibit swings in economic activity of similar] amplitudes.*[1]

A complete cycle from one peak to the next consists of a recession or contraction followed

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[1]Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles* (National Bureau of Economic Research, 1946).

by a recovery phase in which economic measures return to their previous peaks and then an expansion phase in which the measures reach new peaks. The description by Burns and Mitchell mentions three criteria for dating the various phases of the business cycle. The contractions and expansions must be broad-based, that is, they must occur in many sectors and be reflected in several indicators (*diffusion*). They must last a sufficient length of time (*duration*). And the change from peak to trough or from trough to peak must be sufficiently large (*amplitude*). All three criteria must be satisfied in order to define a contraction or expansion. A sharp decline in one sector, such as agriculture, would not qualify as a recession if it did not spill over into other sectors of the economy; the decline would not be broad enough. On the other hand, a broad-based decline that was very brief, one quarter, for example, probably would not qualify as a recession; it would be too short. Likewise, two quarters of 0.1 percent decline in output might not qualify as a recession; the decline would not be deep enough.

Since business cycles are broad-based, they tend to generate their own momentum. Downturns in the economy can be set in motion by a variety of factors, such as a sharp increase in the price of a major resource like oil or a sudden large reduction in government spending. Once a general downturn begins, firms begin to lay off workers. This loss of jobs as well as the uncertainty among people who are still employed leads consumers to cancel or postpone purchases, which results in more layoffs. Not all sectors of the economy are equally vulnerable to a downturn; consumers may be reluctant to delay seeing a doctor if they are ill, but they might readily put off the purchase of a new car. In general, manufacturing industries are more sensitive to business cycles than service industries. A downward spiral in the economy might be halted by a change in consumer expectations that raises confidence, by an increase in disposable income through a reduction in taxes,

or by a rise in government spending for goods and services—any of which would increase demand. When this increased demand becomes broad enough it creates its own momentum toward further expansion. Thus, knowledge of whether the economy is entering a recession or beginning a recovery is important to local businessmen.

Dating business cycles using the Burns and Mitchell criteria is not always straightforward; it involves some personal judgment. In practice, the official dating of recessions and expansions is done by the Business Cycle Dating Committee of the National Bureau of Economic Research (NBER), which is composed of professional economists. To avoid any possibility of political considerations in setting these dates, none of these economists is a government official. The committee considers a number of economic indicators in dating business cycles. Composite indexes, however, play a special role in these decisions because they combine information from several sources to indicate the general state of the economy. They include not only data for the overall economy, such as employment and personal income, but also data from individual sectors, such as retail sales or industrial production.

The Department of Commerce publishes three composite indexes for the national economy—indexes of leading, lagging, and coincident indicators.[2] Of these three, the composite index of coincident indicators is the most important for dating business cycles. A good index of coincident indicators should decline at or near the beginning of recessions and should rise at or near the end. In the last 45 years there

have been 18 business-cycle turning points in the U.S. economy. With four exceptions, the highest and lowest levels of the Commerce Department's index during each cycle have been within three months of the official dates of the business-cycle peaks and troughs.[3] Although the NBER dating committee considers the coincident index when it sets the dates for business cycles, it is not obligated to set the dates at or near the turning points of the index. Therefore, the close correspondence between the official dates and the Commerce Department's index suggests that the index is coincident with the business cycle.

The Commerce Department's Composite Index of Coincident Indicators is constructed from four monthly data series—the number of jobs in nonagricultural establishments, personal income (minus transfer payments) adjusted for inflation, the index of industrial production, and manufacturing and trade sales adjusted for inflation. Month-to-month percent changes are calculated for each of these series, and the changes are standardized based on the long-run average absolute monthly change in the series. For example, the average absolute percentage change in monthly employment between 1948 and 1985 was 0.32 percent. Thus, if the change in nonfarm employment were 0.64 percent this month, the standardized change for this indicator would be 2 (i.e., 0.64 / 0.32). A preliminary coincident index is formed based on the average of the standardized changes in the components that make up the index. To obtain the Department's official composite index, this preliminary index is adjusted to grow over time at the same rate as real gross national

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[2]This article was prepared before the most recent revisions of the Commerce Department's composite indexes. All references in this article refer to the unrevised indexes. See George R. Green and Barry A. Beckman, "Business Cycle Indicators: Upcoming Revision of the Composite Indexes," *Survey of Current Business*, Vol. 73, 10 (Oct. 1993), pp. 44-51.

