Good Times and Bad Contributions to regional industrial growth are not constant over time. Changing economic conditions (recession, inflation, exogenous shocks) are likely to affect industry growth within the national and regional economies and thus alter structural and competitive contributions. Consider two subperiods of similar length but dissimilar economic conditions—1961-70 and 1970-82—again measuring from trough to trough on the business cycle. The first subperiod was characterized by a strong tendency toward high and stable inflation and low and stable unemployment and only minor recessions. The second subperiod was characterized by high and accelerating inflation, very severe recessions, and energy price shocks. For the period 1961-70, there is a clear and surprising story to tell (see chart 2). The more stable economic conditions of the 1960s were accompanied by a strong tendency among employment-growth rates in all of Ohio's industries and industry aggregates to approach the national standard. Although the structural shift toward nonmanufacturing and the competitive lag of most of Ohio's industries still were apparent, the differentials were much less pronounced.

Ohio Manufacturing Industries. Some linkage probably exists between manufacturing and nonmanufacturing industries. The production of goods has become increasingly complex. Firms have become larger, with a diversity of product lines. Firms also have become more highly regulated. These factors have promoted employment growth in services, financial, insurance, real estate, and public utilities and in other areas within the nonmanufacturing sector. Moreover, increases in the output of nonmanufacturing industries often is not traded in national markets. Although this is not uniformly true (for example, tends to be small in scope), major segments of nonmanufacturing may be locally dependent, relying on manufacturing for growth prospects.

While the transmission mechanism here is far from clear, it may be that industry-specific and region-specific factors account for a smaller proportion of growth differentials than we might think. On balance, competitive effects outweigh structural effects because of the greater-than-expected responsiveness. We especially need to determine why the industries where Ohio has long been outperformed its national counterparts, even under the most favorable conditions. Resource costs and productivity are possible explanations, but more evidence is needed.

Nonmanufacturing jobs are not replacing manufacturing jobs. Nonmanufacturing jobs in Ohio are expanding faster than manufacturing jobs in the state, but not as fast as nonmanufacturing jobs nationally. This suggests linkages between industries that "tie" the nonmanufacturing sector to the manufacturing base. If so, the nature of these ties needs to be examined more fully.

Concluding Observations Comparisons of employment growth in Ohio presented here probably pose more questions than provide answers to the regional industrial growth puzzle. No attempt was made to explain specific industrial conditions, and general explanations were more hypothesis than test of hypothesis. Still, four conclusions, or observations that might guide further research, seem warranted:

1. Slow economic growth over the long term in Ohio is associated with structural and competitive elements. In terms of the multi-firm product analogies, we are uniformly represented in slow-growth markets and are losing market share.

2. Neither structural nor competitive differentials are constant over time. A healthy national economic climate significantly reduces resource utilization, as in the 1960s, may recur. Moreover, long periods of relatively stable prices and high capacity utilization were common in the 1960s. Short-term changes in planning horizons and reduce growth limitations com- monly associated with short-term stabilization are also significant. This also may be especially significant in manufacturing, where long lead times in product and process development are important, and payback periods on investment may be lengthy as well. A stronger macroeconomic climate improves competitive prospects in nonmanufacturing industries, presumably because of linkages between market economic and nonmanufacturing activities.

3. Admittedly, the elements in this framework are complex, and structural and regional economies are far from clear. Nevertheless, there is a strong presumption that general economic conditions (inflation and unemployment) are transmitted to regions through both structural and competitive mechanisms, and that a healthy national economic environment would ease the stress on regional economies in structural and competitive transitioning.

Address Correction Requested: Please send corrected mailing label to the Federal Reserve Bank of Cleveland, Research Department, P.O. Box 6387, Cleveland, OH 44101

Economic Commentary

SOURCES OF REGIONAL GROWTH DISPARITY: THE CASE OF OHIO'S INDUSTRIES

by Roger H. Hinderliter

The views stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

1. This article is a revised, shortened version of a December 1983 Economic Commentary, "The Case of Ohio's Industries," Federal Reserve Bank of Cleveland, November 18, 1983. The complete paper is available from the author.

