Monitoring the state's economy

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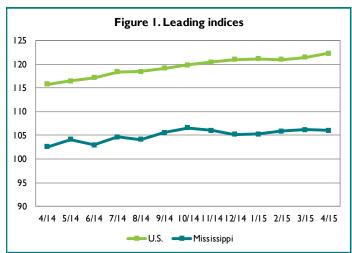
A Publication of the University Research Center, Mississippi Institutions of Higher Learning

### ECONOMY AT A GLANCE

The value of the Mississippi Leading Index (MLI) fell 0.2 percent in April as Figure I below indicates. The decline was the first since last December after no change in January and small gains in February and March. Compared to one year ago the value of the MLI in April was 3.3 percent higher.

As Figure 2 below indicates, the value of the Mississippi Coincident Index rose 0.3 percent in April. Compared to one year ago, the value of the index was 2.0 percent higher and the average value for the last six months exceeds the average value of the previous six months by 0.9 percent.

The second estimate of the change in real U.S. gross domestic product (GDP) for the first quarter by the U.S. Bureau of Economic Analysis (BEA) was revised down to



Sources: University Research Center and The Conference Board

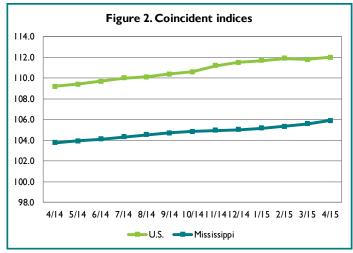
**Notes**: The Mississippi Coincident Index is constructed by the Federal Reserve Bank of Philadelphia and re-indexed to 2004. The Index is based on changes in nonfarm employment, the unemployment rate, average manufacturing workweek length, and wage and salary disbursements. The Mississippi Leading Index is constructed by the Mississippi University Research Center. The U.S. Indices are from The Conference Board. All series are indexed to a base year of 2004.

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-0.7 percent. The revision marked the second contraction since the first quarter of 2014, when real GDP contracted 2.1 percent, and the third contraction for a quarter since the recovery began in 2009. As in 2014, a severe winter was partly blamed for the decline, but also a stronger dollar that hit U.S. exports. Most analysts expect the U.S. economy to bounce back in the second and third quarters, but likely not as strongly as in the same period in 2014.

As reflected in the April MLI, the national slowdown of early 2015 has caught up to Mississippi's economy. However, the decline in the MLI was relatively small, and U.S. manufacturing shows signs of improvement. The state's economy remains positioned to experience modest growth for the year if key industries like construction and manufacturing can expand in the second half of 2015.



Sources: Federal Reserve Bank of Philadelphia and The Conference Board

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### MISSISSIPPI LEADING INDEX, APRIL 2015

The value of the Mississippi Leading Index of Economic Indicators (MLI) fell 0.2 percent in April following increases in each of the previous two months. While the value of the MLI for April was 1.0 percent lower than six months ago when it reached a seven-year high, the level remained 3.4 percent higher compared to one year ago.

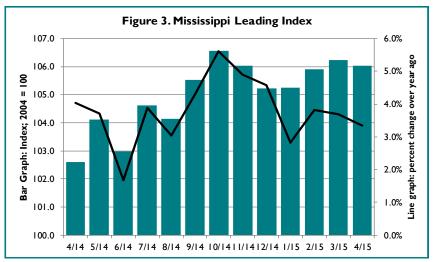
Four components of the MLI contributed negatively in April, although U.S. retail sales were almost effectively unchanged. Discussion of each component appears below in order of largest to smallest contribution.

For the first time since October 2014, the value of the Institute for Supply Management Index of U.S. Manufacturing Ac-

tivity increased in May. As Figure 4 indicates, the value rose 2.5 percent for the month to a level of 52.8, placing it more securely in expansion territory. Most analysts had expected another decline in the Index in May, but increases in the New Orders and Employment components helped propel the gain. The waning impact of the labor disputes at West Coast ports also contributed to last month's improvement. However, the Production component fell, which, along with the continued strength of the dollar, likely indicates U.S. manufacturing growth will remain measured. The value of the Index in May was 5.0 percent lower compared to one year ago.

For the third consecutive month, the Mississippi Manufacturing Employment Intensity Index increased in April. As Figure 5 indicates, the value of the Index climbed 0.7 percent for the month. However, compared to April 2014, the value of the Index was lower by 0.2 percent. Both manufacturing employment and the average weekly hours of production employees in Mississippi increased slightly in April.

