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EXPORT POTENTIAL OF SERVICES IN THE TENNESSEE VALLEY

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Recent analyses of the role of services in the Tennessee Valley regional economy have portrayed regional services as proportionally weak in comparison both to the economies of other regions and to the aggregate U.S. economy (e.g., see Cocheba, Gilmer, and Mack [6]).¹ This weakness persists despite growth in income levels and in the activities of the goods-producing sector. Even when adjustments are made to account for the Region's high ratio of rural-to-urban activity and its relatively small urban places, weakness persists in both employment and income measures of the service sector. Further examination of the Valley's service sector has shown that some service sub-sectors have responded to increases in manufacturing incomes; such response is in agreement with the major body of economic literature that assumes that services are a tertiary sector in the Fisher-Clark developmental sequence of an income-driven progression from agriculture to manufacture to service [9, 5]. This traditional explanation holds that increases in manufacturing activity effect increases in services both directly via increases in demand for services complementary to manufacturing and indirectly via rising per capita incomes coupled with high income elasticity of demand for services.

In the Tennessee Valley region some of the service subsectors (consumer services, retail & wholesale) have responded to increases in manufacturing income, but several (producer services, social services) have not. Previous research has traced this lack of response to structural factors [6]. Specifically, as the increases in manufacturing stemmed primarily from branch plants, the increase in complementary services often took place in the region of the headquarters. Daniels [8] has shown that the weaknesses of these service subsectors may be self-perpetuating under conditions of current development policies.²

As the economic weakness of these subsectors is structural in nature, they may be appropriate subjects of discretionary policies and strategies to induce development. Identification of those service subsectors that have potential as free-standing exports or as import substitutes is the first step in shaping such policy measures. This paper reports the results of applying a new low cost methodology that indicates likely basic activities in the service sector of the

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Tennessee Valley region. The first part of the paper reviews methodologies for identifying service sector exports and explains the new method for such identification. The second section applies this method to the Tennessee Valley and considers appropriate policy measures.

Techniques for Identifying Exports

Methods and problems of identifying exporting manufacturing activities were first clearly summarized in a series of articles by Andrews [1]. The most common tools used for identifying exports are the survey approach and location quotients. The survey method is generally limited to application in smaller places; large area application is usually precluded by considerations of cost and timeliness. The method is also often prohibitively expensive if all interfirm linkages are to be taken into account. The method we developed is a variant on the location quotient method. The fundamental rationale underlying the location quotient method is: in a region of a macro-economy consisting of trading regions, those industries with location quotients above one are likely to export their products; products of those industries with location quotients below one are likely to be imported. For a particular industry, deviations of its regional location quotients from one then can be taken as evidence that it is traded. If this rationale is accepted, then the primary problem in identifying exportable services is finding those that have a high variance in location quotients when this variance is measured across an appropriate set of places.

The problem of identifying service exports for an urban area is complicated in several ways. First, there is the dual export functions such areas may perform for a given service. Each urban area has an associated non-urban hinterland to which it would export a variety of services due to its ability to deliver those services more cheaply than other urban centers. These same services and others may also be sold beyond the hinterland to the rest of the world. It is this second component of service exports that is of particular interest in light of recent development literature, and to identify it we must correct for variance in location quotients caused solely by differences in the sizes of the hinterland associated with different urban centers.

A second complication in identifying potential-free standing exporters arises because two industrial roles can qualify an industry for inclusion in the economic base: direct and indirect exportation. The former has no forward linkages; indirect exportation, however, occurs when an activity produces intermediate inputs to direct exports. If a given service has a strong input linkage to a given set of manufacturing industries and is not easily transported, then variation in its location quotients among urban places would be highly correlated with variation in the location quotients of these manufacturing industries. Such variation would not be proof that a service could be a free-standing exporter. Identification of indirect exporters is an important advantage of the location quotient method over the survey method as these firms are likely to report to a surveyor that all of their sales are made to the local economy. Location quotients pick up both direct and indirect exports, thus avoiding underestimating basic activity. However, they are incapable, used alone, of separating them. After an initial screening using our technique,

indirect exporters could be identified by making use of input-output data. Additional information about the difficulty of transporting each of these services would then shed light on which might be free standing exporters. Our analysis was not carried that far.

