Producer services: trends and prospects for the Seventh District

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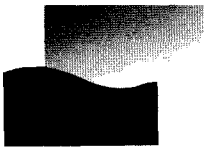

Economic development strategists in the Seventh District have tried to hitch their wagons to the booming service sector as a means of replacing disappearing paychecks in manufacturing and agriculture. But not all services are capable of driving regional growth. Service sector jobs satisfying local consumer demand, such as dry cleaning and most retail sales, do not usually generate additional personal income. According to the so-called "export base" theory, goods and services sold afar generate income which, in turn, finances local income and spending on nonexport goods and services. In this way, the portion of regional growth that is generated by changes in external demand for the region's exports is usefully identified for purposes of development policies. Accordingly, the region's perspective correctly focuses on those service sectors that are driven by external demand—that is, so-called "export sales."[1] In particular, producer services industries have been associated both with strong growth of late, and with external rather than local markets. Producer services are services sold to firms rather than to consumers and typically include accounting, management consulting, financial services, real estate, insurance, engineering, architecture, and credit reporting.[2] The producer services sector represents one of the most rapidly growing sectors as measured by the rate of job growth (see Table 1). Moreover, its growth has been consistently high over the past two decades, growing at an annual rate of 4.5 percent per year from 1969 to 1979, and 4.8 percent from 1979 to 1989.

Given this robust growth, producer services appear to be a rich target for local and regional development policies. But the richness of the target may be to little avail without a deeper understanding of where and why producer services are growing. Surely, not all regions will be attractive to all producer services industries; and not all industries will be attractive to regions. What institutions and amenities are attractive to producer services industries? Are both urban and rural locales attractive? Do producer services industries sell beyond the boundaries of the local economy and, if so, which industries do so?

In this article, I review current studies in order to shed light on these issues. Studies are reviewed which claim to measure a regional economy's propensity to sell services beyond its own boundaries. Further, the article examines the tendency for producer services to favor locating in more urbanized areas rather than in less urbanized or rural areas, and how technological changes in personal computers and telecommunications technology may be changing the locational tendencies of producer ser-

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TABLE 1

	Employment 1989	Annual growth 1969-79	1979-89
	thousands	*(-------percent--------)*	
Producer services	23,351	4.5	4.8
Business services	7,845	7.1	8.2
FIRE	9,981	4.5	3.6
Legal services	1,258	5.8	6.0
Membership org.	1,644	–1.2	.5
Miscellaneous*	2,624	6.4	3.9
Communication	1,340	2.3	.2
Electric, gas, and sanitary	1,004	1.9	2.1
Retail trade	21,957	2.9	2.4
Wholesale trade	6,471	3.3	1.5
Transportation	3,988	1.3	1.6
Health	8,876	6.0	4.3
Government	20,355	1.4	1.0
All services (nongoods)	99,911	2.8	2.7

*Includes engineering, architecture, accounting, management, and public relations services.
SOURCE: Bureau of Economic Analysis.

vice firms. The final section summarizes the findings and discusses the overall prospects for producer services industries in the 1990s.

Can service exports spur a regional economy?

Two types of studies support the idea that growth in services *can* independently spur a region's economy. Both do so by suggesting that a significant proportion of a region's services *are* sold afar rather than locally, which implies that services growth need not be derived from the growth in local goods production. The first set of studies looks at the proportion of a region's services employment across industries. The observation that a region's employment concentrates in a particular service industry, that is, that there is surplus labor employed in producing a service, suggests that the region produces more than it needs and therefore exports the surplus.[3] As pointed out by the authors themselves, this method and its variants are subject to error in their purported measurement. A region may display greater employment concentration, not because it exports the service afar, but because its population prefers to consume the service in question to a greater degree, or because it produces the service with more labor and less capital and land in comparison to other regions. Alternatively, its topography or climate may require greater local production and consumption of the service. For example, pest control services for buildings are in greater demand in hot humid climates such as Houston or New Orleans, while snow removal services are demanded in Buffalo. These problems aside, differences in service employment across regions can be used to determine which regions export services, to a reasonable order of approximation.[4]

The most commonly used measure for service export has been a simple index of employment concentration which looks at an industry's share of total employment in a region. This share is put into index form by dividing by the industry's share of total employment in the nation:

$$(1)\quad \text{Index} = (E_{i,j}/E_{total,j}) \,/\, (E_{i,US}/E_{total,US}),$$

for service industry i and region j. For example, if advertising employment in Chicago accounted for .5 percent of Chicago's total employment, but only .25 percent of total employment in the nation, then advertising in Chicago would have an index number of 2. An index number greater than 1 suggests that the region produces a surplus in the service which is exported elsewhere. Accordingly, an index number of 1 would indicate little or no trade while an index number less than 1 would suggest that the region imports the service.

