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Costs, Revenues and Simulated Consolidation of Selected Missouri Counties

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Costs, Revenues and Simulated Consolidation of Selected Missouri Counties

THOMAS KLINDT AND CURTIS BRASCHLER

Predominantly rural counties in the United States have had increasing difficulty in financing local county governments and in providing essential services to rural residents. According to a report of the Committee for Economic Development, 2,700 counties out of a total of over 3,000 in the United States are predominantly rural. One-third of the total have populations under 10,000, while more than two-thirds have less than 25,000 and more than nine-tenths have less than 50,000 inhabitants. The Committee goes on to suggest that the need to consolidate these counties into aggregates of 50,000 people has been recognized for 50 years.¹

One reason for the financial difficulty arises from the major portion of the revenue for the county governments coming from property taxes. Two variables—valuation and tax rate—determine the amount of property taxes collected in a given area. The valuation is dependent upon the wealth of a county. Revenues from fees tend to be correlated with the number of people in the county. The financial problem for the county with a small total wealth is further aggravated by small total wealth's tendency to limit population.

State aid, another source of revenue for the county, is also less for the county with small total wealth, since much of state aid comes in the form of paying a portion of the cost of an extra service. Counties with little revenue may not be able to avail themselves of an extra service even at a fraction of the total cost.

Typically, the counties with the highest per capita costs and the fewest services have been rural counties with little or no industry, low value of land per acre, and low per capita income. Often population is decreasing, thus decreasing the county's chance of drawing outside capital. Thus, high costs fall frequently on those who can least afford them.

A major problem appears to lie with the small counties because of the high per capita costs and their inability to meet rising costs. It also appears that these problems may become worse if population and wealth relative to other counties continue to decline.

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¹Committee for Economic Development, *Modernizing Local Government*, New York, 711 Fifth Avenue, July 1966, pp. 39-41.

This study was planned as a pilot study in which the specific objectives were to:

- A. Determine the relevant variables which affect the costs and revenues of county government in a specific area under specific conditions.
- B. Develop procedures for determining probable effects of consolidation on the cost and revenues of the specific counties.
- C. Provide a framework that may: (1) be used by public officials in determining the variables needed for decisions concerning county governments, and (2) be used to assist future research studies.

A number of studies of costs of county government have been reported by other investigators. None of these were done with the particular objectives or the particular approach of this study. This growing interest in local government costs apparently is related to increasing costs. State and local per capita expenditures have grown from \$68.14 in 1942, to \$166.29 in 1952, to \$324.00 in 1962.²

The most widely studied area of local government is per capita expenditures for counties with different sizes of populations. Schmandt and Stephens, using 1957 county expenditure data for counties across the United States, found that when mean per capita expenditures were plotted against population, a "U" shaped function appeared. The highest per capita costs were found in the counties with the smallest and largest populations. The lowest mean per capita expenditures were found in the counties with 25,000 to 50,000 population. From this study it was concluded that when the entire group of services provided by the county government were considered, there were economies of scale up to 25,000 population.³

The findings of Schmandt and Stephens are, in general, substantiated in a study completed by Raleigh Barlowe. In his study the lowest mean per capita costs were found to be in the 10,000 to 25,000 range of county population.⁴

In both studies, the largest expenditures, by far, were for education and highways. They were even more important in the smaller counties. Education and highways were the only expenditures which showed economies of scale over a large range of population. Most other expenses showed rather marked diseconomies of scale beyond a population of 10,000.

In nearly every study which dealt with the "U" shaped average cost curve, two cautions were observed. First, while the shape of the average cost curve was, as a whole, "U" shaped, there was a wide variation in the per capita costs at any particular population level. Second, as the population increased, a wider variety of services was performed by the county government. For example, counties with

²Census of Government, 1962, Vol. VI, No. 4, *Historical Statistics of Government Finances and Employment*, Table 1.

³Henry J. Schmandt and G. Ross Stephens, "Local Government Expenditure Patterns in the United States," *Land Economics*, Nov., 1963, Vol. XXXIX, No. 4, pp. 400-401.

⁴Raleigh Barlowe, "Changing Demand for Local Public Services," *Supplying and Financing Public Services in Rural Areas of the Midwest*, Kansas State University, Agricultural Experiment Station, Manhattan, Kansas, pp. 9-11.

small populations may have less need for county zoning than highly populated counties where it may become a virtual necessity.

To deal with the problems of variation in per capita costs, Solomon Fabricant,⁵ in 1942, tried to determine the variables related to the cost of local governments. He used a multiple correlation analysis to study the relationships among per capita income, population density, and percent of the population living in urban areas. About 7.2 percent of the variation in costs of local government were explained by variation in the independent variables.

After Mr. Solomon's article was published, several studies of a similar nature were made. These yielded similar results. However, refinements were made and in 1964 Glenn W. Fisher completed a study⁶ in which state and local government expenditures were related to the following variables:

X_1 = Percent of families with less than \$2,000 income in 1959

X_2 = Yield of the representative tax system

X_3 = Population per square mile

X_4 = Percent of the population in urban areas

X_5 = Increase in population from 1950 to 1960

X_6 = Two party competition

X_7 = Percent of the population over twenty-five years of age having more than five years of education.

These variables explained around 65 percent of the variation in local government expenditures.

Mr. Fisher concluded that his most important finding was the high negative association between family income of less than \$2,000 and government expenditures. He hypothesized that political resistance to higher governmental expenses and subsequent higher taxes may be more pronounced among low income persons. While Fisher's findings were based on the total of state plus local government spending, he indicated that the important variables would be relevant for most levels of government.⁷

Schmandt and Stephens used somewhat different variables and found that state aid and median income were the most important variables affecting county government expenditures.⁸ These investigators concluded that these two factors were indicators of the amount of revenue available to the county governments and determined the amount that could be spent for county government services.

Recognizing population economies of scale some investigators and policy-makers have proposed consolidating the county units into larger areas. Fox and Kumar proposed that the areas be enlarged by ignoring present county bounda-

⁵Solomon Fabricant, "The Trend of Government Activity in the United States Since 1900," New York: National Bureau of Economic Research, Inc., 1952, pp. 112-39.

⁶Glenn W. Fisher, "Interstate Variations in State and Local Governments," *National Tax Journal*, March 1964, Vol. XVII, No. 1, p. 57.

⁷*Ibid.*, pp. 64-74.

⁸Schmandt and Stephens, *op. cit.*, pp. 402-405.

ries and building the new areas in the form of rectangles with sides at 45 degree angles to horizontal lines. This diamond shape is specifically suited for areas with north-south and east-west roads.⁹

Ostenson also suggested enlarging the area over which a governmental unit serves. Ostenson suggested that North Dakota's 53 counties be divided into eight areas using existing county boundaries as dividing lines. Each area would contain a population center and approximately the same per capita real estate values.¹⁰

R. I. Wessel, while recognizing the possibility of economies of scale, concluded that because of political resistance, consolidation of counties may be impossible.¹¹ Another question concerning the feasibility of county consolidation was raised by Thomas F. Hady.¹² He argued that while consolidation of counties might lower the per capita governmental costs of providing the services, other costs such as travel expense might increase for people who wish to avail themselves of the governmental services.

Hirsch recognized the complexity of local government problems in recommending that the total range of problems be considered in proposed reorganization.¹³ He classified seven areas to consider in improving efficiency and performance in local government. These were:

1. Spillover minimization.
2. Scale economy maximization.
3. Geographical area sufficiency.
4. Legal and administrative ability.
5. Functional sufficiency.
6. Controllability and accessibility by constituency.
7. Maximization of citizen participation consistent with adequate performance.

This suggests that while costs are important, other factors must be considered in evaluating the performance of local government.

Other proposals have been made to deal with the fiscal problems of local government. Werner Hirsch suggested that different functions enjoy scale econo-

⁹Karl A. Fox and T. Krishna Kumar, "The Functional Economic Area: Delineation and Implications for Economic Analysis and Policy," Paper prepared for the Eleventh Annual Meetings of the Regional Science Association, Ann Arbor, Michigan, November 13-16, 1964.

¹⁰Thomas Ostenson, Reorganization of County Government in North Dakota (unpublished report from a rural sociological seminar held in North Dakota State University, 1965).

¹¹R. I. Wessel, "Alternative Forms of Rural Government For Supplying Public Services," *Supplying and Financing Public Services in Rural Areas of the Midwest*, Kansas State University, Agricultural Experiment Station, Manhattan, Kansas, p. 36.

¹²Thomas F. Hady, "Changing Demand for Local Public Services," *Supplying and Financing Public Services in Rural Areas of the Midwest*, Proceedings of Seminar, Kansas State University, Agricultural Experiment Station, Manhattan, Kansas, p. 28.

¹³Werner Z. Hirsch, "Local Versus Areawide Urban Government Services," *National Tax Journal*, Dec. 1964, Vol. XVII, No. 4, p. 331.

mies at different population levels.¹⁴ Such differences should be determined in order to determine when various types of intercounty cooperation could be utilized best to take advantage of these economies.

Wessel advocates that contractual arrangements be made between counties to provide the services when scale economies are substantial. Such an arrangement would be particularly suited to road maintenance in sparsely populated rural areas if several counties were enabled to pool their resources to purchase and operate specialized equipment.¹⁵

A somewhat different approach to relieving the pressure of high local government costs was found by the Missouri Public Expenditure Survey. It focuses attention on the fact that the state legislature prescribes the structure of the county government, the duties that the county officials will perform, and the salary of some officials. It also suggests home rule enabling legislation would allow counties to consider situations special to each individual county and perhaps economize in providing some governmental functions.¹⁶

It was necessary because of the objectives of this study and the limited resources available to use a case study approach. Costs and revenues in the financial operations of four county governments were evaluated. While the limitations of such an approach were recognized, pertinent variables can be delineated from such a study.

The original intent was to examine all costs and revenues of the different functions of county government. However, it became evident education and highways did not fit well into the overall framework of the study. In Missouri these services are not handled on a county wide basis. There are school districts and special road services which are not a part of the county government *per se*. Thus, it was necessary to exclude educational and road services from the study.

Most of the expenditure data was taken from state auditor's books in Jefferson City. The other major source of data was the county financial statements which are published by law each year in county newspapers.

The newspapers completed the expenditure data from the auditor's office, and afforded most of the revenue data for the counties. Because audits were not made yearly, data for two of the counties were not available for some of the years under study. Likewise, the newspaper financial records from certain years were missing because certain issues of newspapers were not recorded. The data, however, were complete enough to show relevant trends.

The time covered was the ten-year period from 1956 to 1965. It was believed that this time spread was needed to determine relevant variables and trends in costs and revenues associated with the operation of these county governments.

¹⁴*Ibid.*, pp. 336-339.

¹⁵Wessel, *op. cit.*, pp. 36-37.

¹⁶*Missouri Public Expenditure Survey*, "Constitutional Provision for Streamlining County Government Needs Enabling Statutes," Jefferson City, Missouri, February, 1962, pp. 1-2.

The data were examined to see which variables determined the ability of the county government to provide essential services. An attempt was made to determine whether differences between counties in their ability to provide necessary governmental services were becoming more or less important. An effort was made to relate any differences to changes in certain revenue and cost determining variables. Finally, consolidation of certain counties was simulated and the impact evaluated.

There are considerations which limit the conclusions of the study. Cost and revenue data could not be disaggregated as much as was desired. Disaggregation of financial statements appearing in local newspapers was not consistent. Some data were missing. When data were missing it could only be assumed that the absent data were not significantly different from available data.

The conclusions reached apply only to the sample counties. Examination of four counties does not offer a complete evaluation of the problem defined previously. However, it is believed that major variables affecting the costs and revenues of similar counties were determined, and that a framework for better determining some of the effects of consolidation was developed.

Costs and revenues of county government appear to be intimately associated with the physical features of counties served. Therefore, choices of counties selected were made primarily on the basis of physical characteristics and geographical proximity.