There are two other complications in using a location quotient-based method which are pertinent in the context of classifying service industries. First consumption patterns differ among regions, and this may give rise to deviations of location quotients from unity that do not reflect trade activity. Second, location quotients will vary from industry to industry because of economies of scale. These two problems may work in tandem for two reasons: (1) urban residents often purchase social overhead and utility services that rural residents provide for themselves; and (2) there are significant economies of scale in some social overhead services, such that employment-based location quotients would imply that these services are more concentrated in medium size urban areas than in larger ones. Again, the information generated by our technique must be combined with information from other sources to overcome these problems.

Methodology of this Study

The mathematics that lie behind the technique used in this study are presented in Keil and Mack [11]. The reader who wants a proof of what is stated below is referred there. A basic understanding can be reached by considering a large economy composed of several regions that vary both in population size and the ratio of urbanized to rural population. Some of the services sold in all of the regions are residentiary. Save for economies of scale, the location quotients for these services should be very near unity, regardless of which region is selected. If we pare off the rural areas from a region and from the base, the calculated location quotients for residentiary services in the urban subregions should not be significantly affected. On the other hand, services that agglomerate in urban areas may both serve a surrounding hinterland and export to other urban areas. If these hinterlands are included in the base, agglomerative services will have elevated location quotients in the urban subregions. These location quotients are not necessarily indicative of exports beyond the rural hinterland. However, if a particular urban area's location quotient for the i^{th} service industry remains above one after dropping the rural areas from the base, then it is likely to be exporting that service to other urban areas.

When location quotients are constructed for a number of urban places, the degree of variance of sectoral location quotients across places is indicative of trading activity for the sectors. Thus, we expect the location quotients of residentiary services to cluster around unity with small variances. When the rural part of the base is shed, the variance of the location quotients for agglomerative services that serve only lesser order places (smaller metropolitan areas and the corresponding rural hinterlands) will decline, and the mean across places of such location quotients will move closer to one. That is, after shedding the rural part of the base the location quotients of these service

industries behave more like residential services. Those services that have large variances measured across the urbanized base are most likely to be traded among like-sized or larger places. For a given place, an exporting industry is indicated by the combination of a large location quotient and a large variance when measured across like-sized places. Similarly, potential for import substitution exists when the location quotient is small and the variance measured across places is large. Both of these conclusions are, of course, subject to all of the caveats raised above.

Application to the Tennessee Valley

The identification method described above was used in the study of service exportables of Tennessee Valley SMSAs. The data set was obtained from the Bureau of Economic Analysis, U.S. Department of Commerce and included employment in 28 service industries for the year 1979 for: the U.S. as a whole; the total of all U.S. non-SMSA counties; and each SMSA in the states of Tennessee, Kentucky, Virginia, North Carolina, Georgia, Mississippi, and Alabama.⁴ These states constitute the most immediate trading region for the cities of the Tennessee Valley. Accordingly, the sample SMSAs were separated into two groups: the eight Tennessee Valley SMSAs and the remaining 33 SMSAs in or partially in these states (referred to, hereafter, as the contiguous SMSAs). These 33 SMSAs were considered similar enough in size and economic function so that a study of them would shed light on those services traded among the regions's cities.⁵ Comparison of their service sectors to those of the Tennessee Valley SMSAs should then reveal the strengths or weaknesses of service sectors in the Valley SMSAs.

Two sets of location quotients were calculated by industry for each SMSA: the first used total U.S. employment in the base and the second used only metropolitan employment in the base. With these sets we could study the effect of shedding of rural counties from the base. The cities in the TVA area and the contiguous area were grouped into several size classes (see the column headings in tables one and two) to determine if size in and of itself revealed anything about trade patterns for services (the hierarchy hypothesis). Means and standard deviations were computed of the location quotients of each industry for each size classification of the contiguous area SMSAs and the Tennessee Valley SMSAs and for total metropolitan employment in each of the two areas. We also tabulated the changes in means and in standard deviations which resulted from shedding the rural areas from the base.