Another explanation rests on the role of actual and potential changes in economic activity. As national output evolves structurally and becomes more heavily weighted toward services or other nonmanufacturing activities, manufacturing industries and manufacturing workers become relatively more slowly. Increasingly, it appears that much of the problem is associated with structural competitiveness. While competitive advantages or disadvantages often are illustrated in terms of international comparisons (such as States vs. Japan), they are no less important among regions within the United States. In the simplest sense, Ohio no longer attracts new firms or expansions of existing firms at the same rate as other states in the United States. A Regional Industrial Framework

The source of regional growth in the national economy, and the rate of employment growth in a state or region, depends in part on the rate of change in the national and regional economies. One explanation of the behavior of a regional or state economy is the framework of economic activity. The regional economy is part of a national or world economy, where regional or state economies in the United States. It is most acute in states such as Ohio. Manufacturing industries where Ohio has long been outperformed its national counterparts, even under the most favorable conditions. Resource costs and productivity are possible explanations, but more evidence is needed.

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A region also participates with others in evolutionary changes in economic activity. If, for example, as per capita income rises, economic activity evolves through initial, secondary, and tertiary stages—from agriculture to manufacturing to services—all regions would reflect this pattern.

Despite the common factors, no region is simply a miniature version of the national economy. Natural resources differ across regions, as do the size and composition of the industrial base inherited from the past. These features impart a uniqueness, or inertia, to regional economies that can be prolonged over a long period of time. As a result, evolutionary changes in economic activity need not be transmitted to regions equally or proportionately to existing size.

Neither are national market trends reproduced precisely at the regional level; rather, sharing national trends is accomplished by slow adjustments in regional labor costs through market linkages among regions. For example, if labor force in region B, decreases, adjustments in relative wages can be expected to equalize labor-cost differentials. These kinds of rigidities also imply that while migration flows are encouraged by national trends in labor markets, investment patterns, and technological advances. A region also is influenced by regional differences to converge toward the national average. The tendency for regional differences to converge is a natural presumption, but convergence of labor costs and under competitive contributions to industry growth rates in Ohio. Differences in valuation of the work force in different regions make it difficult to exploit and equalize labor-cost differentials. This discussion suggests two channels of regional growth discrepancy—the industrial base inherited from the past and a region's competitive position vis-à-vis the national economy. A region may grow relatively fast (or slowly) because it holds a relatively large concentration of industries that are growing rapidly (or slowly) throughout the nation. Thus, the region has a favorable (or unfavorable) industrial structure. A region also may grow relatively fast (or slowly) because its own industries outperform (or underperform) national counterparts in their respective industries. Thus, the region has a favorable (or unfavorable) competitive position. Perhaps this can be clarified by an analogy with a multiproduct firm. That firm would grow rapidly or slowly, relative to standards (such as a regional average rate of growth, depending on the composition of its product lines in fast- or slow-growing markets, and whether it is increasing or decreasing market share in each of its lines). The mechanist behind this expression is more fully developed in the longer paper mentioned in text 1.

Employment Growth in Ohio

Employment growth in selected Ohio industries for the period 1949-82 (measured from trough to trough of the business cycle) is shown in chart 1. The axes are labeled in terms of the structural and competitive contributions to industry growth rates in Ohio. Diagonal lines represent equal growth curves, which are alternative structural and competitive arrangements that yield the same industry-growth rate. Three of these curves are labeled in reference to industrial growth rate. The top right quadrant in the chart represents the "best of worlds," where both structural and competitive components are sources of industry growth above the national average. The bottom left quadrant represents the "worst of worlds," where both the structural and competitive components depress industry growth rate.

An examination of Ohio's industry-growth rates suggests two general characteristics of the industrial sector in the postwar period. First, a large concentration of zero-growth or near-zero-growth industries exists in the state, including leading manufacturing and its durable goods divisions and all selected manufacturing industries except transportation equipment and chemicals and petroleum. Second, the structural contribution to growth is generally positive for nonmanufacturing industries and negative for manufacturing industries.

The pervasiveness of underperformance by Ohio's industries is disturbing and, on balance, outweighs the cumulative effects of an unfavorable industrial structure. Between 1949 and 1982, the total employment growth in Ohio at 1.7 percent per year, on average, a shortfall of 1.5 percentage points below the national average of 3.2 percent. Nearly 0.4 percentage point of the shortfall is associated with Ohio's industrial structure. The shortfall resulting from some underperformance by Ohio's industries is about 1.1 percentage points. This strongly suggests that the demand for supply, and demand factors, including the cost and productivity of resources, transportation, and interregional linkages, have more to do with the observed employment growth patterns than do evolutionary changes in economic activity and rigidities of regional industries, but the competitive contributions are nearly always negative.