[3]As the name suggests, an index of leading indicators should peak several months before the economy goes into recession and should reach its cyclical low before the recession ends. The timing should be reversed for an index of lagging indicators. The leads and lags in the Commerce Department's leading and lagging indexes have varied from as long as 23 months to as short as 1 month.

product and is set to 100 in 1982.[4] Except for the adjustment to account for differences in the average monthly changes in the four indicators, each indicator is given the same weight in forming the composite index. But some indicators like the total number of jobs may better reflect the overall state of the economy than other indicators like manufacturing and trade sales. Thus, while the Commerce Department's index has tracked national business cycles very well, it has been criticized for not being derived from a formal mathematical or statistical model.[5]

In order to support the theory of business cycles and aid in the dating of recessions and expansions, James Stock of Harvard University and Mark Watson of Northwestern University have constructed a new index of coincident indicators.[6] Using time-series econometric techniques, they formalized the notion that the business cycle is best measured by the common movements across several economic data series. Each monthly indicator is thought of as having two components. The first is the general "state of the economy," which affects all the monthly indicators. It is not observed directly but only in the common movement of the indicators that are observed. The second component is an idiosyncratic element that might cause any one indicator to move in ways not associated with the general state of the economy. Stock and Watson's coincident index is an esti-

mate of the common component. The movement of this unobserved state of the economy is reflected in varying degrees in each of the published monthly series used to estimate the composite index. Moreover, for some series, changes in the general economy could be reflected not only in the current month but also in succeeding months, and for other series, changes in the general economy could be foreshadowed in preceding months (see *A Formal Model of the New Coincident Index*). In effect, the Stock and Watson index is a weighted average of current and past values of the individual indicators, with the weights determined by the degree of common movement in the indicators.

In constructing their coincident index Stock and Watson used the same data series as the Department of Commerce, with one exception: they substituted employee hours in nonagricultural establishments for the number of nonagricultural jobs because economic output depends not only on how many people are working but also on how long they work. Stock and Watson's new index is available from 1959, and over that period it has coincided with the official business cycles even more closely than has the Commerce Department's Index of Coincident Indicators. The cyclical highs and lows in the Stock and Watson index coincide exactly with the official business-cycle turning points except in 1969 when the new index peaks two months prior to the official turning point.[7]

CONSTRUCTING STATE INDEXES

The success of the Stock and Watson method in constructing a national coincident index that tracks the official business cycles so closely suggests that this method could be used successfully to construct an index for state economies. But the construction of a comparable

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[4]See "Composite Indexes of Leading, Coincident, and Lagging Indicators," *Survey of Current Business*, U.S. Department of Commerce, November 1987.

[5]The entire attempt to define business cycles was criticized from the beginning as an exercise in measurement without theory. See Tjalling C. Koopmans, "Measurement Without Theory," *Review of Economics and Statistics*, 29 (1947), pp. 161-72.

[6]James H. Stock and Mark W. Watson, "New Indexes of Coincident and Leading Economic Indicators," *NBER Macroeconomics Annual* (1989), pp.351-94.

[7]Of course, in developing their index Stock and Watson were attempting to trace the official business cycles prior to 1990, and the NBER dating committee had the new Stock and Watson Index when it dated the most recent recession.

A Formal Model of the New Coincident Index

The basic notion that a change in a monthly indicator reflects a change in the underlying state of the economy is captured in the following equation:

$$\Delta I_t = a + b \, \Delta S_t + u_t \tag{1}$$

where:

ΔI_t = the change in the observed monthly indicator between time t-1 and time t, and

ΔS_t = the change in the unobserved state of the economy between time t-1 and time t.[a]

Since the purpose of this model is to form a composite index, this equation is applied to a number of monthly indicators. For example, Stock and Watson use four monthly indicators so there are four equations similar to equation (1) in their model. The coefficients (a and b) will vary with each equation, but the unobserved variable (ΔS_t) is the same. In addition, the error term in equation (1) and the unobserved variable are assumed to follow an autoregressive process, so that

$$u_t = g_1 \, u_{t-1} + g_2 \, u_{t-2} + e_t \tag{2}$$

and

$$\Delta S_t = c + f_1 \Delta S_{t-1} + f_2 \Delta S_{t-2} + z_t \tag{3}$$

where e_t and z_t are error terms. Equations (2) and (3) are the transition equations in the system.

