

A SHIFT-SHARE ANALYSIS OF MISSISSIPPI EMPLOYMENT TRENDS, 1984-1994

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As Mississippi plans for the future, a clear picture of any shift in the industrial structure of our state's economy is helpful. Which sectors are increasing in importance and why? Is the observed growth attributable to national or regional trends? Are these trends industry-specific or economy-wide developments? In which sectors does the state hold a comparative advantage and does the existing structure reflect these advantages?

As a means of exploring these questions, a shift-share analysis of the state's employment trends for the period 1984-1994, along with each intervening year-to-year period, was conducted. An examination of the overall period suggests that much of the growth occurring in the state has been due to national growth trends and, to a lesser extent, the comparative advantages of the state. However, the economic boom of the early 1990s is attributable to the particular characteristics of the state, rather than a growing national economy or the particular mix of industries within the state, though we have benefited from these factors as well.

The state's growth rate exceeded the nation's in manufacturing, retail trade and services. Within manufacturing, the durable goods sectors have done especially well in Mississippi relative to their performance nationally. The health and gaming industries as well as business services have heavily supported the exceptional growth within the state's service sector. Much of the comparative advantage identified in the state's manufacturing sectors has been due largely to a more rapid transition to service industries at the national level, rather than to dramatic expansions in the state's manufacturing sector. However, the advantages which have been identified within the state's service

sector suggest that Mississippi is also performing well with regard to the move into services. These results are more completely discussed below. But first, a general overview of the shift-share technique is presented.

The Shift-Share Technique

The shift-share technique (S-S) is essentially a snapshot in time of trends in economic activity. As a snapshot, the analysis indicates what has happened over a given time period. Only to the extent the past is a predictor of the future can this snapshot be used for forecasting. Nevertheless, an understanding of what has happened can sharpen our view of what might happen in the future.

In general, the analysis consists of examining a change or shift in some measure of economic activity, in this case employment, and disaggregating that change into its smaller components or sources of change, that is, to find each component's "share" of the "shift". This study disaggregates changes in employment into four components. First, the national share effect (NS) identifies that portion of the change which can be attributed to national overall growth. This component assumes each industry represented in the regional economy grows at the national average growth rate. Second, the industrial mix effect (IM) identifies that portion which is due to the national trends of individual industries. Industries with above national average growth rates are considered fast-growth sectors and yield a positive IM effect. Those sectors with below-national-average growth rates are considered slow-growth sectors and yield a negative IM effect. Growth is enhanced when a state has a concentration of industries which are grow-

ing relatively fast nationally. (Any component can have a negative effect. A negative effect is seen as unrealized potential growth. For example a negative industrial mix effect identifies the number of jobs not created due to the slow national growth of a particular industry).

The third and fourth components reveal the influence of the characteristics which are peculiar to the state. Identifying these regional influences are particularly important since these factors can be strongly influenced by state policy. The third component, known as the competitive effect (CE), identifies the amount of the shift due to the comparative advantage or disadvantage of the state with regard to the sector being considered. A comparative advantage is assumed to exist for a sector when its state growth rate exceeds the nation's. The fourth and final component, the allocation effect (AE), identifies the amount of the shift due to the size of the sector in the state's economy relative to the nation. For example, suppose a particular state is especially dependent on agriculture such that 30 percent of its employment is derived from this industry as opposed to 15 percent nationally. Furthermore, suppose the state holds a comparative advantage in this sector such that employment growth exceeds that of the nation. A portion of the employment change should be attributed to this comparative advantage. Yet growth is further enhanced by the sector's large size in the state. Not only does the state enjoy a high growth rate in this sector, but that rate is applied to a relatively large sector. The allocation effect attempts to capture this type of regional influence.

To understand this effect more clearly, recall that the sign of the competitive effect identifies comparative advantage (positive) or disadvantage (negative) of the state in an industry, where that advantage is identified by an above-national growth rate. A positive allocation effect occurs if the region

either specializes in a sector for which it enjoys a comparative advantage or does not specialize in a sector for which it has a competitive disadvantage. A negative allocation effect occurs when the region specializes in a sector for which it has a comparative disadvantage or fails to specialize in a sector which is a comparative advantage for the region. Specialization is measured relative to the nation's distribution of employment. If the sector's share of total regional employment exceeds the nation's, specialization is assumed.

Mississippi's Total Employment 1984-1994

During the period of 1984 - 1994, total state employment increased by 231,012 persons. Had Mississippi's employment grown at the national rate, only 217,410 jobs would have been added (see Table 1). The question which the shift-share analysis attempts to answer is why the state added 13,602 more jobs than it would have with the national growth rate.

