

Industry Trends: Jobs and Earnings

Kentucky is experiencing a boom in services employment similar to that occurring nationwide. In the last 25 years, the services-producing sector accounted for 8 out of every 10 new jobs. Yet employment in Kentucky has not shifted to the services-producing sector nearly as quickly as it has in other states. Kentucky still has a relatively large percentage of its workforce in goods-producing industries. Employment in apparel, primary metals and motor vehicles has grown especially quickly relative to the rest of the nation. Kentucky's urban counties have had more employment growth overall, but rural counties have had much more growth in manufacturing employment. Counter to national trends, service sector earnings in Kentucky remain considerably below those in manufacturing, but the gap is narrowing, if slowly. The state's low rate of proprietorship formation and stagnant manufacturing wages are concerns. Identifying training and employment options for low-skilled workers displaced by technological advance in the services sector may become a key challenge facing policymakers in the next century.

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The U.S. economy experienced two fundamental transformations in the last 200 years. First, technological change in agriculture (as well as forestry and mining) and growth in mass production led to a massive out-migration of workers from extractive to goods-producing industries, in the process converting society from an agrarian to an industrial base. The industrial revolution would not have proceeded as rapidly as it did without the ready availability of workers coming off farms. That only a small share of today's workforce meets all of the food needs of this country is a hallmark of economic development, one admired by other countries throughout the world. Second, the advent of computer-driven, numerical control processes fundamentally transformed the goods-producing (manufacturing) sector, with a similar substitution of technology for human labor as had occurred earlier in farming. As manufacturing workers were released from factories, they found employment in a booming new sector: services.

Technological change, along with improvements in human and biological capital, as well as legal institutions, has traditionally been one of the main sources of economic growth. It led first to the release of labor out of agriculture into manufacturing and then from manufacturing into services. These shifts give rise to the question: Will technological change eventually lead to a similar release of workers out of the services sector and, if so, to which sector(s)? Or have employers in the service sector already exploited most of the gains possible from technological change?

At present, employment in the service-producing sector is expanding rapidly, although not all industries within the sector are affected equally. The banking industry, for example, is expected to reduce employment levels significantly over the next decade. But even as technology reduces the demand for labor in banking, it may increase the demand for labor in computer services. As the industrial structure of a dynamic market economy changes, occupational demands, skill requirements, wages, benefits, and the length and stability of employment also change.

Kentucky/U.S. Trends

Total full- and part-time employment in Kentucky, including wage and salary and proprietor jobs, grew by 735,000 jobs between 1969 and 1994, from 1.33 to 2.06 million jobs.¹ Thus, for every 100 jobs that existed in 1969, 55 *net* new jobs were created in the state between 1969 and 1994. In comparison, the U.S. economy generated 59 new jobs per 100 jobs in 1969. While the rate of increase in *wage and salary* jobs in Kentucky (61 percent) exceeded the national increase (55 percent), the increase in *proprietorships* in the state (34 percent) was significantly less than the national increase (87 percent). If the number of proprietorships in Kentucky had grown at the national rate, total job growth in the state would have been higher by about 138,000 jobs (19 percent) over this 25-year period. The high rate of proprietorship growth relative to wage and salary growth nationwide may largely reflect recent downsizing in corporations.²

Kentucky is experiencing a boom in services employment similar to that occurring nationwide: In the last 25 years, the services³ sector alone accounted for *4 out of every 10* new full- and part-time private jobs created in the state. The more broadly defined service-producing sector, which includes the service sector as well as transportation, communications and public utilities (TCPU); retail-wholesale trade; and finance, insurance and retail estate (FIRE) services, accounted for more than *8 out of every 10* new jobs.

Yet the well documented shift underway, from extractive and goods-producing industries to the services sector, has been slightly less pronounced in Kentucky than in the nation (Table 13.1). Employment was more heavily concentrated in extractive industries in the state in 1994 than was the case nationally in 1969, and the decline in goods-producing employment over that period was considerably lower in Kentucky (4.0 percentage points) than nationally (9.3 percentage points).

Sector	U.S.		Kentucky	
	1969	1994	1969	1994
Extractive (primary)	5.1%	2.7%	13.1%	7.0%
Goods-producing (secondary)	27.5%	18.2%	24.8%	20.8%
All Services (tertiary)	67.4%	79.1%	62.2%	72.2%
Total	100%	100%	100%	100%
No. of jobs (in thousands)	90,878	144,391	1,328	2,063

Note: Extractive includes farming and mining; goods-producing includes construction and manufacturing; and services consists of all other sectors, including agricultural services, fisheries and forestry.

Source: Authors' calculations using Dept. of Commerce REIS data.