This system of equations (1) through (3) can be estimated using maximum likelihood techniques to produce an estimate of the change in the unobserved state of the economy (ΔS_t).[b] If we then index the unobserved variable S_t to equal 100 at some point in time, we can construct a time-series of the so-called "state of the economy," or a coincident index.[c]

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[a] If the monthly indicator also reflects prior changes in the state of the economy, the estimating equation becomes $\Delta I_t = a + b_0 \Delta S_t + b_1 \Delta S_{t-1} \ldots + u_t$. If the monthly indicator partially foreshadows a change in the general state of the economy, the lagged values of the unobserved state of the economy are replaced by leads.

[b] In the actual estimating equations, Stock and Watson use the log difference of the monthly indicators. The change in the log of the monthly indicator is normalized by subtracting the historical mean and dividing by the standard deviation. Thus the constants a and c do not have to be estimated, and the unobserved variable that is estimated is the normalized change in the log of S_t.

[c] Stock and Watson set their national index at 100 in July 1967, and we set our state indexes at 100 in July 1987.

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state index is not a simple matter of estimating Stock and Watson's model using state data. The monthly indicators used by Stock and Watson are not available at the state level. Moreover, there is no direct way to determine whether a composite index using other indicators at the state level would coincide with the business cycle because there are no official dates for state business cycles. Indeed, this was one reason for developing state indexes. To address the problem of finding an appropriate set of indicators to construct state indexes we identified a set of monthly indicators that are available at both the national and state levels. We selected those variables that were useful in dating national business cycles and assumed they would also be useful in identifying cycles in the state economies.

This indirect method resulted in identifying four variables to be used in our state indexes of monthly indicators—the total number of jobs in nonagricultural establishments, real retail sales, average weekly hours in manufacturing, and the unemployment rate.[8] These variables differ somewhat from those used in other national indexes. The total number of jobs in nonagricultural firms is used in the Commerce Department's Index of Coincident Indicators and was used in an earlier version of the Stock and Watson index.[9] The sales data used in our indexes are less comprehensive than those used by the Commerce Department and by Stock
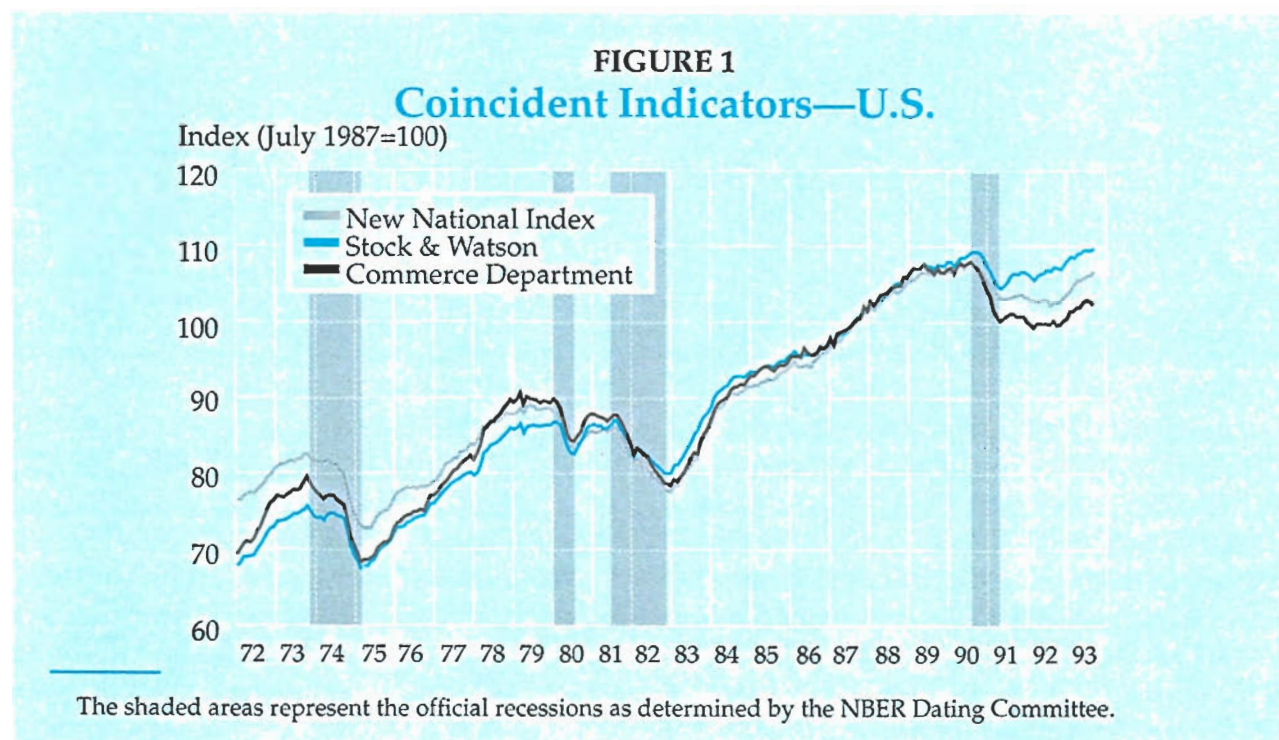
and Watson. Both use a series that includes sales by manufacturers and wholesalers as well as by retailers. Two of the variables we selected to construct our indexes, average hours in manufacturing and the unemployment rate, have not traditionally been counted among the coincident indicators. But we included them in our index because doing so improved the correspondence between the index and the official business cycles, compared to an index using only employment and retail sales.

