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**Growth of the Service Sector
In Kansas**

FINAL REPORT

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December 1992

Report No. 200

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ACKNOWLEDGEMENTS

This study has been performed as part of the Kansas Inc. Strategic Planning Program. The service sector research contributes to Kansas Inc.'s analysis of the state's strengths, weaknesses, opportunities, and threats. The overall Strategic Planning Program will help to formulate an economic development strategy for the 1990s.

Charles Warren, President of Kansas Inc. provided a framework for the study, and contributed useful insights throughout its implementation.

Dr. Mohamed El-Hodiri served as principal investigator for the project. Dr. Charles Krider and Dr. Norman Clifford coordinated the research. As IPPBR director, Dr. Anthony Redwood provided an intellectual climate conducive to the investigation of economic development questions. He also provided many helpful suggestions throughout the study.

Michael Bacalzo, Roberta Pokphanh, and John Deke provided able assistance with data collection, computer programming, editing, and graphics throughout the project.

The opinions expressed in this report are solely those of the authors.

Executive Summary

Growth of the Service Sector in Kansas

Purposes of the Study

- To define the nature of the service sector.
- To examine the reasons for the growing importance of the service sector in U.S. and Kansas economies.
- To document the structural changes in the economies of the U.S., the region, and Kansas brought about by service sector growth.
- To examine the distribution of service sector growth between urban and rural locations.
- To explore the consequences of service sector growth for productivity in the U.S. and Kansas.
- To examine the wages of service sector jobs.
- To examine whether Kansas has been able to attract high wage service sector jobs.
- To understand the labor force requirements of current and emerging service industries.
- To examine the importance of services to Kansas export base.
- To examine the links between services and other sectors of the Kansas economy.

Definitions

- The service sector encompasses a very heterogeneous group of industries. These industries may have little in common except that their output does not have a tangible form. Personal services, business services, finance and insurance, and communications form the core of service sector industries examined in this study. Other studies sometimes use a definition of services that includes wholesale and retail trade, public utilities, and transportation.

Key Findings

- Service sector growth has been responsible for substantial structural change in the U.S. and Kansas economies. Even when a narrow definition of services is employed, services now comprise about 32 percent of the Kansas economy and 36 percent of the U.S. economy.
- Service industries are the fastest growing segment of U.S. and Kansas economies, both in terms of jobs and in terms of value added. To illustrate, during the period 1980-1990, service employment grew about 45 percent in the U.S. and about 35 percent in Kansas. In contrast, manufacturing employment fell 5.1 percent nationally and 3.0 percent in Kansas during the same period. More concretely, services accounted for 123,000 out of 177,000 net new jobs created in Kansas between 1980 and 1990.

- The reasons for service sector growth include:
 - Externalization: manufacturing and other firms contract with service firms to perform functions that were previously done "in house."
 - Technical change: innovations in areas such as computer technology, finance, and telecommunications have led to increased service demand.
 - Lifestyle changes: increases in per capita consumer income and changes in household norms have led to a substitution of purchased services for functions previously performed in the home.
- Both in Kansas and in the U.S., growth in the service sector has been primarily an urban phenomenon. During the 1980s, service sector jobs in metro areas grew on average 51.5 percent throughout the U.S. In contrast, service sector jobs in nonmetro areas grew about 38 percent. The difference in growth rates was more dramatic in Kansas--51.3 percent versus 19.1 percent.
- Although the service sector in Kansas nonmetro areas grew far less rapidly than its metro counterpart, it still provided the largest source of job growth in nonmetro areas.
- Measuring productivity in the service sector is very difficult. Among other problems, there is no simple way to untangle price changes from output changes in standard productivity calculations. From what scant data exist, it appears that productivity should be a neutral issue for Kansas service sector expansion.
- Service sector wages and salaries in Kansas lag their national counterparts to a greater extent than do manufacturing wages. However service sector wages are among the fastest growing in the Kansas economy.
- Some industries within the service sector (for example, communications, banking) pay wages on a par with manufacturing. The Kansas share of high wage industries slightly exceeds the national average.
- The service sector labor force contains a high percentage of executives, managers, and technical workers. Nationally, between 30 and 44 percent of service workers fit into these categories, in contrast with 18 percent for manufacturing. Kansas follows the national pattern.
- The export base of a region is defined as the total volume of sales to customers outside the region. Services can be a significant contributor to the export base. In Kansas, urban areas, particularly Johnson county, are strong exporters.
- Services, particularly business services, are becoming an increasingly important element in the input composition of manufacturers. However the continued growth of business services will depend not only on the growth of their share in manufacturing inputs, but also on the growth of manufacturing output.

Implications for Kansas

- *Policies that encourage manufacturing development should be extended to the export-oriented service sector.* The study documents that services are and can continue to be an

important part of the Kansas export base. Services exported from Kansas play the same role in bringing in new income as do manufacturing and resource industries.

- *Opportunities for service sector growth in nonmetro areas need to be identified if the rate of decline of rural areas is to be slowed.* Service sector growth is concentrated in urban areas, in Kansas even more than in the rest of the U.S. Nevertheless, some service sector firms in rural areas do succeed in making substantial contributions to the rural export base. The underlying factors contributing to successful rural service sector growth need to be identified and promoted.

- *Related to the above, barriers to the growth of services in nonmetro areas need to be identified.* For example, service firms may have infrastructure or labor force needs that currently cannot be met in Kansas nonmetro areas. Once identified, some of these barriers could be removed by policy intervention at the state or local level.

- *Kansas should carefully analyze the impact of any potential tax changes on service sector growth to make sure that services are not disadvantaged vis a vis other sectors of the economy.* Export service sector growth, particularly in urban areas, has been one of the bright spots in Kansas economy. However tax policy changes have sometimes been made without taking service sector impacts into account. As an example, the 1986 classification amendment made a tradeoff between higher assessment ratios for business property and the removal of inventories from the tax base. This resulted in a shift of property taxation toward service sector firms.

- *Access to technology should be promoted for service sector firms as well as for manufacturing.* High-tech service sector firms are similar to high-tech manufacturers in that they need to be on the cutting edge in order to compete. This means having access to bases of knowledge, as well as having adequate financing for equipment in which technology is embodied.

- *Business services should be recognized as an important contributor to manufacturing productivity.* Policies that seek to improve the productivity of manufacturing clusters should take into account the service sector link, since services are important inputs. In a sense, the availability of high-quality service firms in an area serves as a type of infrastructure. The availability of high quality services may be a significant factor in attracting new firms to an area.

- *A highly skilled, educated, and adaptable workforce is essential to continued service sector growth.* The service sector will provide the bulk of new employment opportunities in the near future. A high percentage of the labor force employed by service sector firms is comprised of executives, managers, and technical workers. These jobs almost always require a post-secondary education. Furthermore, these jobs require adaptability and decision-making capacity.

Definition and Classification of Service Industries

Defining what is meant by the service sector is not simple. One problem encountered in trying to establish a definition is that using characteristics common to most service industries generally tends to exclude a few industries. For example, intangibility and a non-storable nature are commonly cited characteristics of service outputs. Yet activities like creation of software and data banks that are generally considered services don't exhibit these characteristics. Another problem with defining the service sector is its overlap with other sectors. For example, employees in the accounting and legal departments of manufacturing firms are essentially service workers but are counted as part of the manufacturing sector.

Despite these difficulties in defining the service sector, it is important to achieve a conceptual understanding of what we mean by service industries. It is also important to consider what is meant by the service sector and service employment when these terms are used by others. If this is not done, it will be difficult to accurately identify and evaluate trends in the service sector. In order to establish a clearer understanding of what is meant by the service sector, common definitions are reviewed below.

One of the first descriptions of a service-type sector was written by Fisher (1939). Fisher described the economy in terms of three sectors. The primary sector includes activities like agriculture, mining, and fishing -- activities involving the extraction of food and natural resources from the land. The secondary sector encompasses manufacturing; refinement of raw materials; building and construction; and gas, water and electricity supply. The tertiary sector was invented to account for a new type of production that seemed to be emerging as technical efficiency made it possible, but did not fit well into the other two categories. This sector includes activities that create outputs that increase consumer well being, but do not result in products like those of the first two sectors. Fisher noted that the term luxury could be used to describe tertiary outputs, but that they were not frivolous or limited to the wealthy as the word might imply.

Fisher's description is interesting because it implies a sequential relationship among the three sectors. The tertiary sector was viewed as the source of employment when the first two sectors became saturated. Just as the agricultural economy had developed into a manufacturing

economy, so to would the manufacturing economy develop into a tertiary economy. Emergence of new non-manufacturing, non-agricultural employment was seen as a natural step in development.

More recent definitions have tried to state more clearly and unambiguously what is included in the service sector. Goe and Shanahan (1990) note the difficulty of doing this and show how two common methods break down. The first method focuses on the production side and distinguishes services as those outputs that require direct interaction between the producer and consumer as opposed to goods which can be stored and shipped. This definition, however, fails to include service industries like research and development that do not require direct interaction with consumers. The other approach looks at how services are consumed. They are characterized as being non-material and consumed immediately upon purchase. Again, this is not an all inclusive definition and services like insurance and software are excluded.

Shelp (1981) gives a broader definition and notes that it describes a very heterogeneous group. He defines services as encompassing a group of activities that often have little in common other than the fact that their outputs often do not have a tangible form. While this definition is more inclusive, it is also much more ambiguous. Riddle (1986, p.12) gives a definition that describes the distinguishing characteristics of service production and consumption in a way that is more inclusive without being ambiguous. She describes services as:

economic activities that provide time, place, and form utility while bringing about a change in or for the recipient of the services. Services are produced by (1) the producer acting for the recipient; (2) the recipient providing part of the labor; and/or (3) the recipient and the producer creating the service in interaction.

Defining services seems to be less a matter of describing their specific characteristics and more a matter of understanding the general nature of them. One useful concept that can help explain the difference between services with a tangible form and manufactured goods is that of "embodied services." These are services that have been packaged in a physical form. Although they have a physical form like manufactured goods, they are conceptually like other services. Examples are computer software, film and books.

Because services make up a large, heterogeneous group, it is difficult to classify them into mutually exclusive groups. However, establishing some classification system is important if trends within the sector are to be measured. This may well require new techniques than have

not traditionally been used. Statistical classifications have been established, but many have been inadequate because they are geared toward traditional economic indicators for goods, which often do not work well when studying services (U.S. Congress, House of Representatives 1984).

Unvala and Donaldson (1988) describe two approaches to categorizing services. The first is by industry or occupation. This is the common statistical method that is used when specific data categorized by industry is required. The second method is by characteristics of the production or consumption process. This is the method for market studies that aim to observe trends within more general cross sections of the service sector.

Patton and Markusen (1991) classify service industries into four broad subgroups: distributive, producer, personal, and business. While this categorization gives four broad industrial groupings, more specific information about small industrial groupings may be more useful. This type of classification is found in U.S. census data where services are grouped by S.I.C. codes.

Nusbaumer (1987) gives a more conceptual classification. Two approaches are used. The first focuses on the production side, where services are categorized as primary, intermediate, and final. Primary services are work supplied by factors of production in every economic sector. Intermediate services are those that contribute to the production process of other commodities (e.g. maintenance, marketing, telecommunications, etc.). Final services are those that contribute to the welfare of individual consumers but do not effect the production process.

On the consumption side, Nusbaumer classifies services as durable and nondurable. Durable services are purchased for long term or continuous consumption. Examples include insurance and legal protection. Nondurable services are those consumed at the time of purchase and includes most service outputs.

Definition of Services Used in This Study

The definition and classification of services used in this study are in part driven by the availability of data. Most data use a classification scheme based the industry of the producer rather than on the type of purchaser or on functions that the output provides. This is especially true of the time series data than are necessary to identify trends. Hence in practice we are limited to choosing a particular set of industrial codes.