One way of interpreting the data in Table 13.1 is that Kentucky is less prepared than other states to develop a services-oriented economy, since a relatively larger share of its labor force is employed in the "old econ-

omy" (primary and secondary sectors). A different interpretation is that decisionmakers in Kentucky have deliberately sought to attract new and existing manufacturing employment from elsewhere in the nation into the state as a basis for generating long-term economic

¹ The data are obtained from the Bureau of Economic Analysis, US Department of Commerce, Regional Economic Information System (REIS). This particular source was chosen, even though it contains data only through 1994, because it allows a breakdown of trends by urban and rural areas. These are the number of jobs estimated to exist in Kentucky; some of the jobs may be held by residents of bordering states, while some Kentuckians commute to jobs in neighboring states. The available data do not allow us to distinguish between the number of jobs held by Kentuckians as opposed to out-of-state residents.

² See, for example, Beyers, W. B. (1996, April). Trends in producer services growth in the rural heartland. *Economic forces shaping the rural heartland*. Kansas City, KA: Federal Reserve Bank of Kansas City.

³ This sector includes: hotels and other lodging places; personal services; private households; business services; auto repair, services and garages; miscellaneous repair services; motion pictures; health services; social services; museums, botanical, zoological gardens; membership organizations; engineering and management services; and miscellaneous services.

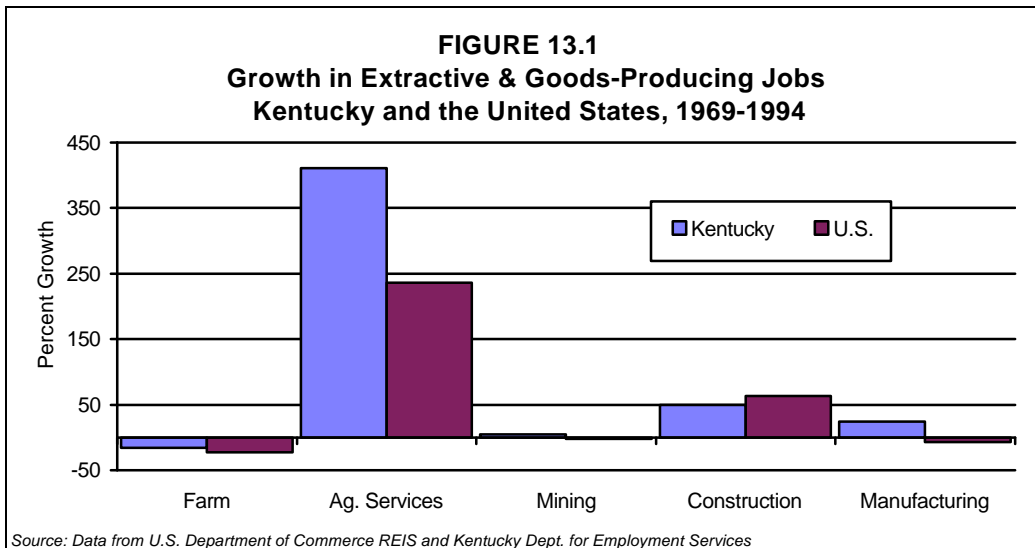
wealth. Many observers view some of these manufacturing sectors, such as motor vehicle parts production and assembly, as being on the cutting edge of modern industrial processes, including the intensive use of information technologies, total quality management (TQM) principles, and customer responsiveness.

Also, according to Commerce Department (RIMS II) estimates, the motor vehicle assembly industry has high employment and earnings multipliers. This means that each new job and dollar earned in that industry in Kentucky is associated with the creation of a significant number of new jobs and additional earnings in the state. For example, when the Toyota manufacturing plant in Georgetown hires additional workers to increase the production of Camrys, other jobs are created in Kentucky in the satellite plants which supply Toyota with parts (such as car seats, plastic parts, electronic engine components, etc.). Furthermore, when the newly hired workers spend their income on food, shelter and clothing, even more jobs are created as a result in the state. In Kentucky, only forestry and fishery products and food manufacturing have higher employment multipliers than the auto assembly industry.⁴

Employment growth in motor vehicle parts production is only one example of the shifts in employment in Kentucky's industrial base. The Bureau of Labor Statistics (BLS) identifies three major sources of employment growth or decline in an industry:

- Changes in the demand for the industry's product
- Changes in technology
- Changing employment practices of business⁵

Examples of the latter include (domestic and international) outsourcing and hiring of temporary workers. In the subsequent analysis, we examine employment trends in the following



major industry subdivisions:⁶ farming; agricultural services, forestry, and fishing; mining; construction; manufacturing; transportation, communications and public utilities (TCPU); wholesale trade; retail trade; finance, insurance and real estate (FIRE); services; and government and government enterprises.