Seasonally-adjusted **initial unemployment claims** and seasonally-adjusted continued unemployment claims in Mississippi both fell in April after increasing in each of the previous two months. The value of initial claims declined by 6.2 percent as seen in Figure 6. This value was 12.5 percent lower compared to one year ago, and the number of initial claims for the month reached its lowest level since last September. Figure 14 on page 6 indicates the number of seasonally-adjusted continued unemployment claims in Mississippi in April decreased by 4.0 percent. Compared to one year ago the number of continued



Source: University Research Center

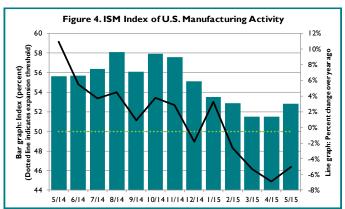
claims in April was lower by 27.9 percent. The seasonally-adjusted unemployment rate in Mississippi for April fell 0.2 percentage point to 6.6 percent for the first time since May 2008.

The value of **U.S. retail sales** essentially did not change in April from the previous month as seen in Figure 7. However, the March increase from February was revised higher to 1.1 percent as the Census Bureau completed its annual revisions to retail sales data. The April value was 0.9 percent higher compared to one year ago. Retail sales excluding automobiles and sales at gasoline stations rose 0.2 percent in April. Nevertheless, a number of other sales also declined, including those at department, electronics, furniture, and grocery stores. Based on these latest sales data, to date lower gasoline prices have not resulted in significantly more consumer spending in other areas.

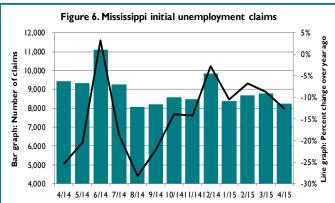
For the second consecutive month, the value of **Mississippi income tax withholdings** (three-month moving average) fell 0.3 percent as Figure 8 indicates. However, the April value was 4.7 percent higher compared to one year ago. The average monthly value of withholdings over the last six months was 1.7 percent higher compared to the previous six months, denoting the general listlessness in the movement of the value since late 2014.

The value of the **University of Michigan Index of Consumer Expectations** (three-month moving average) fell in April for the third month in a row. As seen in Figure 9, the value of the index decreased 1.5 percent

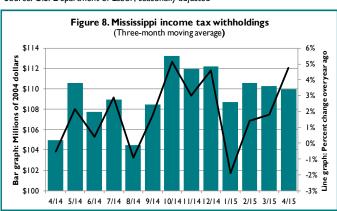
## COMPONENTS OF MISSISSIPPI LEADING INDEX, IN FIGURES



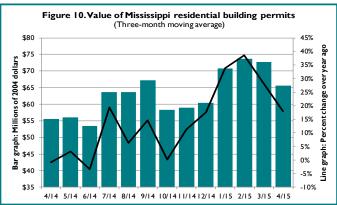
Source: Institute for Supply Management



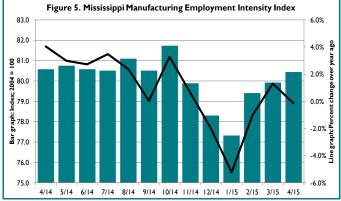
Source: U.S. Department of Labor; seasonally adjusted



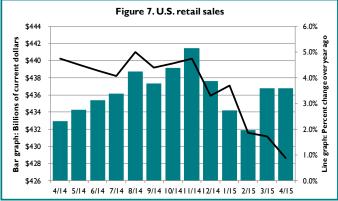
Source: Mississippi Department of Revenue; seasonally adjusted



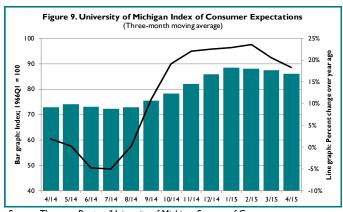
Source: Bureau of the Census; seasonally adjusted



Source: URC using data from Bureau of Labor Statistics



Source: Bureau of the Census



Source: Thomson Reuters/University of Michigan Surveys of Consumers

Following two successive months of increases, the value of the MLI fell 0.2% in April. Four leading economic indicators declined in value for the month.

## MISSISSIPPI LEADING INDEX, APRIL 2015 (CONTINUED)

from the previous month. The April value was the lowest since December, but remained 18.6 percent higher than one year ago. After declining the previous month, expectations for inflation rose, possibly a sign higher gasoline prices are beginning to affect consumer attitudes. In fact, most components of the Index fell in April, reflecting consumers' unease about the slowdown in the U.S. economy since the first of the year. Anticipation of the revisions to first quarter real GDP to reflect a contraction may also have played a factor in the outlook of consumers.

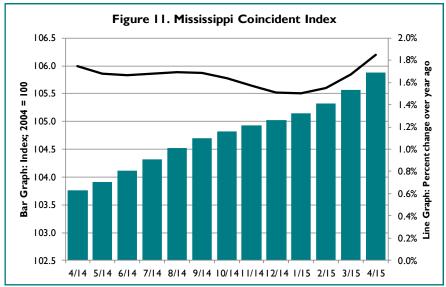
As seen in Figure 10, the value of Mississippi residential building permits (three-month moving average) sank 9.7 percent in April. Despite the decline, the value remained 18.7 percent higher compared to April 2014. Moreover, the average value of permits in the first four months of 2015 exceeded the same period in 2014 by 27.4 percent. The seasonally-adjusted number of units for which building permits were issued (three-month moving average) in Mississippi also fell in April by 15.4 percent. Like the value of permits in the state, however, the number of units was 5.8 percent higher than one year ago.