The idea of observing service specialization and export from employment concentration has been extended to service production within an urban hierarchy and, in particular, to the question of whether some services specialize in urban centers of roughly equal sizes and are exported downward to smaller areas [Gilmer, Keil, and Mack (1989)]. This technique has also been used to look at services trade within systems of large cities in a region in order to

determine whether particular urban areas specialize in particular services, apart from and in addition to the export question [see Gilmer (1990)].

The employment concentrations of a sampling of producer service industries are displayed in Table 2 for the metropolitan areas in Seventh District states. The strong propensity for producer service firms to favor large metropolitan areas is evident; producer services tend to concentrate in the Chicago area, which ranks near the top both regionally and nationally. The largest metropolitan areas in the Seventh District—Chicago, Detroit, Indianapolis, Des Moines, and Milwaukee—display a tendency to export services.[5]

While an urban hierarchy is evident in the Seventh District, with services being exported from urban centers to hinterlands within the region, other observations also suggest that metropolitan areas specialize in particular services, quite aside from the urban hierarchy. For example, although Milwaukee is located only 90 miles from Chicago, a city with more than 3 times as many people, Milwaukee serves as an independent purveyor and specialist in certain urban services such as advertising, consumer credit reporting, and accounting. Moreover, many small metropolitan areas rank close to or above the larger areas in particular services: Peoria and Cedar Rapids in advertising, Lansing and South Bend in consumer credit reporting, Sheboygan in

TABLE 2

Index of employment concentration in business service industries
(Top ranked Seventh District MSAs, 1987)

Advertising	Index	Rank
Chicago, IL PMSA	2.89	5
Cedar Rapids, IA MSA	2.32	6
Milwaukee, WI PMSA	1.99	9
Peoria, IL MSA	1.82	11
Detroit, MI PMSA	1.76	12
Elkhart-Goshen, IN MSA	1.38	28
Ann Arbor, MI PMSA	1.37	30
Madison, WI MSA	1.33	31
Waterloo-Cedar Falls, IA MSA	1.20	43
Kalamazoo, MI MSA	1.19	45

Consumer credit reporting	Index	Rank
Des Moines, IA MSA	1.87	21
Lansing-East Lansing, MI MSA	1.66	34
Chicago, IL PMSA	1.61	38
South Bend-Mishawaka, IN MSA	1.35	51
Milwaukee, WI PMSA	1.34	53
Indianapolis, IN MSA	1.28	65
Fort Wayne, IN MSA	1.20	76
Green Bay, WI MSA	1.17	81
Kankakee, IL MSA	1.13	86
Champaign-Urbana-Rantoul, IL MSA	1.09	94

Computer programming and data processing	Index	Rank
Ann Arbor, MI PMSA	2.44	16
Des Moines, IA MSA	2.33	17
Madison, WI MSA	1.67	35
Cedar Rapids, IA MSA	1.51	41
Lafayette-West Lafayette, IN MSA	1.48	43
Chicago, IL PMSA	1.47	44
Detroit, MI PMSA	1.18	56
Janesville-Beloit, WI MSA	1.16	59
Champaign-Urbana-Rantoul,IL MSA	1.06	67
Milwaukee, WI PMSA	1.06	70

Management and public relations	Index	Rank
Lake County, IL PMSA	2.54	8
Indianapolis, IN MSA	2.14	10
Battle Creek, MI MSA	1.78	17
Chicago, IL PMSA	1.69	23
Ann Arbor, MI PMSA	1.27	45
Grand Rapids, MI MSA	1.26	50
Cleveland, OH PMSA	1.12	60
Fort Wayne, IN MSA	1.09	64
Detroit, MI PMSA	1.02	70
Green Bay, WI MSA	1.01	71

Engineering, architecture, and surveying	Index	Rank
Ann Arbor, MI PMSA	2.00	14
Detroit, MI PMSA	1.46	40
Sheboygan, WI MSA	1.35	49
Cedar Rapids, IA MSA	1.29	55
Madison, WI MSA	1.28	57
Green Bay, WI MSA	1.09	81
Jackson, MI MSA	1.03	91
Iowa City, IA MSA	1.01	96
Chicago, IL PMSA	1.01	98
Indianapolis, IN MSA	1.00	100