⁴ U.S. Department of Commerce. (1992). *Regional multipliers: A user handbook for the regional input-output modeling system (RIMS II)* (2nd ed.). Washington DC: Author.

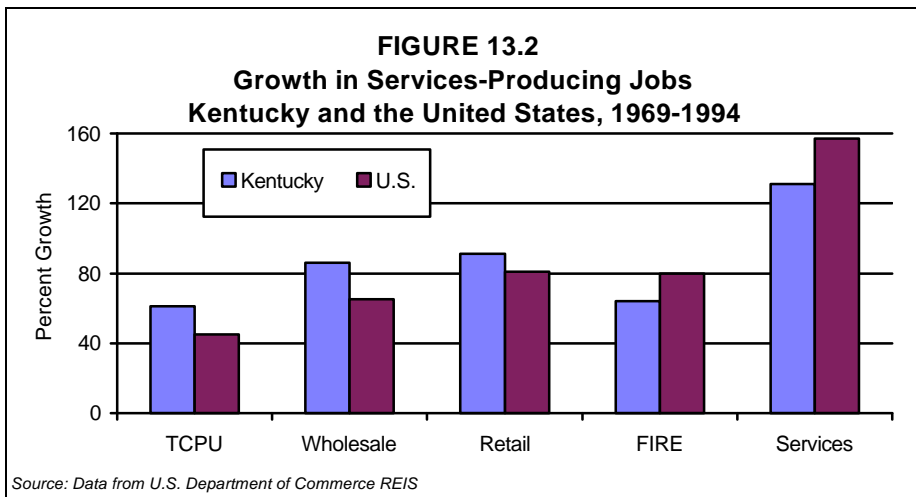
⁵ U.S. Bureau of Labor Statistics. (1995, Fall). *Occupational Outlook Quarterly*, 39, 6.

⁶ Office of Management and Budget. (1987). *Standard industrial classification manual, 1987*. Washington, DC: Executive Office of the President.

The labor-displacing effect of technological change in agriculture between 1969 and 1994 on the number of farm proprietorships has been less pronounced in Kentucky than nationally (Figure 13.1). This likely reflects the large share of farm families in Kentucky growing tobacco. Agricultural services⁷ were by far the most rapidly growing industry out of 10 industry divisions in the state. With a 411 percent net increase, jobs in this industry expanded at almost three times the rate of general service sector jobs (131 percent). In comparing these numbers, it is important to note that the 1969 employment level in agricultural services (4,000) was considerably less than in services (217,000). Even so, 185 net new jobs were created in agricultural services nationwide for every 100 farm proprietorships lost between 1969 and 1994. More generally, as a result of major demographic shifts toward dual-career and single-person households, as well as increases in income which raise the cost of time, the demand for convenience and processed foods has expanded rapidly. Not coincidentally, food- and fiber-related industries today employ nearly 1 out of 5 U.S. workers.

Limited or even negative growth in mining employment reflects both reduced reliance on coal as a source of energy and the effect of labor-saving technological change. Growth in construction employment in Kentucky was less than the national average. Statewide manufacturing employment increased 24 percent between 1969 and 1994, which is remarkable when contrasted with the 7 percent national decline. In 1969, manufacturing accounted for 19 percent of all jobs in Kentucky, compared with 15 percent in 1994. The corresponding percentages for the nation are 23 percent in 1969 and 13 percent in 1994.

Relative to the nation, employment growth in Kentucky has also been more rapid in TCPU and wholesaling and retailing, and less rapid in FIRE and services (Figure 13.2). The result for TCPU may in part reflect higher effective demand for utilities such as communications, electricity, and sanitary services as lower-income areas of the state caught up with service levels nationwide. Also, the communications sector is expanding and modernizing rapidly in Kentucky. The state's advantageous location relative to national population centers may in part explain the higher-than-average growth in transportation and wholesaling.



In Kentucky and the nation, services had the largest numerical increase in employment. The service industry added 283,000 new jobs (in *net* terms) in Kentucky, more than doubling employment between 1969 and 1994. The retail sector had the second largest increase, adding 171,000 new jobs. Public sector employment rose by 31 percent in Kentucky and by 34 per-

⁷ This industry includes soil preparation, crop, veterinary, animal, farm labor, farm management, landscape and horticultural services, in addition to forestry, fishing, hunting and trapping-related services.