## MISSISSIPPI COINCIDENT INDEX, APRIL 2015

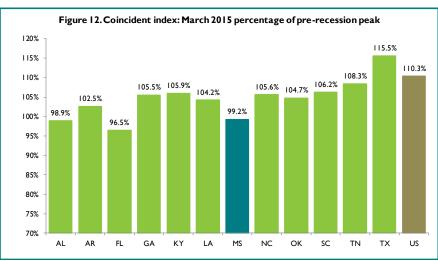
The value of the Mississippi Coincident Index of Economic Indicators (MCI) increased 0.7 percent in April according to the Federal Reserve Bank of Philadelphia. As Figure 11 indicates, the value of the MCI was 2.0 percent higher in April compared to one year ago.

The value of the MCI reached 99.2 percent of its pre-recession peak in April as seen in Figure 12. As in previous months, among the twelve states in the Southeast region the values of the respective coincident indices for Alabama, Florida, and Mississippi were below their pre-recession peaks in April. The value of the coincident index for Arkansas was the next lowest at 102.5 percent of its pre-recession peak.

Compared to three months prior, forty-six states experienced increases in the value of their coincident indices in April as Figure 14 on page 5 indicates. As in March, states home to substantial energy sectors were among the states with the smallest changes in the value of their coincident indices in April. Mississippi was one of thirty-four states with coincident indices that increased 0.5 percent or more compared to three months prior. The values of the coincident indices in twelve states increased between 0.0 and 0.5 percent in April, while the values for Alaska, Kansas, North Dakota, and West Virginia all declined compared to January.



Source: Federal Reserve Bank of Philadelphia



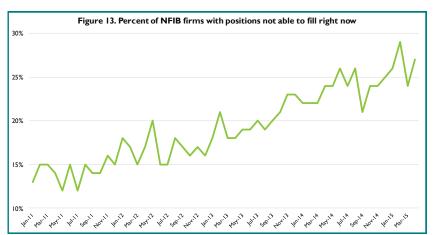
Source: Federal Reserve Bank of Philadelphia

### NATIONAL TRENDS

The Conference Board reported the value of the U.S. Leading Economic Index (LEI) increased 0.7 percent in April, the largest monthly increase since August 2014. Based on data revisions, the value of the LEI increased for twelve consecutive months before declining in February 2015. Compared to one year ago, the value of the LEI was 5.6 percent higher in April. Seven of the ten components of the LEI increased in April and the largest contributors were building permits and the interest rate spread. The ISM New Orders Index made the lone negative contribution.

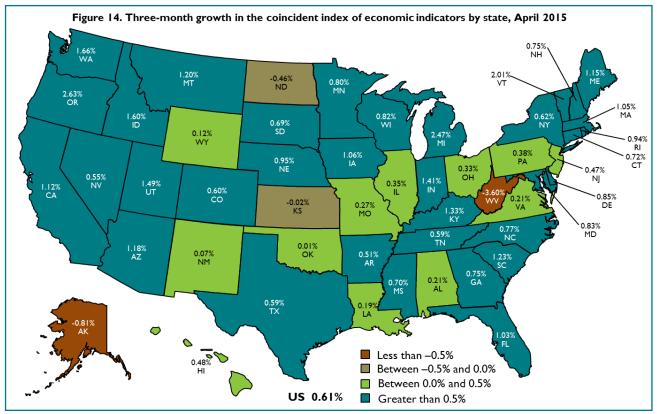
The value of the U.S. Coincident Economic Index (CEI) rose 0.2 percent in April according to The Conference Board. However, the March value was revised lower, indicating the CEI fell 0.1 percent hat month—snapping a streak of thirteen consecutive months of increases. The value of the CEI in April was 2.6 percent higher compared to one year ago.

The National Federation of Independent Businesses (NFIB) Small Business Optimism Index rebounded in April as the value increased 1.8 percent from the previous month. Additionally, the value was 1.8 percent higher



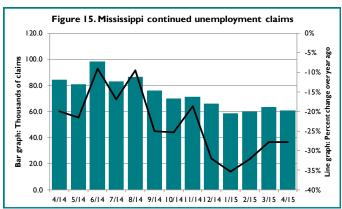
Source: National Federation of Independent Businesses

compared to a year ago. In a reversal from March, nine of the ten components of the Small Business Optimism Index moved higher in April. Notably, the share of firms reporting job openings they are unable to fill right now increased, recovering about half the value it lost in March, as seen in Figure 13. However, the percent of firms expecting higher real sales fell for the fourth consecutive month. All in all, the April Small Business Optimism Index marked an improvement in the expectations of firms after a relatively weak first quarter.