The focus of this study is fairly narrow in comparison with some empirical work. Except where otherwise noted, we select industries classified by the Department of Commerce as 1) communications; 2) finance, insurance, and real estate; and 3) services. Each of these categories actually encompasses a sometimes diverse group of sub-industries. A detailed list of industries can be found in the table in Appendix A.

In contrast to our narrow definition of services, some studies include transportation, public utilities, wholesale trade, and retail trade in the analysis. A preliminary analysis indicates that few of the overall conclusions of our study would change were we to use a broader service measure.

The Phenomenon of Service Sector Growth

The expanding importance of the service sectors is a world-wide phenomenon. Riddle (1986, ch. 2) points out that services have risen as a share of gross domestic product for low, middle, and industrialized nations alike. According to Riddle, "the service sector plays a seldom recognized role as a necessary and critical ingredient in all economic growth." (p. 2)

The growth of the service sectors has imposed deep changes on the structure of the Kansas and U.S. economies. This section of the report documents those changes, and examines their implications for Kansas economic development.

Structural Change in Kansas, the Region, and the Nation

As discussed earlier, this study focusses on a narrowly defined group of services comprised of communications, financial industries, and selected business and consumer services. But even narrowly defined, services comprise over 36 percent of the employment in the nation and about 32 percent of employment in Kansas (Table 1). Kansas shows a concentration of employment in resource based industries (agriculture and mining) that is higher than the national average. In turn, the concentration in service industries falls short of the national average.

During the 1980s, the service industries provided the bulk of new employment opportunities. Nationally, these industries grew a total of 44.5 percent during the decade (1980-1990), in contrast to about 12 percent for all other industries combined. Manufacturing, mining, and agriculture all registered declines in total employment. It should be pointed out that averaging all industries besides services does some injustice to the diversity of growth patterns that the industries exhibit. Within the "other" category, utilities, wholesale, retail, and government all contributed employment growth, although generally at a less rapid pace than that of the specific services emphasized in this study.

Kansas and the region followed the pattern of rapid growth in service industries coupled with declines in traditional industries. Overall, Kansas service industries grew 35.3 percent, in striking contrast with the average of 5.6 percent growth in other industries. Services accounted for 123,000 of the 177,000 net new jobs created in Kansas during the 1980s.

A similar pattern emerges from the analysis of personal income data rather than employment data. The service industries currently contribute over 29 percent of the real personal income earned in Kansas, and about 35 percent of the income earned nationally. Real income in the service sectors grew almost 42 percent in Kansas over the last decade, and a phenomenal 62 percent nationally. The relatively strong performance of the service sector in Kansas has in part counterbalanced real income losses in mining, construction, manufacturing, and transportation.

Employment and income growth in Kansas and in the region clearly lagged behind that of the nation during the 1980s. The method of *shift-share analysis* can be employed to further explore the phenomenon of slow growth. As explained by Holden, Nairn, and Swales (1989), growth can be broken into three components:

1. National component: the growth that would have occurred in Kansas if all industries had grown at their national rates.
2. Structural component: the addition to or subtraction from growth explained by the composition of Kansas industries. For example, Kansas growth will be less than the national average if Kansas specializes in declining industries.
3. Differential or competitive component: the addition to or subtraction from total growth that cannot be explained by economic structure. The implication is that this component reflects the general attractiveness of the state to new business. Additionally, this factor reflects underlying demographic trends.

An application of shift share analysis (Table 3) reveals that most of the slow growth in Kansas over the last decade can be attributed to competitive factors rather than to an unfavorable mix of industries. In other words, although Kansas maintains a sufficiently diversified economic base, the state has been unable to attract new jobs and income at the national average rate.

A more detailed breakdown of services (Table 4) reveals several industries that have experienced employment growth exceeding the national average. These include communications, insurance agents and services, business services, and educational services. Kansas employment growth in banking, health services, and professional services have exhibited slow growth relative to the U.S.

Table 1
Structure of the Economy: Employment, 1980-1990

Industry	Kansas Employment 1990	Kansas Share 1990	Kansas Growth 1980-1990	Region Share 1990	Region Growth 1980-1990	U.S. Share 1990	U.S. Growth 1980-1990
Total	1,483,345	100.0%	13.5%	100.0%	14.4%	100.0%	21.9%
<i>Other Industries</i>	1,013,468	68.3%	5.6%	65.1%	5.6%	63.9%	12.0%
Agriculture, Forestry, and Fisheries	97,206	6.6	-10.7	5.8	-8.5	3.3	-3.4
Mining	33,032	2.2	-5.7	1.3	-25.6	0.7	-21.0
Construction	67,110	4.5	2.8	4.6	2.6	5.2	27.4
Manufacturing	189,404	12.8	-3.0	12.5	-1.1	14.2	-5.1
Transportation	46,146	3.1	-4.9	3.4	14.3	3.0	21.9
Electric, Gas, and Sanitary Services	13,810	0.9	16.9	0.7	3.4	0.7	17.2
Wholesale Trade	73,907	5.0	7.7	4.8	2.2	4.8	17.0
Retail Trade	236,136	15.9	18.7	16.6	18.6	16.6	28.8
Government	256,717	17.3	13.0	15.4	9.3	15.3	12.7
<i>Service Type Industries</i>	469,877	31.7%	35.3%	34.9%	35.6%	36.1%	44.5%
Communication	15,669	1.1	19.2	1.1	6.4	1.0	-1.0
Finance, Insurance, and Real Estate	102,785	6.9	16.3	7.7	13.5	7.8	24.0
Services	351,423	23.7	43.0	26.1	45.7	27.3	54.2

Source: Bureau of Economic Analysis, Table SA25

Table 2
Structure of the Economy: Real Personal Income, 1980-1990

Industry	Kansas Employment 1990	Kansas Share 1990	Kansas Growth 1980-1990	Region Share 1990	Region Growth 1980-1990	U.S. Share 1990	U.S. Growth 1980-1990
Total	23,068,615	100.0%	15.2%	100.0%	13.5%	100.0%	26.1%
<i>Other Industries</i>	16,291,584	70.6%	6.8%	68.0%	3.4%	65.5%	12.8%
Agriculture, Forestry, and Fisheries	1,097,510	4.8	440.3	4.2	172.8	2.1	53.4
Mining	227,932	1.0	-57.4	1.6	-51.0	0.9	-44.9
Construction	1,221,123	5.3	-14.6	5.3	-13.3	5.9	17.7
Manufacturing	4,332,027	18.8	-5.0	18.2	-3.5	19.4	-2.0
Transportation	1,028,711	4.5	-13.6	4.5	-4.6	3.5	5.1
Electric, Gas, and Sanitary Services	416,431	1.8	24.9	1.3	10.0	1.4	27.8
Wholesale Trade	1,637,080	7.1	2.9	6.5	-5.3	6.5	20.4
Retail Trade	2,275,445	9.9	7.4	9.9	4.6	9.7	22.2
Government	4,055,325	17.6	23.3	16.5	19.8	16.2	29.2
<i>Service Type Industries</i>	6,777,031	29.4%	41.9%	32.0%	43.1%	34.5%	62.4%
Communication	456,613	2.0	29.8	2.3	20.1	1.7	6.8
Finance, Insurance, and Real Estate	1,236,023	5.4	22.4	6.0	20.4	6.8	44.6
Services	5,084,394	22.0	48.9	23.7	53.2	26.0	74.0

Source: Bureau of Economic Analysis, Table SA5

Table 3
Shift Share Analysis
Kansas Employment and Real Personal Income
1980 - 1989

Growth Component	Employment	Real Pers. Income
Actual Kansas Growth	13.4%	15.2%
National Component	21.9%	26.1%
Structural Component	-1.9%	-1.4%
Competitive Component	-6.5%	-9.5%

Table 4
Details of Service Industry Employment Growth, Kansas and U.S.

Industry	Kansas Employment 1990	Kansas Growth 1980-1990	U.S. Growth 1980-1990
Communication	15,669	19.2%	-1.0% *
Finance, Insurance, and Real Estate	102,785	16.3%	24.0%
Banking and Other Credit Institutions	25,263	11.2	23.2
Holding Cos. and Investment Services	10,209	-7.0	7.3
Insurance Carriers	14,538	16.5	17.9
Insurance Agents, Brokers, and Services	18,135	72.7	56.3 *
Real Estate	34,640	9.3	26.9
Services	351,423	43.0%	54.2%
Hotels and other Lodging Places	11,124	19.5	47.8
Personal Services	26,505	23.5	29.7
Business Services	59,590	80.5	69.5 *
Auto Repair, Services, and Garages	14,371	44.0	54.1
Miscellaneous Repair Services	10,403	15.9	14.5 *
Motion Pictures	2,848	73.4	112.7
Amusement and Recreation Services	16,424	61.4	72.9
Health Services	93,132	30.7	51.8
Legal Services	9,481	39.1	70.5
Educational Services	12,942	48.0	35.6 *
Social Services and Membership Organizations	37,643	38.6	40.9
Miscellaneous Professional Services	46,082	95.3	129.8
Private Households	10,878	-20.0	-16.0
Total: All Services	469,877	35.3%	44.5%

* denotes industries for which Kansas growth exceeds U.S.

Source: Bureau of Economic Analysis, Table SA25.

Figure 1
Service Employment Growth
 1981 - 1991

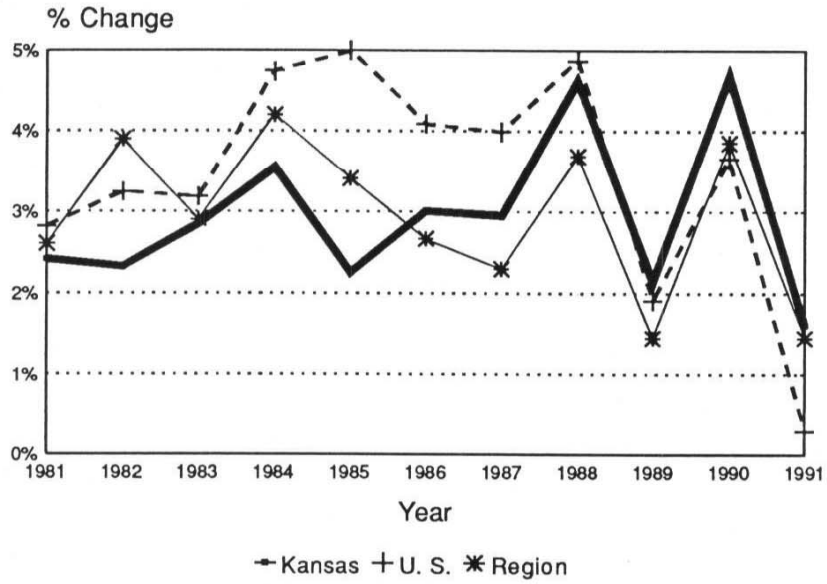
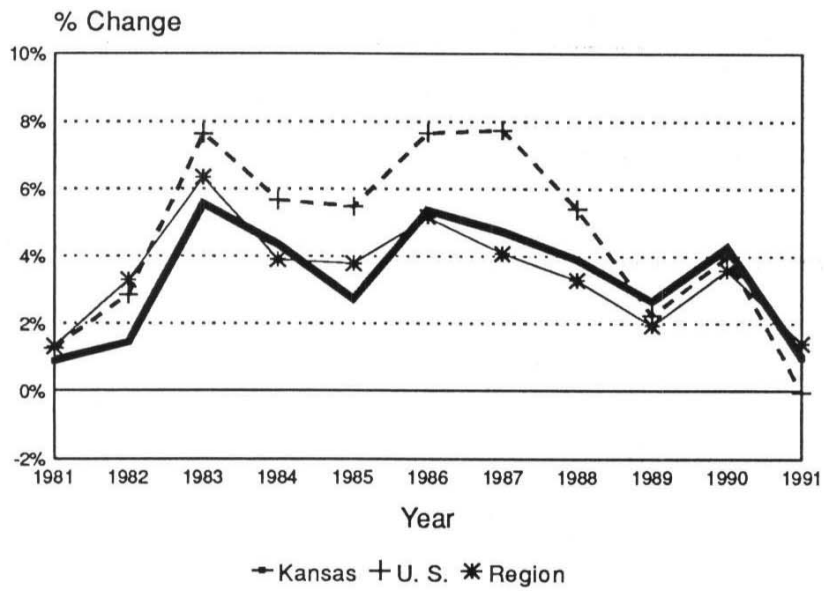


Figure 2
Service Personal Income Growth
 1981 - 1991



Is Service Sector Growth an Urban Phenomenon?