Using these four variables we developed a national index and examined how closely it coincides with the official dates of national business cycles and with other composite indexes for the nation. Based on data since 1972, the pattern of the new national index follows closely the pattern of the Commerce Department's coincident index and Stock and Watson's coincident index (Figure 1).[10] There

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[8]The first three variables enter our model in log difference form. The unemployment rate enters in first difference form and is modeled to reflect the current value and three lags of the variable that reflects the state of the economy.

[9]James H. Stock and Mark W. Watson, "A Probability Model of the Coincident Economic Indicators," in Geoffrey Moore and K. Lahiri, eds., *The Leading Economic Indicators: New Approaches and Forecasting Records* (Cambridge University Press, 1990).

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[10]We started the index in 1972 because some of the data series used in the index are not available at the state level prior to 1972.

FIGURE 1
Coincident Indicators—U.S.

Index (July 1987=100)

The shaded areas represent the official recessions as determined by the NBER Dating Committee.

have been four national business cycles since 1972. Only the Stock and Watson index coincides precisely with the official peaks and troughs of all of them. But the new national index developed with data series that are also available at the state level traces the four national business cycles closely. With two exceptions the peaks and troughs of this new composite index are within one month of the official peaks and troughs of the U.S. business cycles since the early 1970s (Table 1).[11] The Commerce Department's Composite Index of Coincident Indicators was also off by several months at the same two turning points. Thus, the timing of the new index compares favorably with the

timing of the Commerce Department's index, and it can be considered a coincident index.[12]

Using the same monthly indicators as in the new national index, we constructed coincident indexes for each of the three states in the Third Federal Reserve District — Pennsylvania, New Jersey, and Delaware (see *New National and State Indexes*). Since retail sales data are not available for Delaware, that state's index included only three of the four indicators.[13] These

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[11]The two exceptions are the peak preceding the 1980 recession when the index led the economy by seven months and the trough of the most recent recession when the index lagged the economy by 15 months. Prior to the 1980 recession, the Stock and Watson index, the Commerce Department's index, and the new national index were basically flat for almost a year. Although the new index and the Commerce Department's index peaked several months before the beginning of that recession, they changed very little in the intervening months. After the official end of the most recent recession in March 1991, the cyclical lows for the Commerce Department's index and the new national index lagged by several months. The *steep declines* in the two indexes ended, however, about the same time as the official end of the recession, and the two indexes improved temporarily shortly after the official end of the recession.

[12]The average monthly increase in the new national index between 1972 and 1992 was 0.13 percent, compared with 0.16 percent for the Commerce Department's index and the 0.19 percent for the Stock and Watson index. The variance in the monthly change for the new index is also smaller than the variance for the other two indexes. The correlation between monthly changes in the new index and the Commerce Department's index is 0.54, and the correlation between the new index and the Stock and Watson index is 0.55. Both correlation coefficients are significantly different from 0 and from 1 at the 0.01 level. The correlation between the Commerce Department and the Stock and Watson indexes is considerably higher at 0.93, because with one minor exception these two indexes are constructed from the same monthly indicators.

[13]A national index constructed from the three variables used in the Delaware index tracks the national business cycles slightly less accurately than the new national index constructed from all four variables. In some cases, e.g., the 1981-82 recession, the timing of the peaks and troughs of the two national indexes are identical.