Source: Federal Reserve Bank of Philadelphia

## MISCELLANEOUS ECONOMIC INDICATORS, IN FIGURES



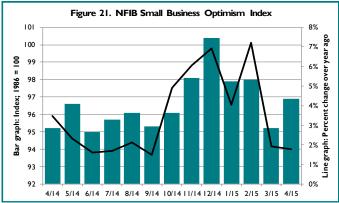
Source: U.S. Department of Labor; seasonally adjusted



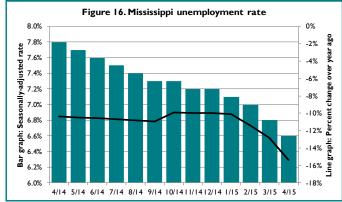
Source: U.S. Bureau of Labor Statistics; non-seasonally adjusted



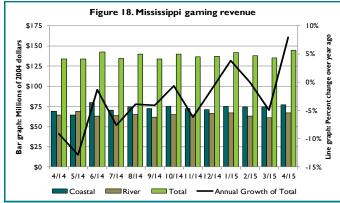
Source: U.S. Bureau of Labor Statistics



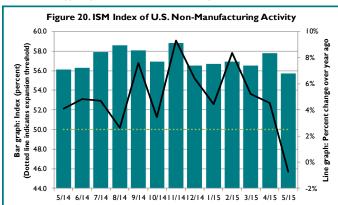
Source: National Federation of Independent Businesses



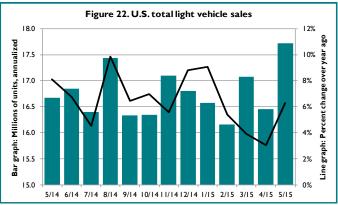
Source: U.S. Bureau of Labor Statistics; seasonally adjusted



Source: Mississippi Department of Revenue; seasonally adjusted



Source: Institute for Supply Management



Source: Bureau of Economic Analysis; seasonally adjusted at annual rates

TABLE I. SELECTED ECONOMIC INDICATORS

	April	March	April	Percent cha	ange from	
Indicator	2015	2015	2014	March 2015	_	
U.S. Leading Economic Index 2004 = 100. Source: The Conference Board	122.3	121.5	115.8	<b>△</b> 0.7%	<b>▲</b> 5.6%	
U.S. Coincident Economic Index 2004 = 100. Source: The Conference Board	112.0	111.8	109.2	▲0.2%	<b>^2.6</b> %	ic Indic
Mississippi Leading Index 2004 = 100. Source: University Research Center	106.0	106.2	102.6	<b>▼</b> 0.2%	<b>▲</b> 3.3%	<b>Economic Indices</b>
Mississippi Coincident Index 2004 = 100. Source: Federal Reserve Bank of Philadelphia	105.9	105.6	103.8	<b>^</b> 0.3%	<b>^2.0</b> %	ľ
Mississippi initial unemployment claims Seasonally adjusted. Source: U.S. Department of Labor	8,250	8,794	9,426	<b>▼6.2</b> %	<b>▼12.5</b> %	ndex
Value of Mississippi residential building permits  Three-month moving average; seasonally adjusted; millions of 2004 dollars.  Source: Bureau of the Census	65.6	72.7	55.6	<b>▼9.7</b> %	<b>▲</b> 18.1%	Leading Index
Mississippi income tax withholdings Three-month moving average; seasonally adjusted; millions of 2004 dollars. Source: Mississippi Department of Revenue	109.9	110.3	105.0	<b>▼</b> 0.3%	<b>▲</b> 4.7%	l iddissis
Mississippi Manufacturing Employment Intensity Index 2004 = 100. Source: URC using data from U.S. Bureau of Labor Statistics	80.4	79.9	80.6	▲0.7%	<b>▼</b> 0.2%	the Mis
University of Michigan Index of Consumer Expectations Three-month moving average; index 1966Q1 = 100. Source: Thomson Reuters/University of Michigan Surveys of Consumers	85.2	87.4	72.8	<b>▼2.5</b> %	<b>▲</b> 17.0%	Components of the Mississippi
ISM Index of U.S. Manufacturing Activity  Advanced one month. Source: Institute for Supply Management	52.8	51.5	55.6	<b>▲</b> 2.5%	<b>▼</b> 5.0%	ompon
U.S. retail sales Current dollars, in billions. Source: Bureau of the Census	436.8	436.8	433.0	♦0.0%	<b>▲</b> 0.9%	٥
U.S. Consumer Price Index 2004 = 100. Source: URC using data from Bureau of Labor Statistics	125.3	125.0	125.5	<b>△</b> 0.2%	<b>▼0.2</b> %	
Mississippi unemployment rate Seasonally-adjusted. Source: U.S. Bureau of Labor Statistics	6.6%	6.8%	7.5%	<b>▼2.9</b> %	<b>▼12.0</b> %	
Mississippi continued unemployment claims Seasonally adjusted. Source: U.S. Department of Labor	60,854	63,358	84,364	<b>▼4.0</b> %	<b>▼27.9</b> %	
ISM Index of U.S. Non-Manufacturing Activity  Advanced one month. Source: Institute for Supply Management	55.7	57.8	56.1	<b>▼3.6</b> %	<b>▼</b> 0.7%	ndicators
U.S. mortgage rates Seasonally adjusted; 30-year conventional. Source: U.S. Federal Reserve	3.66%	3.76%	4.32%	<b>▼2.6</b> %	<b>▼15.2</b> %	_
Mississippi average hourly wage for manufacturing Seasonally adjusted; 2004 dollars. Source: U.S. Bureau of Labor Statistics	18.24	18.42	17.96	<b>▼1.0</b> %	<b>▲</b> 1.5%	Miscellaneous
Mississippi average weekly earnings for manufacturing Seasonally adjusted; 2004 dollars. Source: U.S. Bureau of Labor Statistics	752.46	763.84	749.97	<b>▼1.5</b> %	<b>▲</b> 0.3%	Μis
NFIB Small Business Optimism Index 1986 = 100. Source: National Federation of Independent Businesses	96.9	95.2	95.2	▲1.8%	<b>▲</b> 1.8%	
U.S. total light vehicle sales Millions of units seasonally adjusted at annual rates. Source: U.S. Bureau of Economic Analysis	17.71	16.46	16.67	<b>▲</b> 7.6%	<b>▲</b> 6.3%	
Gaming revenue Coastal counties	144.5 77.3	135.5 74.7	133.7 69.1	<b>△</b> 6.6% <b>△</b> 3.5%	<b>▲</b> 8.1% <b>▲</b> 11.9%	
<b>River counties</b> Seasonally adjusted; millions of 2004 dollars. Source: Mississippi Department of Revenue	67.2	60.8	64.6	<b>▲10.5</b> %	<b>4.0</b> %	