Four counties were included in the study. These were Oregon, Ripley, Butler, and Pemiscot. (Figure 1) These counties were selected because they were predominantly rural and had wide variations in wealth, population density, and costs and revenues. Counties with very large urban centers were purposely omitted. Oregon and Ripley have small populations, low wealth, and similar economies. They contain relatively poor land resources and hardly any industry.

Butler and Pemiscot have much higher populations, more concentrated wealth, and more developed economies. However, these two differ in their physical makeup. Pemiscot is primarily agricultural with a rich land resource, while Butler contains Poplar Bluff, a growing trade center for Southeast Missouri.

Even with the variation in the four counties, certain features are common to each of them. All have essentially the same form of county government, share agriculture as the main economic base, and are located in the same area of the state.

Oregon County

Natural Resources. Oregon County lies on the Arkansas border and is the second county west of Butler County. The land area of Oregon County is 784 square miles, or 501,760 acres.¹⁷ In 1959, 101,769 acres or 20.3 percent of the total area

¹⁷United States Department of Commerce, Bureau of the Census, 1964 *United States Census of Agriculture*, Vol. 1, part 17, United States Government Printing Office, Washington, D.C., 1967, Table 28.

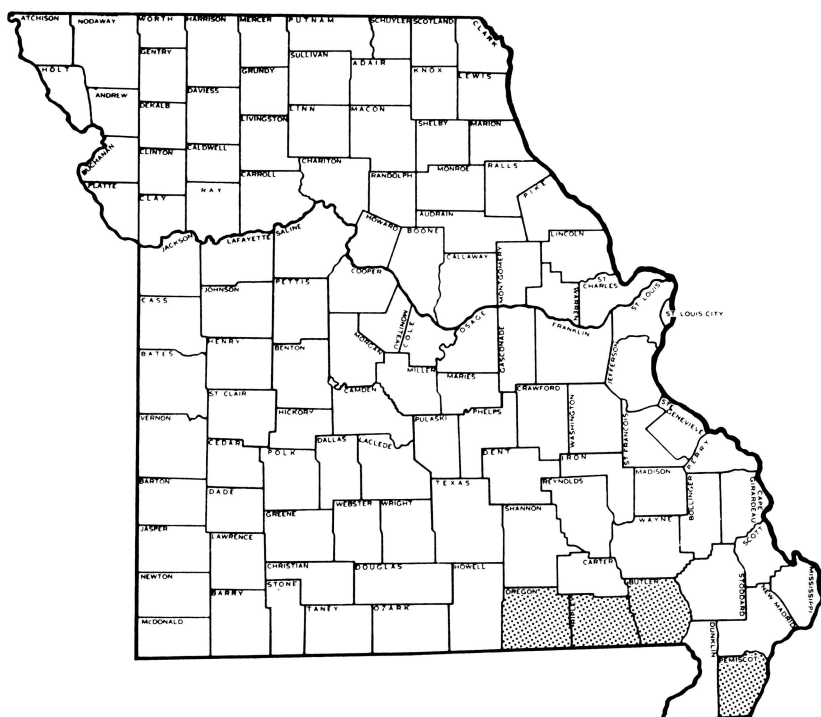


FIGURE 1. COUNTIES INCLUDED IN THE STUDY.

was cropland. The acreage of cropland is decreasing. In 1940, 27.2 percent of the land was cropland. In 1950 the figure was 22.1 percent. Thus, the cropland resource is decreasing. The entire county lies in rough Ozark hills. Most of the rough land could be used to produce timber; however, it has been cut over and allowed to grow back in brush. The northeastern section of the county is in the Mark Twain National Forest. Oregon, unlike many Ozark region counties, has been unable to turn its rough land into tourist attractions.

The Economy. The assessed valuations of Oregon County, along with the changes have been as follows:

Year	Valuation	Change in Valuation	% Change in Valuation
1940	\$ 4,935,959		
1950	7,098,287	\$2,162,328	+43.8
1960	8,985,563	1,887,276	+26.6
1965 ¹⁸	10,511,864	1,526,301	+17.0

¹⁸Missouri State Tax Commission, *loc. cit.*

The valuation for Oregon is small and increasing at a relatively slow rate.

The median family income was \$1,158 in 1950 and increased to \$2,357 in 1960.¹⁹ Even with the substantial increase in median family income, the poverty index was high at 61 percent.²⁰

Population. The total population of Oregon County was 13,390 in 1940, 11,978 in 1950, and 9,845 in 1960.²¹ This is a 26.5 percent decrease in population from 1940 to 1960.

The population of the largest town in the county, Thayer, is 1,713. This is a primarily rural county; 59.1 percent of the population is nonfarm. Changing technology and the movements of rural population to urban centers has taken a heavy toll on the population of this county.

Ripley County

Natural Resources. Total area of Ripley County is 639 square miles.²² It is very similar to Oregon County. The total cropland in 1959 was 85,559 acres, 17.2 percent of the total. This compares to 20.9 percent in 1940 and 19.5 percent in 1950.

The bulk of the county is cut-over timber land which produces very little now and accordingly is worth very little. Like Oregon County, Ripley County has been unable to attract much tourist trade. However, Ripley County does contain one recreation asset; the Current River flows the length of the county and attracts a small amount of tourist business.

The Economy. The assessed valuation of Ripley County reflects the value of the land and other assets. The assessed valuation and changes are as follows:

Year	Valuation	Change in Valuation	% Change in Valuation
1940	\$ 4,488,997		
1950	6,590,469	\$2,101,472	+46.8
1960	8,106,236	1,515,767	+23.0
1965 ²³	9,515,250	1,409,014	+17.4

The median income was \$1,076 in 1950 and \$1,977 in 1960.²⁴ Sixty-four percent of the families having less than \$3,000 income in 1960.²⁵

¹⁹United States Department of Commerce, Bureau of the Census, *City and County Data Book*, Washington, (1956 for 1950 data and 1967 for 1960 data) Table 2.

²⁰Ashley, *loc. cit.*

²¹From the office of the State Auditor in charge of class III and IV counties.

²²United States Department of Commerce, Bureau of the Census, *1964 United States Census of Agriculture*, Vol. 1, part 17, United States Government Printing Office, Washington, D.C., 1967, Table 28.

²³Missouri Tax Commission, *loc. cit.*

²⁴United States Department of Commerce, Bureau of the Census, *City and County Data Book*, Washington (1956 for 1950 data and 1967 for 1960 data), Table 2.

²⁵Ashley, *loc. cit.*

Population. The total population of Ripley County decreased from 12,606 in 1940, to 11,414 in 1950, to 9,096 in 1960.²⁶ This represents a 27.8 percent decrease from 1940 to 1960.

The population of Doniphan, the largest town in the county, is 1,421, according to the 1960 census. The nonfarm population represented 68.9 percent of the total population in the same year.

Butler County

Natural Resources. Butler County with an area of 714 square miles is situated on the northwestern edge of the Missouri bootheel and is bordered by Arkansas on the south (Figure 1). The area in cropland is increasing. In 1940 only 29.1 percent of the total was cropland but by 1950 this had increased to approximately 35 percent.²⁷ In 1959, there were 165,746 acres in cropland, comprising 36.3 percent of the total area. Much variation exists. The northern region of the county is very rough timbered land, a large part of which is included in the Clark National Forest. The southeastern section is flat Mississippi delta and good farmland.

The Economy. While assessed valuation is not a precise measure of wealth in a county, it is generally about 30 percent of the market value of property in the county.

The valuation and changes in Butler County valuation for selected years follow:

Year	Valuation	Change in Valuation	% Change in Valuation
1940	\$12,102,009		
1950	21,468,458	\$ 9,366,449	+78.4
1960	34,061,402	12,592,944	+58.7
1965 ²⁸	41,883,643	7,822,241	+23.0

There have been marked increases in valuation, both in absolute and percentage terms. Part of the increase has resulted from inflation, because net additions to physical wealth have also contributed substantially.

²⁶From the office of the State Auditor in charge of class III and IV counties.

²⁷United States Department of Commerce, Bureau of the Census, 1964 *United States Census of Agriculture*, Vol. 1, Part 17, United States Government Printing Office, Washington, D.C., 1967, Table 28.

²⁸Missouri State Tax Commission, *Annual Report of Proceedings and Decisions*, Jefferson City, (1940, 1950, 1960, and 1965).

The median family income increased from \$1,489 in 1950 to \$2,864 in 1960.²⁹ The poverty index, indicating the percent of the families in the county with less than \$3,000 income, was 52 percent in 1960.³⁰

Population. The population of Butler County was 34,276 in 1940, 37,707 in 1950 and 34,656 in 1960.³¹ A large nonfarm population has resulted largely from the growth of Poplar Bluff as a regional growth and trade center. Poplar Bluff's population was 15,926 in 1960. Thus much of the population of the county was nonfarm, with the bulk of the inhabitants residing in one city.

Pemiscot County

Natural Resources. Pemiscot County lies in the southeastern corner of the Missouri bootheel. It is bounded by the Mississippi River on the east and Arkansas on the south. Its total land area is 488 square miles.³² The proximity of the Mississippi River and its bottomland accounts for the high percentage of the area which is cropland. The percent of land in crops was 70.5 in 1940, 78.9 in 1950 and 84.6 in 1959. This percentage is high because of the drainage efforts in the county and it is increasing very rapidly.

The Economy. Because of the high value of the land, the assessed valuation is also high. The assessed valuation is as follows:

Year	Valuation	Change in Valuation	% Change in Valuation
1940	\$16,727,211		
1950	26,025,701	\$ 9,298,490	+55.6
1960	37,483,456	11,457,755	+44.0
1965 ³³	43,019,723	5,536,267	+14.8

The median family income for Pemiscot County was \$1,252 in 1950 and \$2,276 in 1960.³⁴ The poverty index is 60 percent.³⁵

Population. The total population in Pemiscot County was 46,857 in 1940, 45,624 in 1950 and 38,095 in 1960.³⁶ These figures indicate a decrease in population of 18.7 percent from 1940 to 1960.

The nonfarm population in 1960 was 64.0 percent. The population of the largest town, Caruthersville, was 8,643 in 1960. Again, the consistent decrease in

²⁹United States Department of Commerce, Bureau of the Census, *City and County Data Book*, Washington (1956 for 1950 data and 1967 for 1960 data), Table 2.

³⁰John W. Ashley, *Profile of Poverty in Missouri*, Research Center, School of Business and Public Administration, University of Missouri, Columbia, Missouri, Table I.

³¹From the office of the state auditor in charge of class III and IV counties.

³²United States Department of Commerce, Bureau of the Census, *1964 United States Census of Agriculture*, Vol. 1, part 17, United States Government Printing Office, Washington, D.C., 1967, Table 28.

³³Missouri State Tax Commission, *loc. cit.*

³⁴United States Department of Commerce, Bureau of the Census, *City and County Data Book*, Washington (1956 for 1950 data and 1967 for 1960 data), Table 2.

³⁵Ashley, *loc. cit.*

³⁶From the office of the State Auditor in charge of Class III and IV counties.

the population may be partially explained by the predominately rural setting of the county.

Comparison of the Four Counties

When comparing variation among counties in the study area, it must be remembered that this study dealt only with the total spectrum. For example, when it stated that Butler County has a high nonfarm population, it is compared to the other counties in the sample but not to Missouri or the U.S.

Two of the counties, Oregon and Ripley, were very similar in terms of variables considered. The other two counties, Butler and Pemiscot, were similar with respect to some of the more important variables, but differed in terms of some other important variables.

Oregon County is the largest with 501,760 acres, Pemiscot County has only 312,320 acres, and the other two counties fall between those two figures. The size of the county is important because size is related to both wealth and the cost of operating the county government.