According to our argument, residential sectors have means which cluster around unity with small variances measured across like-sized places. When the rural sector is dropped, there is little change in either the mean or variance for these residential sectors. Similarly, agglomerative sectors which serve only lesser places will manifest mean location quotients which move toward unity as well as variances which fall significantly when the rural part of the base is shed. Table 1 confirms these expectations for the variances computed for the contiguous SMSAs. See, for example, retail trade and personal services in the first instance, and fraternal organizations and investment and

holding companies (which have high standard deviations in all size classes of the contiguous SMSAs) in the second.

TABLE 1
Standard Deviations for Non-TVA Southeast Cities
Calculated using the Metropolitan Base

Industry/City Population	<130,000	130 to 200	201 to 300	301 to 600	>600,000	U.S. Base	
						All Non-TVA	Minus Metro Base
Distributive Services	0.278	0.205	0.343	0.254	0.347	0.351	0.027
Transportation	0.626	0.387	0.742	0.261	0.243	0.565	0.044
Communication	0.317	0.188	0.212	0.306	0.347	0.319	0.028
Utilities	0.799	0.524	0.285	0.260	1.008	0.700	-0.020
Wholesale Trade	0.246	0.124	0.272	0.307	0.427	0.365	0.033
Retail Trade	0.125	0.096	0.166	0.044	0.069	0.129	0.005
Social Overhead	0.256	0.264	0.290	0.133	0.148	0.262	0.191
Health	0.297	0.229	0.349	0.165	0.207	0.283	0.016
Education	0.358	0.519	0.282	1.093	0.200	0.602	0.078
Producer Services	0.147	0.121	0.148	0.252	0.268	0.275	0.037
F.I.R.E.	0.118	0.102	0.192	0.309	0.174	0.272	0.036
Banking	0.123	0.125	0.136	0.243	0.170	0.188	0.010
Credit Agencies	0.286	0.178	0.193	0.318	0.234	0.306	0.034
Brokerage	0.083	0.166	0.155	0.338	0.247	0.262	0.066
Ins. Carriers	0.196	0.156	0.492	0.664	0.394	0.514	0.108
Ins. Agents & Brokers	0.228	0.184	0.142	0.513	0.285	0.327	0.032
Real Estate	0.183	0.216	0.157	0.093	0.442	0.333	0.050
Combined RE & Ins.	1.429	0.356	0.199	0.310	0.441	0.877	-0.041
Holding & Inv. Cos	0.723	0.244	1.210	1.817	0.490	1.101	0.195
Misc Business Svcs	0.197	0.209	0.086	0.217	0.577	0.400	0.082
Legal Svcs	0.181	0.154	0.131	0.187	0.200	0.218	0.027
Membership Org	0.365	0.243	0.448	0.409	0.370	0.404	0.024
Misc Professional Svcs	0.176	0.167	0.131	0.313	0.520	0.402	0.066
Social Svcs	0.372	0.201	0.286	0.255	0.136	0.291	0.010
Consumer Svcs	0.196	0.219	0.190	0.254	0.160	0.244	0.015
Hotels & Lodging	0.441	0.612	0.405	0.936	0.313	0.607	-0.019
Personal Svcs	0.260	0.173	0.093	0.172	0.118	0.193	0.017
Auto Repair	0.224	0.182	0.317	0.221	0.214	0.287	0.033
Misc. Repair	0.103	0.179	0.230	0.253	0.228	0.278	0.025
Motion Pictures	0.199	0.115	0.227	0.148	0.194	0.191	0.025
Amusements	0.162	0.179	0.281	0.324	0.178	0.269	0.022
Museums	1.176	0.169	0.375	0.408	0.334	0.708	0.130
Govt & Govt Enterprises	0.951	0.637	0.726	0.310	0.651	0.753	-0.003
Total Services	0.199	0.170	0.064	0.067	0.163	0.181	0.010
Total Non-Services*	0.403	0.347	0.119	0.131	0.327	0.365	-0.032

Those services for which the Tennessee Valley could either gain employment via exporting or via import substitution may be discovered by the overlapping of three measures:

1. High levels of standard deviations among like-size places in the contiguous states, after the rural part of the base is shed.
2. Low measures of mean location quotients among the target (Tennessee Valley) places, calculated after the rural part of the base is shed.
3. A relatively small decrease in variance as the rural part of the base is shed.