### MISSISSIPPI EMPLOYMENT TRENDS

Total nonfarm employment in Mississippi rose 0.3 percent in April according to the U.S. Bureau of Labor Statistics (BLS). March total employment was also revised higher by 400 jobs. A total of 2,900 jobs were added in the state in April, and compared to one year ago employment in Mississippi was 0.8 percent higher. The state's economy added 8,900 jobs over the past twelve months, but thus far in 2015 the net gain equals only 400 jobs.

Mississippi was one of forty states and the District of Columbia to report increases in nonfarm employment in April. California, Pennsylvania, and Florida added the most jobs for the month. As in March, West Virginia remained the only state to report lower employment for the month compared to one year ago.

Increases in employment by sector were relatively small in Mississippi in April. The largest absolute increase in employment occurred in Professional and Business Services, which added 1,300 jobs for the month—an increase of 1.3 percent. The Accommodation and Food Services sector closely followed with a gain of 1,100 jobs, a 0.9 percent increase.

The largest percentage increase in employment for the month occurred in Arts and Entertainment, which rose 1.8 percent, an increase of 200 jobs. The Health Care and Social Assistance sector experienced both the largest absolute and percentage decreases in jobs in April. The industry lost 3,700 jobs, a 2.9 percent decline.

The industries in the state that employed fewer people in April than one year ago were Mining and Logging and Construction, down by 400 and 3,200 jobs, respectively. The Trade, Transportation, and Utilities sector and the Accommodation and Food Services sector experienced the largest growth in job numbers over the past twelve months, as in both industries added 2,400 jobs.

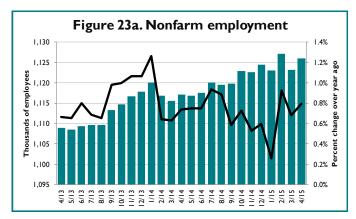
Employment growth in Mississippi remains flat, which is not new, but U.S. employment growth slowed in the first third of 2015 as well. The small gain in March was followed by larger increases in April and May. While these gains bode well for U.S. job growth for the rest of the year, Mississippi may not follow suit. Sectors such as Construction and Government need to consistently post job gains for the state to improve upon its tepid employment growth.

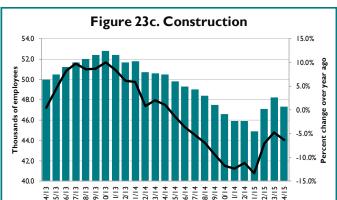
Table 2. Change in Mississippi employment by industry, April 2015