Paralleling the shift in the U.S from a goods oriented economy to a service oriented economy has been a shift in production from nonmetropolitan to metropolitan areas. It is natural to question whether the movement to service orientation has exacerbated the relative decline of rural areas. A related question is whether there remains an unexploited potential for service sector growth in rural areas.

Bender (1987) addresses both of these points. He reviews empirical evidence that indicates services follow a "central place hierarchy," flowing from urban to outlying areas. In Bender's view, services become attractive rural development targets only if they are footloose in nature. With this in mind, he analyses data on service employment for the period 1969 to 1979. He concludes that growth in services in rural areas can be attributed to two factors: growth in goods industries that use services as inputs, and growth in non-labor income such as social security. He finds no evidence of independent service sector growth. In fact, he finds that if anything, services are becoming more urbanized.

Bender cautions against economic development strategies focused on bringing footloose service sector firms to rural areas. His analysis indicates that footloose firms willing to relocate in rural areas are the exception rather than the rule. He suggests two alternative strategies for rural communities, each of which has consequences for service sector growth. First, communities may concentrate on attracting retirees and others with non-labor income. This population will create a demand for locally provided services such as health care. Second, communities may concentrate on basic manufacturing and other goods producing industries. As these industries become more efficient, they use more services in the production process.

A simple analysis of data from the 1980s supports Bender's point about the urban-rural dichotomy of service sector growth. Service employment has grown faster than total employment and population at all geographic levels. However service growth has been concentrated in metro areas. Nationally, employment growth in metropolitan areas exceeded that for nonmetro areas by a factor of almost of two to one during the 1980s. The ratio was closer to three to one in Kansas. Service sector employment growth is one of the bright spots of the Kansas nonmetro economy. Nevertheless, growth is substantially slower than in metro areas. Nonmetro areas are clearly not capturing service sector growth from metro areas.

Table 5
Growth of Service Employment, Total Employment, and Population
1980-1990

Area	Service as % Total Emp. 1990	Service Growth % 1980-1990	Total Emp. Growth % 1980-1990	Population Growth % 1980-1990
U.S.	34.8	49.4	22.2	9.8
Metro	37.0	51.5	24.4	11.6
Nonmetro	25.7	38.2	13.7	3.8
Kansas	30.0	38.0	14.4	4.6
Metro	34.2	51.3	25.5	12.6
Nonmetro	24.6	19.1	2.7	-3.4

Note: Definition of services excludes communications.

Source: Bureau of Economic Analysis, Tables CA5 and CA25.

Within Kansas, Johnson and Douglas counties stand out with high service employment growth during the 1980s. Riley and Pottawatomie counties in the north central part of the state form a regional service growth cluster. Other areas of high service sector growth are centered in the Wichita area and, in the southwest, around Finney county (see Figure 3).

Conclusions

In terms of the general phenomenon of service sector growth, Kansas echoes the national pattern. Services now comprise a larger share of the Kansas economy than they did in 1980. However the pace of employment growth in Kansas has underperformed the national average. Shift-share analysis indicates that the explanation lies in the overall competitiveness of the Kansas economy rather than in the composition of Kansas industries.

Both metropolitan and nonmetropolitan areas shared in the surge of service sector growth during the 1980s. But service employment in metro regions grew at a much faster pace than in outlying areas. It appears that the concentration of service sector employment in metropolitan areas is intensifying.

The patterns of service sector location offer little promise for rural economic development strategies built on attracting footloose service firms. However, a role remains for service industry growth to support the demands of consumers and industries in nonmetro areas.

Explaining Service Sector Growth

Some have viewed the shift to services very negatively, feeling it will lead to lower productivity growth and wage polarization. Others view the trend with much less concern, claiming that it is a natural step in the evolution of the economy and will not lead to lower productivity growth or the loss of high paying jobs. The data of the previous section illustrates the large increase in the share of employment found in the service sector, but it does not explain the reasons for this growth. In order to evaluate the implications of the shift to services, however, it is necessary to look at various reasons for it.

Several different reasons are given in the literature for the growth in the service sector. The first group of reasons explains service proliferation in terms of new demands generated from businesses. Part of this new demand comes from *externalization*. Externalization is the contracting out of services that were previously provided internally. For example, janitorial services or legal services that were formerly provided by employees of a manufacturing firm may be contracted to an outside firm that can provide the services at a lower cost.

Goe (1991) notes reasons why externalization may be the desirable option for firms. The most obvious reason is cost savings - economies of scale may allow outside firms to produce services at a lower cost. Large capital outlays needed for service production may also encourage externalization. A firm may not be able to justify a large capital expenditure if its demand for a service is relatively small. Also, if the benefits of using a service are uncertain, the risk involved with the initial capital investment can be shifted outside through externalization. Government regulations requiring services to be done by an outside firm may also be a source of externalization.

Externalization is not the only factor affecting the demand for business and producer services. Beeson and Bryan (1986) note that changes in methods of production and the types of goods produced have led to an increased demand for intermediate services. Design and computer services, data processing, communications, and financial services have all become more important. Technological advances and streamlining in organization have allowed specialized service firms to provide these inputs to businesses at affordable prices.

The growth in business services has contributed significantly to the overall growth of the service sector. Data for the U.S. and Kansas both show a rate of growth for business services higher than the rate for services collectively. In terms of employment, the growth rate for all services was 54.2 percent for the U.S. and 43.0 percent for Kansas. Business services (advertising, credit, maintenance, computer services, etc.) grew at a rate of 69.5 percent nationally and 80.5 percent for Kansas. Miscellaneous professional services (engineering, accounting, public relations, etc.) also showed strong employment growth -- 129.8 percent nationally and 95.3 percent in Kansas.

Personal consumption of services has also contributed to overall service growth. Daniels (1985) indicates that this may be a natural consequence of rising per capita income. As incomes increase, consumption of services tends to rise relative to goods. This is because many goods are necessities and thus their demand is less sensitive to changes in income. Beeson and Bryan (1986) note that the types of goods demanded as incomes rise are generally luxury-type products that require more service inputs (such as design and marketing) than do other goods, and thus also contribute to service growth.

Changing lifestyle patterns and household norms are also cited as reasons for increased service consumption. The emergence of families with two wage earners has led to a need for many services that were previously privately provided in the home to be purchased elsewhere. Services produced in the home were not accounted for in national income figures, but those purchased outside are included.

In addition to the factors influencing demand for services, it is also important to look at the structural changes in the economy and their relation to service growth. Fisher's (1939) original analysis about the shift from secondary to tertiary production indicated that such structural change was a natural consequence of the development process. Disagreement exists about whether such a shift from manufacturing to services is desirable.

Kutscher and Personick (1986) show that the shift to services is relative and not at the expense of manufacturing. Their analysis of various manufacturing industries shows that while some have experienced decline, output of manufacturing overall has increased. The shift to services has also been larger in terms of employment than in terms of output. Plunkert (1990) notes that manufacturing output has remained constant in terms of percentage share of GNP.

This seems to indicate that manufacturing has not suffered from the service sector pulling away jobs, but rather that employment has undergone a transition to services because of the higher levels of productivity growth in the manufacturing sector.

Perna (1987) views the shift to service industries with much more concern, stating that it is leading to the loss of manufacturing jobs to foreign competitors and an overall decline in productivity growth. He points out that although U.S. output of manufactured goods appears to have remained constant in terms of share of GNP, demand for manufactured goods has increased as a share of GNP. This indicates that rising incomes lead to higher relative consumption of certain goods, and not just services. This new demand is not being met by domestic production but rather with imports. Perna also notes that measurements of the manufacturing share of GNP in real dollar terms may be deceiving because changing base years can affect the size of the measurement. If current dollar measurements are used instead, manufacturing's share of GNP show a slight downward trend.

According to Perna, the analogy to the shift from agriculture to manufacturing may actually be the opposite of what is occurring with services. Shifting to manufacturing led to higher productivity jobs, but service employment may not be able to create productivity growth high enough to keep wage levels acceptable. Decline in overall productivity growth is attributed to the increase in low productivity service jobs and failure to increase manufacturing jobs.

Kutscher and Mark (1983) show that the slowdown in productivity growth is not directly attributable to an increased service sector. Using different time periods and output measures, they showed that in each case the shift from manufacturing to service employment has had no more than a nominal effect on overall productivity. They also note that productivity and capital intensity vary greatly over the different industries within the service sector and that implications of service growth for productivity must take this into consideration.

Clearly, there is not uniform agreement about the causes and implications of the growth in service employment. Some of the basic reasons for growing demand for service outputs can be explained. Some of the reasons for service employment growth, such as lower relative productivity growth and externalization, have also been explained, but the relative importance of each is not as clear. The degree to which the structural change in the economy is negative or positive is also not clear. While some studies have shown that shifting to services has not

hurt productivity, others, such as Perna, indicate that potential manufacturing growth has been missed. We return to the issue of productivity in the next section.

In order to better understand the nature of the shift to service employment, a detailed analysis of the changes in the structure of both employment and output is needed. An analysis of consumer demands is also needed in order to determine if these structural changes have been in response to changing consumer preferences, needs, and incomes. Furthermore, the service sector needs to be evaluated in terms of its individual industries and not just as an aggregate sector so that trends within the sector can be measured. These areas present a potential for much future study that can help to create a better understanding of the changing economy.

Productivity and Labor Force Issues in the Service Sectors

As Stanbeck and Noyelle (1990) point out, the structural shift in the U.S. economy reflects changes in how we produce and changes in what we produce. Firms purchase an increasingly higher volume of service inputs, and consumers spend an increasingly large share of their income on personal services, health care, and education. But productivity growth, at least as measured by national statistics, remains far lower for services than for industrial sectors. As a consequence, the shift toward services has resulted in an overall slowdown in productivity growth. Some have questioned whether the ultimate consequence will be lower paying jobs and a lower standard of living-- a process known as *de-industrialization*.

Table 6
Annual Average Labor Productivity Changes
in Industrialized Nations, 1979-1985

Country	Industrial Sectors (%)	Service Sectors (%)
U.S.	2.2	0.5
Japan	4.4	1.3
Germany	1.8	1.3
United Kingdom	3.7	0.8
Italy	2.2	-1.7
Canada	1.8	0.7

Source: OECD Historical Statistics, 1985 (Paris, OECD, 1987). Reproduced from Stanback and Noyelle.

Difficulty in Measuring Service Sector Productivity

Productivity is simple to define and hard to measure. As the term is used by economists, productivity is the ratio of total output to an input, usually labor. For a firm producing a standardized product, such as nails of a particular size and material, it is easy to think of productivity in physical terms--pounds of nails per hour of labor time. For most industrial products, the problem is more complex. Goods change in design, new product lines are invented, and perhaps most importantly, goods change in quality. A standardized physical output measure simply does not exist. Goods are generally measured as dollar flows rather than

as physical flows. Price indexes are developed to convert dollar flows to "real" measures, but these price indexes may not always accurately reflect quality changes.

But compared with measuring productivity in the service industries, measuring productivity in the goods sectors is a snap. A recent *Wall Street Journal* article (Malabre and Clark, 1992) discusses some of the problems. Some quotes give an indication of the problem's magnitude:

'At our current state of knowledge, we don't really know what's happening to service-sector productivity. It could well be growing faster than manufacturing instead of much slower.' (Michael Darby, University of California)

'The fuzziness of the service sector, whose role keeps expanding, makes it harder to get accurate readings on the performance of the economy.' (Ronald Schmidt, San Francisco Federal Reserve Bank)

[productivity in services] 'is simply impossible to measure.' (Michael Harper, Bureau of Labor Statistics)

Stanback and Noyelle point out that the problem of finding a standardized "real" output measure is more serious for service industries than for manufacturing. Services such as advertising and consulting are often provided on a one-to-one basis with clients--rather than being standardized, the product is unique. Proxy techniques that use labor inputs as a measurement of output lead to an underestimation of service productivity growth.