Accounting, auditing, and bookkeeping	Index	Rank
Madison, WI MSA	1.66	11
Chicago, IL PMSA	1.50	16
South Bend-Mishawaka, IN MSA	1.48	18
Des Moines, IA MSA	1.41	25
Grand Rapids, MI MSA	1.32	36
Milwaukee, WI PMSA	1.26	42
Aurora-Elgin, IL PMSA	1.20	54
Kalamazoo, MI MSA	1.12	67
Indianapolis, IN MSA	1.09	74
Detroit, MI PMSA	1.04	83

engineering and architecture, Grand Rapids in accounting, and Battle Creek in management and public relations. Those smaller metropolitan areas hosting major state universities such as Ann Arbor, Madison, and Champaign-Urbana figure prominently as service exporters. Computer programming, engineering, research, and testing labs draw heavily on university skilled labor and institutional capital.

Direct observation of service exports

A second group of analytical studies directly observes the sales transactions of service firms as exported outside the region. These studies have been conducted in particular regions, with the assumption that the results could be applied to other regions. The pioneering work was conducted for the Puget Sound area of Washington state by William B. Beyers, Michael J Alvine, and Erik G. Johnsen (1985). The authors interviewed 2,000 firms in the services, utility, communication, FIRE (finance, insurance, and real estate), business, and professional services industries. The central finding was that a heretofore unrecognized proportion of service firms (55 percent) exported more than 10 percent of their sales outside the area. All firms taken together exported more than 36 percent of sales outside the Puget Sound region, with healthy sales outside of the state as well. Other findings indicated a wide variation among industry types in the propensity to export services. Most individual industries tended to export between one-third and two-thirds outside the region; real estate and accounting tended to depend more heavily on local sales while R&D labs and transport services tended to export more.[6]

Additional studies have been conducted as case studies of areas within the industrial Midwest [Goe (1990) and Porterfield and Pulver (1991)]. Such studies have corroborated the findings of the Beyers, *et. al.* study that producer services are often exported. In addition, the subsequent studies offer many additional insights into the geography of producer services sales such as the preferences of producer services export firms to locate in large metropolitan areas, rural areas, or in small to medium size metropolitan areas.

Urban tendencies

Producer services have long displayed a marked preference for locating in urbanized areas. By one recent study, 93.7 percent of producer service employment located in Metropolitan Statistical Area (MSA) counties in the U.S., and 65.5 percent located in the largest 39 MSAs [O hUallachain and Reid (1991)]. This urban tendency also holds true with respect to the scale of establishment in larger versus smaller areas; that is, firm size increases with the size of the MSA [Krmenec and Cohn (1991)].[7]

The reasons for more urbanized concentration may include gains from larger scale than is possible in urban locations. Demand for a service such as public relations or environmental law can be met at lower cost when the service is provided to a large number of local clients. In addition, producer services inherently involve the transfer of information, either in person or through electronic transmission. The delivery of services through face-to-face communication from a central place to a surrounding area economically provides such an arrangement. Transportation from a central place outward through a spoke-like travel grid can minimize time. For example, recent studies have illustrated the importance of air travel access to service firms locating in large metropolitan areas [Beyers, *et. al.* (1985)]. At the same time, a transportation grid can also efficiently bring in service customers for face-to-face meetings. These may be corporate customers, wholesale buyers, or people attending conventions and similar meetings.

A second set of reasons for urban concentration are the gains of close proximity enjoyed by individual service industries, many of whom sell to one another and who presumably can shop for and/or deliver services at lower cost if they are located in the same urban area. Reportedly, producer services often sell to other service industries or the administrative arms of goods producing industries in a region [Goe (1990)].

Similar to the transportation benefits achieved by manufacturing industries from close proximity in years past (for example, apparel and textiles in New York City or more recently steel, machine tools, and autos in the Great Lakes region), service transactions involving face-to-face contact may also benefit from location and interaction. Others have emphasized that "higher order" or "information intensive" service industries do benefit from strategic location, but the benefits do not neces-

sarily derive from direct interaction [O hUallachain and Reid (1991)]. Rather, a shared labor pool of creative and flexible workers may enable such firms to solve unforeseen and complex problems as they arise.