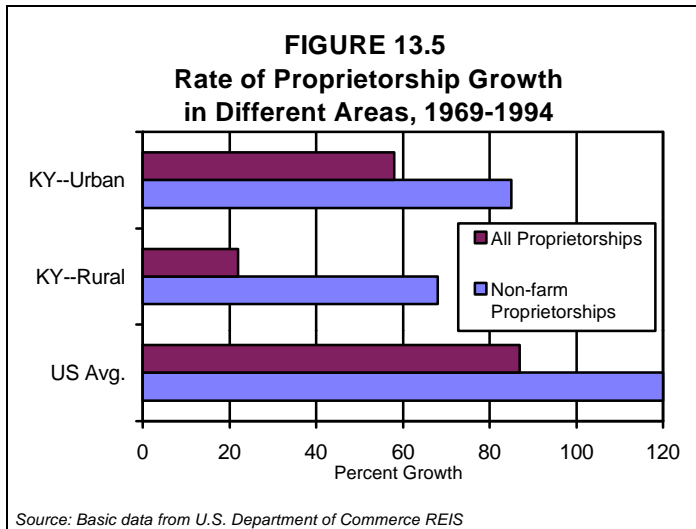
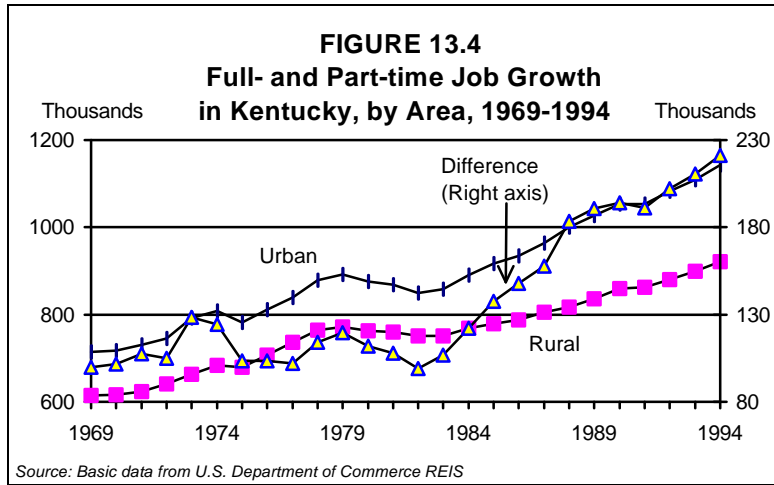
Total job growth over the last 25 years was more rapid in urban than in rural areas of Kentucky, resulting in a relative shift from rural to urban areas in the location of employment (Figure 13.4). For every 100 jobs that existed in 1969, urban areas added 60 net new jobs, compared with 50 jobs added in rural areas.

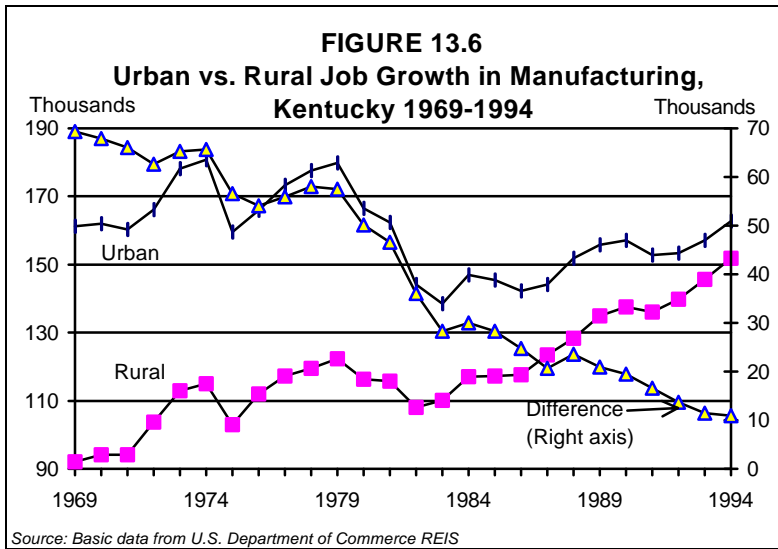
The effects of recessions in the early 1970s, 1980s, and again in 1991, on job growth in the state are visible in Figure 13.4. Both urban and rural areas shared in the prolonged national economic expansion starting in the mid-1980s, but since 1982 the rate of new job creation has been more rapid in urban than in rural counties. In 1969, rural counties had 51 percent of the state's population and 46 percent of all jobs; in 1994, they contained 52 percent of the population but only 45 percent of the jobs, as the number of commuters living in rural "bedroom" communities increased.

In rural areas of Kentucky, fewer net new proprietorships were created than in urban areas (Figure 13.5). For reasons that are not fully understood, proprietorships in both urban and rural areas of the state grew at rates considerably below the national average.