TABLE 1
Leads and Lags of the New National Index
at Business Cycle Peaks and Troughs
(leads and lags in months)

BUSINESS CYCLE PEAKS	lead (+)/ lag (-)	BUSINESS CYCLE TROUGHS	lead (+)/ lag (-)
November 1973	0	March 1975	-1
January 1980	+7	July 1980	0
July 1981	0	November 1982	-1
July 1990	+1	March 1991	-15

New National and State Indexes

Except for Delaware there are four measurement equations in each system used to estimate the new national and state indexes:

(1) $\Delta emp_t = \beta_e \Delta S_t + u_{te}$

(2) $\Delta hrs_t = \beta_h \Delta S_t + u_{th}$

(3) $\Delta rs_t = \beta_r \Delta S_t + u_{tr}$

(4) $\Delta UR_t = \beta_{u0} \Delta S_t + \beta_{u1} \Delta S_{t-1} + \beta_{u2} \Delta S_{t-2} + \beta_{u3} \Delta S_{t-3} + u_{tu}$

where

Δemp = the standardized change in the log of nonfarm employment

Δhrs = the standardized change in the log of average hours worked in manufacturing

Δrs = the standardized change in the log of real retail sales

ΔUR = the standardized change in the unemployment rate.

Since retail sales are not available for Delaware, equation (3) is omitted in the system of equations for the Delaware index. Lagged values of the unobserved state of the economy are entered in the unemployment rate equation because including the lags produced a national index that coincided better with the official NBER recession dates. Moreover, the unemployment rate is often a lagging indicator reflecting the state of the economy in previous months. The estimated coefficients for each of the four systems is given in the following table:

Estimates of Coefficients Used to Construct
Indexes of Coincident Indicators

	US INDEX	PA INDEX	NJ INDEX	DE INDEX
EMPLOYMENT EQ				
β_e	0.715	0.530	0.823	0.701
	(.051)	(.081)	(.065)	(.134)
HOURS EQ				
β_h	0.175	0.175	0.159	0.185
	(.032)	(.041)	(.050)	(.053)
RETAIL SALES EQ				
β_r	0.156	0.128	0.046	
	(.026)	(.034)	(.049)	
UNEMPLOYMENT EQ				
β_{u0}	-0.428	-0.044	-0.202	-0.637
	(.052)	(.092)	(.058)	(.130)
β_{u1}	-0.213	-0.240	-0.102	-0.136
	(.052)	(.102)	(.058)	(.088)
β_{u2}	0.033	-0.161	-0.003	0.071
	(.045)	(.103)	(.061)	(.089)
β_{u3}	0.026	0.217	-0.010	-0.010
	(.045)	(.110)	(.055)	(.063)

( ) = standard error of the estimate

models produced estimates of an unobserved "state of the economy," or a coincident index, for each of the three states.

BUSINESS CYCLES IN THE STATES

The coincident indexes for the three states in the Third Federal Reserve District define business cycles that correspond generally to the four national business cycles since 1972. But the cycles in each state have differed in their timing and duration. These differences can be seen by comparing the peaks and troughs of the state indexes with the official NBER dates and with the peaks and troughs of the new national index (Figures 2 through 4). Since there are clear differences between state and national business cycles, we need to apply some criterion to the new indexes to identify recessions and expansions at the state level. The experience of the NBER dating committee illustrates that there is no simple rule that will always identify peaks and troughs in the business cycle, but there should be some minimum decline in the index in order to characterize a given period as a recession. We found that a cumulative decline four times the average absolute monthly change in the index clearly

defined four recessions in the new national index since 1972, and these recessions corresponded closely with the four officially recognized national recessions over that time period. We used the same rule of thumb to identify recessions at the state level. The peak of the cycle can be dated by the high point in the index just prior to the cumulative decline. Likewise, the trough of a cycle can be dated by the low point in the index prior to a cumulative increase that is four times the average absolute monthly change.[14] This identification of recessions at the state level allows us to compare cycles in the Third District states to national cycles. The peaks and troughs of the state indexes are shown in Table 2.