The ratio of total cropland to total acreage is an approximate indication of the agricultural productivity of a county. The rates increased in Butler and Pemiscot Counties from 1940 to 1959. In 1959, the percentage in Pemiscot County was 84, while in Butler County the percentage was 36.3. Oregon and Ripley Counties decreased in percentage to lows in 1959 of 20 percent or less. These differences resulted from improved technology on the land that was highly adaptable to row crops. The adaption to improved row crop technology was much lower on hill land.

Oregon and Ripley Counties have low valuations while Butler and Pemiscot have high valuations. In 1965 the valuations of Oregon and Ripley Counties were around \$10 million while that of Butler was \$42 million, and Pemiscot's was about \$43 million.

Nearly as important as the total valuation in the counties is the rate of growth of the valuation. The percentage increase from 1940 to 1965 was 246 for Butler County, 157 for Pemiscot County, 113 for Oregon County and 112 for Ripley County. The high wealth counties were increasing their wealth lead over the poorer counties.

Butler County had the highest median family income in 1960 with \$2,864. There was little difference in the median family incomes of the other three counties. They ranged from nearly \$2,000 to \$2,350. The percentage of families with less than \$3,000 income was lowest in Butler County at 52 percent. The other counties showed little variation, ranging from 60 percent to 64 percent.

The populations of Oregon and Ripley Counties were between nine and ten thousand in 1960—decreasing about 27 percent since 1940. Pemiscot County had the highest population, 38,095 in 1960, a decrease of 19 percent since 1940. Butler County's population of 34,656 in 1960 was smaller than Pemiscot County's, but had changed little from 1940.

In 1960, the per capita valuation was \$1,243 in Butler, \$1,231 in Oregon, \$1,265 in Pemiscot, and \$1,231 in Ripley. The per capita wealth for all counties

increased through time but there was little variation among counties at a point in time.

An obvious relationship emerges while examining the connection between costs and revenues of county governments. In the long run, and usually in the short run, expenditures must equal revenue. Revenue is determined primarily by the wealth of a county while costs are closely related to the population of the area. Since wealth and population are not necessarily highly positive in correlation, wide differences in capabilities to finance local governments can be expected between areas. Since revenues and costs are primarily dependent on different factors, it seemed logical to examine the costs and revenues separately.

Revenue Sources

In Missouri, county government revenue comes from three main sources: state aid, licenses and fees for services performed, and property tax revenue. The magnitude of these sources is dependent upon different factors. Thus to properly evaluate county revenue, it is necessary to consider all sources.

In Missouri, state aid is paid to the counties as a fraction of the cost of providing certain services. The counties may or may not elect to provide these services for which state aid is given. These decisions depend on the particular needs of a county and on the ability to pay the fractional costs of certain services.

A problem arises in attempting to quantify the amount of state aid given to a county. In Missouri the percentage of the service cost the state will bear varies from county to county. This percentage depends primarily on the valuation and population of the county. Generally, the state pays the highest percentage of the costs to those counties which need help the most. Even so, the counties with large populations and large valuations get the largest absolute amount of state aid and the counties with small populations and valuations get the highest state aid per capita.

Where state aid is a source of county revenue, it must be included in any study of the financial situation of county governments; however, the magnitude can only be determined by an individual county study.

State aid, although nearly a free donation to any particular county, is a cost to society and should be treated as such. It should be used only to the point where the cost to society is equal to the benefit to society.

County fees and licenses were second only to property tax as sources of revenue in the sample counties. Fees come from persons who have secured the services of a county official or employee. Nearly all the revenue from licenses comes from liquor licenses.

The revenue derived from fees appears to be a function of population. As population increases, the demand for services of officials and employees increases. At a given price level for services, the total revenue should increase as population is increased.

The demand for licenses is derived from the demand for liquor, and the demand for licenses would be expected to increase as population increases. Revenue derived from licenses also should increase as population increases, given some price level for licenses.

The property tax is by far the largest single source of income to the county governments. Depending on the population and quality of the land, the property tax will account for from 70 to 90 per cent of total revenue.

The property tax is, for practical purposes, a tax on wealth. Its magnitude is figured by multiplying the valuation of each piece of property in the county by a fixed tax rate. The tax rate is set by the county court, subject to a maximum which is set by the state legislature. The maximum rate for Missouri is 50 cents per \$100 valuation. To raise the rate, the people of the county must vote. After an increase in the tax rate is passed by a vote of the people, the increase is only valid for four years, after which the 50 cents per \$100 valuation is again the maximum.

The valuation of property in a county is set by an assessor. The assessor attempts to assess all property at the same percent of market value.

Revenue derived from property tax is a function of wealth and the tax rate. For a given tax rate, there is linear relationship between revenue and wealth. If revenue were plotted against wealth with several different tax rates, the result would be a family of linear revenue lines starting at the origin.

In summary, revenue for the county government is a function of population, total wealth in terms of valuation, and the property tax rate. Revenue from the state and revenue from fees and licenses, decreases in per capita terms as population increases. Revenue from property taxes increases at a constant rate with valuation, given some tax rate. If valuation per capita is held constant, then the total revenue from property tax increases at a constant rate with population. Thus, the per capita revenue, shown as AR on Figure 2, would be downward

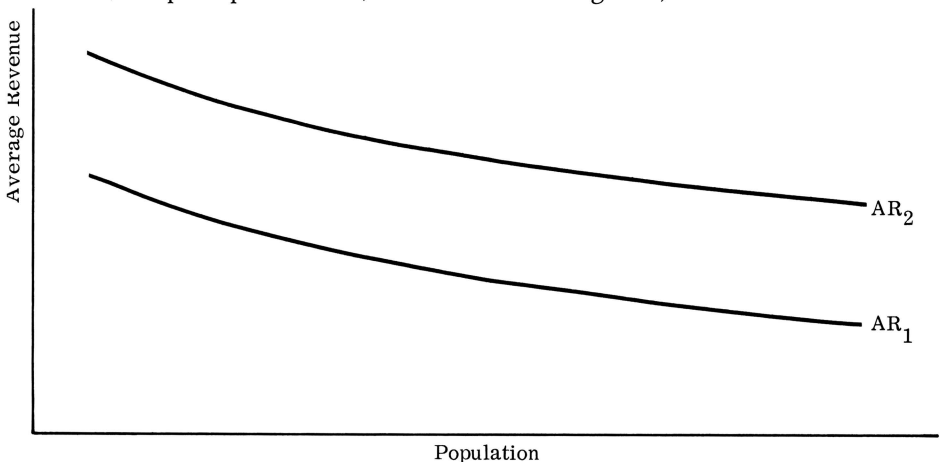


FIGURE 2. AVERAGE REVENUE WITH DIFFERENT TAX RATES.

sloping to the extent the revenue from fees and licenses and from the state are downward sloping. The AR curves will move up with increases in the tax rate, as shown in the movement from AR_1 to AR_2 .

Components of Costs

An analysis of costs of county government may be simple or complex, depending upon the particular problem under consideration. From one viewpoint county governments are nonprofit organizations and can not sustain losses over a long period of time; costs simply equal revenue. However, this view of costs does not suffice for purposes of this study. An evaluation of other cost factors is needed.

Classes of County Government Costs. Counties are required to budget their expenditures in a precise manner, according to classes.³⁷ These classes are:

Class I—Care of pauper insane.

Class II—Juries and elections.

Class III—Roads.

Class IV—Salaries and office expense.

Class V—Contingent and emergencies.

Class VI—Equipment and other legal expenses.

Class I isn't a particularly large expenditure in relation to other classes, but because of its nature, is very unpredictable. Most of the expenditures in this class are payments to state institutions for care of the pauper insane.

Class II is also highly variable, but in a regular manner. Biannually, this category of expenditure is large because of election costs.

Class IV is by far the largest class of expenditure. From an average of 108 rural counties, salaries and office expense accounted for nearly half of total county expenditures.³⁸

Class V is the second largest class of expenditures. It includes payments for buildings and grounds, public welfare, and other contingencies. Increases in public expenditures are making this class more important as time passes.

Class VI, equipment and other legal expenses, is probably the most controllable class of expenditure. County officials are able to purchase equipment during those years when there is extra revenue and put off purchases in years when other classes have already taken the revenue.

The percentage of total revenue that each of these classes receives changes over time as certain services become more or less important in relation to others. Primarily because of increases in the general price level, the general trend of each of the classes, and certainly of costs as a whole, is to increase over time.

³⁷The 73rd General Assembly enacted House Bill 205 which changed the budgeting procedure for third and fourth class counties, however for the purposes of this study, the old procedure will be used because the bulk of the data comes from years prior to the change.

³⁸Missouri Public Expenditure Survey, *14th Annual Compilation of County Budgets*, Jefferson City, Missouri, July, 1959, p. 1.

Economies of Population. Population economies have been recognized in county government operation up to a population of 25,000 or more. However, this includes roads and education. Roads and education show the most distinct economies of scale. When these two classes are excluded, it is logical to assume that scale economies relative to other cost categories will change. In this analysis scale economies were assumed different for each class of county government expenditure.

With a given economic base, there appear to be no economies or diseconomies of scale in care of the pauper insane (Class I expenditures). The county pays a given cost per individual for their care.

With a given level of population density economies and diseconomies appear unlikely in the Class II category (Elections and Juries). Expenditures for this category would not be decreased on a per capita basis by area expansion.

Class III expenditures for roads were not considered in this study.

Empirical and theoretical considerations suggest economies of population for Class IV expenditures (Salaries and Office Expense) for populations at least through the 10,000 level. These arise primarily because each county employee can handle a volume of business associated with a certain population level. The population which is needed to keep a county employee fully employed varies with the different offices. As demands for services increase because of increases in population, diseconomies may be expected. These diseconomies could result from inefficiency and the bureaucracy which may be a product associated with larger organizational structure.

Population economies of scale appear unlikely in the Class V category. It is little more than a catchall for other classes which have exceeded their budgeted allocation. Regular additions to this class include electricity and gas expenses which would not have large economies of scale.

Theoretically, it could be argued that the greatest economies of scale may be realized from Class VI expenditures which include equipment and legal expense. Use of improved technology has afforded large benefits to those organizations which can efficiently utilize sophisticated equipment and procedures. However, simulating the impact of technological change on costs of local government was beyond the scope of this study.

Another variable associated with local government is area covered. People must travel to a service or the service must be transported to the people. This introduces the need for consideration of another cost variable.

The distance for travel from a peripheral point on the circle to the center is r for any r of a particular circle of radius r but the number of peripheral units added by a one unit increase in r is $\pi(r+1)^2 - \pi r^2 = \pi(r^2 + r + 1) - \pi r^2 = 2\pi r + \pi$ and the distance added by a given r would be $r(2\pi r + \pi) = 2\pi r^2 + \pi r$. The total distance for travel T.D. for any circle of radius r would be

$$\text{T.D.} = \sum_{i=1}^r 6.28r^2 + 3.14r = 6.28 \sum_{i=1}^r r^2 + 3.14 \sum_{i=1}^r r \text{ for any set of positive inte-}$$

gers of r. It should be noted that the function is defined only for positive integral values of r. This is because the concern is for distance added to travel by a one unit increase in the value of r. Defining r for all real numbers in such a situation would give meaningless results because any r above zero would result in an indefinitely large number which would be meaningless.

It can be shown that the summation of the squares of the first r positive integers is

$$\frac{2r^3 + 3r^2 + r}{6} \text{ and the sum of the first } r \text{ integers is}$$

$$\frac{1}{2}r^2 + \frac{1}{2}r$$

$$\text{T.D.} = \left(\frac{2r^3 + 3r^2 + r}{6} \right) + 3.14 \left(\frac{1}{2}r^2 + \frac{1}{2}r \right) =$$

$$3.14 \left(\frac{2r^3 + 3r^2 + r}{3} \right) + 1.57r^2 + 1.57r =$$

$$\frac{6.28r^3 + 9.42r^2 + 3.14r}{3} + 1.57r^2 + 1.57r$$

$$\text{T.D.} = 2.09r^3 + 4.71r^2 + 2.62r \quad ,$$

The total distance traveled to reach a central point then is increasing at an increasing rate with distance from the central point.