Rural prospects

The revolution in electronic communication and information transmission has stirred the hopes and interests of rural areas in attracting producer services firms. Indeed, advances in satellite communications, fiber optics, facsimile machines, and microwave technology have dramatically lowered costs and opened new vistas for communications in more remote locations. Anecdotal information such as Citicorp's siting of a credit card processing facility in South Dakota has created expectations in rural and smaller metropolitan areas of a deconcentration of producer jobs. More general evidence of the developments in producer jobs is furnished by the recent study by O hUallachain and Reid, which reports that employment share of the nation's producer services (SIC 73 and 89) increased from 3.6 to 6.3 percent from 1976 to 1986. Gains were also reported for small and intermediate metropolitan areas at the expense of the 39 largest MSAs.

Despite this interest and evidence, the fundamental forces affecting the rural versus urban location decision are highly ambiguous; opportunities for rural development in producer services industries have possibly been oversold. While it is true that communications advances can allow some services to be delivered from less costly (and possibly more amenable) rural locations, the opposite is also sometimes true; communications advances also allow services to originate from urban sites and be delivered to rural locales more cheaply, as has been suggested by Kirn, Conway, and Beyers (1990). These authors report little or no deconcentration of producer services down the urban hierarchy from 1974 to 1984. In another study conducted in rural Washington, the authors found that information technologies created nine jobs but eliminated eleven [Dillman, Beck, and Callan(1989)].

Some analysts also believe that many service activities, especially those accounting for rapid growth in producer services industries such as management consulting and financial analysis, are becoming more sophisticated and skill intensive [Stanback and Noyelle (1982)]. But these types of activities—which involve information analysis and intepretation—require face-to-face meetings and interaction with associated industries. That is, communications are complementary to these activities rather than substitutes. Accordingly, rural locations will not tend to be a drawing card for such services.

Air transportation represents another complement rather than substitute for "higher order" service activities. Airline deregulation has strengthened the producer services standing of those large metropolitan areas hosting major hub airports. Surveys attest to the importance of frequent and expansive air connections for both producer services and administrative establishments [see Testa (1992), Kirn, Conway, and Beyer (1990), and Drennan (1989)]. In contrast, the near completion of the U.S. interstate highway system (along with supporting road networks) has tended to deconcentrate overland and distribution services.

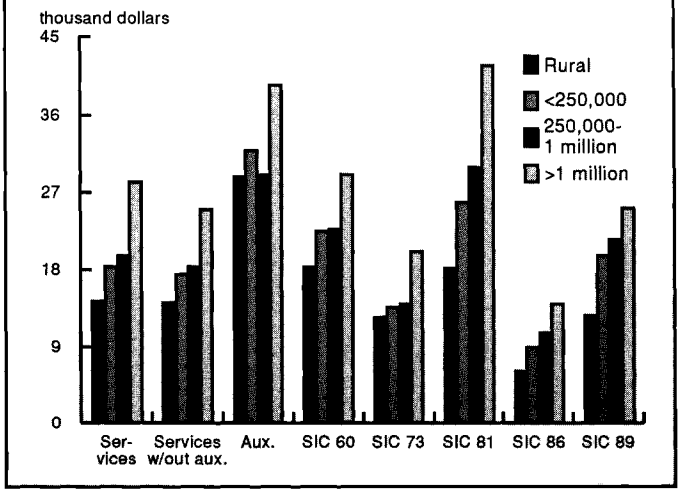
Analysts also observe a widening spatial "division of labor" or dichotomy arising from these relative advantages for centrally rather than rurally located service industries. Similar to the branching of routinized manufacturing production activities which has occurred in the U.S. from North to South and from urban to rural, service firms are unbundling the more routinized information processing activities such as data entry and claims processing to remote areas. Service firms do this in order to capitalize on lower cost labor where possible while retaining skilled service functions in larger metropolitan areas. Standardized and routinized service activities, so-called "back office" or "lower order" activities, are seen as most amenable to innovations in communications technologies.