Using the first measure we find the group of services that are apparently being exported and imported by the contiguous SMSAs. Although any cut-off point must be arbitrary, brackets on the standard deviations can be used to rank order services by the degree of exportability. In the aggregate of the contiguous SMSAs (see column six in table one), eleven service industries have standard deviations greater than 0.4 and another seven have standard deviations between 0.3 and 0.4. These are our prime candidates for traded services.

Table one also shows the changes in the standard deviations for the total group of contiguous SMSAs. These are, for each service sector, the measure calculated on the metropolitan base subtracted from the measure calculated on the total U.S. base. They are predominately positive, indicating that rural hinterlands are importing these services from a metropolitan center. Of the four that are negative, each have location quotients in the rural counties that are greater than one. That utilities and government have negative changes may be a reflection of economies of scale in these services. Combined real estate and insurance offices are generally thought of as a small-town phenomenon and this may explain the negative change for that sector.

As for the second criterion, Table 2 displays the mean location quotients for the Tennessee Valley SMSAs for each of three size categories and also for the whole group calculated on the metropolitan U.S. base. Using the data for the whole group we see that several sectors show low mean location quotients which, if coupled with high standard deviations in Table 1, could indicate development potential for the Tennessee Valley. Table 3 shows the overlapping of Table 1 and Table 2 measures, indicating those sectors for which the location quotients for the aggregation of Tennessee Valley SMSAs are low ($<.80$) and the standard deviations for the aggregation of contiguous SMSAs are high ($>.30$). Since a very high standard deviation combined with a very low location quotient would be a strong indicator of potential employment gains from developing either import substitution or actual export capacity, Table 3 industries are rank ordered by the difference between the standard deviation of contiguous cities less Tennessee Valley mean location quotient.

The third of our criteria may be difficult to detect in highly aggregated sector categories. We, therefore, consider it a weak indicator. A better understanding of this criterion may be obtained by considering the extreme case of a service that is produced in each metropolitan area in an amount exactly proportionate to its labor force but is only consumed in smaller-order places. The only

TABLE 2
Means for Tennessee Valley Authority Cities
Calculated on the Metropolitan Base

Industry/City Population	130 to 200	301 to 600	>600,000	All TVA
Distributive	0.531	0.721	1.259	0.808
Transportation	0.508	0.641	1.443	0.808
Communication	0.648	0.825	0.947	0.811
Utilities	0.372	0.226	0.210	0.258
Wholesale	0.537	0.808	1.376	0.882
Retail Trade	0.799	0.902	0.998	0.900
Social Overhead	0.487	0.712	1.085	0.749
Health	0.576	0.786	0.974	0.780
Education	0.159	0.437	1.497	0.632
Producer Services	0.390	0.625	0.852	0.623
F.I.R.E.	0.436	0.607	0.933	0.646
Banking	0.707	0.676	0.908	0.742
Credit Agencies	0.641	0.743	0.870	0.749
Brokerage	0.014	0.190	0.801	0.299
Ins. Carriers	0.179	0.681	0.950	0.623
Ins. Agents & Brokers	0.488	0.576	1.020	0.665
Real Estate	0.369	0.455	0.844	0.531
Combined RE & Ins.	1.037	0.699	0.533	0.742
Holding & Inv. Cos.	0.274	0.531	2.215	0.888
Misc. Business Svcs	0.239	0.644	0.812	0.585
Legal Svcs	0.365	0.565	0.639	0.534
Membership Org	0.619	0.757	0.895	0.757
Misc. Profit Svcs	0.275	0.575	0.714	0.535
Social Svcs	0.402	0.528	0.728	0.547
Consumer Svcs	0.561	0.750	1.135	0.799
Hotels & Lodging	0.329	0.783	1.554	0.862
Personal Svcs	0.963	1.084	1.141	1.068
Auto Repair	0.792	0.708	0.978	0.796
Misc. Repair	0.490	0.759	0.756	0.691
Motion Pictures	0.393	0.376	0.755	0.475
Amusements	0.288	0.459	1.019	0.557
Museums	0.000	0.447	0.351	0.311
Govt & Govt Enterprises	1.861	1.144	0.964	1.278
Total Services	0.913	0.855	1.019	0.911
Total Non-Services*	1.132	1.273	0.937	1.154