If a homogeneous distribution of population is assumed in an area, population will increase by $3.14r^2$ as distance from the central point increases. However, total distance traveled will increase much more rapidly as indicated above. In sparsely settled low wealth areas total travel costs may become significant in determining economies to be developed from county consolidation.

To illustrate the implications of these arguments, consider the problem in per capita cost terms. Cost theory suggests that if per capita cost for a given area is plotted on population as shown by AC_1 in Figure 3, the "U" shaped curve which is formed is a result of population economies and diseconomies. However, if the area of the county must be increased to obtain a larger population, the per capita costs are increased at all levels as shown by AC_2 . Thus, a family of per capita cost curves exists with each individual population depending on the area of the county necessary to obtain that population. The magnitude of the upward shift in the cost curve will depend on population density, road system, distribution of population and possibly other variables.

Variations about any particular average cost curve are to be expected when empirical evidence is used. These variations may be explained in three ways. First, the finances of a given county may simply be poorly managed, causing the people to pay a higher price than is necessary for their services. Second, a population may simply not demand the same quality of services as a population in a different county. Third, the total revenue may exercise a constraint on the amount of services that may be provided for a county. That is, given two counties of the same population, the valuation, or total wealth, may be enough lower in one that it can not provide the same amount of service as the other. Or, given

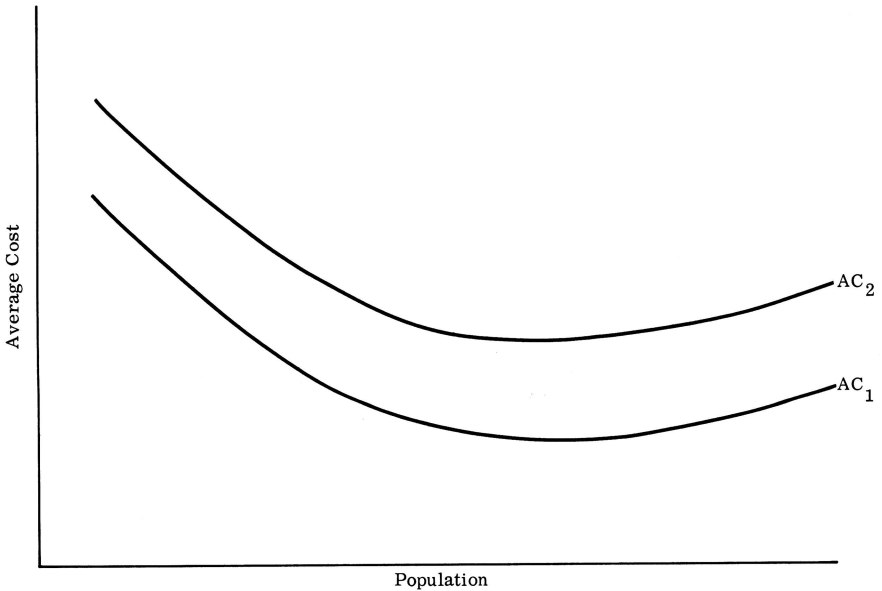


FIGURE 3. PER CAPITA COSTS FOR TWO DIFFERENT AREAS.

the same circumstances, the poorer county may be able to provide the same services at less cost because of the recognition by those who sell their products or services to the county of lower living costs and fixed capital assets providing a reason to stay in the local area.

Combining Costs and Revenue

Total revenue is a function, primarily of wealth, tax rate, and population. Total cost, for a given set of services, is a function of population and area, and is constrained by total revenue. Herein lies the crux of the problem. In the most general terms, revenue is derived from wealth and expenditures are made on the population. Thus, the lowest cost level of county government operation may not be obtainable when population increases can be achieved only by area expansion.

If the assumptions are made that wealth per capita is constant and that area per county is constant, then the main variables are population and the tax rate. Under these assumptions, the resulting average cost curve and average revenue curves are shown on Figure 4.

The AC_0 curve is illustrative of the average cost per capita of county governments for like services, assuming that the area in the county is the same for all populations. This curve shows economies of scale up to population P_0 , and diseconomies past that point.

AR_0 is the average revenue curve when the maximum tax rate (50 cents per \$100 valuation) is imposed. Any AR curve is downward sloping throughout, primarily because of the impact of state aid, since state aid is higher per capita in

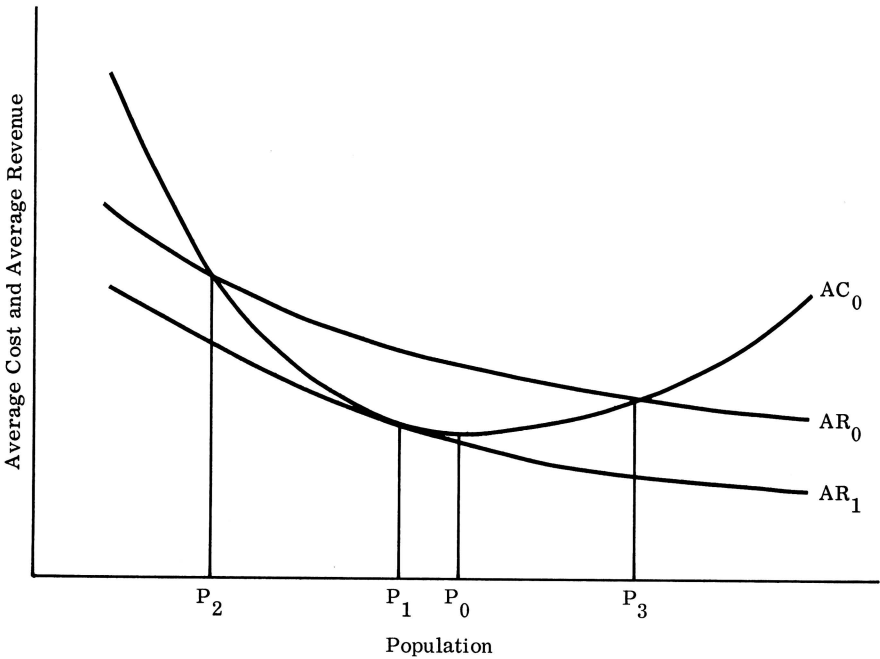


FIGURE 4. THEORETICAL AVERAGE COST AND AVERAGE REVENUE CURVES.

counties with small populations. Because AR_0 includes all revenues and includes the property tax revenues with the highest rate, it is the highest attainable average revenue curve. Thus, the range in which AR_0 is greater than or equal to AC_0 , P_2 to P_3 is the range in which the population of a county must fall in order for that county to remain solvent.

AR_1 represents the average revenue when the tax rate is decreased. It is parallel to AR_0 since the revenue is decreased by a constant sum per person. Since the tax rate is the only factor which may be altered, all average revenue curves will be parallel and below AR_0 . Theoretically, if the population of a county were P_1 , the tax rate which should be imposed to cover all current expenditures, is the tax rate which is used to derive AR_1 .

If AR_1 were, in fact, the average revenue which was derived from the maximum tax rate, then the population of the county would have to be P_1 in order for the county to remain solvent. Any population besides P_1 would lead to expenditures in excess of revenue. As may be noted, P_1 is left of P_0 , the low point of the average cost curve, and in fact, the county would not be able to meet expenditures if the population were P_0 . This seeming paradox is a result of the subsidy which the state government pays to counties with small populations.

Theoretical Considerations of Proposals for Reducing Costs of County Government

Two approaches are usually suggested for lowering the costs of county governments: (1) becoming more efficient in the operation of county government, (2) combining counties so that population will be increased with resultant economies of scale associated with the population increase.

Most of the proposals to increase the efficiency of county government deal with combining several of the offices in small counties in which each office by itself may not be fully employed. At present, state laws will not allow such restructuring of the county government. However, if the performance of service is not impaired, and if such restructuring would lower per capita costs, then certain restructuring would be advantageous.

County Consolidation. County Consolidation is a widely acclaimed proposal for decreasing the per capita cost of county government. The justification for county consolidation stems from the fact that when a large number of counties are sampled, those with populations between 25,000 to 50,000 have lower per capita costs than do counties with smaller populations.

The counties under prime consideration for consolidation are counties such as Oregon and Ripley which are included in the sample for this study. They are counties with low population, around 10,000, and with high per capita government costs. They are also counties with low population density and low valuation, whether in terms of total or per acre.

The objective of county consolidation may be seen in Figure 5. If two counties of size P_1 were combined so that the total population were P_2 , the cost per ca-

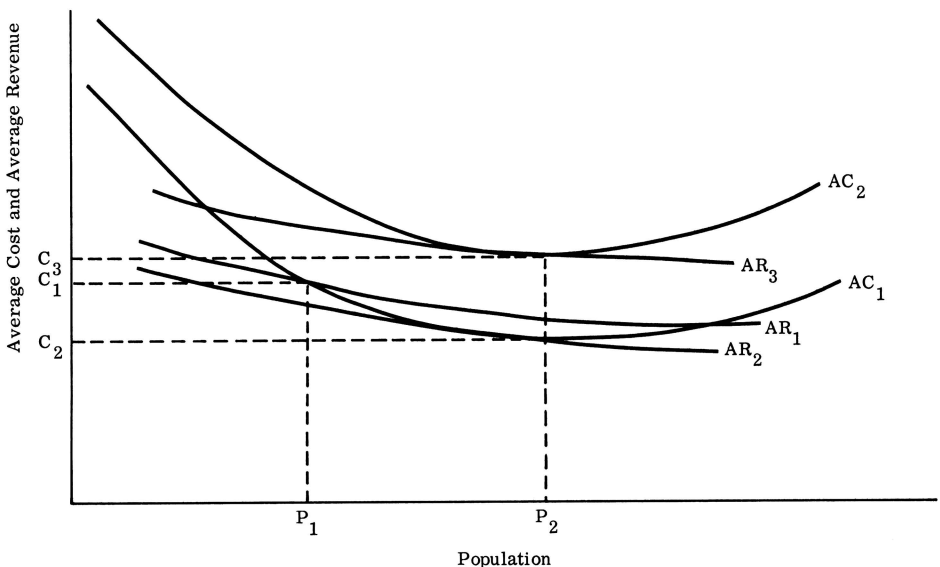


FIGURE 5. POSSIBLE EFFECTS OF CONSOLIDATION

pita would be C_2 instead of C_1 , if AC_1 were the appropriate cost curve. Thus, there would be substantial savings to the people who lived in the two counties which were consolidated. The property tax could be lowered to AR_2 from the higher AR_1 .

However, this analysis is fallacious because two assumptions were violated. AC_1 represents the per capita costs of counties with differing populations given some constant area, thus the density is ever increasing with increases in population. If, in fact, two counties with P_1 populations were combined, and the areas were the same as assumed in AC_1 , then the consolidated county with P_2 population would be double the area of either of the single counties. Also, the consolidated county would have the same population density as either of the two single counties. Both of the situations above are in violation of the assumptions of the model. Yet this kind of false reasoning underlies much analysis and it is seldom obvious.

As population increases for a given area, part of the economies come from increases in population density. If two counties of some population density are combined so that population doubles, the population density remains the same. Thus, the decrease in per capita costs which comes from a high population density would not be expected from consolidating the counties.

The other assumption violated was that of having constant area on any particular per capita curve. As area of a county increases, the distance over which a service must be performed increases at a more rapid rate than does the population. The economies of larger population may be substantially reduced because of increased travel cost. Since the variables affecting county government cost and revenue are different for any area, only a detailed analysis of the relevant variables for any particular situation will determine the economic validity of the consolidation.

COSTS AND REVENUES OF THE SAMPLE COUNTIES, 1956-1965

Cost and revenue data were collected on the operation of county governments for all sample counties from the county audit division of the state government. The time period covered was for the years from 1956 through 1965.