Information on the geography of services by type of activity tends to be scarce. One example has emerged from a recent survey of mortgage servicing firms and thrifts in the United States reported in *American Banker*. The results of the survey suggest that rural and small metropolitan areas have captured an inordinate share of routinized service activity. Grand Rapids, Michigan, and Gainesville, Georgia, ranked among the top locations in mortgage servicing. Troy, Michigan, Pasadena, Texas, and Fargo, North Dakota, were among top-ranking thrift locales.[8]

A promising research avenue to identify a rural/urban spatial division of labor has been recently undertaken by Kassab and Porterfield (1991). In examining business service industries and distribution industries in metropolitan and nonmetropolitan counties, the authors identify workers by their occupation as categorized by low skill or high skill using the Current Population Survey. While results are preliminary at this time, the authors do find significant skill and occupational differences for the same industries in urban versus rural counties.[9]

FIGURE 1

1989 per employee payroll by size of metropolitan area



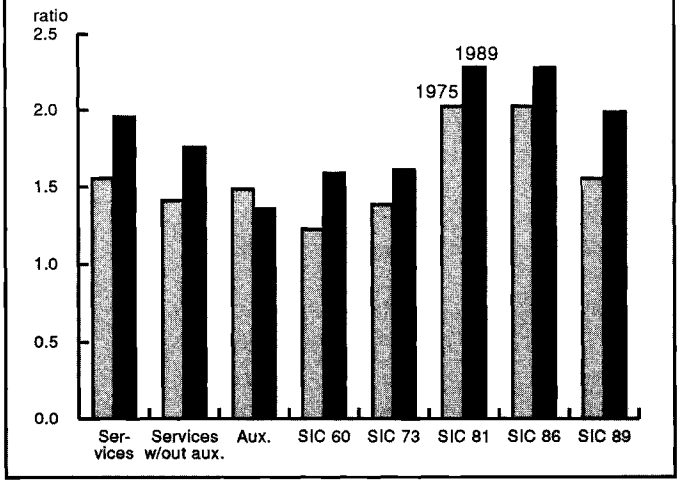
If accurate, this rural/urban dichotomy between higher order and lower order producer services activities and occupations holds at least two potential drawbacks for less urbanized areas. First, less skilled jobs tend to be lower paying so that, as a potential avenue for development, these jobs may be less desirable in their overall economic impact. The tendency has been for lower paying jobs to locate in less urbanized areas. Figure 1 shows average annual payroll per employee for four size classes of counties within the Seventh District.[10] For producer services in aggregate, and for each individual category as well, a distinct and marked difference in payroll per employee can be seen for 1989. For services overall, compensation per employee in rural counties is approximately one-half that of the largest class of MSAs in 1989 (see Figure 1). Perhaps even more convincing, a continuum of average payroll from higher paying (in large counties) to lower paying (in smaller counties) can be seen for each of the subcategories comprising producer services.

Over time, the same data source suggests that the payroll disparity between rural counties and MSAs has become more pronounced in the Seventh District (see Figure 2). All of the subcategories of producer services industries, except auxiliaries, contributed to the total effect in which, for aggregate services, the ratio of average payroll per employee for the largest MSAs to the average for rural counties climbed from 1.56 in 1975 to 1.96 in 1989.

Previous research has been conducted on payroll disparities between rural and urban counties in the upper Midwest states of Minnesota, Wisconsin, Illinois, Michigan, and Iowa by Porterfield and Pulver (1991). The results are notable in that, according to their survey of 18 producer services industries, few systematic differences in average annual payroll emerged between metropolitan areas, nonmetropolitan areas, and nonmetropolitan areas not adjacent to metropolitan areas. One explanation for the

FIGURE 2

Ratio of per employee payroll in large metropolitan areas to rural areas



apparent conflict in findings is that the Porterfield-Pulver study examined industries defined much more narrowly (for example, at the three-digit SIC code level).[11] This suggests that, when industry mix is taken into account, payroll disparities may not be so profound. Either way, many of the implications are the same for policy purposes. Whether it is the higher paying industries or the higher paying activities of any industry that prefer urban locales, or both, lower paying and lower skill jobs in rural areas are the result.

A second concern about rural areas specializing in back office operations is that standardized jobs are often those that are the most transitory. In contrast to nonstandard jobs involving interpretative skills and face-to-face interaction, routinized jobs are most amenable to automation, thereby leading to job base shrinkage. For example, there is a concern for the future of data entry jobs; technological advances may replace data entry workers with data scanning devices. Even if mechanization is not the cause of worker displacement, low skill jobs can be lost through migration. As many rural areas have discovered from their experience with branch plant manufacturing jobs, the next stop in the geographic product cycle is often cheaper overseas locations. Recent news reports document the flight of routinized service jobs from the U.S. to other countries. Insurance companies have set up claims offices in Ireland; airlines are processing tickets in Barbados; and book publishers and data entry firms have moved keyboarding activities to Asia.