Comparison of Productivity in Kansas with U.S.

It is difficult if not impossible to measure the level of service sector productivity in such a way that comparisons across industrial sectors and across time are meaningful. However the picture looks brighter when it comes to comparing productivity across regions. The Bureau of the Census collects state-level data on payroll, employment, and receipts for selected service industries every five years. Under the assumption that the number of hours worked per employee is fairly constant across state, receipts per employee is an adequate cross-section measure of productivity at any given moment of time.

Table 7 shows payroll and receipts per service sector employee for Kansas and the U.S. The values represent nominal dollars and have not been adjusted for inflation. The table reveals that Kansas receipts or sales per service sector worker fall short of the national average. In this limited sense, the level Kansas productivity lags behind the U.S. But differences in output per

worker are largely reflected in differences in payroll per worker. A dollar of payroll expenditure in Kansas yields on average \$1.63 in gross receipts, very close to the national average. In terms of productivity growth, Kansas receipts per employee have grown at rate very close to the national average. Productivity concerns should not prevent service industries from developing in Kansas locations.

Table 7
Payroll and Receipts per Service Sector Employee

Change	US 1982	US 1987	% Change	KS 1982	KS 1987	%
Receipts per employee	38,446	47,964	24.8	33,257	40,597	22.1
Payroll per employee	25,502	27,217	6.7	20,318	24,833	22.2
Receipts per \$ payroll	1.50	1.76	--	1.64	1.63	--

Source: Bureau of the Census, *Census of Service Industries*, 1987

Wages and Skills in the Service Sectors

Many concerns have been voiced about whether service sector jobs are good jobs. An appropriate comparison is the average wage per employee in services versus that in the manufacturing sector. At least at the national level, the concerns may be unjustified. For example, 1990 real wages in the financial sector and communications sectors exceed those in manufacturing. Although average wages in the general service sectors (business services, personal services, etc.) fall short of those in manufacturing, they come very close to the wage and salary average of all sectors (\$16,255 versus \$17,712 in real 1982 dollars).

Table 8 shows wages and salaries for workers in Kansas and the U.S. that have been adjusted for inflation using a 1982 base year. Kansas wages and salaries average about \$2,600 less than their national counterparts. The difference is more pronounced for the service sectors--about \$5,200 for financial industries and \$3,000 for general services.

Within the broad categories of service industries shown in Table 8 are a number of detailed sub-industries. A question arises whether Kansas wages fall short of the national average because of a concentration of employment in lower paying sub-industries. The analysis is similar to the shift-share analysis discussed earlier in this report. Differences due to industrial structure are distinguished from those due to general competitive factors. The analysis (Table

9) shows that Kansas has slightly more than its share of advanced, higher paying service industries. However even these industries pay less in Kansas than in the nation on average. The lower level of wages in part reflects a lower cost of living in Kansas compared with areas on the east and west coasts.

Service industries are often compared with manufacturing. On the negative side, an average job in the general service sector can be expected to pay only about 2/3 as much as a manufacturing job. Wages in some of the specific service sectors, for example social services and hotels, are only about half the level of wages in manufacturing. These industries fit the stereotype for the service sector.

On the positive side, real service sector wages in Kansas and in the U.S. are growing much more rapidly than wages in general. Services may soon catch up with wages in the manufacturing sector, particularly in Kansas, where manufacturing wages have actually declined in real terms. Furthermore, the service sectors have provided most of the new job opportunities in recent years. Although manufacturing offers higher wages, it offers fewer opportunities.

Table 8
Real Wages and Salaries per Employee

Industry	Kansas 1980	Kansas 1990	Change 80-90	U.S. 1980	U.S. 1990	Change 80-90
Wage and Salary Average	15,414	15,132	-1.8%	16,974	17,712	4.3%
<i>Other Industries</i>	16,021	15,294	-4.5%	17,623	17,665	0.2%
Agriculture, Forestry, Fisheries	8,451	11,525	36.4	8,945	10,208	14.1
Mining	23,304	19,062	-18.2	27,926	28,415	1.7
Construction	20,411	17,234	-15.6	21,231	20,011	-5.7
Manufacturing	20,181	20,129	-0.3	21,129	22,058	4.4
Transportation	23,310	25,272	8.4	23,966	20,500	-14.5
Electric, Gas, Sanitary Services	22,757	25,667	12.8	25,679	29,426	14.6
Wholesale Trade	19,787	19,729	-0.3	21,845	22,988	5.2
Retail Trade	9,716	8,713	-10.3	10,668	10,007	-6.2
Government	13,821	14,391	4.1	16,409	18,133	10.5
<i>Service Type Industries</i>	13,471	N/A	N/A	15,237	17,809	16.9%
Communication	21,902	N/A	N/A	24,588	26,847	9.2
Finance, Insurance, Real Estate	16,075	17,599	9.5	18,050	22,813	26.4
Services	12,184	13,250	8.7	13,844	16,255	17.4

Source: Bureau of Economic Analysis, Tables SA7 and SA27. Values converted to real dollars using Consumer Price Index with 1982-1984 as base year.

Table 9
Sources of Service Sector Real Wage Differences, Kansas and U.S.

Average U.S. service wages, excluding communications	17,488
Average Ks. service wages, excluding communications	14,073
Actual Difference	3,415
Difference due to service sector industry mix*	-258
Difference due to general factors affecting wage levels	3,673

* A negative sign on this item means that Kansas has a favorable industry mix.
Source: Calculated from Bureau of Economic Analysis, Tables SA7 and SA27.

Labor Force Requirements in the Service Industries

The growth and prosperity of the service industries requires an appropriately trained labor force. In contrast to the misconception of service jobs as low skill and dead end, a surprising percentage of service workers are executives, managers, or technical workers (accountants, teachers, engineers, nurses, etc.). Nationally, between 30 and 44 percent of service workers fit into these categories, depending on industry. In contrast, only 18 percent of manufacturing jobs are held by executives, managers, or technical workers. Kansas follows the national pattern. The implications for the Kansas labor force are clear: as the service industries grow, they will require a high percentage of workers with a post-secondary education.

Table 10
Occupation of Work Force by Industry, 1986

Industry	U.S. Exec./Mang.	U.S. Technical	U.S. Other	Kansas Exec./Mang.	Kansas Technical	Kansas Other
Manufacturing	6.3%	11.7%	82.0%	7.0%	11.9%	81.0%
Other Non-Service	6.8%	8.8%	84.4%	6.4%	7.3%	86.3%
Communications	9.0%	19.9%	71.1%	8.2%	18.5%	73.3%
Finance, Insur., Real Estate	12.8%	14.4%	72.8%	13.1%	13.4%	73.5%
Business and Professional Services	8.4%	26.7%	64.9%	10.3%	25.5%	64.1%
Other Services (includes health)	5.5%	39.2%	55.3%	6.0%	35.3%	58.7%

Source: Kansas Department of Human Resources and U.S. Bureau of Labor Statistics

Conclusions

Three myths persist concerning service sector jobs: that the jobs are low productivity, low wage, and low skill. The productivity issue remains unresolved due to profound problems in measuring service sector real output. Current measurement techniques probably lead to an underestimation of productivity growth in reported statistics. Concerning wages, it is true that most service jobs pay less than traditional manufacturing jobs. The difference between service and manufacturing wages depends strongly on which service industry is examined. Trends are important here. On the bright side, service industry wages are growing faster, often much faster, than wages in most other sectors. Finally, relative to other industries the service sectors require a high proportion of executive, managerial, and technical employees. The service sectors demand a highly educated labor force.

The Role of Export Oriented Service Industries in the Regional Economy

Models of Regional Growth

No one can study economics without encountering the concepts of supply and demand. The supply-demand model distinguishes the motivation of producers from that of consumers. And indeed the supply-demand dichotomy provides a useful way to explain two alternative theories of regional growth.

The supply-side or "neoclassical" approach stresses the importance of critical factors such as labor, capital, and technical knowledge in explaining changes in a region's employment and output. According to this approach, regional growth depends on the growth of the labor supply, the amount of investment, and the degree of technical progress achieved by producers (Armstrong and Taylor, 1985).

Within a regional economy, the sources of growth may be internal or external. For example, investment may flow from the retained profits of regional producers, or it may flow in from other regions of the economy. In fact, factor flows are predicted to occur whenever the rate of return on a factor, such as capital, is greater in one region of the economy than in another. Factor flows may occur between industries as well as between regions.

Price responsiveness is a key to the neoclassical model. An increase in the price of a good sends a signal for more resources to be used in the production of the good. An increase in the return on capital or labor in one region of the economy sends a signal for resources to migrate to that region.

An alternative theory of regional growth views demand factors, particularly exports, as the key to understanding regional differences in prosperity. In their simplest form, demand-side models posit that an economy's *export base* brings new income into the region. That income is then respent within the region, producing a multiplier or ripple effect. More complex demand-side models, such as input-output models, allow for industry by industry differences in the size of the multiplier effect. But the basic focus on exports as the foundation of the regional economy remains.

In practice, most empirical models of regional economies appear to demand-side oriented. For example, a survey of state level modeling efforts (Burruss, Eglinski, and Oslund, 1988)

failed to find any examples of supply-side models or models emphasizing factors of production. The demand-side view dominates thinking about regional economies both among theorists and practitioners.

The supply and demand side approaches can be seen as complementary rather than as contradictory. Location theory helps to provide the bridge. Supply factors influence where export oriented firms will locate their investment. The output of these firms may then become part of the export base when it is sold outside the region. Short run fluctuations in demand influence income and employment. Long run trends in export demand determine whether the firms that have located in a region will prosper and reinvest, or whether they will decline. So both the supply and demand approaches indicate that exports play a key role in a region's prosperity.

Export Oriented Services

Several recent studies have explored the extent to which services contribute to the export base. The studies vary considerably in methodology and in the definitions of services employed.

An early study (Riefler, 1976) starts on a note of concern about the increasing share of services in the U.S. economy. Riefler questions whether the growth in services experienced in some geographic areas can be redirected to lagging regions. He performs a data analysis on aggregate income and employment data, from which he shows a strong correlation between service earnings per capita and population. From this, he concludes that service activities are tightly tied to market size. In other words, services are market-oriented and respond to, but do not independently initiate, growth. Without this independent role, services cannot be considered part of the export base.

Several studies refute Riefler's findings (Smith and Pulver, 1981; Beyers and Alvine, 1985; Stabler and Howe, 1988; Porterfield, 1988). In the earliest of these studies, Smith and Pulver report on a survey of Wisconsin nonmanufacturing firms in small and medium-sized communities. For the purpose of their study, exports are defined as any sales outside of the community. Their study finds that the majority of nonmanufacturing firms export little. However 27 percent of firms export more than 50 percent of their total output. As one would expect, the results vary by the size of the firms and

the type of business. Larger firms are more likely to be exporters, as are firms in the financial, legal, and professional services industries.

Beyers and Alvine (1985) find similar results, based on interviews with over 2000 firms in the Puget Sound area. Their sample includes firms in the transportation, legal, financial services, business services, and professional services industries. On average, firms report that they receive about 44 percent of their revenue from local customers, 17 percent from other areas of Washington state, and the remainder from customers dispersed throughout the U.S. and other countries. Even accounting and bookkeeping firms, which report the highest percentage local sales, export about 20 percent of their output to other regions. Beyers and Alvine find exporters among small firms as well as large. They also notice that firms of similar size in the same industry often have greatly different export ratios. They attribute this to differences in business development strategies. The authors conclude that services contribute greatly to the economic base of the Puget Sound region, and that "many service sectors have a base of income which is as external and spatially diverse as many sectors traditionally considered to be key to the local economy."