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[14]Other simple rules could be used to date the beginning and end of a recession, such as three or four consecutive decreases or increases in the index. While the use of such consecutive decrease or increase rules would move the peak or trough closer to the NBER date for some recessions, for other recessions they would move the peak or trough further away from the official dates. These rules were not clearly superior to using the absolute high point and low point of the index as the business cycle turning points, and they have no compelling theoretical justification.
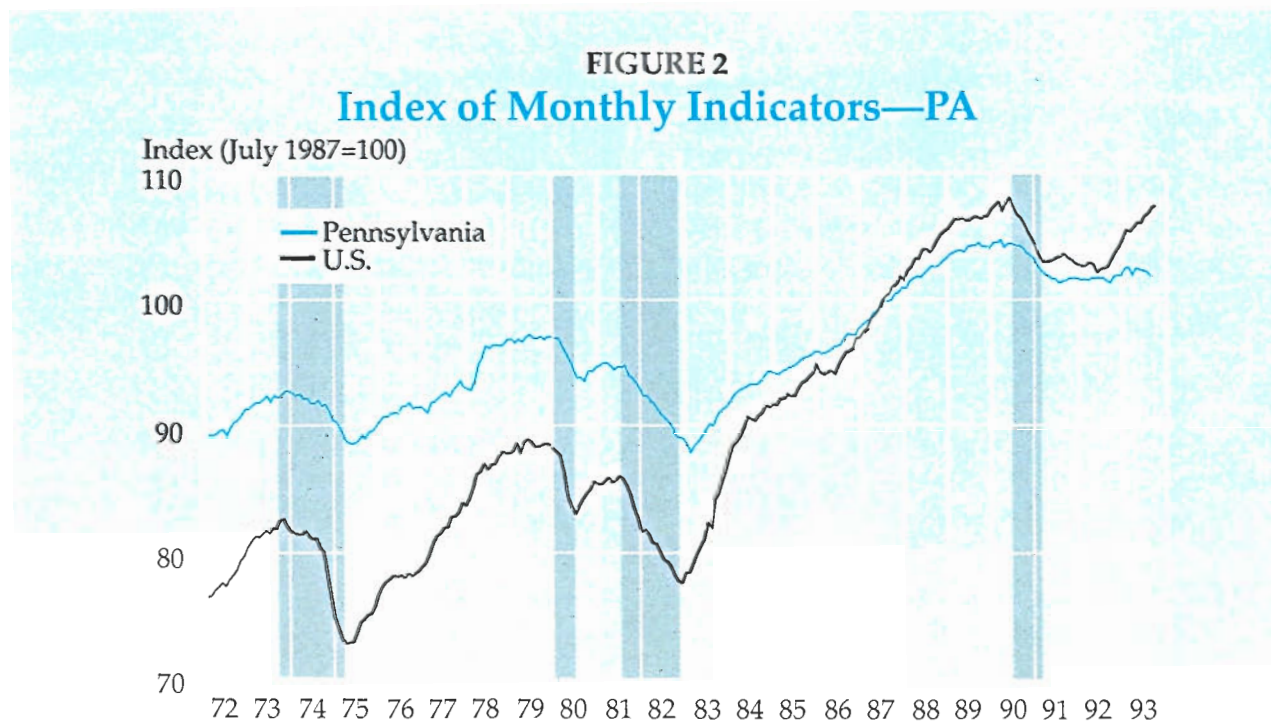
TABLE 2
Peaks and Troughs of State Indexes

	PA INDEX	NJ INDEX	DE INDEX
PEAK	November 1973	November 1973	February 1973
TROUGH	May 1975	May 1975	April 1975
PEAK	June 1979	February 1980	February 1980
TROUGH	September 1980	July 1980	April 1980
PEAK	March 1981	September 1981	July 1981
TROUGH	February 1983	November 1982	January 1982
PEAK	March 1990	March 1989	June 1990
TROUGH	July 1991	September 1992	April 1991

Pennsylvania's economy comprises somewhat less than 5 percent of the U.S. economy as measured by the number of jobs in the state and by gross product. In terms of the mix of industries, the cyclically sensitive manufacturing sector represents a larger percentage of the Pennsylvania economy than it does of the national economy, so one might expect Pennsylvania to suffer more recessions or longer recessions than the nation.[15] While there have not been more recessions in the state, recessions have generally lasted longer in Pennsylvania than in the nation (Figure 2). In every recession since 1972 the new coincident index for Pennsylvania has recorded a longer downturn than indicated by the official dates for the national

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[15]Over the period 1972 to 1992 manufacturing employment has averaged 25 percent of Pennsylvania's total employment but only 21 percent of U.S. employment.

recession. And except for the last recession, the declines in the Pennsylvania index have also lasted longer than the declines in the comparable national index. And generally recoveries in Pennsylvania have been less vigorous than in the nation as a whole. The current recovery is a striking example. At the end of the 1990-91 recession the Pennsylvania index technically reached its cyclical low 11 months before the new national index, but the state's index was little changed for more than a year after reaching that low point and was not signaling a recovery. The index reflected the popular impression of a lingering recession in the state.