But of course, this concern does not mean that lower order producer service jobs are undesirable as targets for rural economic development. The transitory nature of employment is hardly confined to routinized producer service employment. In today's global economy, it may be easily argued that all area economies, urban and rural alike, regardless of their skill base, must struggle to re-invent themselves and to encourage a flow of new jobs and activities to replace those that are fleeing. In this light, back office service jobs can be viewed as a challenge rather than as a problem. One possibility would be to institute programs to upgrade worker skills in order to preserve existing producer service jobs or to develop new industry activities.

Rural and urban evidence in the Seventh District

Within the Seventh District states of Illinois, Indiana, Michigan, Iowa, and Wisconsin, it appears that any change in the tendency for producer services to favor larger metropolitan areas is evolutionary rather revolutionary (see Table 3).

TABLE 3

Concentration index of employment
(Seventh District)

	All producer services		Auxiliary establishments	
	1989	Change 1974-89	1989	Change 1974-89
> 1 million	1.25	–0.01	1.61	0.17
250,000 - 1 million	0.88	0.09	0.53	–0.07
< 250,000	0.75	0.02	0.29	–0.16
Rural counties	0.51	–0.04	0.04	–0.31

	Finance, insurance, real estate		Business services (SIC 73)	
	1989	Change 1974-89	1989	Change 1974-89
> 1 million	1.15	–0.05	1.28	–0.05
250,000 - 1 million	0.97	0.11	0.88	0.15
< 250,000	0.82	0.07	0.80	0.07
Rural counties	0.66	0.01	0.34	0.01

	Legal services		Miscellaneous services (SIC 89)*	
	1989	Change 1974-89	1989	Change 1974-89
> 1 million	1.27	0.15	1.50	0.31
250,000 - 1 million	0.81	–0.03	0.51	–0.39
< 250,000	0.61	–0.13	0.56	–0.39
Rural counties	0.61	–0.33	0.21	–0.28

*Includes engineering, architecture, accounting, management, and public relations services.
NOTE: Membership organizations (SIC 86) not shown.
SOURCE: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns.*

TABLE 4

Concentration index of employment in producer services industries (Selected MSAs, Seventh District)

	Chicago		Des Moines		Detroit		Indianapolis		Milwaukee	
	1974	1989	1974	1989	1974	1989	1974	1989	1974	1989
All prod. services	1.35	1.34	1.40	1.65	1.37	1.20	1.03	1.10	0.96	1.18
Auxiliaries	1.30	1.64	0.61	1.08	2.27	2.04	0.72	1.00	0.80	1.17
F.I.R.E.	1.37	1.30	2.14	2.45	0.97	0.90	1.34	1.18	0.99	1.16
Business (73)	1.59	1.35	1.16	1.21	1.21	1.25	.80	1.16	1.16	1.32
Legal	1.17	1.43	1.14	1.19	1.10	1.17	0.84	0.88	1.16	1.09
Membership org.	1.02	0.92	1.24	1.07	0.90	0.76	1.01	0.95	.96	0.92
Miscellaneous*	1.24	1.31	.96	N.A.	1.33	2.34	1.14	0.98	0.75	1.50

*Includes engineering, architecture, accounting, management, and public relations services.
SOURCE: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns.*

As measured by employment, producer services in aggregate remained some 25 percent more concentrated in the largest metropolitan areas (population greater than one million) in 1989. This concentration continued to diminish throughout metropolitan areas of smaller size until, for rural (nonMSA) counties, producer services employment share was 50 percent below the corresponding share of the five state region overall.

A modest tendency for rural areas to become less concentrated in producer services can also be observed from 1974 to 1989, while small and medium sized metropolitan areas tended to gain concentration (see Table 3). Some of the gains in small and medium sized area specialization came at the expense of the largest tier of metropolitan areas—those with populations greater than one million. Detroit and Chicago both reported a lower relative specialization in producer services (see Table 4).

Conclusions and outlook

Producer services industries are becoming a more important part of the regional economic base. As producer services become increasingly specialized, so too have regions become more specialized in particular producer services. As a result, services are often sold from afar and can therefore correctly be considered as part of the regional "export base." Technological and organizational advances in both communication and personal travel, including fiber optics networks and mega-hub airports, have facilitated the sale and delivery of specialized services from particular regions.