Porterfield's 1988 study presents the results of a survey of manufacturing and service firms in the upper midwest region. Of the literature reviewed, this study is probably the most relevant to the Kansas economy. Some of the results of the study are reproduced in Table 11. The service industries included in the study earn a high percentage of their revenue (about 21 percent) from out-of-state sales. While on average the out-of state sales percentage is less than that for manufacturing, several of the individual industries report averages that exceed that of manufacturing. For most services, the mean exceeds the median. This indicates that in each industry, there are a few relatively large firms that are highly export oriented, while the remaining firms export little or not at all.

Having established the importance of service exports, Porterfield goes on to analyze some the determinants of whether a firm exports. Her study indicates that the size of a firm has a positive influence on its propensity to export. The exporting firms are generally company headquarters or branch plants with non-local ownership. The firms employ a specialized marketing staff, and make a high percentage of their sales to manufacturing firms.

Table 11
Exports by Industry

Sector	% sales outside state	
	mean	median
Manufacturing	32.7	60.0
Services	20.9	5.0
Selected Services		
Radio and television broadcasting	15.9	10.0
Security brokers and dealers	20.1	5.0
Medical insurance	3.4	0.0
Fire, marine, casualty insurance	48.4	50.0
Advertising	19.8	0.0
Mailing, reproduction, steno services	3.9	0.0
Employment services	15.8	0.0
Prepackaged software	27.9	10.0
Data processing	25.4	3.0
Computer services	25.4	3.0
Research and development labs	65.4	72.5
Management and public relations'	34.0	10.0
Engineering and architectural services	14.8	0.0

Source: Porterfield (1988, p. 73)

A final study (Gilmer, Keil, and Mack, 1989) again sounds Riefler's initial note of caution about the potential of the service industries. The authors employ a variation of the location quotients method to estimate exports for urban centers and rural "hinterlands." Without going into details about their methodology, it suffices to say that the method uses a large cross-section of industry specific employment data. The authors do not dispute that trade in services exists between urban centers. They also find evidence of trade in services from urban communities to rural areas. However they find little evidence of independent service exports from rural communities. The results are somewhat consistent with Porterfield. While Porterfield finds evidence of service exports in metro and nonmetro areas, the proportion of service firms that export is much higher in the metro regions.

Measurement of State and Regional Exports

One of the problems in gauging the importance of trade flows (imports and exports) between regions is the scarcity of good data. Government agencies in the U.S. publish only limited data on the flows of manufactured commodities, and none on the flows of services.

Hence original survey based studies, such as Porterfield, provide the best available data on export behavior. However the cost in time and money involved in survey methods makes direct survey approaches fairly rare. Fortunately, a survey based input-output model constructed by M. Jarvin Emerson (1989) includes Kansas export data for goods and services. Emerson' data confirm the importance of service exports to the Kansas economy.

Table 12
Kansas Exports as Percentage of Output, 1985

Industry	Exports as % Output
Communications	2.4
Banking	9.2
Other Finance	41.3
Insurance and Real Estate	39.0
Lodging	11.8
Personal Services	26.0
Business Services	23.9
Medical, Health	9.7
Other Services	11.0

Source: Emerson (1989).

Note: Exports include sales to federal government.

The most commonly used alternative approach to measuring regional trade is referred to as the *location quotients* method. The method depends on employment or payroll data, usually that published by the federal government.

A simple location quotient can be constructed using employment (or payroll) numbers as proxies for the sizes of various industries:

$$LQ_i = (E_i^R / E_T^R) / (E_i^N / E_T^N)$$

where

E_i^R : Employment (or payroll) for industry i in region.

E_T^R : Total employment (or payroll) for all industries in region.

E_i^N : Employment (or payroll) for industry i in nation.

E_T^N : Total employment (or payroll) for all industries in nation.

The location quotient compares the share of industry i in the local economy with the share of industry i in the national economy.

The basic assumption of the location quotients method is that regions with a share of industry i greater than the share of industry i nationally are exporters of good i . Similarly, regions with a share of industry i less than the national average import good i . When a regional industry has a location quotient less than 1, regional firms can satisfy only a fraction (equal to the location quotient of the industry) of regional demand. A fraction equal to $(1 - LQ_i)$ of regional demand is imported.

The assumptions underlying the location quotients method of estimating trade are subject to three major criticisms. None fatally damage the methodology, but they do suggest that location quotient results be interpreted with caution.

1. *Disproportionate intermediate demands.* The location quotient method implicitly assumes that intermediate demand for a good or service in a region is proportional to U.S. demand (see Oslund, 1988 for more details). So high concentrations of supply of a good or service are interpreted to be indications of export activity. However it may be the case that high concentrations of supply are necessary to satisfy demand coming from other regional producers. In this case, high location quotients may indicate indirect rather than direct exports. For example, aircraft manufacturers in the Wichita area may make use of specialized computer services. These computer services become embodied in the exports of the manufactured goods. In that sense, the services are exported when the manufactured goods are exported.
2. *Disproportionate consumer demands.* As was the case with intermediate demands, the location quotients method assumes that consumer demand in a region is proportional to U.S. demand. Where a region differs substantially from national averages in per-capita income or in consumer tastes, the location quotient method can give misleading results.
3. *Cross-hauling.* The location quotients method estimates only net exports (exports minus imports) rather than independent import and export numbers. The distortions caused by this problem (referred to as cross-hauling in the literature) can be reduced but not eliminated by constructing export estimates at a very detailed industry level.

Despite the problems with the location quotients method, it still gives a good overview of the export structure of a region. Hence we have constructed a set of location quotients for Kansas using detailed employment numbers from *County Business Patterns*. These allow us to look at export patterns in more detail than found in Emerson. Additionally, we have constructed export measures for Johnson and Sedgwick counties.

Table 13 shows estimates of exports (measured in employment terms) for the state and the two counties. Appendix A shows the analysis for a more detailed set of industries. For Kansas

as a whole, 20.6 percent of employment depends directly or indirectly on exports. The highest export ratios occur in mining (56.8%) and manufacturing (48.8%). Most of the service industries show some export activity. On average exports account for 12.1 percent of service employment. The Kansas export base includes some 37,000 service industry jobs. Financial industries and health services appear to be responsible for the bulk of export employment.

There are clearly some discrepancies between the export ratios reported by Emerson's survey and the ratios estimated by location quotients. But the overall conclusion holds—service exports form an important part of the Kansas export base. Emerson's export measures include only direct exports. His data provide strong evidence that service industries make a contribution to the export base that is independent of manufacturing.

It is interesting to compare state level exports with exports from urban areas. We chose Johnson and Sedgwick counties as examples. First note that as measured by location quotients, exports from a county are defined as any sales outside the county borders. For Johnson County, the number of employees supported by exported services rivals the number supported by all other industries (22,968 for services; 28,414 for all other). Over 32 percent of service sector employment depends on exports. Sedgwick County shows a much higher concentration of exports in the manufacturing industries. Still about 5,000 service sector employees are export dependent.

The services categories clearly play an essential part of the Johnson County economic base. Some of the services produced in the county are sold out of state, while others are absorbed by the remainder of Kansas. This is one reason that Johnson county exports exceed state exports for most service industries. Financial services, communications, business services, and professional services stand out as exporting a high percentage of output. Services are much less important in the Sedgwick County economic base. It is likely that they play a supporting role to manufacturing in Sedgwick County.

Table 13
Net Exports by Type and Exports as Percent of Total Employment
Kansas, Johnson County, Sedgwick County, 1989

	<i>Kansas</i>		<i>Johnson County</i>		<i>Sedgwick County</i>	
	Net Export Employment	Export % Total	Net Export Employment	Export % Total	Net Export Employment	Export % Total
<i>Other Industries</i>						
Ag. Serv., For., Fish.	1,073	22.5	917	53.3	0	0.0
Mining	6,177	56.8	81	37.5	2,377	72.0
Construction	1,255	2.9	1,710	16.5	728	8.1
Manufacturing	93,864	48.8	10,712	47.3	46,084	74.1
Utilities	11,379	26.6	3,005	49.0	3,169	35.3
Wholesale Trade	14,409	22.8	7,511	44.5	2,667	23.1
Retail Trade	16,393	8.5	4,334	11.6	1,963	5.2
Not Classified	100	0.4	144	3.0	0	0.0
Subtotal	144,650	25.2	28,414	28.4	56,988	41.8
<i>Service Industries</i>						
Communications	2,610	18.3	3,145	59.3	358	12.6
Fin., Insur., Real Estate	8,728	15.0	9,535	48.6	925	9.5
Hotels	241	2.7	0	0.0	0	0.0
Personal Services	1,219	10.5	815	31.2	278	11.0
Business Services (not high tech)	1,193	4.3	4,337	40.9	709	9.7
Business Services (high tech)	193	4.4	925	43.0	194	18.8
Auto Repair and Services	484	6.7	236	17.8	167	9.4
Misc. Repair Services	92	2.8	24	4.6	279	30.1
Motion Pictures	556	21.8	181	30.4	69	13.8
Amusements	668	10.0	543	31.8	211	13.6
Health Services (not high tech)	9,303	34.8	8	0.3	0	0.0
Health Services (high tech)	6,463	9.7	885	11.0	689	4.9
Legal Services	0	0.0	0	0.0	0	0.0
Educational Services	0	0.0	213	14.0	151	10.1
Soc. Serv. and Member Org.	4,336	12.5	219	5.0	589	8.6
Misc. Prof. Services (not high tech)	0	0.0	316	14.6	32	1.6
Misc. Prof. Services (high tech)	1,264	10.5	1,586	35.2	440	15.7
Subtotal	37,350	12.1	22,968	32.3	5,091	8.2
TOTAL	182,000	20.6	51,382	30.0	62,079	31.3

Source: *County Business Patterns*, 1989. Suppressed data estimated by IPPBR.

Conclusions

Traditionally, the term "export base" has brought to mind agricultural, mineral, and manufactured products shipped from a region to areas around the country. The growth of the service industries forces us to rethink the nature of exports. Most studies have shown that services can play a role very much like that of manufacturing in bringing new income into a community.

An analysis of the Kansas data supports this emerging view of service industries as exporters. Service exports can easily exceed manufactured exports for urban economies such as Johnson county. But there is no guarantee that exports from urban area exports translate into exports from the state. As Gilmer, Keil, and Mack point out, services generally flow from urban to rural areas. A question remains whether services can provide a healthy export base in rural areas.

Links between Services and Other Sectors of the Kansas Economy

Services both support and are supported by other sectors of the Kansas economy. Service industry growth is inextricably tied to the strength of the purchasers of services-- consumers, producers, and government. Growth in consumer services depends strongly on income and population growth in the local area. Similarly, growth in business type services is closely linked to the success of an area's major industry clusters. However as services become more export oriented due to factors such as improvements in communications, both consumer and business services will increasingly serve a national and even international market.

Table 14
Percentage of Sales by Type of Customer

	Business Demand (%)	Household Consumption (%)	Government Demand (%)	Net Foreign Exports (%)
Transportation and warehousing	56.7	26.8	6.6	9.9
Communications, except radio and TV	46.6	45.4	6.1	1.9
Radio and television broadcasting	30.7	69.3	0.0	0.0
Private electric, gas, water, sanitary	53.5	39.6	7.4	-0.6
Finance and insurance	47.9	47.1	2.3	2.7
Real estate and rental	34.9	62.7	1.0	1.5
Hotels; personal and repair services	30.3	67.2	2.5	0.1
Business services	81.4	9.7	8.2	0.7
Automobile repair and services	30.5	63.7	5.7	0.0
Amusements	39.3	58.2	1.0	1.5
Health, educational, social services	4.0	93.9	2.0	0.0

Note: Industry demand may not sum to 100% due to rounding errors.

Source: Bureau of Economic Analysis, *Input-Output Accounts of the U.S. Economy*, 1987.