Total Revenue

Total revenue has been previously defined as the sum of three components in the state of Missouri. In this study the revenue was disaggregated in terms of these three components.

State Aid. Counties generally receive revenue from the state as partial payment for providing a service to the people of the county. On other occasions revenue to the county from the state may take the form of payments for a service rendered to the state.

The state aid component of total revenue for three of the sample counties is shown in Table 1. The counties with small populations received more per

TABLE 1--TOTAL AND PER CAPITA REVENUE FROM THE STATE^a

Year	Butler		Oregon		Ripley ^d	
	Total ^b	Per Capita ^e	Total ^c	Per Capita ^e	Total ^d	Per Capita ^e
1956	\$ 6,999	\$.20	\$9,512	\$.89	\$4,755	\$.47
1957	3,820	.11	5,222	.50	3,552	.36
1958	5,907	.17	6,049	.59	3,966	.41
1959	4,465	.13	6,026	.60	3,831	.41
1960	4,339	.13	6,357	.64	2,435	.27
1961	6,130	.18	6,405	.67	3,308	.37
1962	9,400	.27	6,318	.68	5,898	.69
1963	12,179	.36	6,826	.75	4,506	.54
1964	-f	-	6,474	.74	5,778	.72
1965	-f	-	7,643	.89	5,147	.67

^aData were not available for Pemiscot County because the revenue from the state was combined with other revenues.

^bFrom the county financial statements which were printed during February in the Poplar Bluff American Republic, Poplar Bluff, Missouri.

^cFrom the county financial statements which were printed during February or March in The Thayer News (1957), Thayer, Missouri, or the South Missourian Democrat (All years except 1957), Alton, Missouri.

^dFrom the county financial statements which were printed during February or March in The Doniphan Prospect News, Doniphan, Missouri.

^ePopulation figures, used in calculating the per capita data, were derived from a linear trend using 1950 and 1960 census population data.

^fData not available.

capita than did the county with a large population (Table 1). This resulted from the state's paying a nearly constant amount for services to the county regardless of the population. For example, each county received a \$1,600 payment for furnishing data concerning student numbers. Partial payment of the school superintendent's salary and payments for commodity distribution program constitute other major sources of state aid to county government.

In summary, the revenue to the counties from the state is growing both in total and per capita terms. This revenue, while being larger in total to counties with large populations is larger per capita to counties with small populations.

Fees and Licenses. The total revenue from fees and licenses for each of the sample counties is shown in Table 2. In general, revenue from this source increased both in total and per capita terms for the sample counties during the

TABLE 2--TOTAL AND PER CAPITA REVENUE FROM FEES AND LICENSES^a

Year	Ripley ^b		Oregon ^c		Pemiscot ^d	
	Total	Per Capita	Total	Per Capita	Total	Per Capita
1956	\$ 7,991	.80	\$5,142	.48	\$33,823	.82
1957	7,975	.81	5,723	.55	24,407	.60
1958	9,254	.97	6,099	.59	18,356	.46
1959	7,035	.75	6,716	.67	- e	-
1960	9,083	1.00	6,324	.64	- e	-
1961	8,664	.98	7,042	.73	17,865	.48
1962	8,580	1.00	7,583	.81	24,760	.68
1963	13,744	1.66	7,232	.80	24,640	.69
1964	8,603	1.07	8,652	.98	- e	-
1965	10,941	1.42	7,841	.92	23,645	.70

^aData for Butler County is not available.

^bThe Doniphan Prospect News, *op. cit.*

^cThe South Missourian Democrat and The Thayer News, *op. cit.*

^dFrom the county financial statements which are printed during March or April in The Democrat Argus, (1957, 1961, 1965), Caruthersville, Missouri, The Republican, (1958), Caruthersville, Missouri, The Missouri Herald, (1956, 1960, 1963), Hayti, Missouri, and The Steele Enterprise, (1962), Steele, Missouri.

^eData not available.

study period. However, there was considerable variation among the sample counties (Table 2).

Property Tax. The revenue from property taxes is by far the most important source of revenue and accounts for 70 to 80 percent of the total revenue. In a sense, the property tax rate is the easiest variable to change. Yet, because it is ultimately subject to political control, any attempt to increase the tax rate, and thus the total county revenue, may encounter political resistance.

The total and per capita revenue from property taxes for the sample counties for the study period are shown in Table 3. Total and per capita revenue from property taxes increased rapidly during the period for all sample counties, but per capita revenue increased more rapidly in the smaller counties (Table 3).

Changes in assessed valuation for the sample counties during the study period are shown in Table 4. Despite much variation in assessed valuation among sample counties, all showed large increases. The percentage increase in assessed valuation from 1959 to 1965 was 34 for Oregon, 31 for Butler, 19 for Ripley, and 17 for Pemiscot.

TABLE 3--TOTAL AND PER CAPITA REVENUE FROM PROPERTY TAXES^a

	Butler		Oregon		Pemiscot		Ripley	
	Total	Per Capita	Total	Per Capita	Total	Per Capita	Total	Per Capita
1956	\$127,400	\$3.55	\$37,201	\$3.48	\$151,173	\$3.95	\$39,145	\$3.91
1957	131,334	3.69	41,122	4.02	127,515	3.16	39,236	4.01
1958	113,647	3.51	38,808	3.78	152,084	3.84	41,627	4.46
1959	130,096	3.72	50,254	5.00			40,056	4.29
1960	131,041	3.78	70,015	7.11			42,352	4.66
1961	149,334	4.33	69,042	7.20	178,587	4.79	42,212	4.78
1962	161,858	4.72	75,504	8.10	206,305	5.66	40,296	4.71
1963	158,603	4.65	52,898	5.84	204,764	5.75	44,805	5.41
1964			86,390	9.82			44,115	5.51
1965			59,587	6.98	196,261	5.77	50,719	6.56

^aIncludes current plus back taxes. Also the financial statements from which this data comes includes only the tax revenue in the hands of the treasurer and not in the hands of the collector on December 31. Thus, there is some lag in the figures because the collector gets much of the revenue in the last of December.

TABLE 4--TOTAL ASSESSED VALUATION IN THE SAMPLE COUNTIES^a

	Butler	Oregon	Pemiscot	Ripley
1956	\$32,046,567	\$ 7,861,406	\$36,690,279	\$8,029,231
1957	31,577,760	8,303,831	36,824,722	8,191,659
1958	32,533,165	8,735,985	37,712,974	8,157,778
1959	33,020,161	8,907,184	37,105,709	8,098,826
1960	34,061,402	8,985,563	37,483,456	8,106,236
1961	34,926,507	9,226,695	37,896,417	8,187,897
1962	36,467,075	9,279,157	40,862,734	8,560,920
1963	38,384,749	10,159,864	42,083,252	8,474,260
1964	39,792,772	10,336,470	42,698,005	9,175,666
1965	41,883,643	10,511,864	43,019,723	9,515,250

^aMissouri State Tax Commission. Proceedings and Decisions of the Missouri State Tax Commission, Jefferson City, Missouri.

The percentage change in assessed valuation did not appear to follow any logical pattern in the sample in the sense that the high wealth counties or low wealth counties were in a specifically separable category.

This apparent random change among the sample counties may be partially explained thus: If relative changes in assessed valuation are related to the need for added revenue, this might account for the relatively large increase in Oregon

and Ripley's assessed valuation even though the real economic growth of the two counties was apparently not large from 1956 to 1965.

Assessed valuation per capita in the counties was similar. The per capita valuation increased through time for all counties partially because of increasing county per capita government costs. In 1965, the per capita valuation was \$1,243 in Butler, \$1,231 in Oregon, \$1,265 in Pemiscot, and \$1,231 in Ripley.

Table 5 shows the tax rates for the period of the study for each of the counties. Because of the need for greater revenue, Butler and Pemiscot Counties have increased their tax rate to the maximum under state law. Ripley County had the maximum rate in effect through the entire period, while Oregon County increased the tax rate above the 50 cent level by a vote of the people of the county. Tax rates were higher in Oregon and Ripley than in Butler and Pemiscot Counties (Table 5), simply because of necessity to generate needed revenues.

TABLE 5--PROPERTY TAX RATE IN CENTS PER \$100 VALUATION

County	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Butler	40	40	40	40	42	45	45	50	--	50
Oregon	50	50	50	80	80	80	80	75	75	75
Pemiscot	40	40	45	--	--	50	50	50	--	47
Ripley	50	50	50	50	50	50	50	50	50	50

Current revenue from property taxes was determined by multiplying the tax rate by the assessed valuation and adding the net of back taxes collected and delinquent taxes not collected for the given year. The result is shown in Table 5.

Almost all of the revenue from property tax for a given year comes in November and December. The implications of this lag will be discussed later.

Other Sources of Revenue. A final source of revenue to a county government, referred to as "other," is a catch-all for the small and irregular revenues which go to the county government. Common items in the "other" category are payments for rental of space, sale of property, and refunds made to the county government for overpayment. This category of revenue was usually very small. The exception came in those years when large sales of property or real estate were made.

Sum of Revenue Sources. The sum of the revenue sources is shown in Table 6. Per capita revenues increased in all counties during the study period. It should be noted that per capita revenues for Ripley and Oregon were higher, particularly toward the end of the study period, than in Butler and Pemiscot Counties. This was consistent with expectations.

Total Costs

The total and per capita costs for the sample counties were determined by classes and are shown in Table 7. The expenditures in each class and the expenditures for the total of all classes increased through the study period.

TABLE 6--TOTAL AND PER CAPITA GENERAL REVENUE RECEIPTS

	Butler		Oregon		Pemiscot		Ripley	
	Total	Per Capita	Total	Per Capita	Total	Per Capita	Total	Per Capita
1956	\$177,079	\$4.94	\$ 54,103	\$ 5.06	\$203,541	\$4.95	\$51,890	\$5.18
1957	176,234	4.95	54,451	5.19	161,848	4.01	50,763	5.18
1958	162,217	4.60	54,746	5.33	181,994	4.60	54,846	5.74
1959	179,454	5.13	67,184	6.68	-	-	50,921	5.46
1960	180,118	5.20	86,732	8.81	190,615	5.00	65,111	7.16
1961	206,558	5.99	87,696	9.15	218,597	5.86	54,184	6.14
1962	223,748	6.53	92,625	9.93	246,469	6.76	54,774	6.41
1963	224,767	6.59	70,737	7.81	253,415	7.11	63,055	7.62
1964	-	-	104,853	11.91	-	-	58,496	7.31
1965	278,520	8.26	75,526	8.84	240,530	7.07	66,808	8.64

TABLE 7--TOTAL AND PER CAPITA COSTS OF COUNTY GOVERNMENTS BY CLASSES

Year	Butler County Total Expenditures				
	Class I	Class II	Class IV	Class V	Total
1956	\$7,365	\$19,258	\$118,085	\$21,810	\$166,519
1957	7,091	6,852	126,018	25,475	165,436
1958	7,519	18,408	136,725	27,968	190,619
1959	7,559	7,222	149,136	32,229	196,146
1960	7,644	15,982	162,719	26,048	212,394
1961	8,595	6,733	167,056	29,970	212,354
1962	8,255	20,286	163,035	33,098	224,673
1963	8,439	6,972	171,554	38,405	225,369
1964	-	-	-	-	-
1965	8,326	9,266	195,631	38,216	251,439

Year	Per Capita Expenditures				
	Class I	Class II	Class IV	Class V	Total
1956	\$.21	\$.54	\$3.29	\$.61	\$4.64
1957	.20	.19	3.54	.72	4.65
1958	.21	.52	3.88	.79	5.41
1959	.22	.21	4.27	.92	5.61
1960	.22	.46	4.70	.75	6.13
1961	.25	.20	4.85	.87	6.16
1962	.24	.59	4.76	.97	6.56
1963	.25	.20	5.03	1.13	6.61
1964	-	-	-	-	-
1965	.25	.27	5.80	1.13	7.46

TABLE 7 (continued)