First, the industrial mix effect indicates that the positive effects of fast-growth industries located in the state exceeded the negative effects of slow-growth industries. As a result, Mississippi gained 1,303 employees. Thus, a portion of the growth can be traced to a mix of industries which included a greater concentration of fast-growth industries than in the nation.

Second, Mississippi's employment trends indicate a positive competitive effect which suggests a comparative advantage. Comparative advantage accounts for 16,990 employees added to the Mississippi economy between 1984-94. In other words, growth is traced to industrial sectors which grew faster in the state than these same industries grew nationally. However, potential state employment growth was reduced because of less than optimal allocation of resources to certain industries. Had the state's employment been distributed more in line with it's

Table 1. **SUMMARY DATA FOR SHIFT-SHARE ANALYSIS OF MISSISSIPPI EMPLOYMENT 1984-1994**

<u>Industrial Sector</u>	<u>Total Shift</u>	<u>National Share Effect</u>	<u>Industrial Mix Effect</u>	<u>Competitive Effect</u>	<u>Allocation Effect</u>
Total Employment	231,012	217,410	1,303	16,990	(4,691)
Wage and Salary	218,810	181,366	(8,949)	47,392	(999)
Proprietors	12,202	36,045	10,252	(30,402)	(3,693)
Farm	(27,707)	15,392	(29,712)	(5,745)	(7,642)
Agric. Serv., Forestry, Fisheries & Other	4,656	1,928	3,600	(884)	11
Mining	(6,609)	2,922	(8,079)	(1,247)	(205)
Construction	11,081	10,643	(39)	492	(15)
Manufacturing	43,887	44,132	(53,775)	43,407	10,123
Nondurable Goods	11,934	19,440	(17,976)	7,806	2,664
Durable Goods	31,953	24,692	(35,025)	36,464	5,821
Transportation and Public Utilities	13,086	9,053	(214)	4,905	(658)
Wholesale Trade	3,900	8,572	(2,767)	(2,395)	489
Retail Trade	46,337	32,504	7,268	7,121	(556)
Finance, Insurance, and Real Estate	8,047	10,534	(2,238)	(393)	143
Services	107,225	38,373	49,492	26,495	(7,135)
Government and Government Enterprises	27,109	43,357	(11,079)	(4,051)	(1,118)

SOURCE: Center for Policy Research and Planning, Spring 1996.

comparative advantages, an additional 4,691 persons would have been employed during this period. To more fully understand these general trends a closer examination of each sector is required.

Specific Industrial Sectors

An examination of the industrial mix effect for individual sectors reveals the amount of employment growth which can be traced to the national trends in each of these sectors. Almost 50,000 employees were added to the state's economy through the above-average growth occurring in the service sector nationally. Within the service

sector, health services stands out as a particularly important industry during the 1984-94 period. However, potential employment in manufacturing was reduced by almost 54,000 people due to slow national growth. This loss was felt in both durable and nondurable manufacturing in general, and electronic equipment excluding computer equipment in particular. Many of these manufacturing jobs are going overseas as the nation's industrial structure becomes more service-oriented.

The analysis also indicates that proprietor employment grew at an above-average rate while wage and salary

employment grew at a rate below average. This trend is in part a product of the corporate restructuring which took place during 1984-94. Many people who lost their jobs began their own businesses. Also, in order to reduce overhead costs, many firms began "out-sourcing" services which were once done "in-house". In many cases, service businesses were formed from the departments which were eliminated in this restructuring. These trends contributed to the fast growth observed in the service sector.

The competitive effect indicates that Mississippi enjoyed a comparative advantage in numerous sectors. In particular, state employment growth exceeded the nation's in such sectors as durable and nondurable manufacturing, retail trade and services. Recall that nationally both durable and nondurable manufacturing grew at below-average rates, as many of these jobs went overseas and the nation moved towards the service industry. Mississippi appears to be moving towards services as well, but managed to maintain growth rates in manufacturing which were above the nation's. While on the one hand this is a positive factor for the state, decline in manufacturing is likely as the state follows the national trend toward a greater emphasis on service sectors.

The most notable sectors in which a comparative disadvantage was observed include: proprietors, mining, wholesale trade, apparel and accessory stores, home furniture and furnishing stores, government, as well as all of the finance, insurance, and real estate sectors except depository and non-depository credit institutions and real estate agents. The national growth rate for most of these sectors was below average with the state's rate being even lower. One notable exception is proprietors' employment, which has already been identified as a fast-growth sector nationally. Mississippi did not a-

chieve the high growth rate observed nationally in this sector.