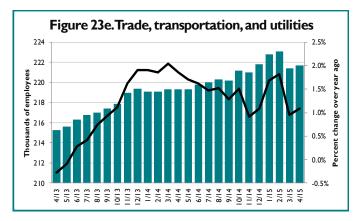
	Relative share of total <sup>a</sup>	April 2015	March 2015	April 2014	Mar	ge from ch 2015 Percent	А	nge from pril 2014 Percent
Total Nonfarm	100.0%	1,126,100	1,123,200	1,117,200	<b>^</b> 2,900	<b>▲</b> 0.3%	<b>^</b> 8,900	<b>^</b> 0.8%
Mining and Logging	0.8%	8,700	8,700	9,100	_	<b>♦</b> 0.0%	<b>▼</b> 400	<b>▼</b> 4.4%
Construction	4.2%	47,300	48,200	50,500	<b>→</b> 900	<b>▼</b> 1.9%	<b>▼</b> 3,200	<b>▼</b> 6.3%
Manufacturing	12.4%	140,700	140,200	139,300	<b>▲</b> 500	<b>^</b> 0.4%	<b>▲</b> 1,400	<b>▲</b> 1.0%
Trade, Transportation, & Utilities	19.7%	221,700	221,400	219,300	<del>^</del> 300	<b>^</b> 0.1%	<b>^</b> 2,400	<b>▲</b> 1.1%
Retail Trade	12.1%	135,900	135,500	135,400	<del>^</del> 400	<b>◆</b> 0.3%	<b>◆</b> 500	<b>^</b> 0.4%
Information	1.2%	13,400	13,200	12,900	<del>^</del> 200	<b>↑</b> 1.5%	<del>^</del> 500	<b>▲</b> 3.9%
Financial Activities	3.9%	43,800	43,700	43,300	<b>∸</b> 100	<b>▲</b> 0.2%	<b>↑</b> 500	<b>▲</b> 1.2%
Services	35.9%	404,900	406,500	398,200	<b>▼</b> 1,600	<b>▼</b> 0.4%	<b>^</b> 6,700	<b>^</b> 1.7%
Professional & Business Services	9.0%	101,600	100,300	99,500	<b>▲</b> 1,300	<b>▲</b> 1.3%	<b>△</b> 2,100	<b>^</b> 2.1%
Educational Services	1.1%	12,000	12,100	11,600	<b>→</b> 100	<b>▼</b> 0.8%	<del>^</del> 400	<b>↑</b> 3.4%
Health Care & Social Assistance	11.0%	123,600	127,300	122,600	<b>→</b> 3,700	<b>▼</b> 2.9%	<b>▲</b> 1,000	<b>◆</b> 0.8%
Arts & Entertainment	1.0%	11,600	11,400	11,200	<del>^</del> 200	<b>▲</b> 1.8%	<del>^</del> 400	<b>▲</b> 3.6%
Accommodation and Food Services	10.3%	117,000	115,900	114,600	<b>▲</b> 1,100	<b>^</b> 0.9%	<b>^</b> 2,400	<b>^</b> 2.1%
Other Services	3.5%	39,100	39,500	38,700	<b>→</b> 400	<b>▼</b> 1.0%	<del>^</del> 400	<b>↑</b> 1.0%
Government	21.9%	245,600	245,200	244,600	<del>^</del> 400	<b>▲</b> 0.2%	<b>▲</b> 1,000	<b>^</b> 0.4%

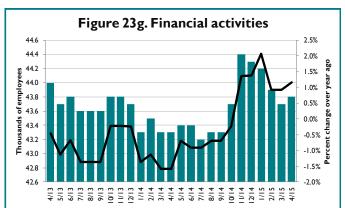
<sup>&</sup>lt;sup>a</sup>Relative shares are for the most recent twelve-month average. Source: U.S. Bureau of Labor Statistics