TABLE 3
Degree of Overlap of Measures 1 and 2; for Aggregation of All
Contiguous SMSAs and All Tennessee Valley SMSAs

	Std. Deviation for Contiguous SMSA's	Means for All T.V. SMSAs	Col. 1 - Col. 2	Rank
Credit Agencies	.306	.749	- .443	9
Insurance Carriers	.514	.623	- .109	3
Insurance Agents & Brokers	.327	.665	- .338	7
Real Estate	.333	.531	- .198	6
Combined Real Estate & Insurance	.877	.742	+ .135	2
Misc. Business Services	.400	.585	- .185	5
Membership Organizations	.404	.757	- .353	8
Misc. Professional Services	.402	.535	- .133	4
Museums	.708	.311	+ .397	1

possible source of variance in location quotients for such a service is differences in the size or consumption patterns of the hinterlands. Shedding the hinterlands from the base would reduce the variance among metropolitan areas to zero. In less extreme cases where there is some trade between metropolitan areas but no employment in the rural counties, however, the variance will remain positive. In both of these cases the mean location quotient will fall by the largest possible amount. This maximum difference is equal to the location quotient itself multiplied by the ratio of total employment removed from the base to total employment in the original base. In the data we are using, the upper limit is the ratio of the Experienced Civilian Labor Force residing in rural counties (25,588,296) to the total U.S. Experienced Civilian Labor Force (104,057,985) or approximately 24.6%. Thus, a fall in the standard deviation of a sector of more than 15% would indicate that a substantial part of that sector's export activity is to lesser order places. Of the categories we have analyzed, brokerage services has a reduction in variance greater than 20% suggesting that it is well distributed among SMSAs and virtually absent in rural counties.

The last column of Table 1 presents the third measure, the difference between the standard deviations of sector location quotients for the contiguous SMSAs calculated on the total U.S. base and their standard deviation calculated on the metropolitan base. Small differences in this column indicate that most of the trading that is occurring in that sector is among metropolitan areas. Seven of the industries have declines in their location quotients larger than 12%, suggesting strong downward trading links. Nonetheless, if variance remains high after removal of the rural counties, there is likely to be substantial trading occurring between metropolitan areas.

A purely mechanistic application of our methodology would show the utilities sector to also be an area of import substitution. This, however, is due to the presence of the Tennessee Valley Authority, a Federal corporation which is categorized by B.E.A. as a government entity rather than a utility. The other indicated categories of potential exports and/or import substitutes appear to

have a logical basis for such designation; the designation is consistent with the study of Tennessee Valley services by Cocheba, Gilmer, and Mack [6].

Because of the effects of agglomeration upon location quotients for differing-sized places, a parallel analysis was performed for the three size categories of SMSAs in the Tennessee Valley. That is, the Tennessee Valley location quotients for each industry in each size of place were used with the standard deviations across contiguous places of like size. The third criteria was not used because of the small number of Tennessee Valley SMSAs. As in Table 3, exportable services are ranked by the difference between Tennessee Valley mean location quotients and the standard deviation of location quotients for contiguous cities. The results of this analysis show that:

- In the 130,000 to 200,000 category the following industries, by our criteria, showed a sizable difference between standard deviation of means for contiguous SMSAs and location quotients for Tennessee Valley places: holding and investment companies, hotels and lodging, transportation.
- In the 300,000 to 600,000 category the following industries met our export criteria: Holding and investment companies, brokerage, museums, insurance carriers, insurance agents and brokers, amusements, miscellaneous profit services, and membership organizations.
- In the >600,000 category the following industries met our criteria: Museums, miscellaneous business services, miscellaneous professional services.