Strong positive allocation effects were observed in manufacturing in general, as well as the specific sectors of lumber and wood products, furniture and fixtures, and food and kindred products. Strong negative allocation effects were observed in machinery and computer equipment. Mississippi held a comparative advantage in this sector, meaning the state growth rate exceeded that of the nation, yet it represented a smaller share of state employment than nationally. A similar story was true for primary metal industries, motor vehicles and equipment, instruments and related products, transportation by air, eating and drinking places, and business services. Thus the state held a comparative advantage in these sectors, but did not specialize in them.

The national growth rate exceeded that of the state in farm employment, yet farming's share of the state's total employment exceeded that of the nation. The same was true of oil and gas extraction, nonmetallic minerals except fuels, heavy construction contractors, private household services, and state and local government. In these cases, the state specialized in sectors for which it held a comparative disadvantage.

Sensitivity Analysis

One limitation of the S-S analysis lies in its sensitivity to the years selected for analysis. If either the beginning or ending year is unusual, unusual results will be generated. In order to compensate for this sensitivity, the S-S technique should be applied to several time periods. To this end, each interval year was compared to the previous year using the S-S technique.

For the overall period 1984-94, we saw earlier that had the state grown at the national rate, positive growth would have occurred. But, in the case of the period 1990-91, the state would have experienced a decrease of over 10,000 employees.

Actually, the state realized an increase of slightly more than 2,400 employees. Much of the reason for this positive growth in the face of negative national trends was the relative comparative advantage of many sectors in Mississippi economy. Also contributing to the positive growth, though to a lesser extent, was a mix of industries which enjoyed above-average growth nationally (industrial mix effect).

Except for the 1986-87 and the 1988-89 periods, Mississippi's industrial mix yielded positive overall growth for the state. In these two periods however, the selection of industries representing the state's economy was too heavily weighted in sectors for which nationally the growth rates were below average. Yet even in these two periods, the effects were fairly small, meaning the state maintained a relatively large amount of employment in sectors with above average national growth rates.

Perhaps the most interesting story is found in the changes occurring in the competitive and the allocation effects. As already discussed, Mississippi held a comparative advantage in terms of employment growth relative to the nation during the period 1984-94. An examination of the intervening years reveals that this trend did not emerge until the beginning of the 1990s. In each of the interval periods prior to 1990, a negative competitive effect was observed, indicating the state grew more slowly than the nation. In general, the magnitude of this competitive disadvantage diminished with each year between 1984 and 1989. Beginning with the 1990-91 period, a positive competitive effect is observed, indicating a comparative advantage.

The comparative disadvantage of the state's economy observed in the mid-to-late 1980s was not driven by any particular sector; rather most sectors failed to grow at the rate observed nationally. The turnaround of the 1990s has been driven largely by a state growth rate that exceeded the nation's in the services sector, (primarily

health services, business services, as well as amusement and recreation, i.e. gaming) and to a lesser extent the manufacturing sectors (durable goods more than nondurables).

In each of the intervening periods between 1984 and 1991, a negative allocation effect was observed. Given the previous discussion of the competitive effect, the negative allocation effect can be traced in general to relative specialization in sectors for which the state held a comparative disadvantage. This observation holds for each of the intervening periods between 1984 and 1990. In the period 1990-91 the state enjoyed a comparative advantage over the nation, yet maintained a negative allocation effect. The implication is that the state failed to specialize in those sectors for which it held a comparative advantage. Apparently, this "poor" allocation was corrected. In 1991-92, 1992-93 and 1993-94 the state's distribution of employment reflected its comparative advantage and a positive allocation effect was observed.

Summary

Mississippi enjoyed an economic boom throughout the first half of this decade. Much of this growth can be linked to the particular characteristics of the state rather than either a growing national economy or a mix biased towards industries which were growing fast nationally. Indeed, much of the popular press has addressed the boom of the southeastern states. Mississippi has certainly enjoyed being a part of this expansion. The state has held a comparative advantage in the service sectors as well as in manufacturing. In the case of manufacturing, much of the comparative advantage reflects relatively poor growth nationally. The implication is that the role of Mississippi's manufacturing sector within the state's economy could be reduced, following the national trends. More recent data suggests this may in fact be occurring.

Over the past few years the state has distributed its employment among the various industrial sectors in a way that reflects its comparative advantage. Movement into health services and amusement and recreation services as well as into durable goods manufacturing has contributed to relatively high growth in the state. This growth comes from both better than national growth rates in these sectors, as well as from a distribution of employment which emphasizes these sectors relative to the nation.

The reader wishing further details is referred to Working Paper No. 9601 "Employment Trends in Mississippi: A Shift-Share Analysis," published by this office. The author presents his findings for a more detailed industry breakdown in this publication.