New Jersey's economy represents slightly more than 3 percent of the U.S. economy in terms of jobs and gross product. The structure of the New Jersey economy has changed over the past 20 years from a greater than average dependence on manufacturing to a less than average dependence. Financial and business

FIGURE 2
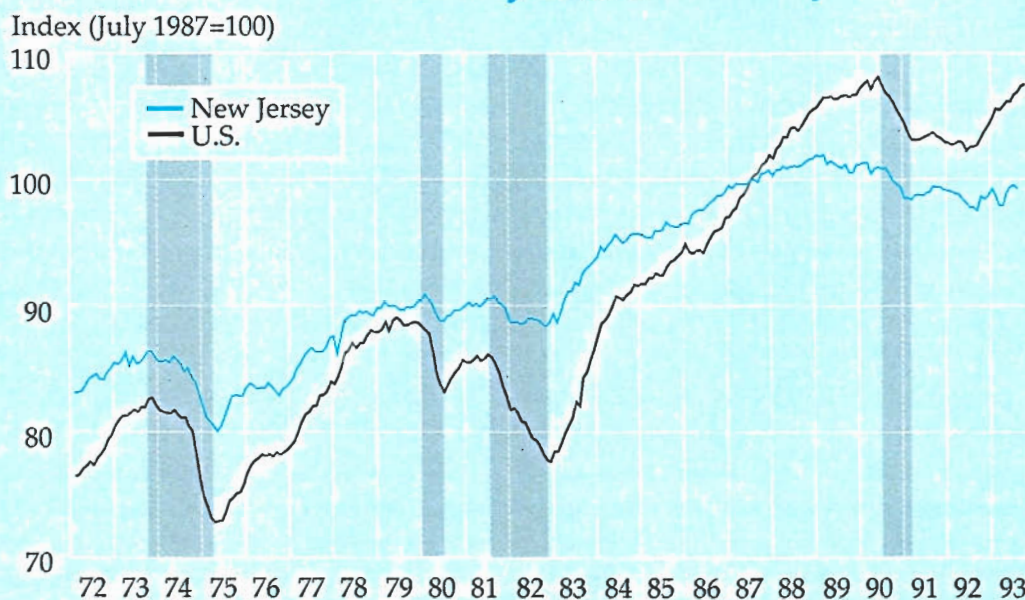## Index of Monthly Indicators—PA

Index (July 1987=100)

The shaded areas represent the official recessions as determined by the NBER Dating Committee.
The U.S. index is the new national index constructed from variables also available at the state level.

services have become a more important part of the state's economy. According to the new coincident index for New Jersey, some recessions in the state have been longer than the U.S. average (1973-75, 1990-91), and some have been shorter (1980, 1981-82). That pattern holds whether we measure national recessions by the official NBER dates or by the comparable national index (Figure 3). The most recent recession in New Jersey has been especially prolonged in part because this recession affected the service-producing sectors more than previous ones. Based on the peak and trough in the state's coincident index, the latest recession in New Jersey lasted from early 1989 to mid-1992, much longer than it did in the other states of the Third Federal Reserve District. There were some temporary improvements in the index over this three-year period, but none of the improvements were strong enough to qualify as a recovery.[16]

Delaware's economy is less than one-half of 1 percent of the U.S. economy in terms of jobs in the state and in terms of gross state product. The state's economy is more heavily concentrated in manufacturing than the U.S. economy, a fact that should tend to make it more cyclical. The very rapid growth in financial and business services since the early 1980s, however, has helped the state weather the last few recessions relatively well. Clear counterparts to three of the four national recessions since 1972 are apparent in the history of Delaware's new coincident index (Figure 4). The one national recession that has no counterpart in the Delaware index is the short-lived one in 1980. The decline from peak to trough in Delaware's monthly

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[16]That is, the total increase in the index during these temporary improvements did not equal four times the average monthly change.

FIGURE 3
Index of Monthly Indicators—NJ

Index (July 1987=100)

— New Jersey
— U.S.

72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93

The shaded areas represent the official recessions as determined by the NBER Dating Committee.
The U.S. index is the new national index constructed from variables also available at the state level.