Of the sectors designated as potential exports, most fall into the group of producer services, a classification which is often targeted for development. This is appropriate in view of the argument (see Chinitz [4]) that a good local supply of business services is a prerequisite for regional growth, especially in new lines of activity. Miscellaneous professional services and miscellaneous business services are often associated with development incubators, as they encompass activities such as advertising, data processing, consulting, research and development, graphics and reproduction.

The education category in the B.E.A. delineation of services refers to private education; public education falls into the governmental services sector. Accordingly, variance in location quotients in "education" reflects, in part, the private/public education balance and is not an appropriate indicator for development strategies. The category of combined real estate and insurance is a smaller place substitute for the individual services of real estate and insurance. As it therefore tends to appear as a major export of smaller places and potential export of larger places, it was dropped when its designation was inappropriate to the size of place. It should also be noted that some sectors which are viewed as traditional targets for development were not designated as exportables or import substitutes in this study. These sectors include: communications, banking, legal services, and social services.

A parallel analysis was performed on the individual SMSAs of the Valley. The results are reported in Table 4. The import substitution sectors were designated by the overlap of the first and second measures. That is, both high

standard deviations among like-sized contiguous SMSAs and low location quotients of the specific Tennessee Valley SMSAs were required. The standard deviations had to be higher than .300 and the location quotients had to be lower than .85 for Valley SMSAs of populations greater than 600,000 and the location quotients had to be lower than .80 for Valley SMSAs smaller than 600,000. The use of criterion two was particularly effective, in that the many low standard deviations among the like sized contiguous places indicated that services tended to be residentiary, and that there was little potential for significant export of services even when location quotients were low. Again, because of the existence of the Tennessee Valley Authority, the designation of utilities as a potential export was deleted as a definitional aberration. As in the aggregations of Valley SMSAs presented in Table 3, the preponderance of potential for import substitutes and exportables in these individual SMSAs is in producer services.

TABLE 4
Services Designated as Potential Exports/Import Substitutes
by Specific Tennessee Valley SMSA

Memphis:	Miscellaneous professional services, museums, insurance carriers.
Nashville:	Brokerage, social services, miscellaneous repair, museums.
Knoxville:	Brokerage, insurance carriers, insurance agents, brokers, holding and investment companies.
Johnson City, Kingsport, Bristol:	Wholesale, credit agencies, brokerage, insurance carriers, insurance agents and brokers, holding and investment companies, miscellaneous professional services, hotels and lodging, amusements, museums.
Chattanooga:	Brokerage, insurance agents and brokers, miscellaneous professional services, amusements, museums.
Huntsville:	Wholesale, credit agencies, brokerages, insurance carriers, insurance agents and brokers, holding and investments companies, membership organizations, miscellaneous professional services, hotels and lodging, amusements, museums.
Clarksville Hopkinsville:	Transportation.
Florence:	Transportation, combined real estate and investment, hotels and lodging.

Finally, Table 5 indicates by SMSA those services that are actually exported beyond the immediate hinterland of the specific place. These exported services were designated by the overlapping of: location quotients greater than 1; standard deviations greater than .30 for like sized places; and decreasing standard deviations as the rural part of the base is shed. Despite the mechanical basis of our screening process, this list seems to provide a reasonable group of service exports for each city. Memphis is a recognized distribution center, and Nashville's well-known entertainment, insurance, and education industries are all represented. Knoxville, Chattanooga, and the Tri-Cities of Bristol, Kingsport, and Johnson City are all medium-sized manufacturing centers that offer few professional or producer services. The governmental "exports" result from the presence of the TVA headquarters in Knoxville and its chemical fertilizer complex in Florence; from NASA's facilities in Huntsville; and from Fort Campbell in Clarksville/Hopkinsville. This list, as well as the potential exports of Table 4, seem to closely match the conclusions of earlier research on the present position of the Tennessee Valley service sector.

TABLE 5
Services Designated as Current Actual Exports Beyond the Immediate Hinterland. Listed by SMSA.