The successful development of producer services has become a much coveted prize for regions. For one reason, overall growth in producer services industries has been extremely robust throughout the 1970s and 1980s. However, during the recent U.S. economic slowdown, overall employment in producer services also slowed owing to weakness in financial and real estate industries.[12] So too, some analysts have speculated that long awaited gains in service sector productivity are now materializing (following capital investments during the early 1980s). If so, these productivity advances may be labor saving. But despite the recent slowdown in employment growth, not all producer services industries are pulling back. For example, business services such as accounting and computer programming continue to expand, and producer services remains an active target of economic development in many regions.

Not all regions have been successful in garnering growth in producer services but rather, these industries remain concentrated in large urban areas. While existing evidence is not yet conclusive, it appears that advances in telecommunications and personal travel have only strengthened the hand of urban areas in hosting producer services and subsequently delivering producer services to peripheral areas. In the Seventh District states, payroll premiums for urban workers in producer services have apparently increased in comparison to rural counties. As a counter trend, remote areas have succeeded in attracting back office or lowered skilled

producer services activities in many instances. As a matter of policy, such a trend should not necessarily be discouraged by rural areas. Such jobs may be quite valuable to rural labor markets and may lead to higher skilled jobs through either an active development policy such as worker training, or a natural evolution of sevice industry growth.

FOOTNOTES

[1]The view that only goods and services that are sold afar are growth generating is not strictly true. Rather, it has been a useful paradigm in viewing the process of regional development. However, there is surely a remainder of growth and welfare which is internally generated. Enhanced specialization and trade within regional boundaries can also increase the region's welfare. Secondly, greater efficiency in providing local goods and services can increase the region's competitiveness and capacity to supply exports to other regions so that, indirectly, related nontraded job activities are also "growth-generating."

[2]The definition of which industries comprised producer services varies from study to study. In fact, all of the industries make sales to both firms and to household consumers so that the classification "producer services" is somewhat of a misnomer. For a review of industry tendencies to sell to both household and to business sectors over time, see Duchin (1988).

[3]See Mack and Keil (1986) for information on Indianapolis; Groshen (1987) on Ohio and neighboring states; Gilmer, Keil, and Mack (1989) on rural southeastern U.S.; Gilmer (1990) on major Texas cities; and Austrian and Zlatoper on Cleveland and large MSAs.

[4]Another possible reason for thinking that this measure is misleading is that the classification of service industries may be inexact. For example, a region may display an index of 1.0 for the advertising industry, suggesting no external trade in services. Nonetheless, the region may actually specialize in a particular *type* of advertising which is exported while, in turn, another specific *type* of advertising service is imported. The failure to reveal such trade and specialization lies with the insufficiently disaggregated classification scheme of the data.

[5]In constructing these indexes, we are comparing service employment share in the region to the overall nation. It should be noted that, because the overall region specializes in goods production—especially manufacturing—the metropolitan areas of the region will not rank as highly among the nation's metropolitan areas.

[6]These figures are drawn from Table III-11 of the study, which refers to those 1,100 surveyed establishments reporting more than 10 percent export sales.

[7]See Goe (1990) and Porterfield and Pulver (1991). An earlier study by Stephen M. Smith (1984) surveyed 350 nonmanufacturing firms in nonmetropolitan areas of Wisconsin. The author reported 28.1 percent of sales outside of the town boundaries.

[8]Data provided by ADP Data Service division, New York, from its data base of the *Thrift Financial Report*, as reported in *American Banker*, October 21, 1991.

[9]Kassab and Porterfield (1991).

[10]Data are drawn from *County Business Patterns*, U.S. Bureau of the Census. Payroll employment reflects both part-time, full-time, and part-year employees. Employees are recorded for a single week in March of the year reported. Only counties for which no disclosure problem existed were sampled. County classification reflects the population size of the MSA in 1988, rather than the population size of the county itself.

Recent evidence by Kassab and Porterfield (1991) also finds sharp propensities for business service workers in rural areas to be employed part-time (often involuntarily), thereby lowering observed payrolls per employee.

[11]The Porterfield-Pulver survey (1991) covered only a small subset of industries so that their results are not necessarily in conflict with our own. Also, a methodological difference is that the Porterfield-Pulver study reported from data that was imputed or estimated for county areas. We prefer to sample only from rural counties in which there were no disclosure problems with the data.

[12]Strongin (1990).

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