Year	Oregon County Total Expenditures					Total
	Class I	Class II	Class IV	Class V		
1956	\$2,311	\$5,070	\$47,889	\$ 9,217	\$64,487	
1957	2,411	2,912	46,809	4,196	56,329	
1958	2,295	4,293	49,760	4,917	61,265	
1959	1,930	3,950	51,033	7,490	64,403	
1960	2,162	4,684	54,880	6,272	67,998	
1961	2,149	2,808	53,438	6,965	65,360	
1962	2,540	7,596	61,246	7,327	78,710	
1963	2,453	1,830	60,371	8,745	73,399	
1964	2,586	7,825	65,704	7,791	83,906	
1965	636	5,110	65,236	10,733	81,715	

Year	Per Capita Expenditures					Total
	Class I	Class II	Class IV	Class V		
1956	\$.22	\$.47	\$4.48	\$.86	\$6.03	
1957	.23	.28	4.47	.40	5.37	
1958	.22	.42	4.85	.48	5.97	
1959	.19	.39	5.07	.75	6.40	
1960	.22	.48	5.57	.64	6.91	
1961	.22	.29	5.58	.73	6.82	
1962	.27	.82	6.57	.79	8.44	
1963	.27	.20	6.66	.97	8.10	
1964	.29	.89	7.47	.89	9.53	
1965	.07	.60	7.64	1.26	9.57	

Year	Pemiscot County Total Expenditures					
	Class I	Class II	Class IV	Class V	Class VI	Total
1956	\$ 9,574	\$15,637	\$109,088	\$52,143	\$ 754	\$187,196
1957	8,816	5,999	117,859	47,336	4,572	184,582
1958	9,488	15,086	122,806	47,174	6,760	201,314
1959	8,584	4,699	127,384	41,118	600	182,384
1960	8,799	15,839	129,018	40,938	10,412	205,007
1961	9,532	3,429	146,315	44,150	11,795	215,220
1962	10,320	15,054	142,519	51,784	9,760	229,436
1963	9,758	4,687	148,232	52,294	25,169	240,141
1964	10,645	17,042	147,824	55,318	8,050	238,880
1965	10,560	8,834	158,799	50,684	2,153	231,028

Year	Per Capita Expenditures					Total
	Class I	Class II	Class IV	Class V	Class VI	
1956	\$.23	\$.38	\$2.65	\$1.27	\$.02	\$4.55
1957	.22	.15	2.92	1.17	.11	4.57
1958	.24	.38	3.10	1.19	.17	5.08
1959	.22	.12	3.28	1.06	.02	4.70
1960	.23	.42	3.39	1.08	.27	5.38
1961	.26	.09	3.93	1.18	.32	5.77
1962	.28	.41	3.91	1.42	.27	6.29
1963	.27	.13	4.16	1.47	.71	6.74
1964	.31	.49	4.25	1.59	.23	6.86
1965	.31	.26	4.67	1.49	.06	6.79

Year	Ripley County Total Expenditures				
	Class I	Class II	Class IV	Class V	Total
1956	\$1,647	\$4,839	\$35,380	\$ 3,665	\$45,531
1957	2,009	2,829	37,344	5,383	47,565
1958	2,001	5,413	39,510	5,861	52,788
1959	1,778	2,385	41,568	6,034	51,764
1960	2,069	5,625	43,166	13,090	63,951
1961	1,853	2,415	42,265	6,930	53,463
1962	1,598	7,109	47,331	8,332	64,370
1963	1,636	2,337	50,261	6,265	60,500
1964	1,783	5,600	51,735	4,321	63,437
1965	2,095	2,212	55,481	5,284	65,072

Year	Per Capita Expenditures				
	Class I	Class II	Class IV	Class V	Total
1956	\$.16	\$.48	\$3.53	\$.37	\$4.54
1957	.21	.29	3.81	.55	4.86
1958	.21	.57	4.13	.61	5.52
1959	.19	.26	4.46	.65	5.55
1960	.23	.62	4.75	1.44	7.03
1961	.21	.27	4.79	.79	6.06
1962	.19	.83	5.54	.97	7.53
1963	.20	.28	6.07	.76	7.31
1964	.22	.70	6.46	.54	7.93
1965	.27	.27	7.18	.68	8.42

The per capita costs were lower in the counties with high population than in the counties with low population. This was again consistent with expectations.

Expenditure Class Costs by County. Class I expenditures, care of the pauper insane, while having higher total cost in the counties with higher populations, did not appear to have appreciable economies of scale with respect to population (Table 1). The per capita costs were nearly the same for all four counties and had increased only slightly through the years (Table 1).

Class II expenditures, Juries and Elections, varied between counties as well as throughout the time period of the study (Table 1). The cyclical nature of election costs accounts for the variation.

Per capita costs of Class II expenditures were somewhat lower in the high population counties. This suggested some scale economies in this class but the cost reductions appeared more related to density of population than to the size. This was caused primarily by high election costs in low density townships.

Salaries and office expense (Class IV) were by far the largest class of expenditures (Table 1). These costs have also shown the most consistent and marked increase over time. Low population counties—Oregon and Ripley—had substantially higher per capita costs in this category than the high population counties—Butler and Pemiscot. This suggested that the higher population counties were enjoying economies associated with their larger populations.

It was not possible to distinguish between quality of services offered by the different counties included in the study. To evaluate differences per capita in Class IV costs between counties, it was necessary to adjust for differences in services offered. Counties were classified with respect to whether certain services were offered or not offered in a particular county. The services offered by all counties in the sample were labeled common expenditures for all counties. The following were common cost classifications for all counties.

Offices and Officers Common to all Counties^a

County court	Magistrate and probate court
County clerks office	Surveyor
Treasurer	Superintendent of schools
Collector	Prosecuting attorney
Assessor	Sheriff's office
Circuit clerk	Coroner
Court reporter	Custodian
	Extension office

^aExcludes those services for which less than \$500 were spent during the ten year sample period.

The following grouping shows service categories offered on an individual county basis.

While the services which were not common to all counties may be costly and important in those counties in which they were provided, they can not be

correctly included in an examination of the possible economies of scale in providing services in different counties.

Class IV expenditures, which were common to all counties, were broken down into the component parts, salary and office expense. This breakdown for 1963 is shown in Table 8. There was very little difference among the counties in

TABLE 8--TOTAL AND PER CAPITA SALARY AND OFFICE EXPENSE
FOR 1963 COMMON CLASS IV EXPENDITURES^a

	Butler	Oregon	Pemiscot	Ripley
Salary	\$119,747	\$35,724	\$106,604	\$35,088
Per Capita	3.51	3.94	2.99	4.24
Per Cent of total	78	72	80	79
Operating expense	34,395	13,661	26,945	9,491
Per Capita	1.01	1.51	.76	1.15
Per Cent of total	22	28	20	21
Total	154,142	49,385	133,549	44,579
Per Capita	4.52	5.45	3.75	5.39

^aExcludes county extension service.

the percent that was spent on salaries. Butler, Pemiscot, and Ripley Counties were very close, with Oregon County being only a few percentage points lower. A possible explanation of this was that travel expense was included in office expense and Oregon County, the largest in the sample, may have taken relatively more for travel allowance, leaving less proportionately for salary.

Per capita expenditures for both salary and operating expense were lowest in Butler and Pemiscot Counties (Table 8). However, there was more difference within the high population pair of counties and the low population pair of counties than between the high and low pairs (Table 8).

The variance in per capita costs within the high population counties and low population counties was such that population economies were not as evident as might have been expected (Table 8). However, the empirical evidence does tend to support an argument that higher population counties are more economical from a local government operational standpoint.

The main purpose of this study was not to establish the validity of economies in local government through higher population since this cost phenomenon is generally recognized and accepted. Yet, as will be shown later, the magnitude of these economies in relation to other facts may well determine the economic practicality of county recombinations under specified circumstances.

Contingent and emergency expenditures, Class V, were the second largest class of costs to the county government (Table 8). The major items in Class V are maintenance of buildings and grounds, power, lights, water, and public welfare.

Class V expenditures have been generally increasing over time, but in a very irregular manner. No economies of scale appeared to be associated with Class V

expenditures in the sample counties, since Butler, Oregon, and Ripley Counties had nearly the same per capita costs while Pemiscot, the largest county, had the largest per capita expenditures (Table 8). Part of Pemiscot County's larger expenditures may be explained by the fact that over the years some items were apparently included in Class V expenditures which other counties included in Class IV.

Pemiscot County was the only county in the sample which had Class VI expenditures for equipment and other legal purposes. In most years, the per capita costs were not particularly large. The financial statements for Pemiscot County indicated a substantial building and improving fund operative during the latter part of the study period.

Total Costs. All costs were summed to show the total costs of county government for the sample counties during the study period (Table 1). Total costs were higher in Butler and Pemiscot Counties than in Oregon and Ripley (Table 1). However, the range of per capita costs from highest to lowest was: Oregon County, Ripley County, Butler County, and Pemiscot County (Table 1). In only one year was Ripley County's per capita cost higher than Oregon County's (Table 1). However, Butler County's per capita cost was higher than Ripley County's in three years (Table 1). On one occasion, Pemiscot County's per capita cost was higher than Butler County's (Table 1).

County cost averages were determined for the study period (Table 9). The cost rankings were the same as noted previously (Table 9). Again the high population counties appeared to have lower costs than the lower population counties but the difference was less than expected. Other variables influencing unit cost such as area, local efficiency, level, and quality of service were not considered in this purely descriptive analysis.

TABLE 9--AVERAGES OF THE SAMPLE COUNTIES' PER CAPITA COSTS OVER TIME

County	1956-1960	1961-1965	1956-1965
Pemiscot	\$4.86	\$6.49	\$5.67
Butler ^a	5.29	6.76	6.02
Ripley	5.50	7.45	6.48
Oregon	6.14	8.49	7.31

^a1964 per capita cost in Butler County was estimated to be \$7.00.

A factor which may have influenced the difference in average per capita costs between Oregon and Ripley Counties is Oregon County's voting to increase the tax rate above 50 cents per \$100 valuation, while Ripley County voters did not. This revenue constraint may have been a factor, along with lower living costs and fixed capital diminution, in Ripley County's ability to procure products and services at less cost.

Costs and Revenue Comparisons

The average per capita revenue and the average per capita costs were basically equated for all sample counties during the study period (Table 10). Over the 10-year period, Pemiscot County averaged nine cents per capita revenue over per capita cost. However, in the first five years, the costs exceeded the revenue. In the second five-year period, the revenue exceeded the costs enough to offset the previous loss.

Butler County did not cover costs in the first five years, but more than offset the losses in the next five years (Tables 9 and 10). The net effect over the 10-year span was an average per capita revenue over cost of eight cents.

TABLE 10--AVERAGES OF THE SAMPLE COUNTIES' PER CAPITA REVENUE OVER TIME^a

County	1956-1960	1961-1965	1956-1965
Pemiscot	\$4.76	\$6.76	\$5.76
Butler	4.86	6.92	5.94
Ripley	5.74	7.22	6.48
Oregon	6.21	9.52	7.87

^aPer capita revenue for Butler County in 1964 and Pemiscot County in 1959 and 1964, used in the preparation of this table were estimated using least squares technique.

Ripley County revenues exceeded costs over the first five years, but in the second five years the costs exceeded revenue (Tables 9 and 10). Over the ten-year period costs equaled revenue. During both the first and second five-year spans, the revenue was higher than the cost in Oregon County. Oregon netted an average per capita revenue over cost of 56 cents.

All of the counties at least met expenses over the 10-year period, with Oregon County being the only one which taxed the people enough to substantially increase its surplus. It should be noted that Oregon County started 1956 with only a \$914 cash balance, thus some build-up in surplus was needed. All of the counties which had revenue in excess of expenditures over the 10-year period did so by increasing the property tax rate.