While urban areas of the state have been creating more total jobs than rural areas, the pattern for manufacturing jobs is quite different (Figure 13.6). Since 1969, manufacturing jobs have expanded more rapidly in rural than in urban areas; furthermore, all of the *net*

new manufacturing jobs were created in rural areas. While nearly 2 out of every 3 manufacturing jobs in Kentucky were located in urban areas in 1969, present trends are such that these jobs are almost evenly divided between urban and rural areas. Urban areas contained about the same number of manufacturing jobs in 1994 as in 1969 (about 160,000), while rural areas experienced a 65 percent increase over this period (from 92,000 to 152,000). The rapid increase in rural manufacturing employment since 1986, when plans for the Toyota Motor Manufacturing plant in Scott County were first announced, is noteworthy.





Many observers maintain that shifts in manufacturing employment nationwide from urban to rural areas are the result of firms seeking low-skill and low-wage workers to carry out routine manufacturing work in branch plants. These kinds of jobs may be among the most likely to be relocated or lost to less developed countries,¹¹ where wages

are lower than in the United States and yet average skill levels are generally rising. Thus, it may become increasingly difficult over time for rural areas in Kentucky to compete on the basis of low wages and skills in certain industries, as the recently announced closing of the Oshkosh B'Gosh clothing plant in Adair County illustrates. A key challenge is to provide workers with the skills and technology they need to compete with low-wage workers in other countries on the basis of higher productivity (or a lower labor cost index). It is noteworthy in this regard that exports of goods manufactured in Kentucky increased by more than 35 percent between 1990 and 1995 in constant dollars, suggesting firms in the state were sufficiently competitive to expand their sales.¹²

At the same time, innovations such as just-in-time inventory management by manufacturers, which requires the nearby location of parts suppliers, and the need for firms to operate close to their markets to better monitor changes in consumer tastes and preferences, may attenuate the tendency of firms to locate overseas. Transportation costs and trade barriers in the form of quotas and domestic content legislation (for cars) may further reduce such tendencies.

Service sector jobs grew more rapidly between 1969 and 1994 in urban areas, where they increased 140 percent from a base of 131,000 jobs, than in rural areas where the increase was by 118 percent from 83,500 jobs in 1969. This may reflect higher earnings and purchasing power in urban areas, as well as agglomeration economies (which are inter- or intra-industry-specific cost savings that arise when two or more firms locate in the same place). The differential rate of growth of service sector jobs in urban and rural areas explains most of the diverging job growth pattern observed in Figure 13.4. Forty-seven percent of all net new jobs generated in urban areas between 1969 and 1994 were in services, compared with only 33 percent in rural areas.

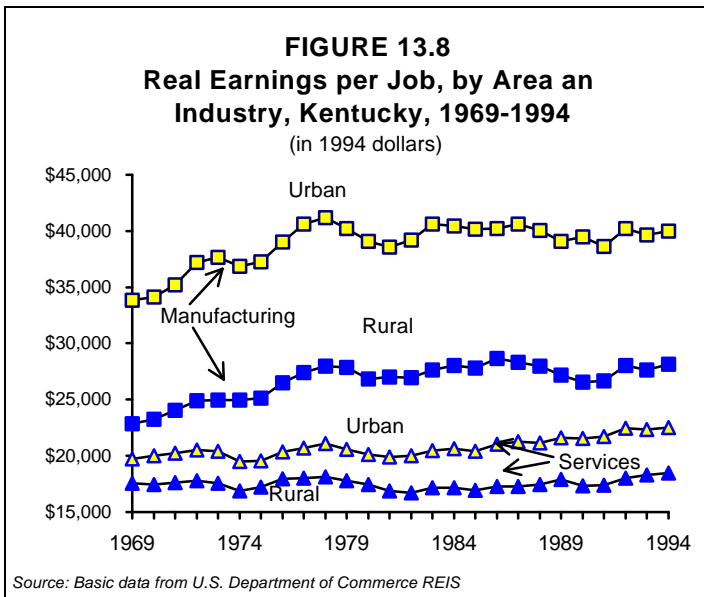
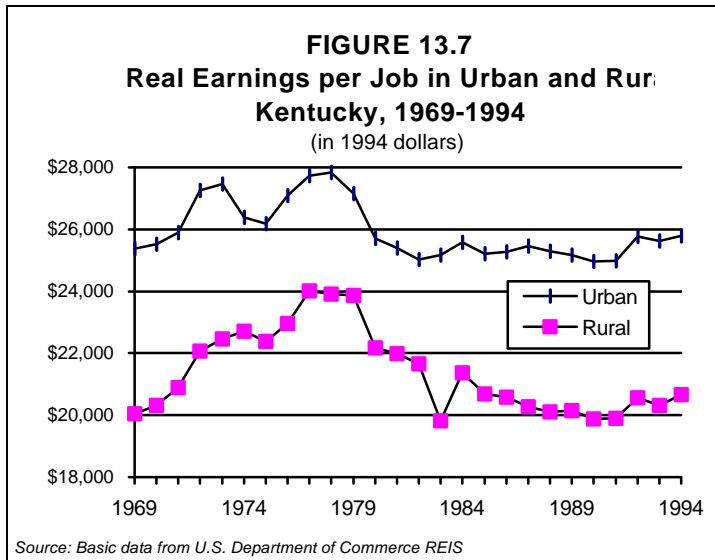
¹¹ Blair, J.P. (1995). *Local economic development: Analysis and practice*. Thousand Oaks, CA: Sage Publications.