FIGURE 4
Index of Monthly Indicators—DE
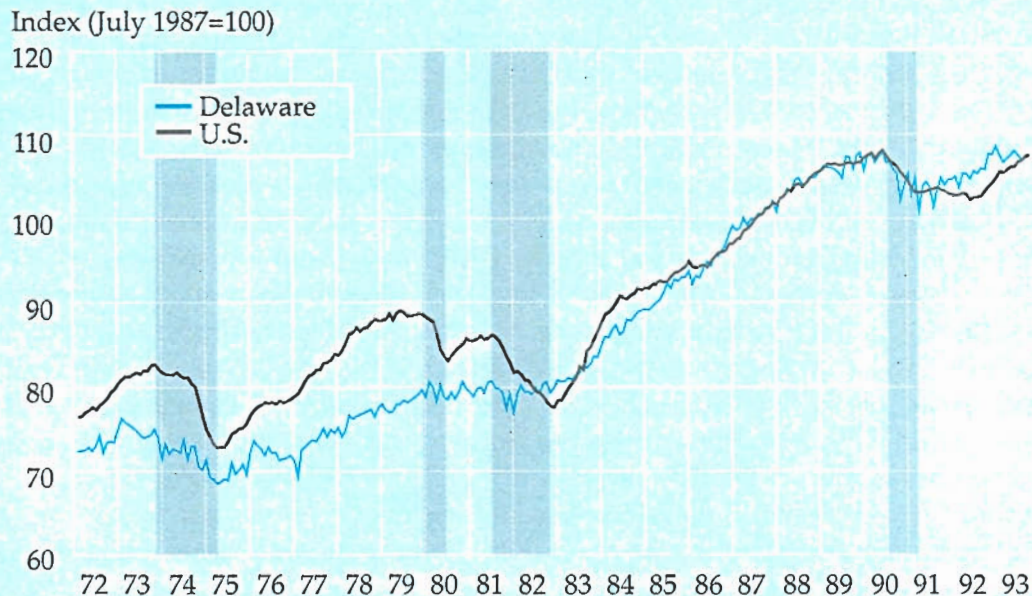
Index (July 1987=100)

The shaded areas represent the official recessions as determined by the NBER Dating Committee.
The U.S. index is the new national index constructed from variables also available at the state level for many states.

index in the first half of 1980 was very brief (two months), and the total change in the index in those two months was less than three times the average monthly change. Based on the normal criteria for national recessions the brief 1980 downturn in Delaware would not qualify as a recession. The subsequent recession in 1981-82 is clearly discernible in the Delaware index, which registered a cumulative decline well over four times the monthly average, but this recession ended much earlier in the state than in the nation. Passage of legislation in 1981 encouraging the establishment of credit card banks in the state aided Delaware's economy. While the new index indicates that Delaware weathered recessions much better than the nation in the 1980s, it also indicates that the state suffered more in the 1970s. The 1973-75 recession began much earlier in Delaware than in the nation or in the other two states in the

Third District. Moreover, the new coincident index suggests that Delaware suffered a local recession between February 1976 and February 1977—a downturn not matched at the national level. The state index declined a total of 5.9 percent, more than six times the average monthly change. The weakness in the state's economy was concentrated in the manufacturing and construction industries.

GETTING ANSWERS ABOUT
STATE BUSINESS CYCLES

The ability to construct a composite index of monthly indicators that are available at the state level helps answer some of the questions frequently raised about regional business cycles. The new coincident index for Pennsylvania indicates that recessions have generally lasted longer in that state than in the nation as a whole. A set of indexes for all 50 states would undoubt-

edly uncover other states that tend to have longer recessions and help us identify some reasons. The new index for New Jersey indicates that the most recent downturn in that state began more than a year before the onset of the national recession and continued for more than a year after the end of the national recession. The index confirms that this recession was much longer in New Jersey than in the other states in the region. The new index for Delaware indicates that the state suffered only one recession in the early 1980s, and that one was briefer than the national downturn. But Delaware suffered a more extended recession than the nation in the early 1970s. Moreover,

Delaware's index provides evidence of a local recession in the second half of the 1970s. The expansion of financial and business services in Delaware seems to have made the state's economy less cyclical.

These new composite indexes for the states provide another tool to monitor and analyze a region's economy. They can help us compare the timing of business cycles among the states and between any state and the nation. A full set of such indexes for all the states would help answer even more questions about regional business cycles and the structure of regional economies.