The exceptions again are transportation equipment and chemicals and petroleum. Indeed, these two industries escape the zero-growth cluster because the competitive contribution, although moderate, pays the structural costs.

The positive structural contribution is especially strong in service industries in finance, two industries that have become prototypical examples of rapid-growth possibilities. In Ohio, however, the supporting unequal rates and resources were not fully developed in the longer paper mentioned in text 1.
and resources, a region is influenced by national trends in labor markets, investment patterns, and technological advances. A region also participates with others in evolutionary changes in economic activity. If, for example, as per-capita income rises, economic activity evolves through secondary, tertiary stages—agriculture to manufacturing to services—all regions would reflect this pattern.

Despite the common factors, no region is simply a miniature version of the national economy. Natural resources differ across regions, as do the size and composition of the industrial base inherited from the past. These features impart a uniqueness, or inertia, to regional economies that can be prolonged over a long period of time. As a result, evolutionary changes in economic activity need not be transmitted to regions equally or proportionately to existing size.

Neither are national market trends reproduced precisely at the regional level; rather, sharing national trends is accomplished through market linkages among regions. For example, if labor-force growth in region B exceeds that of region A, adjustments in labor costs can be expected to create incentives for labor to migrate from region A to region B, equalizing labor costs and underlying labor-force growth rates. Both A and B converge toward the national average. The tendency for regional differences to converge is a natural presumption, but convergence may be slow and some differences persist.

While migration flows are encouraged by labor-cost differentials, there are also costs, pecuniary and nonpecuniary (social reluctance, for example, to dislocate oneself), that discourage migration. If workers are willing to migrate, other arrangements (for example, differences in unionization of the work force) may make it difficult to exploit and equalize labor-cost differentials. These kinds of rigidities also may persist pre-1948-82 (measured from the trough to trough of the business cycle) and shown in chart 1. The axes are labeled in terms of the structural and competitive contributions to industry growth rates in Ohio. Agonial lines represent equal growth curves, which are alternative structural and competitive contributions to industry growth rates. The top right quadrant in the chart represents the "best of worlds," where both structural and competitive components are sources of industry growth above the national average. The bottom left quadrant represents "worst of worlds," where both the structural and competitive components depress industry growth rate.

An examination of Ohio's industry-growth rates suggests two general characteristics of the state's industrial sector in the postwar period. First, a large concentration of zero-growth or near-zero-growth industries is about 1.1 percentage points. Between 1949 and 1982, total employment in Ohio increased at 3.2 percent. Nearly 0.4 percentage point of the shortfall is associated with Ohio's industrial structure. The shortfall resulting from some underperformance of Ohio's industries lag the national industries. The exceptions again are transportation and chemicals and petroleum. Indeed, these two industries escape the zero-growth cluster because the competitive contribution, although moderate, pays no penalty. The positive structural contribution is especially strong in services and finance, two industries that have been prototypical examples of rapid-growth possibilities in Ohio. In other words, supporting unemployment and finance industries expanded employment less rapidly than their national counterparts. Nonmanufacturing industries are not replaced by manufacturing jobs. Though benefiting from strong growth from the national economy, Ohio's nonmanufacturing industries lag the national industries as much as many manufacturing industries.

The pervasiveness of underperformance by Ohio's industries is disturbing and, on balance, outweighing other examples of rapid-growth possibilities. Second, the structural contribution to growth is generally positive for nonmanufacturing industries and negative for manufacturing industries. The mechanings behind this expression are more fully developed in the longer paper mentioned in note 5.
and resources, a region is influenced by national trends in labor markets, investment patterns, and technological advances. A region also participates with others in evolutionary changes in economic activity. If, for example, as per capita income rises, economic activity evolves through phases of primary, secondary, and tertiary stages—from agriculture to manufacturing to services—all regions would reflect this pattern.

Despite the common factors, no region is simply a miniature version of the national economy. Natural resources differ across regions, as do the size and composition of the industrial base inherent in the past. These features impart a uniqueness, or inertia, to regional economies that can be prolonged over a long period of time. As a result, evolutionary changes in economic activity need not be transmitted to regions equally or proportionately to existing size.