¹² Kentucky Department of Employment Services.

Urban vs. Rural Earnings in Kentucky

Slow, and even negative, real wage and earnings growth are a concern to citizens and policymakers nationwide, because they forebode declining standards of living. Perhaps more ominously, a recent study shows that U.S. employment growth over the period 1979 to 1987 was greater in industries with lower average earnings in 1992 and the number of jobs in industries with higher average earnings declined.¹³

Real earnings per job by place of work are higher in urban areas of Kentucky, but the earnings gap has fallen slightly in real terms, from \$5,300 in 1969 to \$5,100 per job in 1994 (Figure 13.7).¹⁴ Following national patterns, real earnings per job in both rural and urban areas of the state are lower in 1994 than in the late 1970s. Nationwide, average hourly earnings in constant (1982) dollars fell from \$7.78 per hour in 1980 to \$7.40 in 1994. Average weekly earnings fell from \$275 to \$256 over the same period.



Real manufacturing earnings per job are 42 percent higher in urban than in rural counties (Figure 13.8), compared with a 48 percent discrepancy in 1969. This supports the contention that manufacturers in part locate in rural areas (and low-wage states) to take advantage of lower-cost labor. Furthermore, real manufacturing earnings per job in rural areas are lower now, although only modestly, than in 1986,

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¹³ Isserman, A.M. (1994). State economic development policy and practice in the United States: A survey article. *International Regional Science Review*, 16, 49-100.

¹⁴ The argument is often made that lower incomes in rural areas are compensated for by lower costs of living, relative to urban areas. While this is accurate for some items, such as housing or land values, it is not necessarily true for basic food staples and gasoline, as revealed recently in a Kentucky Farm Bureau survey (see Basics cost more in E. Kentucky. (1992, May 3). *Lexington Herald-Leader*. p. A1). High costs of transportation into remote rural areas (particularly eastern Kentucky) and lack of competition among retailers can lead to higher costs for these items (or lower quality). These costs are compounded (in terms of cost and time) when rural residents commute over large distances to their places of work.

when the rapid expansion in rural manufacturing jobs began in Kentucky. Real manufacturing earnings per job have tended to stagnate in urban areas since 1978.

Real earnings in the services sector have been growing slightly since 1980 in urban areas and, with some fluctuations, in rural areas. Thus, earnings are increasing modestly in the sector accounting for most of the state's employment growth. In 1969, service sector earnings per job in rural areas in constant dollars were \$2,200 below those in urban areas (a 12 percent difference). By 1994, the rural-urban earnings gap had increased to \$4,100 (or 22 percent). Furthermore, service sector earnings in Kentucky remain considerably below those in manufacturing, which is counter to nationwide trends:

Misconceptions about the relative quality of jobs available to workers in various industries abound. One of the most difficult to dispel is the idea that jobs in the goods-producing sector are uniformly superior. Over the last 15 years, goods-producing wages have fallen as service-sector pay has increased, with the result that service workers now generally earn about the same as their counterparts in manufacturing. Consequently, policy that favors goods-producing employment is not necessarily a sensible strategy for generating high-wage opportunities for American workers.¹⁵

Real government earnings per job have increased in parallel fashion between 1969 and 1994 in urban and rural areas, averaging just over \$27,500 per job in urban areas, and \$24,200 in rural areas in 1994. Consequently, although average earnings per job in services and the public sector are lower (by up to two thirds) than earnings in manufacturing, the gap between the three sectors is narrowing slowly as manufacturing earnings stagnate.