Ripley County was the only one which did not increase the tax rate. It was already at the constitutional maximum. Butler and Pemiscot both raised their tax rate to the maximum constitutional rate to cover expenditures.

In summary, costs and revenues increased markedly for all sample counties during the 10-year study period. Per capita costs and revenues increased most rapidly in the low population counties in the sample, indicating that these counties were reaching population levels where fairly serious diseconomies existed in the operation of their government. The difference in per capita costs between high and low population counties was not as great as was hypothesized, but appeared to be widening toward the end of the study period. Further declines in population in the low population counties will further compound an already serious cost and revenue problem.

All county government cost categories were examined except roads and schools. Class IV expenditures for office salaries and equipment accounted for 70 to 80 percent of the total expenditures examined. It was within this category of county expense that most of the population economy in the sample counties appeared.

ANALYSIS OF COUNTY CONSOLIDATION

Consolidation of Oregon and Ripley Counties

One of the major objectives of this study was to simulate possible economies from county consolidation. Since several studies on scale economies have shown a large portion of economies of scale exhausted at around 10,000 people, it appeared logical to consider the possible effects of consolidating the two low population counties (Oregon and Ripley).

In the simulation it was necessary to make a number of assumptions. It was assumed that the county seat of this hypothetical county would be in Alton, the county seat of Oregon since Oregon County is somewhat larger than Ripley County in both size and population. This seemed logical unless a new center of county government were assumed other than either existing county seat. This does not appear to be a realistic possibility as it would require new and large capital outlays.

The economies of population, as noted previously, come primarily from Class IV expenditures (salaries and office expense). To find the total expenditure for any given year for the consolidated county, Class I, Class II, and Class V expenditures from Oregon and Ripley Counties were summed. These classes did not show economies of population, thus it would be expected that the consolidated county would have to spend as much to provide these services as it did for Oregon and Ripley to furnish them separately.

Population economy had appeared evident in the Class IV expenditure category. Therefore, it was necessary to treat these expenditures differently. If there were no economies of scale, it would be logical to sum the Class IV expenditures of the two counties as was the case with the other classes. Thus the bounds of expenditures for the consolidated county would be: Class I, II, and V of both Oregon and Ripley Counties plus Class IV for both Oregon and Ripley Counties plus Class IV for only Oregon County. This would be the case if the present personnel and office equipment in Oregon County could provide the required services if the demands of the population of Ripley County were thrust upon them.

The expenditures for the consolidated county would be expected to lie somewhere within these bounds. A realistic estimate seemed to be the sum of Classes I, II, and V expenditures for both counties, plus Oregon's Class IV expenditures, plus one-half of Ripley County's Class IV expenditures. This assumed that the present personnel of one of the counties would be unable to handle the business of both counties without increase in inputs.

The difference in the three cost estimates for the consolidated county is in the amount of Ripley County's Class IV expenditures, which were considered as either all, none, or one-half. In future references, the total costs of the consolidated county will be designated by the portion of Ripley County's Class IV expenditures which were included.

The total and per capita costs for the consolidated county were computed under the three different assumptions for 1961, 1963, and 1965 (Table 11). When

TABLE 11--TOTAL AND PER CAPITA COSTS OF THE OREGON-RIPLEY CONSOLIDATION USING DIFFERENT ECONOMIES^a

Year	All of Ripley's Class IV Expenditures		One Half of Ripley's Class IV Expenditures		None of Ripley's Class IV Expenditures	
	Total	Per Capita	Total	Per Capita	Total	Per Capita
1961	\$118,323	\$6.46	\$ 97,690	\$5.31	\$76,588	\$4.16
1962	133,899	7.72	108,767	6.27	83,637	4.82
1965	146,787	9.02	119,045	7.32	91,306	5.61

^aThe per capita figure is derived by using the summation of the populations of Oregon and Ripley Counties in the respective years.

all of Ripley's Class IV expenditures were used the per capita expenditures for the consolidated county was simply the average cost per capita for Oregon and Ripley County (Table 11). However, when only one-half of Ripley's Class IV expenditures were used, the savings per capita over the average per capita costs of Oregon and Ripley Counties was \$1.15 in 1961, \$1.45 in 1963, and \$1.70 in 1965 (Table 11). When none of Ripley's Class IV expenditures were used, the per capita savings were \$2.30, \$2.90, and \$3.41 for like years (Table 11).

When the per capita cost of each county was compared to the per capita cost of the combined counties, somewhat different results were found. The saving was greater for the residents of Oregon County than for those of Ripley County (Table 12). The residents of the more economy-minded Ripley County would not be interested in combining with the less frugal Oregon County unless considerable economies of population could be realized. Otherwise, the residents of Ripley County would have to pay more for the consolidated county than they did with the single county (Table 12).

In either case, per capita cost savings from consolidation were not as large as had been hypothesized. This appears to result because the scale impact of population was less than was expected. Even without adding any additional costs which might arise from county consolidation, the savings were usually less than two dollars per capita.

The savings to the individual taxpayers of Oregon and Ripley Counties in property taxes were determined. At first glance it would appear that the savings

TABLE 12--SAVINGS PER CAPITA IN OREGON AND RIPLEY COUNTIES USING DIFFERENT ECONOMIES FOR THE CONSOLIDATED COUNTY

	1961	1963	1965
Savings per capita in Oregon County			
All Ripley's class IV expenditures included	.36	.38	.55
One half Ripley's class IV expenditures included	1.51	1.83	2.25
None of Ripley's class IV expenditures included	2.66	3.28	3.96
Savings per capita in Ripley County			
All Ripley's class IV expenditures included	-.40	-.41	-.60
One half Ripley's class IV expenditures included	.75	1.04	1.10
None of Ripley's class IV expenditures included	1.90	2.49	2.81

to the taxpayers would be the same as the savings which were found in the previous section. This is not true because the revenue from the state and from fees and licenses decreases in per capita terms as the population of a county increases.

The tax rate which would be needed to meet expenditures in the consolidated county was determined (Table 13). If no economies existed, the required tax rate would be above the maximum constitutional rate. However, consolidation would most likely result in enough savings to avoid raising the tax rate above the constitutional maximum.

TABLE 13--THE PROPERTY TAX RATE REQUIRED FOR THE OREGON-RIPLEY CONSOLIDATION UNDER DIFFERING ECONOMIES^a IN DOLLARS PER \$100 VALUATION

	1961	1963	1965
All of Ripley's class IV expenditures	\$.532	\$.551	\$.589
One half of Ripley's class IV expenditures	.411	.416	.450
None of Ripley's class IV expenditures	.289	.282	.312

^aThe amount of revenue forthcoming from the state, and fees and licenses, used in deriving the figures in this table, were found by using linear regression for each of the years.

The projected savings were expressed in terms of savings per \$100 valuation and savings per capita (Table 14). The savings to Ripley County taxpayers were relatively small, being around 5 to 10 cents per \$100 based on a 50 cent tax rate (Table 14). A taxpayer with \$10,000 assessed valuation would save only \$5.00

TABLE 14--THE SAVINGS PER \$100 VALUATION AND PER CAPITA FOR THE TAXPAYER IN OREGON AND RIPLEY COUNTIES WITH THE COUNTIES CONSOLIDATED

	1961		1963		1965	
	Oregon	Ripley	Oregon	Ripley	Oregon	Ripley
All of Ripley's class IV expenditures						
Savings per \$100 valuation	\$.27	\$-.03	\$.20	\$-.05	\$.16	\$-.09
Savings per capita	2.58	-.30	2.23	-.52	1.98	-1.10
One half of Ripley's class IV expenditures						
Savings per \$100 valuation	.39	.09	.33	.08	.30	.05
Savings per capita	3.74	.83	3.74	.86	3.96	.61
None of Ripley's class IV expenditures						
Savings per \$100 valuation	.51	.21	.47	.22	.44	.19
Savings per capita	4.92	1.96	5.25	2.23	5.39	2.31

per year in Ripley County. There would have been greater savings to the residents of Oregon County, but it must be remembered that the tax rates for the consolidated county only met expenditures, while in Oregon County in the years in question, a surplus was being built. Thus the actual savings would not be as large as indicated in Table 14. On the other hand, it should be remembered that Ripley County was incurring serious fiscal problems in 1967 and 1968. Thus the county cannot remain solvent in the future with a 50 cent rate.

Incremental Travel Costs from Consolidation. The previous sections dealt only with the possible savings which would accrue from consolidating Oregon and Ripley Counties. However, there are costs which would be incurred both to the private sector and to the county government if county consolidation took place. As was pointed out in the theory section, travel cost increases at a more rapid rate than population when an area is expanded by increasing distance from a central point. In addition, the costs are not distributed evenly over the population unless the county seat is located in the center of the geographical area. Obviously, this was not possible in a Ripley, Oregon merger without a new center. Thus Ripley County residents would bear incremental private travel costs under the assumption of the merger.

Certain other assumptions needed to be made to perform the analysis of the cost of travel. The additional travel distance was calculated by finding the direct distance to Alton and subtracting the direct distance to Doniphan. This gave an estimate of incremental private travel costs. Roads were assumed to be on a straight line to Alton and this gave a conservative bias to estimated travel costs. After the

populations of all of the towns in Ripley County were subtracted, the rest of the rural population was assumed to be homogeneously distributed throughout the rest of the county. Thus, the average distance traveled by the rural population could be figured from the geographic center of Ripley County. The average cost of travel per mile was assumed to be five and one-half cents for each of the three years which were considered. It was also assumed that one trip was made to the county seat per person per year. On a family basis or taxpayer basis this would allow for approximately four trips per year.

The additional miles traveled by the residents of Ripley County and the cost of that travel are shown in Table 15. The cost decreased over time as population

TABLE 15--DISTANCE TRAVELED AND COST OF TRAVEL FOR RIPLEY COUNTY WITH THE OREGON-RIPLEY CONSOLIDATION

	Miles from Alton	Miles from Doniphan	Difference in Miles	Miles Times Population		
				1961	1963	1965
Briar	25	9	16	464	432	416
Currentview	38	9	29	1,131	1,044	986
Doniphan	34	0	34	46,852	43,962	41,072
Fairdealing	46	13	33	2,574	2,409	2,244
Gatewood	19	16	3	57	54	51
Naylor	47	13	34	16,456	15,436	14,416
Oxly	42	8	34	3,298	3,094	2,890
Poynor	32	8	34	1,496	1,394	1,292
Geographic center of the county	31	4	27	179,685	168,588	157,437
Total				252,013	236,413	220,804

	Total Cost of Travel at 5.5 Cents Per Mile		
	1961	1963	1965
Briar	\$ 26	\$ 24	\$ 23
Currentview	62	57	54
Doniphan	2,577	2,418	2,259
Fairdealing	142	132	123
Gatewood	3	3	3
Naylor	905	849	793
Oxly	181	170	159
Poynor	82	77	71
Geographic center of the county	9,883	9,272	8,659
Total	13,861	13,002	12,144

decreased. In any case, the cost is relatively high for the entire county. The average per capita cost of travel for Ripley County residents was \$1.57 for each of the three years or approximately \$6.00 per taxpaying family.

It was assumed that the county government would have to go to the people at least one-half as often as the people must go to the county government. This travel would include trips by the law enforcement personnel, county extension agents, welfare personnel, and other travel by county officials. The cost of this extra travel would be borne by the county government and would amount to \$.38 per capita for total population of the consolidated county.

The \$.38 per capita cost to the consolidated county government would be reflected in an increased tax rate, while the increase in private travel costs would have to be paid by the residents of Ripley County alone. However, the increase in private cost is still a cost of consolidation. Table 16 shows the effect of the increased cost on the total savings of consolidation. If there were no economies, there was a net loss equal to the travel expense. If the economies were such that only one-half of Ripley County's Class IV expenditures were included, the savings would be positive, but small. If none of Ripley County's Class IV expenditures were included, the net savings would be sizeable.