Table 14 makes it clear that a substantial percentage of demand for services originates in the business sector. Quinn, Baruch, and Paquette [1988] discuss the interdependency of services and other economic sectors:

...services and manufacturing are now so intertwined and mutually supporting that policy makers can no longer consider one as subordinate or in opposition to the other. Increasingly, success in either sector will go to those who effectively utilize the combined technological potentials both areas offer (p. 45).

The authors further point out that the cost competitiveness of manufacturing industries depends on the cost and quality of purchased service inputs such as transportation, communications, health care, and banking. Innovations in the service sector, particularly those associated with transmitting and processing information, have made it more cost effective for many firms to purchase state of the art services from other companies rather than to produce the service functions in-house.

The importance of the service sector to Kansas manufacturing can be seen by looking at three examples of important industry clusters--those centering around printing and publishing, aircraft, and automobiles and parts. Members of an industry cluster are related in some or all of the following ways: through purchases and sales, through demand for a common pool of skilled labor, through access to a common technology, or through shared demand for specific educational or other infrastructure resources. The discussion of the relationship between services and manufacturing focuses on purchaser-seller relationships.

Input-output data provided the best source of information on purchases and sales. Table 15 illustrates typical purchase patterns for three industries important to Kansas. In 1987, service sector purchases accounted for at least 6 dollars of every 100 dollars of output. Between 1982 and 1987, service sector input use as a share of output increased significantly for the automobile and aircraft industries, and held steady for printing and publishing. Business services comprise the largest single category of services purchases. Over the five-year period, all three industries increased the share of business services purchased.

Table 15 should be interpreted with some caution. First, the data are based on U.S. averages rather than Kansas-specific information. Second, even if Kansas firms operate in a manner typical of other firms in the U.S., there is no guarantee that they purchase their service inputs within Kansas. This report has already documented the prevalence of service imports and exports. From an economic development viewpoint, Table 15 can be seen as illustrating the *potential* for service sector links to Kansas manufacturing. Services, particularly business services, are becoming an increasingly important element in the input composition of manufacturers. However the continued growth of business services will depend not only on the growth of their share in manufacturing inputs, but also on the growth of manufacturing output.

Table 15
Input Use for Major Kansas Industry Clusters
(\$ of Input Use per \$100 Output)

	<i>Printing and Publishing</i>		<i>Automobiles and Parts</i>		<i>Aircraft and Parts</i>	
	1982	1987	1982	1987	1982	1987
Inputs to Production						
Materials	31.6	28.2	55.8	54.7	37.2	31.1
Transportation and Utilities	3.6	2.9	3.2	2.7	2.7	2.3
Government Produced Inputs	1.6	1.4	0.2	0.3	0.3	0.3
Wholesale and retail trade	3.5	3.6	7.5	8.0	2.3	2.5
Private Services	10.7	10.6	4.3	6.4	8.5	9.4
Communications, except radio and TV	1.3	0.9	0.2	0.2	0.6	0.5
Radio and television broadcasting	0.0	0.0	0.0	0.0	0.0	0.0
Finance and insurance	0.9	1.0	0.4	0.5	1.6	1.7
Real estate and rental	1.3	1.2	0.1	0.1	0.3	0.3
Hotels; personal and repair services	0.4	0.4	0.1	0.1	1.1	1.2
Business services	4.9	5.6	2.1	2.4	4.4	5.1
Eating and drinking places	1.2	1.1	0.2	0.2	0.3	0.3
Automobile repair and services	0.4	0.3	1.0	2.7	0.1	0.0
Amusements	0.0	0.0	0.0	0.0	0.0	0.0
Health, educational, social services	0.2	0.2	0.1	0.1	0.1	0.2
Value Added (wages, profits)	49.0	53.2	28.9	28.0	49.0	54.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Bureau of Economic Analysis, *Input-Output Accounts of the U.S. Economy*, 1982 and 1987

Conclusions

For many of the service industries, other businesses provided an important source of demand. The links between services and manufacturing are particularly strong. The relationship has been described as "intertwined and mutually supporting." Examination of input data for three industries important to Kansas reveals services, particularly business services, to be a growing share of the manufacturing input mix.

Implications for Economic Development

The importance of the service sector to the Kansas economy has been well documented by this study. Based on our research, we suggest some possible implications and policy options. The list of implications is intended as a starting point for discussion rather than as a definitive set of recommendations.

1. Policies that encourage manufacturing development should be extended to the export-oriented service sector.

The study documents that services are and can continue to be an important part of the Kansas export base. Services exported from Kansas play the same role in bringing in new income as do manufacturing and resource industries.

2. Opportunities for service sector growth in nonmetro areas need to be identified if the rate of decline of rural areas is to be slowed.

The shift of the U.S. economy toward the service sector seems to be accelerating the decline of rural areas. Services are more concentrated in urban areas than other industries. Kansas shows even more urban concentration than the U.S. on average.

Nevertheless, some service sector firms in rural areas do succeed in making substantial contributions to the rural export base. Factors contributing to successful rural service sector growth need to be identified and promoted.

3. Related to #2 above, barriers to the growth of services in nonmetro areas need to be identified.

For example, service firms may have infrastructure or labor force needs that cannot currently be met in Kansas nonmetro areas. Some of these barriers could be removed by policy intervention.

4. Kansas should carefully analyze the impact of any potential tax changes on service sector growth to make sure that services are not disadvantaged *vis a vis* other sectors of the economy.

Export service sector growth, particularly in Johnson County, has been one of the bright spots in Kansas economy. However tax policy changes have sometimes been made without taking service sector impacts into account. As an example, the tradeoffs involved in classification and removal of inventories from tax base resulted in a shift of property taxation toward service sector firms.

5. Access to technology should be promoted for service sector firms as well as for manufacturing.

High-tech service sector firms are similar to high-tech manufacturers in that they need to be on the cutting edge in order to compete. This means having access to bases of knowledge, and having adequate financing for equipment in which technology is embodied.

6. Business services should be recognized as an important contributor to manufacturing productivity. Policies that seek to improve the productivity of manufacturing clusters should take into account the service sector link.

The relationship between services and manufacturing has been described as "intertwined and mutually supporting." Examination of input data for three industries important to Kansas reveals services, particularly business services, to be a growing share of the manufacturing input mix. In a sense, the availability of high-quality service firms in an area serves as a type of infrastructure. The availability of high quality services may be a significant factor in attracting new firms to an area.

7. A highly skilled, educated, and adaptable workforce is essential to continued service sector growth.

The service sector will provide the bulk of new employment opportunities in the near future. A high percentage of the labor force employed by service sector firms is comprised of executives, managers, and technical workers. These jobs almost always require a post-secondary education. Furthermore, the jobs require adaptability and decision-making capacity.

Appendix A.1
Location Quotients and Exports by Detailed Industry
Kansas and Johnson County

Industry	Location Quotient	Kansas		Location Quotient	Johnson County	
		Total Employment	Net Export Employment		Total Employment	Net Export Employment
<i>Communications</i>						
4812 Radiotelephone communications	2.38	638	369	12.25	638	586
4813 Telephone communications, exc. radio	1.19	9,320	1,483	2.68	4,080	2,559
4820 Telegraph and other communications	0.12	18	0	0.08	2	0
4830 Radio and television broadcasting	1.23	2,758	510	0.92	399	0
4840 Cable and other pay TV services	1.23	1,313	248	0.84	173	0
4890 Communication services, nec	0.83	243	0	0.21	12	0
<i>Finance, Insurance, Real Estate</i>						
6010 Central reserve depository, nec	0.00	0	0	0.00	0	0
6020 Commercial banks	1.13	15,726	1,869	0.76	2,046	0
6030 Savings institutions	0.88	3,616	0	0.58	466	0
6060 Credit unions	0.30	134	0	1.07	94	6
6080 Foreign bank and branches and agencies	0.00	0	0	0.00	0	0
6090 Functions closely related to banking	0.08	31	0	0.25	18	0
6110 Federal and federally-sponsored credit	3.07	532	358	0.09	3	0
6140 Personal credit institutions	1.31	2,770	648	1.49	614	202
6150 Business credit institutions	0.32	268	0	0.74	118	0
6160 Mortgage bankers and brokers	1.21	1,767	309	5.57	1,576	1,293
6210 Security brokers and dealers	0.32	953	0	0.38	220	0
6220 Commodity contracts brokers, dealer	0.43	64	0	0.49	14	0
6230 Security and commodity exchanges	0.03	2	0	0.00	0	0
6280 Security and commodity services	0.40	256	0	1.41	176	51
6310 Life insurance	0.68	3,653	0	1.60	1,682	632
6321 Accident and health insurance	0.12	51	0	0.27	23	0
6324 Hospital and medical service plans	0.11	141	0	0.01	2	0
6330 Fire, marine, and casualty insurance	1.24	6,169	1,176	4.90	4,747	3,778
6350 Surety insurance	0.52	69	0	3.02	78	52
6360 Title insurance	0.47	250	0	0.69	72	0
6370 Pension, health, and welfare funds	0.74	189	0	0.84	42	0
6390 Insurance carriers, nec	0.79	57	0	0.00	0	0
640Y Insurance agents, brokers service	1.38	9,065	2,503	2.21	2,818	1,545
6510 Real estate operators and lessors	0.65	3,294	0	1.08	1,066	81
6530 Real estate agents and managers	0.64	3,747	0	1.68	1,910	775
6540 Title abstract offices	2.32	564	321	1.07	50	3
6552 Subdividers and developers, nec	0.32	304	0	0.95	176	0
6553 Cemetery subdividers and developers	0.73	302	0	0.22	17	0
679\ Administrative and auxiliary	0.30	621	0	0.52	207	0
6710 Holding offices	2.12	2,607	1,375	5.67	1,354	1,115
6720 Investment offices	0.83	108	0	0.31	8	0
6732 Educational, religious, etc. trusts	0.72	268	0	0.05	4	0
6733 Trusts, nec	0.45	116	0	0.16	8	0
6792 Oil royalty traders	1.21	30	5	1.03	5	0
6794 Patent owners and lessors	0.10	14	0	0.12	3	0
6798 Real estate investment trusts	0.17	11	0	0.45	6	0
6799 Investors, nec	1.96	332	163	0.31	10	0
<i>Hotels and Motels</i>						
7010 Hotels, motels, and tourist courts	0.63	8,498	0	0.69	1,787	0
7020 Rooming and boarding houses	0.84	78	0	0.48	9	0
7032 Sporting and recreational camps	0.24	32	0	0.24	6	0
7033 Trailing parks for transients	0.39	49	0	0.09	2	0
7040 Membership-basis organization hotel	3.11	355	241	0.09	2	0