Neither are national market trends reproduced precisely at the regional level; rather, sharing national trends is accomplished by smoothing through market linkages among regions. For example, if labor-force growth in region A exceeds that in region B, adjustments in labor costs differentials may be cumulative. Thus, the region has a favorable (or unfavorable) industrial structure. A region may grow relatively fast (or slowly) because it holds a relatively large concentration of industries that are growing rapidly (or slowly) throughout the nation. Thus, the region has a favorable (or unfavorable) industrial structure. A region may grow relatively fast (or slowly) because it has its own industries outperform (or underperform) their regional counterparts in the national economy. Thus, the region has a favorable (or unfavorable) competitive position. Perhaps this can be clarified by an analogy with a multiproduct firm. That firm would grow rapidly or slowly, relatively fast and stable, depending on the composition of its product lines in fast- or slow-growing markets (the structural component), and whether it is increasing or decreasing market share in each of these product lines (the competitive component).

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Good Times and Bad

Contributions to regional industrial growth are not constant over time. Changing economic conditions (recession, inflation, exogenous shocks) are likely to affect industrial growth within the national and regional economies and thus alter structural and competitive conditions. Consider two subperiods of similar length but dissimilar economic conditions—1961-70 and 1970-82—again moving from trough to trough in the business cycle. The first subperiod was characterized by a strong tendency toward high and stable inflation and only minor recessions. The second subperiod was associated with high and accelerating inflation, very severe recessions, and energy price shocks. For the period 1961-70, there is a clear and surprising story to tell (see chart 2). The more stable economic conditions of the 1960s were accompanied by a strong tendency toward nonmanufacturing industries and regions with greater diversity of product lines. Firms are likely to experience more structural and competitive advantages over the national industry.

Business-cycle dynamics are part of the totally different experience of Ohio’s industries in the 1960s and the 1970s. The demand for manufacturing goods is highly sensitive to overall economic growth. Recession is concentrated in manufacturing industries and regions with the most marginal facilities. If recessionary pressures are minimized, structural and competitive growth differentials dissipate. Moreover, long periods of relatively stable prices and high capacity utilization typical of the 1960s may lengthen planning horizons and reduce growth limitations commonly associated with short-term business cycles. This also may be especially significant in manufacturing, where long lead times in product and process development are important, and payback periods on investment may be lengthy as well. A stronger manufacturing climate improves competitive prospects in nonmanufacturing industries, presumably because of linkages between malleable economic and nonmanufacturing activities. Admittedly, the elements in this analysis reflect structural and competitive conditions. Regional economies are far from clear. Nevertheless, there is a strong presumption that general economic conditions (inflation and unemployment) are transmitted to regions through both structural and competitive mechanisms, and that a healthy national economic environment would ease the strain on regional economies in structural and competitive transitions.

While the transmission mechanism here is far from clear, it may be that industry-specific and region-specific factors account for a smaller proportion of growth differentials than we might think.

Concluding Observations

Comparisons of employment growth in Ohio presented here probably pose more questions than provide answers to the regional industrial growth puzzle. No attempt was made to explain specific industrial situations, and general explanations were more hypothesis than test of hypothesis. Still, four conclusions, or observations that might guide further research, seem warranted:

- Slow economic growth over the long term in Ohio is associated with structural and competitive elements. In terms of the multi-product firm analogy, we are unappreciated roles played in slow-growth markets and are losing market share.
- Neither structural nor competitive differentials are constant over time. A healthy national economic climate significantly reduces regional problems of both types.
- The major source of regional economic growth is employment, very severe recessions, and energy price shocks. For the period 1961-70, there is a clear and surprising story to tell (see chart 2). The more stable economic conditions of the 1960s were accompanied by a strong tendency toward nonmanufacturing industries and regions with greater diversity of product lines. Firms are likely to experience more structural and competitive advantages over the national industry.
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Another explanation rests on the limited scope of regional economies in structural and competitive changes in economic activity. As national output evolves structurally in many areas, so do nonmanufacturing industries in different regions. Firms are able to expand their size faster as nonmanufacturing jobs expand, than they are able to expand as manufacturing jobs expand, very severe recessions, and energy price shocks. For the period 1961-70, there is a clear and surprising story to tell (see chart 2). The more stable economic conditions of the 1960s were accompanied by a strong tendency toward nonmanufacturing industries and regions with greater diversity of product lines. Firms are likely to experience more structural and competitive advantages over the national industry.

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