- Memphis: Transportation, wholesale, insurance agents and brokers, real estate, holding and investment companies, miscellaneous business services, government and government enterprises.
- Nashville: Communications; wholesale, education, insurance carriers, insurance agents and brokers, holding and investment companies, membership organizations, hotels and lodging, amusements.
- Knoxville: Wholesale, museums, government enterprises.
- Johnson City,
Kingsport, Bristol: Combined real estate and insurance.
- Chattanooga: Combined real estate and insurance, credit agencies, insurance carriers, holding and investment companies.
- Huntsville: Government and government enterprises.
- Clarksville
Hopkinsville: Combined real estate and insurance, government and government enterprises.
- Florence: Government and government enterprises.

Conclusions and Policy Implications

In this study we have augmented and applied a location quotient-based procedure which identifies service sector activities with export potential. Freestanding export sectors were identified for the Tennessee Valley by examining the effects upon location quotients of dropping rural hinterlands from the base. Application of the method identified eight industries of the 29 service industries that have potential as either import substitutes or as freestanding exports from the Tennessee Valley. Exports were also identified for individual SMSAs. These findings are in agreement with previous studies that had indicated particular weaknesses in the producer services of the Valley but had not considered the matter of potential exportability.

As for policy implications, the findings have value not only in the designation of potential exports, but also in the certification of the economic health of several sectors which are often the inappropriate targets of development policy. Specifically, communications, banking, and legal services were adequate in view of the size of the SMSAs. Similarly, there appears to be no need for policies which would attempt to augment employment in the retail, wholesale, or in most consumer services.

NOTES

¹ "The Tennessee Valley" refers to the 176-county power service area in which Tennessee Valley Authority electricity is sold. This area encompasses virtually all of Tennessee; significant parts of Kentucky, Mississippi, and Alabama; and smaller parts of Georgia, North Carolina and Virginia.

Service industries are defined in this paper by using the following alternative scheme developed by Stanback. [16].

Alternative Classification Scheme for the Service Sector

Distributive services

Transportation, communications, and public utilities (TCPU)

Wholesale trade

Retail trade

Social overhead services

Health

Education

Producer Services

Finance, insurance, and real estate (FIRE)

Business services

Legal services

Membership organizations

Miscellaneous professional services

Social services

Mainly consumer services

Hotels and lodging

Personal services

Auto repair

Miscellaneous repair

Motion pictures

Amusements

Private households

Government and government enterprises

Private household employment and earnings are typically excluded from the consumer service data. Data are adjusted for the presence of the Tennessee Valley Authority by allocating its employment (normally Federal Government) to public utilities or to construction when appropriate. All data are from the Bureau of Economic Analysis.

² For a further discussion of manufacturing growth in the Tennessee Valley, see Pulsipher, Gilmer, and Hinote [14].

³ There are two survey-based studies of service sector exports in the recent literature (Smith [15] and Beyers, Alvine, and Johnson [2]). Smith's work was restricted to the analysis of 375 firms in rural Wisconsin. The second work is based on a large sample of Puget Sound area service firms but appears to ignore indirect exports.

- ⁴ The 1979 year was selected as it is the most recent peak-year for which data is available.
- ⁵ These SMSAs are: Virginia Beach, VA; Portsmouth, NC; Winston Salem/High Point, NC; Birmingham, AL; Atlanta, GA; Florence, AL; Jackson MS/Newport, VA; Hampton/Newport, VA; Mobile, AL; Raleigh/Durham, NC; Richmond, VA; Gastonia, NC; Louisville, KY; Savannah, GA; Columbus, GA; Fayetteville, NC; Macon, GA; Montgomery, AL; Lexington/Fayette, KY; Wilmington, NC; Lynchburg, VA; Asheville, NC; Salisbury/Concord, NC; Biloxi/Gulfport, MS; Augusta, GA; Roanoke, VA; Albany, GA; Pascagoula/Moss Pt, MS; Anniston, AL; Athens, GA; Colonial Hts/Popewell, VA; Hickory, NC; and Tuscaloosa, AL.

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