Industry	Location Quotient	Kansas		Johnson County		
		Total Employment	Net Export Employment	Location Quotient	Total Employment	Net Export Employment
<i>Personal Services</i>						
7211 Power laundries, family commercial	0.76	202	0	1.33	68	17
7212 Garment pressing and cleaners	0.95	99	0	1.45	29	9
7213 Linen supply	1.04	585	24	0.00	0	0
7215 Coin-operated laundries and cleaning	1.04	465	18	1.29	112	25
7216 Dry cleaning plants, except rug	0.91	1,393	0	1.48	439	142
7217 Carpet and upholstery cleaning	1.37	387	104	3.45	190	135
7218 Industrial launderers	0.85	505	0	0.38	44	0
7219 Laundry and garment services, nec	0.71	88	0	1.64	40	16
7220 Photographic studios, portrait	1.04	507	18	1.44	137	42
7230 Beauty shops	1.05	3,602	184	1.35	898	235
7240 Barber shops	2.36	372	214	2.26	69	38
7250 Shoe repair and hat cleaning shops	1.48	94	30	3.04	38	25
7260 Funeral service and crematories	1.42	1,163	346	0.26	42	0
7291 Tax return preparation services	1.31	1,191	280	1.22	215	38
7299 Miscellaneous personal services, ne	0.97	997	0	1.46	291	92
<i>Business Services</i>						
7311 Advertising agencies	1.23	1,717	319	4.49	1,217	946
7312 Outdoor advertising services	0.54	70	0	0.00	0	0
7313 Radio, TV, publisher representative	1.35	297	76	3.81	163	120
7319 Advertising, nec	0.39	75	0	0.32	12	0
7322 Adjustment and collection services	1.29	732	164	2.97	327	217
7323 Credit reporting services	0.78	236	0	1.05	61	3
7331 Direct mail advertising services	1.43	1,183	359	2.08	332	172
7334 Photocopying and duplicating service	1.02	442	8	2.03	171	87
7335 Commercial photography	0.66	112	0	0.09	3	0
7336 Commercial art and graphic design	0.64	320	0	1.55	151	54
7338 Secretarial and court reporting	0.91	204	0	2.63	115	71
7342 Disinfecting and exterminating	1.05	686	32	0.86	110	0
7349 Building maintenance services, nec	0.68	4,636	0	0.88	1,164	0
7352 Medical equipment rental	1.17	219	31	2.46	89	53
7353 Heavy construction equipment rental	0.54	210	0	0.61	46	0
7359 Equipment rental and leasing, nec	1.09	1,556	125	0.77	214	0
7361 Employment agencies	0.33	659	0	1.32	516	125
7363 Help supply services	0.76	8,769	0	1.87	4,167	1,934
7371 Computer programming services	0.43	873	0	1.66	659	263
7372 Prepackaged software	0.14	93	0	0.15	20	0
7373 Computer integrated systems design	1.00	704	0	1.95	268	131
7374 Data processing and preparation	0.76	1,660	0	1.67	706	283
7375 Information retrieval services	0.03	4	0	0.00	0	0
7376 Computer related services, nec	1.87	415	193	1.69	73	30
7377 Computer rental and leasing	0.54	60	0	1.88	41	19
7378 Computer maintenance and repair	0.43	216	0	1.06	103	6
7379 Computer related services, nec	0.70	317	0	3.19	282	193
7381 Detective and armored car services	0.26	1,128	0	0.10	86	0
7382 Security systems services	0.82	358	0	1.30	110	25
7383 News syndicates	1.88	169	79	11.91	208	191
7384 Photofinishing laboratories	0.92	659	0	0.99	138	0
7389 Business services, nec	0.76	3,363	0	1.40	1,195	339
<i>Automobile Repair and Rental</i>						
7513 Truck rental and leasing	0.82	418	0	0.56	55	0
7514 Passenger car rental	0.27	194	0	0.12	17	0
7515 Passenger car leasing	0.97	104	0	3.50	73	52
7519 Utility trailer rental	0.50	16	0	0.00	0	0
7520 Automobile parking	0.16	78	0	0.15	14	0
7532 Top and body repair and paint shops	1.00	1,578	6	0.78	239	0

Industry	Location Quotient	Kansas		Johnson County		
		Total Employment	Net Export Employment	Location Quotient	Total Employment	Net Export Employment
<i>Automobile Repair and Rental cont.</i>						
7533 Auto exhaust system repair shops	0.78	163	0	1.10	44	4
7534 Tire retreading and repair shops	1.01	122	1	0.00	0	0
7536 Automotive glass replacement shops	0.64	111	0	0.60	20	0
7537 Automotive transmission repair shop	0.87	202	0	0.89	40	0
7538 General automotive repair shops	1.14	2,341	283	0.87	347	0
7539 Automotive repair shops, nec	1.16	451	62	0.48	36	0
7542 Car washes	1.16	973	132	1.65	269	105
7549 Automotive services, nec	0.85	427	0	1.76	171	74
<i>Repair and Rental</i>						
7622 Radio and television repair	0.70	214	0	1.02	61	1
7623 Refrigeration service and repair	0.33	71	0	0.15	6	0
7629 Electrical repair shops, nec	1.14	642	81	1.08	117	8
7630 Watch, clock, and jewelry repair	0.89	44	0	2.44	24	14
7640 Reupholstery and furniture repair	0.73	165	0	0.57	25	0
7692 Welding repair	0.97	257	0	0.46	24	0
7694 Armature rewinding shops	1.04	279	11	0.00	0	0
7699 Repair services, nec	0.96	1,557	0	0.84	266	0
<i>Motion Pictures</i>						
7812 Motion picture and video production	0.12	67	0	0.42	45	0
7819 Services allied to motion pictures	0.02	15	0	0.01	2	0
7822 Motion picture and tape distribution	0.27	46	0	0.17	6	0
7829 Motion picture distribution service	0.00	0	0	0.00	0	0
7832 Motion picture theaters, ex drive-i	1.44	1,299	396	1.84	323	148
7833 Drive-in motion picture theaters	1.51	69	23	1.43	13	4
7840 Video tape rental	1.15	1,054	138	1.16	207	29
<i>Amusements</i>						
7910 Dance halls, studios, and schools	1.36	245	66	2.05	72	37
7922 Theatrical producers and services	0.33	176	0	0.04	5	0
7929 Entertainers and entertainment group	0.09	43	0	0.08	7	0
7930 Bowling and billiard establishments	1.26	1,183	245	0.56	102	0
7941 Sports clubs and promoters	0.31	71	0	0.26	11	0
7948 Racing, including track operation	0.14	63	0	0.02	1	0
7991 Physical fitness facilities	0.76	813	0	1.94	405	196
7992 Public golf courses	0.46	117	0	0.29	14	0
7993 Coin-operated amusement devices	1.25	293	59	0.69	31	0
7996 Amusement parks	0.09	55	0	0.00	0	0
7997 Membership sports and recreation	1.13	2,541	299	1.71	745	310
7999 Amusement and recreation, nec	0.63	1,097	0	0.92	312	0
<i>Health Services</i>						
8010 Offices and clinics of medical doct	1.02	12,579	225	0.96	2,306	0
8020 Offices and clinics of dentists	1.01	4,927	70	1.13	1,068	125
8030 Offices of osteopathic physicians	1.40	481	137	1.25	84	17
8041 Offices of chiropractors	1.16	746	105	0.95	119	0
8042 Offices of optometrists	1.63	923	357	0.50	55	0
8043 Offices and clinics of podiatrists	0.83	189	0	1.15	51	6
8049 Offices of health practitioners, ne	0.52	335	0	1.01	127	2
8050 Nursing and personal care facilities	1.69	22,750	9,303	0.76	1,989	0
8060 Hospitals	1.13	44,849	5,102	0.44	3,396	0
8071 Medical laboratories	1.30	1,360	317	3.94	797	594
8072 Dental laboratories	1.41	519	150	3.07	220	148
8080 Home health care services	0.57	1,726	0	0.95	556	0
8090 Health and allied services, nec	0.72	1,730	0	0.70	325	0

Industry	Location Quotient	Kansas		Location Quotient	Johnson County	
		Total Employment	Net Export Employment		Total Employment	Net Export Employment
<i>810Y Legal services</i>	0.68	5,765	0	0.68	1,118	0
<i>Education Services (non-government)</i>						
8210 Elementary and secondary schools	0.79	3,309	0	0.96	782	0
8220 Colleges and universities	0.50	4,982	0	0.10	198	0
8230 Libraries and information centers	0.29	45	0	0.00	0	0
8240 Vocational schools	0.88	836	0	0.97	179	0
8290 Schools and educational services, n	0.67	530	0	2.38	367	213
<i>Social and Membership Services</i>						
8320 Individual and family services	0.88	3,152	0	0.27	189	0
8330 Job training and related services	1.34	3,576	908	0.07	36	0
8350 Child day care services	0.96	3,506	0	1.07	760	52
8360 Residential care	0.94	3,474	0	0.45	325	0
8390 Social services, nec	0.54	980	0	0.31	109	0
8410 Museums and art galleries	0.43	200	0	0.08	7	0
8420 Botanical and zoological gardens	0.37	39	0	0.00	0	0
8610 Business associations	0.88	793	0	0.64	111	0
8620 Professional organizations	1.16	578	79	1.41	136	39
8630 Labor organizations	0.56	954	0	0.24	78	0
8640 Civic and social associations	1.17	3,834	565	0.64	409	0
8650 Political organizations	0.56	31	0	1.26	14	3
8660 Religious organizations	1.26	12,788	2,646	1.04	2,042	74
8690 Membership organizations, nec	1.17	939	138	1.32	206	50
<i>Misc. Professional Services</i>						
8711 Engineering services	0.50	2,986	0	1.12	1,299	141
8712 Architectural services	0.75	1,021	0	1.72	456	191
8713 Surveying services	0.53	257	0	0.56	53	0
8720 Accounting, auditing, and bookkeep.i	0.95	4,558	0	0.95	884	0
8731 Commercial physical research	0.26	388	0	0.16	47	0
8732 Commercial nonphysical research	0.65	589	0	2.14	377	201
8733 Noncommercial research organization	0.23	135	0	0.06	7	0
8734 Testing laboratories	0.71	368	0	0.93	94	0
8741 Management services	1.19	3,236	525	1.51	792	266
8742 Management consulting services	0.75	1,540	0	1.45	578	178
8743 Public relations services	0.42	159	0	1.17	86	13
8744 Facilities support services	0.06	38	0	0.00	0	0
8748 Business consulting, nec	2.25	1,331	739	6.19	711	596
899\ Administrative and auxiliary	0.61	1,970	0	1.33	837	206
890Y Services, nec	0.88	1,487	0	1.33	438	109

Source: *County Business Patterns*, 1989. Suppressed data estimated by IPPBR.

Appendix A.2
Location Quotients and Exports by Detailed Industry
Sedgwick and Wyandotte Counties

Industry	<i>Sedgwick County</i>			<i>Wyandotte County</i>		
	Location Quotient	Total Employment	Net Export Employment	Location Quotient	Total Employment	Net Export Employment
<i>Communications</i>						
4812 Radiotelephone communications	1.38	84	23	0.00	0	0
4813 Telephone communications, exc. radio	0.95	1,690	0	0.55	331	0
4820 Telegraph and other communications	0.06	2	0	0.00	0	0
4830 Radio and television broadcasting	1.48	752	242	0.42	73	0
4840 Cable and other pay TV services	0.68	165	0	0.00	0	0
4890 Communication services, nec	2.39	159	92	0.00	0	0
<i>Finance, Insurance, Real Estate</i>						
6010 Central reserve depository, nec	0.00	0	0	0.00	0	0
6020 Commercial banks	0.80	2,525	0	0.93	993	0
6030 Savings institutions	0.59	548	0	0.50	159	0
6060 Credit unions	0.11	12	0	0.00	0	0
6080 Foreign bank and branches and agencies	0.00	0	0	0.00	0	0
6090 Functions closely related to banking	0.10	8	0	0.08	2	0
6110 Federal and federally-sponsored credit	9.23	363	323	0.00	0	0
6140 Personal credit institutions	1.25	602	121	0.98	159	0
6150 Business credit institutions	0.02	3	0	1.00	63	0
6160 Mortgage bankers and brokers	0.23	76	0	0.01	2	0
6210 Security brokers and dealers	0.53	357	0	0.03	7	0
6220 Commodity contracts brokers, dealer	0.36	12	0	0.12	1	0
6230 Security and commodity exchanges	0.00	0	0	0.00	0	0
6280 Security and commodity services	0.14	21	0	0.00	0	0
6310 Life insurance	0.60	739	0	0.14	57	0
6321 Accident and health insurance	0.23	23	0	0.06	2	0
6324 Hospital and medical service plans	0.09	27	0	0.00	0	0
6330 Fire, marine, and casualty insurance	0.38	425	0	0.10	37	0
6350 Surety insurance	0.00	0	0	0.21	2	0
6360 Title insurance	0.21	26	0	0.59	24	0
6370 Pension, health, and welfare funds	0.10	6	0	0.22	4	0
6390 Insurance carriers, nec	1.69	28	11	0.00	0	0
640Y Insurance agents, brokers service	0.67	1,003	0	0.21	104	0
6510 Real estate operators and lessors	0.81	932	0	0.76	296	0
6530 Real estate agents and managers	0.55	730	0	0.19	87	0
6540 Title abstract offices	1.84	101	46	0.97	18	0
6552 Subdividers and developers, nec	0.46	98	0	0.02	2	0
6553 Cemetery subdividers and developers	1.03	96	3	2.04	65	33
679\ Administrative and auxiliary	0.32	147	0	0.00	0	0
6710 Holding offices	2.37	660	381	0.54	51	0
6720 Investment offices	1.47	43	14	0.00	0	0
6732 Educational, religious, etc. trusts	0.07	6	0	1.78	51	22
6733 Trusts, nec	0.57	33	0	0.13	3	0
6792 Oil royalty traders	3.84	22	16	0.00	0	0
6794 Patent owners and lessors	0.16	5	0	0.00	0	0
6798 Real estate investment trusts	0.00	0	0	0.00	0	0
6799 Investors, nec	1.25	48	10	0.20	3	0
<i>Hotels and Motels</i>						
7010 Hotels, motels, and tourist courts	0.69	2,108	0	0.13	136	0
7020 Rooming and boarding houses	0.00	0	0	0.00	0	0
7032 Sporting and recreational camps	0.09	3	0	0.76	8	0
7033 Trailering parks for transients	0.10	3	0	0.00	0	0
7040 Membership-basis organization hotel	0.21	5	0	0.60	5	0