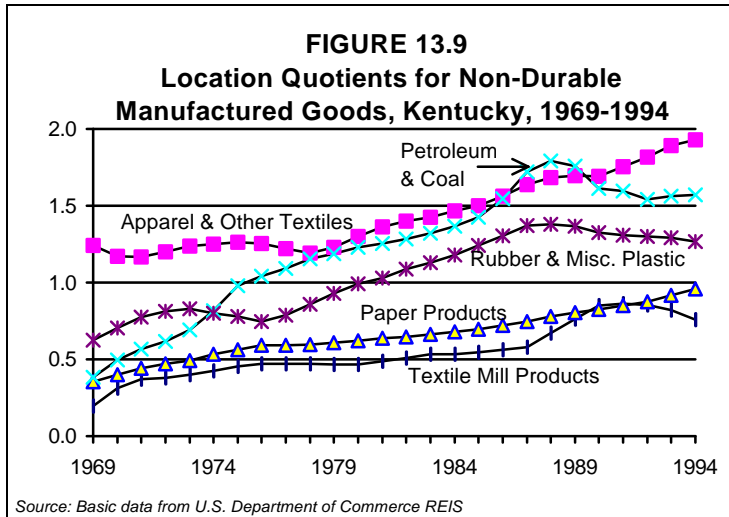
Trends in Location Quotients

A location quotient shows the extent to which an area such as a state or county is specialized in a given industry. Here we calculate the quotient as the ratio of statewide earnings in a given industry to the total workforce in Kentucky, divided by the ratio of total earnings nationwide in the same industry to the national workforce. The location quotient for apparel and related products manufacturing earnings per worker in 1994 roughly equals 2.0, indicating that the state has a relatively higher share of its employment in apparel manufacturing than do other states. This number also suggests that the state is a net exporter of apparel and related products.

In contrast, Kentucky's location quotient for furniture and fixtures manufacturing is only about 0.5, suggesting the state has a low degree of manufacturing concentration in this industry, and that it is importing furniture and fixtures from other states or countries. A location quotient between 0.8 and 1.2 suggests that a state neither imports nor exports goods produced in that industry.

This kind of analysis provides clues about the relative strengths and weaknesses of Kentucky's economy and points to industries—such as furniture and fixtures—which are potential candidates for “import-substitution.” In these industries an opportunity *may* exist for profitable expansion within the state. In the following section we discuss manufacturing sub-industries which experienced significant trends in their location quotients during the years 1969 to 1994.

¹⁵ Dupuy, M., Schweitzer, M.E. (1994, February 1). Are service-sector jobs inferior? *Economic Commentary*. Cleveland, OH: Federal Reserve Bank of Cleveland.

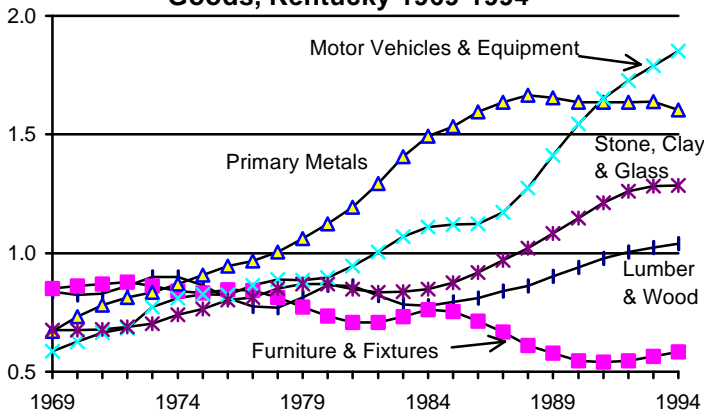


Among nondurable manufactured goods, location quotients rose in five industries over the study period (Figure 13.9): petroleum and coal products, apparel and other textile products, rubber and miscellaneous plastics products, textile mill products, and paper and allied products. All but apparel had location quotients near or below 0.5 in 1969. Today, textile mill and paper and allied products have a

location quotient just below 1.0, and the others have location quotients well above 1.0. This suggests that in all five industries import substitution has occurred, and/or exports from the state have increased. Companies such as Fruit of the Loom™ and Scott Paper™ account for a large share of the trends in apparel and paper products exhibited in the graph. In addition, the location quotient for tobacco manufacturers (not shown) declined from over 11.0 in 1969 to 7.2 in 1994.

In the durable manufactured goods category, primary metals; motor vehicles and equipment; stone, clay and glass products; and lumber and wood products had location quotients below 1.0 in 1969; today, all have quotients above 1.0. The motor vehicles and equipment sub-industry stands out, with a significant increase in the location quotient since 1986 (Figure 13.10). The remarkable success of the Ford Explorer sport utility vehicle, the Toyota Camry, and to some extent the Corvette explain the increase in the location quotient. At the same time, the quotient for primary metal industries has remained flat after rising rapidly to above 1.5 between 1969 and 1987. After remaining below 1.0 for all of the 1970s and 1980s, the location quotient for the lumber and woods products industry has now surpassed 1.0. The stone, glass and clay products industry basically changed its status from import-dependent to an exporting industry. In contrast, the trend for furniture and fixtures shows why some groups in the state have argued for increasing the value-added to wood products within the state rather than shipping raw lumber to states such as North Carolina to produce finished wood products: here the location quotient has fallen from 0.8 to under 0.6.