## MISSISSIPPI EMPLOYMENT TRENDS BY SECTOR, IN FIGURES

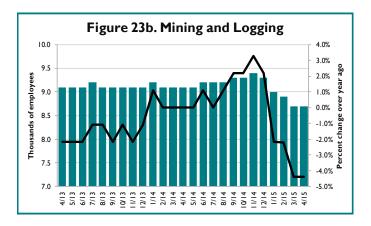


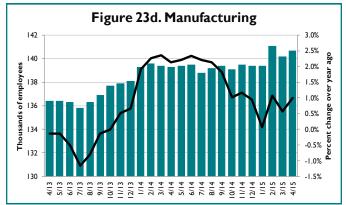


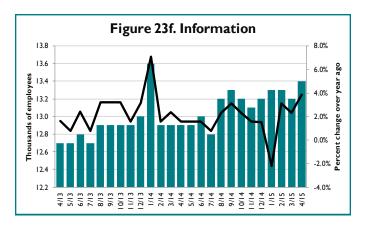


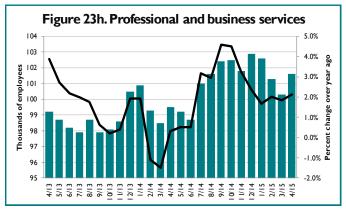




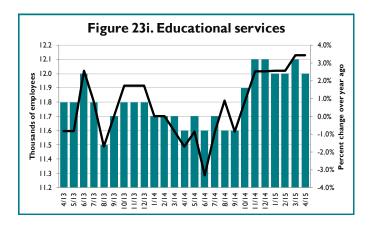


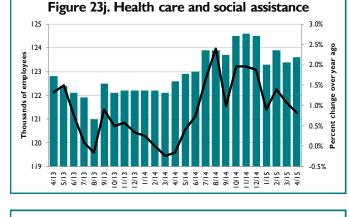


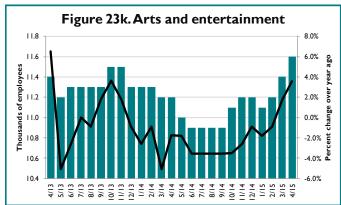


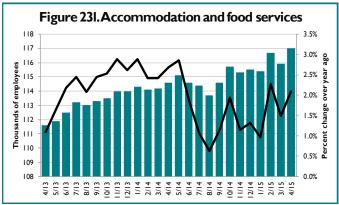


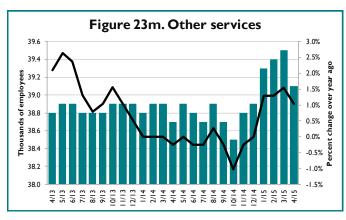
## MISSISSIPPI EMPLOYMENT TRENDS BY SECTOR, IN FIGURES (CONTINUED)

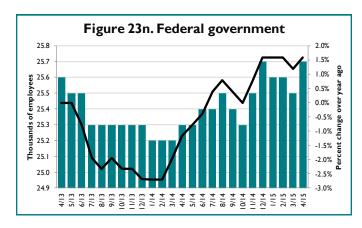


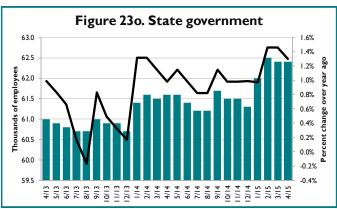


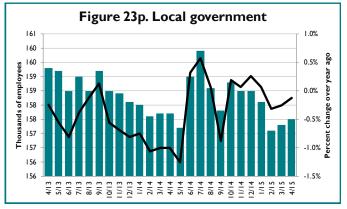












Source: U.S. Bureau of Labor Statistics (all figures); seasonally adjusted

### MEASURING THE NATURAL UNEMPLOYMENT RATE

conomists at the Federal Reserve Bank of Chicago recently published an essay in which they argue the U.S. natural rate of unemployment likely lies below 5.0 percent. They contend the natural rate has fallen in recent years largely as a result of U.S. demographic changes. Before considering their findings, a discussion of what the natural unemployment rate means is warranted.

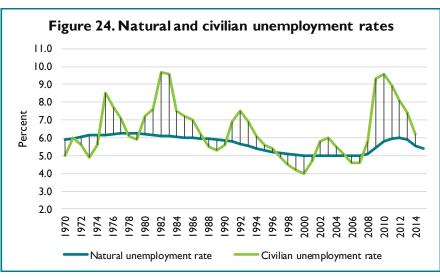
A number of ways exist to think about the natural rate of unemployment. The rate is described as natural because ostensibly it represents the level of unemployment the economy gradually approaches in the long run. Another way to regard the natural unemployment rate is the level of unemployment in the economy that exists in the absence of cyclical unemployment—unemployment caused by a recession or other economic downturn. Some level of unemployment always persists in an economy; the unemployment rate never equals or approaches zero. The natural rate of unemployment reflects the sum of two types of unemployment continually present in an economy. The first is frictional unemployment, which exists because of the time required for individuals who are separated from one job to find another job. Frictional unemployment can persist in an economy with plenty of jobs available because workers may have the opportunity to be selective in the jobs they accept, as opposed to taking the first available job they can find. The other component of the natural unemployment rate is structural unemployment, which exists because of a mismatch of skills between workers and the available jobs. Typically structural unemployment results from an improvement in technology that renders a worker's skills obsolete, such as when

automated equipment replaces an assembly line worker. Individuals in this type of situation normally must find a way to improve their skills or training in order to find comparable employment. Finally, the natural rate of unemployment also equates to the rate of unemployment that exists when the economy is at full employment. An economy is at full employment when, basically, a job exists for everyone who wants one. Frictional and structural unemployment remain during full employment, however, and are reflected in the natural rate of unemployment.

Figure 24 depicts the annual U.S. unemployment rate along with the natural U.S. unemployment rate since 1970. Clearly,

the U.S. unemployment rate has spent most of the last four-plus decades at levels well above the natural rate. Also observable from Figure 24 are brief periods each decade when the unemployment rate actually fell below the natural rate. When the economy is at the natural rate of unemployment, essentially every individual in the labor force who wants a job at the current wage rate has one; no surplus of labor exists. However, because the economy is likely expanding at this point, the demand for labor may increase. Firms begin asking current employees to work overtime and start paying higher wages in order to attract individuals who are not in the labor force to become employees. As these workers enter the labor force, the unemployment rate gets pushed below the natural unemployment rate. When the unemployment rate falls below the natural rate, an increase in inflation often results as higher wages can drive up the production costs of individual firms. As seen in Figure 24, a spike in the unemployment rate—sometimes pronounced—frequently follows a period when the unemployment rate fell below the natural unemployment rate. The challenge for economists and those who set economic policy in the U.S. is determining when the economy reaches full employment.