Industry	Sedgwick County			Wyandotte County		
	Location Quotient	Total Employment	Net Export Employment	Location Quotient	Total Employment	Net Export Employment
<i>Personal Services</i>						
7211 Power laundries, family commercial	0.24	15	0	0.75	15	0
7212 Garment pressing and cleaners	0.64	15	0	0.34	3	0
7213 Linen supply	1.11	141	14	1.84	79	36
7215 Coin-operated laundries and cleaning	1.26	128	27	0.66	23	0
7216 Dry cleaning plants, except rug	0.94	325	0	1.31	154	36
7217 Carpet and upholstery cleaning	1.32	84	20	0.37	8	0
7218 Industrial launderers	1.05	142	7	0.00	0	0
7219 Laundry and garment services, nec	0.58	16	0	0.57	5	0
7220 Photographic studios, portrait	1.19	131	21	0.82	31	0
7230 Beauty shops	0.90	698	0	0.54	141	0
7240 Barber shops	1.38	49	13	0.76	9	0
7250 Shoe repair and hat cleaning shops	2.23	32	18	0.70	3	0
7260 Funeral service and crematories	0.79	145	0	1.22	77	14
7291 Tax return preparation services	1.46	301	94	2.04	142	72
7299 Miscellaneous personal services, ne	1.28	297	64	0.72	56	0
<i>Business Services</i>						
7311 Advertising agencies	1.00	316	0	0.37	40	0
7312 Outdoor advertising services	0.83	25	0	0.00	0	0
7313 Radio, TV, publisher representative	0.00	0	0	0.00	0	0
7319 Advertising, nec	1.03	44	1	0.31	5	0
7322 Adjustment and collection services	1.71	221	92	0.99	43	0
7323 Credit reporting services	0.22	15	0	0.00	0	0
7331 Direct mail advertising services	1.40	261	74	1.03	65	2
7334 Photocopying and duplicating service	1.49	147	48	0.41	14	0
7335 Commercial photography	1.29	50	11	1.46	19	6
7336 Commercial art and graphic design	0.38	43	0	0.26	10	0
7338 Secretarial and court reporting	0.49	25	0	0.11	2	0
7342 Disinfecting and exterminating	0.98	145	0	0.88	44	0
7349 Building maintenance services, nec	0.92	1,409	0	0.47	247	0
7352 Medical equipment rental	0.75	32	0	4.84	70	55
7353 Heavy construction equipment rental	0.60	53	0	0.36	11	0
7359 Equipment rental and leasing, nec	2.49	807	482	0.72	79	0
7361 Employment agencies	0.08	38	0	0.25	39	0
7363 Help supply services	0.82	2,140	0	0.94	830	0
7371 Computer programming services	0.16	76	0	0.44	69	0
7372 Prepackaged software	0.31	47	0	0.14	7	0
7373 Computer integrated systems design	2.18	350	190	0.00	0	0
7374 Data processing and preparation	0.88	434	0	0.82	137	0
7375 Information retrieval services	0.00	0	0	0.00	0	0
7376 Computer related services, nec	1.09	55	5	0.00	0	0
7377 Computer rental and leasing	0.00	0	0	0.00	0	0
7378 Computer maintenance and repair	0.48	55	0	0.40	16	0
7379 Computer related services, nec	0.16	16	0	0.00	0	0
7381 Detective and armored car services	0.51	492	0	0.20	64	0
7382 Security systems services	0.84	83	0	2.01	67	34
7383 News syndicates	0.00	0	0	0.21	1	0
7384 Photofinishing laboratories	0.74	120	0	0.13	7	0
7389 Business services, nec	0.82	824	0	0.18	62	0
<i>Automobile Repair and Rental</i>						
7513 Truck rental and leasing	1.23	143	27	2.31	91	51
7514 Passenger car rental	0.86	143	0	0.00	0	0
7515 Passenger car leasing	0.65	16	0	0.00	0	0
7519 Utility trailer rental	1.55	12	4	0.00	0	0
7520 Automobile parking	0.44	48	0	0.19	7	0
7532 Top and body repair and paint shops	0.82	292	0	1.55	186	66

Industry	Sedgwick County			Wyandotte County		
	Location Quotient	Total Employment	Net Export Employment	Location Quotient	Total Employment	Net Export Employment
<i>Automobile Repair and Rental cont.</i>						
7533 Auto exhaust system repair shops	1.08	51	4	2.11	34	18
7534 Tire retreading and repair shops	0.11	3	0	8.70	81	71
7536 Automotive glass replacement shops	0.86	34	0	1.09	14	1
7537 Automotive transmission repair shop	1.23	65	12	2.39	43	25
7538 General automotive repair shops	1.07	499	33	0.89	141	0
7539 Automotive repair shops, nec	1.73	153	65	1.16	35	5
7542 Car washes	1.12	214	23	0.54	35	0
7549 Automotive services, nec	0.91	104	0	0.95	37	0
<i>Repair and Rental</i>						
7622 Radio and television repair	0.69	47	0	0.26	6	0
7623 Refrigeration service and repair	0.30	14	0	1.05	17	1
7629 Electrical repair shops, nec	2.42	308	180	0.33	14	0
7630 Watch, clock, and jewelry repair	1.19	13	2	0.45	2	0
7640 Reupholstery and furniture repair	0.59	30	0	1.35	23	6
7692 Welding repair	0.17	10	0	0.58	12	0
7694 Armature rewinding shops	2.58	157	96	1.26	26	5
7699 Repair services, nec	0.94	346	0	1.50	187	62
<i>Motion Pictures</i>						
7812 Motion picture and video production	0.09	11	0	0.00	0	0
7819 Services allied to motion pictures	0.11	16	0	0.14	7	0
7822 Motion picture and tape distribution	0.00	0	0	2.77	36	23
7829 Motion picture distribution service	0.00	0	0	0.00	0	0
7832 Motion picture theaters, ex drive-in	0.91	186	0	0.44	30	0
7833 Drive-in motion picture theaters	3.03	31	21	0.00	0	0
7840 Video tape rental	1.23	256	48	0.64	45	0
<i>Amusements</i>						
7910 Dance halls, studios, and schools	1.57	64	23	0.89	12	0
7922 Theatrical producers and services	0.67	82	0	0.60	25	0
7929 Entertainers and entertainment group	0.12	13	0	0.00	0	0
7930 Bowling and billiard establishments	1.56	331	118	1.14	82	10
7941 Sports clubs and promoters	0.62	32	0	0.00	0	0
7948 Racing, including track operation	0.06	6	0	0.00	0	0
7991 Physical fitness facilities	0.40	96	0	0.47	39	0
7992 Public golf courses	0.80	46	0	0.79	15	0
7993 Coin-operated amusement devices	2.31	123	70	1.58	28	10
7996 Amusement parks	0.32	46	0	0.00	0	0
7997 Membership sports and recreation	0.92	469	0	0.32	54	0
7999 Amusement and recreation, nec	0.63	249	0	0.16	22	0
<i>Health Services</i>						
8010 Offices and clinics of medical doct	1.03	2,890	90	1.09	1,030	82
8020 Offices and clinics of dentists	0.86	945	0	0.67	249	0
8030 Offices of osteopathic physicians	1.21	94	16	0.33	9	0
8041 Offices of chiropractors	0.88	128	0	0.43	21	0
8042 Offices of optometrists	1.50	193	64	0.32	14	0
8043 Offices and clinics of podiatrists	0.54	28	0	0.26	5	0
8049 Offices of health practitioners, ne	0.45	65	0	0.29	14	0
8050 Nursing and personal care facilities	0.71	2,151	0	0.97	1,001	0
8060 Hospitals	1.05	9,430	422	2.51	7,659	4,608
8071 Medical laboratories	1.16	274	38	0.10	8	0
8072 Dental laboratories	1.70	142	59	1.43	40	12
8080 Home health care services	0.86	585	0	0.34	78	0
8090 Health and allied services, nec	0.92	501	0	1.13	208	23

Industry	Sedgwick County			Wyandotte County		
	Location Quotient	Total Employment	Net Export Employment	Location Quotient	Total Employment	Net Export Employment
<i>810Y Legal services</i>	0.71	1,356	0	0.60	390	0
<i>Education Services (non-government)</i>						
8210 Elementary and secondary schools	0.61	577	0	1.15	368	47
8220 Colleges and universities	0.21	486	0	0.17	131	0
8230 Libraries and information centers	0.40	14	0	0.00	0	0
8240 Vocational schools	1.70	367	151	0.00	0	0
8290 Schools and educational services, n	0.30	54	0	0.26	16	0
<i>Social and Membership Services</i>						
8320 Individual and family services	1.13	915	102	0.46	127	0
8330 Job training and related services	1.02	615	10	0.97	199	0
8350 Child day care services	0.79	655	0	0.51	142	0
8360 Residential care	0.81	676	0	0.50	142	0
8390 Social services, nec	0.45	186	0	1.34	187	48
8410 Museums and art galleries	0.62	66	0	0.09	3	0
8420 Botanical and zoological gardens	1.67	39	16	0.00	0	0
8610 Business associations	0.65	132	0	0.19	13	0
8620 Professional organizations	0.62	70	0	0.20	8	0
8630 Labor organizations	0.36	138	0	3.05	397	266
8640 Civic and social associations	0.77	570	0	0.47	118	0
8650 Political organizations	0.36	5	0	0.00	0	0
8660 Religious organizations	1.21	2,775	476	0.94	729	0
8690 Membership organizations, nec	0.68	123	0	0.33	20	0
<i>Misc. Professional Services</i>						
8711 Engineering services	0.41	559	0	0.33	153	0
8712 Architectural services	0.81	251	0	0.16	17	0
8713 Surveying services	0.46	50	0	1.17	43	6
8720 Accounting, auditing, and bookkeep.i	1.02	1,106	17	0.51	188	0
8731 Commercial physical research	0.18	60	0	0.29	34	0
8732 Commercial nonphysical research	0.36	74	0	0.21	14	0
8733 Noncommercial research organization	0.64	84	0	0.00	0	0
8734 Testing laboratories	0.73	86	0	0.00	0	0
8741 Management services	1.32	810	196	4.49	933	725
8742 Management consulting services	1.52	711	244	0.04	6	0
8743 Public relations services	0.40	34	0	0.00	0	0
8744 Facilities support services	0.00	0	0	0.11	6	0
8748 Business consulting, nec	0.63	84	0	0.20	9	0
899\ Administrative and auxiliary	0.75	551	0	0.33	82	0
890Y Services, nec	0.64	246	0	0.21	27	0

Source: *County Business Patterns*, 1989. Suppressed data estimated by IPPBR.

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