FIGURE 13.10
Location Quotients for Durable Manufactured Goods, Kentucky 1969-1994



Source: Basic data from U.S. Department of Commerce REIS

In general, more manufacturing industries experienced increases than decreases in their location quotients over the period studied. These changes are consistent with the patterns identified in Table 13.1 and confirm results of a recent study by the Corporation for Enterprise Development, stating “[t]hat Kentucky companies have been more aggressive in finding markets for their products or services outside the state.”¹⁶

Industry Growth Projections

The Fall 1995 issue of *Occupational Outlook Quarterly* contains the following forecasts for industrial job growth nationwide between 1994 and 2005.¹⁷ As with all forecasts, the accuracy of these predictions depends on the extent to which the assumptions used in making them prove to be correct. The BLS projects total employment to grow by 14 percent over the years 1994 to 2005, compared with 24 percent growth between 1983 and 1994. Wage and salary employment in the goods-producing sector is forecast to decline by 900,000 jobs nationally, while self-employment in that sector is forecast to grow by 200,000 jobs. In contrast, Thompson's analysis indicates that, in the next few years, “. . . at least some job growth is expected in nearly every manufacturing industry in Kentucky. . . .”¹⁸ Considerable continued growth is projected to occur nationally in the service sector, led by services including state and local government, education and hospitals (by 33 percent); and followed by retail trade (13 percent); finance, insurance and real estate (6 percent); transportation, communications and public utilities (7 percent); wholesale trade (7 percent); and state and local government, excluding education and hospitals (7 percent).¹⁹

For 1996, Challenger, Gray and Christmas, Inc., recently predicted a total of 420,000 layoffs from corporations, a number similar to that in 1995. Furthermore, they predict that “[p]ayroll-shedding will be most common in industries where the government's role, either as a purchaser or a regulator, is shrinking: defense, aerospace, telecommunications, banking, and utilities.”²⁰

¹⁶ Sachdev, A. (1996, July 12). State earns first 'A.' *Lexington Herald-Leader*, p. C8.

¹⁷ U.S. Bureau of Labor Statistics. *Occupational Outlook Quarterly*.

¹⁸ Thompson, E.C. (1996). Quarterly forecasts for the Kentucky economy, 1996-98 *Kentucky annual economic report*. Lexington, KY: University of Kentucky, Center for Business and Economic Research, p. 5.

¹⁹ U.S. Bureau of Labor Statistics. *Occupational Outlook Quarterly*.

²⁰ McNamee, M. (1996, January 8). Industry outlook. *Business Week*, 72-74A. See also: www.businessweek.com/1996/02/b602cs5.htm (page 3).

Implications for Kentucky

1. An important trend nationally appears to be the move toward greater self-employment as corporations continue to “downsize.” However, rates of proprietorship formation in Kentucky, especially in rural areas, lag behind those of the nation by considerable margins. This raises the question of whether the educational sector (especially postsecondary institutions but also high schools) should develop entrepreneurial training programs to assist those seeking to start their own businesses. Lack of capital availability in the state to fund new ventures *may* constrain potential entrepreneurs.

2. Trends in the manufacturing and service sectors in the state differ from national trends in two important ways: manufacturing employment is growing rather than falling, and service sector earnings have not yet caught up with manufacturing earnings. The promotion of automobile manufacturing in the state appears to have been a sound strategy, and the robustness of this sector largely insulated the state's economy in the most recent national recession.²¹ However, the stagnation of manufacturing earnings remains a concern to the extent that it forebodes stagnant standards of living, and it remains to be seen whether public and private training efforts in the state will ultimately lead to higher real manufacturing wages.

3. Like other states, Kentucky has yet to feel the full impact of technological change in services on employment levels. On the one hand, increases in labor productivity should raise earnings in services and accelerate the rate of convergence between service and manufacturing sector earnings. On the other hand, increases in productivity also will potentially reduce the number of workers needed by firms to produce current levels of output. Identifying training and employment options for low-skilled workers displaced by technological advance in the services sector may become a key challenge facing policymakers in the next century.

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²¹ The data examined here do not allow us to evaluate the *long-term* benefits and costs of using tax and other incentives as a general industrial development strategy; however, a reduced tax base weakens a state's ability to supply public services, including education.