The natural rate has varied over time, as Figure 24 demonstrates. As the Baby Boom generation reached working age and more women entered the workforce, the natural unemployment rate climbed to over 6 percent. By the late 1990s, however, the rate settled at 5.0 percent and remained at this level until the Great Recession began in 2008. The annual rate peaked at 6.0 percent in 2012 according the Federal Reserve Bank of St. Louis



Seasonally-adjusted. Source: Federal Reserve Bank of Saint Louis.

## MEASURING THE NATURAL UNEMPLOYMENT RATE, CONTINUED

and fell to 5.6 percent in 2014. The Bank projects the rate will continue to decline through 2025 to between 5.1 and 5.2 percent.

Alternatively, the group of economists at the Federal Reserve Bank of Chicago maintain the natural rate of unemployment is at least 0.5 percentage point below its March 2015 level. They cite three primary factors for a lower natural rate as of 2015: age, sex, and education. First, because increasing age is associated with lower unemployment, they argue the natural rate is lower because of the aging of the U.S. workforce. As of 2015 most members of the Baby Boom generation compose a portion of workers aged 55 and up, and as a result this age cohort is much larger than in the late 1990s. Similarly, teenagers—a group of workers traditionally associated with relatively high unemployment—are a much smaller segment of the labor force than in the early 1980s. Thus, the authors argue the natural rate has likely declined because more of the labor force now consists of a group with lower unemployment rates, and a group with higher unemployment rates makes up a smaller portion of the labor force.

Similarly, the authors note the share of the population holding a college degree has risen since the early 1980s and unemployment rates for college graduates tend to be considerably lower. Thus, they contend calculations of the natural rate of unemployment should account for this shift. The Chicago Federal Reserve economists also adjust their estimates of the natural rate for gender, although they do not discuss their motivation for its inclusion. Presumably, they account for differences in gender because women now compose a larger portion of the labor force in the U.S. than in years past, and unemployment rates for women tend to be slightly lower than for men across age brackets.

Using 2005 as a base year (which was the last year the actual U.S. unemployment rate reached the natural unemployment rate according to the Congressional Budget Office), the authors use a model of labor force participation to estimate a natural unemployment rate that adjusts for changes in the age, sex, and educational attainment of the U.S. labor force for 1982-2014. They refer to this rate as their baseline rate, which they estimate as of the fourth quarter of 2014 equals 4.9 percent. They contrast this rate with the CBO estimate of 5.4 percent as of January 2015.

The authors also estimate a natural unemployment rate by adjusting only for age and sex due to some critics' arguments regarding the effects of educational attainment. They find even with these adjustments the rate rises only to 5.0 percent. Similarly, when their baseline rate adds the effects of immigration changes to the calculations, the rate again only rises to 5.0 percent.

As to the implications of a lower natural unemployment rate, the authors note it could explain a number of observations about the recovery. If, as their measures of the natural unemployment rate suggest, more "slack" exists in the labor market at current rates of unemployment, then the lack of pressure on wages and inflation in the economy is not surprising. Federal Reserve Chair Janet Yellen has admitted as much, as she stated in a speech last month, "... the unemployment rate today probably does not fully capture the extent of slack in the labor market."

Some issues with the unemployment rate are likely inherent to its calculation. The civilian unemployment rate depicted in Figure 24 is what the U.S. Bureau of Labor Statistics (BLS) refers to as the U-3 rate, its most commonly reported measure. However, the U-3 rate does not count "discouraged workers" as part of the labor force—those workers who would like to have a job but have given up looking for one. Nor does the U-3 rate include underemployed workers, those individuals who are working but would like to work more hours. The broader measure that includes both of these groups as well as all individuals who are so-called "marginally attached" to the labor force is known as the U-6 unemployment rate. The seasonallyadjusted U-6 unemployment rate for the U.S. in April according to BLS was 10.8 percent, double the U-3 rate in April of 5.4 percent. Some proponents argue the U-6 rate provides a more complete picture of the U.S. labor market.

In conclusion, measuring the labor market for an economy as large as that of the U.S. is an enormous and complex task. Economists continue to look for methods to measure unemployment that provide accuracy and understandability to the general public. Nevertheless, when viewing such economic statistics, keeping in mind what goes into them will assist in their interpretation.

### FOR FURTHER READING:

Aaronson, Daniel, Luojia Hu, Arian Seifoddini, and Daniel G. Sullivan. Changing labor force composition and the natural rate of unemployment. Chicago Fed Letter, Number 338. May 2015. Available from: https://www.chicagofed.org/~/media/publications/chicagofed-letter/2015/cfl338-pdf.pdf.