TABLE 16--SAVINGS WITH THE OREGON-RIPLEY CONSOLIDATION AFTER TRAVEL COSTS ARE DEDUCTED

	Total Savings	Cost of Government Travel	Cost of Individual Travel	Savings Minus Travel Expense
All Ripley class IV included				
1961	\$ 0	\$6,892	\$13,785	\$-20,677
1963	0	6,466	12,932	-19,389
1965	0	6,038	12,077	18,115
One half Ripley class IV included				
1961	21,133	6,892	13,785	456
1963	25,132	6,466	12,932	5,734
1965	27,742	6,038	12,077	9,627
None of Ripley class IV included				
1961	42,265	6,890	13,785	21,588
1963	50,261	6,466	12,932	30,863
1965	55,481	6,038	12,077	37,366

Perhaps more important than the net savings was the fact that most of the travel expense had to be paid by residents of Ripley County. In addition, Ripley County had less to gain from county consolidation than did Oregon County because Ripley's per capita cost with the single government was lower. This

meant that with the more realistic economies of scale, Ripley County would pay more with consolidation by \$1.20, \$.91, and \$.85 per capita in 1961, 1963, and 1965, respectively. Thus it would be exceedingly difficult to convince Ripley County residents that they should consolidate with Oregon County.

Another cost which would be an outgrowth of consolidation is the cost of new facilities. Present facilities of the Oregon or Ripley County governments would have to be expanded to serve a larger consolidated county. The ultimate cost of expanding the facilities would fall on the people.

Summary of County Merger. Incremental travel costs appeared to dissipate a sizeable portion of any savings in operational costs of county government brought about by consolidation. Some questions may be raised concerning the realism of the travel costs assumed. However, there is also the non-economic question concerning whether or not residents of Ripley County would have been able to procure services equal to the services which they had had with their single county because of greater distance from the county seat. However, this is a relative matter and there appears to be no question but what increased private and public travel costs would be substantial in a county merger proposal. The more serious question may be the unequal distribution of these increased costs. From a political standpoint, the distribution of costs and benefits from such a proposal could be virtually unsurmountable in practice. Caution in recommending such proposals appears prudent from both a public and private standpoint. Cost-reducing potential of shared functions, cooperative agreements, and perhaps other means for achieving more efficiency in government operation appears to merit further investigation.

Consolidation of Butler and Ripley Counties

Another possibility for county consolidation was Butler and Ripley County. It would appear that such a merger might provide an advantage to Ripley County but not to Butler. This would seem logical since Ripley's population is such that population diseconomy appeared evident. On the other hand, Butler seemingly could expect little gain from such a merger since its population is such that population economies would likely be reduced. The years 1961 and 1963 were used because of the absence of data for Butler County in 1965. Poplar Bluff appeared the logical seat of the new county since it would contain the majority of the people in the simulated merger.

Assumptions regarding costs were the same as those made for the Ripley/Oregon merger. Again, it was assumed that the only cost reduction resulting from consolidation would be in Ripley's Class IV expenditures. Thus, all of the costs of both counties were combined except different portions of Ripley's Class IV expenditures. Total and per capita cost of the consolidation were determined under different assumptions (Table 17).

When all of Ripley County's Class IV expenditures were used, which represented no economies of scale, the resultant per capita figures were simply an

TABLE 17--TOTAL AND PER CAPITA COSTS OF THE BUTLER-RIPLEY CONSOLIDATION USING DIFFERENT ECONOMIES

Year	All of Ripley's Class IV Expenditures		One Half of Ripley's Class IV Expenditures		None of Ripley's Class IV Expenditures	
	Total	Per Capita	Total	Per Capita	Total	Per Capita
1961	\$265,817	\$6.14	\$244,684	\$5.65	\$233,552	\$5.16
1963	285,869	6.75	260,738	6.15	235,608	5.56

average of the two existing counties (Table 17). When one-half of Ripley's class IV expenditures were used, the average per capita saving was \$.49 in 1961 and \$.60 in 1963 (Table 17). If the economies due to consolidation were assumed to be greater so that none of Ripley County's Class IV expenditures were included, the average per capita savings were \$.98 in 1961 and \$1.19 in 1963 (Table 17). These per capita savings were much smaller than with the Oregon/Ripley consolidation because the savings were spread over many more people (Table 17).

The per capita savings for residents of the individual counties are shown in Table 18. The data showed that only small per capita savings were made until very large economies were assumed (Table 18). Then the per capita savings were not large. The savings to Ripley County, assuming large population economies, were smaller than those obtained by the Oregon/Ripley consolidation, due to the larger population in Butler County.

TABLE 18--SAVINGS PER CAPITA IN BUTLER AND RIPLEY COUNTIES USING DIFFERENT ECONOMIES FOR THE CONSOLIDATED COUNTY

	1961	1963
Savings per capita in Butler County		
All Ripley's class IV expenditures included	.02	-.14
One half Ripley's class IV expenditures included	.51	.46
None of Ripley's class IV expenditures included	1.00	1.05
Savings per capita in Ripley County		
All Ripley's class IV expenditures included	-.08	.56
One half Ripley's class IV expenditures included	.41	1.16
None of Ripley's class IV expenditures included	.90	1.75

The tax rate which would be required with the combination was determined (Table 19). In the case where the merged county is assumed to be able to handle all incremental costs with only half of Ripley's current operating budget, the savings per \$100 of assessed valuation would have been 9 cents (Table 19). This represents about \$9 in savings for a taxpayer with \$10,000 in assessed valuation.

TABLE 19--THE PROPERTY TAX RATE REQUIRED FOR THE
BUTLER-RIPLEY CONSOLIDATION UNDER
DIFFERING ECONOMIES IN DOLLARS
PER \$100 VALUATION

	1961	1963
All Ripley's class IV expenditures	\$.474	\$.464
One half Ripley's class IV expenditures	.425	.411
None of Ripley's class IV expenditures	.376	.357

The savings to the taxpayers in the two counties were very nearly the same (Table 19). They were much nearer than was the case in the Oregon/Ripley consolidation, because the tax rates in Butler and Ripley were much the same before consolidation.

The savings determined would be partially offset by additional costs of county consolidation. Again, a major incremental cost would be increased travel expense in both the private and public sector. Incremental travel costs were simulated with the same basic assumptions as those used for the Oregon/Ripley merger.

The additional costs of making one trip to the county seat per capita, per year, for the residents of Ripley County are shown in Table 21. This would allow a taxpayer family to make about four trips to Poplar Bluff to transact business at the county government level. The costs for private travel were less with the Butler/Ripley consolidation than for the Oregon/Ripley consolidation. The reason for the lower cost was that the population of Ripley County was closer to Poplar Bluff than to Alton. The per capita cost of additional private travel was \$1.40 for 1961 and \$1.39 for 1963 for residents of Ripley County. All of the extra cost of private travel would fall on the population of Ripley County.

It was assumed that the government had to travel half as often to the people as the people to the government. The cost to the government was \$.13 per capita in 1961 and \$.12 per capita in 1963. This additional cost to the government would have had to be borne by the entire population of the consolidated county.

The savings and additional costs of travel are shown in Table 22. There were some net savings to the area if the economies were such that one-half of Ripley County's Class IV expenditures were included (Table 22). The savings were somewhat greater if economies were assumed to be maximum (all of Ripley County's Class IV expenditures eliminated).

TABLE 20--THE SAVINGS PER \$100 VALUATION AND PER CAPITA FOR THE TAXPAYER IN BUTLER AND RIPLEY COUNTIES WITH THE COUNTIES CONSOLIDATED

	1961		1963	
	Butler	Ripley	Butler	Ripley
All of Ripley's class IV expenditures				
Savings per \$100 valuation	\$-.024	\$.026	\$.036	\$.036
Savings per capita	-.24	.24	.40	.37
One half of Ripley's class IV expenditures				
Savings per \$100 valuation	.025	.075	.089	.089
Savings per capita	.25	.70	.100	.91
None of Ripley's class IV expenditures				
Savings per \$100 valuation	.074	.124	.143	.143
Savings per capita	.75	1.15	1.61	1.46

TABLE 21--DISTANCE TRAVELED AND COST OF TRAVEL FOR RIPLEY COUNTY WITH THE BUTLER-RIPLEY CONSOLIDATION

	Miles from Poplar Bluff	Miles from Doniphan	Difference in Miles	Miles Times Population	
				1961	1963
Briar	35	9	26	754	702
Currentview	29	9	20	780	720
Doniphan	27	0	27	37,206	34,911
Fairdealing	15	13	2	156	146
Gatewood	43	16	27	513	486
Naylor	18	13	5	2,420	2,270
Oxly	21	8	13	1,261	1,183
Poynor	35	8	27	1,188	1,107
Geographic center of the county	28	4	24	156,720	149,856
Total				203,998	191,381
				Total Cost of Travel at 5.5 Cents Per Mile	
				1961	1963
Briar				41	39
Currentview				43	40
Doniphan				2,046	1,920
Fairdealing				9	8
Gatewood				28	28
Naylor				133	125
Oxly				69	65
Poynor				65	61
Geographic center of the county				8,785	8,242
Total				11,220	10,526

TABLE 22--SAVINGS WITH BUTLER-RIPLEY CONSOLIDATION AFTER TRAVEL COSTS ARE DEDUCTED

	Total Savings	Cost of Government Travel	Cost of Individual Travel	Savings Minus Travel Expense
All of Ripley class IV included				
1961	\$ 0	\$5,610	\$11,220	\$-16,830
1963	0	5,263	10,526	-15,789
One half Ripley class IV included				
1961	21,133	5,610	11,220	4,303
1963	25,132	5,263	10,526	9,343
None of Ripley class IV included				
1961	42,265	5,610	11,220	25,435
1963	50,261	5,263	10,526	34,472

Again a Butler/Ripley consolidation would place most of the travel burden on the residents of Ripley County. If the more reasonable estimate of the economies of scale (one half of Ripley County's Class IV expenditures included) was used, there was a net loss per capita to Ripley County residents of \$99 in 1961 and \$.23 in 1963 if they paid all additional private travel costs and their share of additional government travel costs. Thus, again, it would be difficult to convince the residents of Ripley County that they should consolidate.

SUMMARY AND CONCLUSIONS

The objective of this study was to determine trends in costs and revenue of County governments of a selected sample of Missouri counties. In addition, the study was designed to simulate the economic impact of a merger of certain county governments with static technology.

Stimulus for the study developed from the current fiscal difficulties of many rural low population centers. Proposals for consolidating counties to achieve economies from increased population have become common in recent years.

Four southeast Missouri counties were selected for the study. These counties were similar in that their basic industry was agriculture. Two counties (Butler and Pemiscot) had over 30,000 people as of the 1960 census while the other two counties (Oregon and Ripley) had less than 10,000 each. It was reasoned that these four counties would provide an operating sample for determining possible cost differences associated with population on a very limited basis. In addition, the selection made it possible to simulate mergers between two low population and low wealth counties and also between a high population and a low population county. With current knowledge concerning population economies, a

merger between the two high population counties was ruled out *a priori*. This seemed logical since both counties contained more than enough population to exhaust potential economies of population.

County government costs of operating schools and roads were excluded from the analysis. This would appear to be a serious omission since expenditures for roads and schools generally constitute 40 to 80 percent of the cost of local government. There were two major reasons for omitting these expenditures from the analysis. First, the schools are financed to a large extent in Missouri by the state and the roads, by both the state and federal governments. Secondly, schools have generally been consolidated in Missouri to include large enough areas so that further expansion of population by area expansion would be impractical because of excessive distances.

In the case of roads there would appear to be little economic advantage from county consolidation in road construction. Higher per capita road costs in low population counties appears to be primarily related to low population aggregations *per se*. Maintenance costs could probably be reduced by inter-county cooperation but this does not necessarily require consolidation of the individual county governments.

Conclusions

1. Per capita revenue and per capita costs of county government increased for all counties during the study period. However, the low population counties' per capita revenue and costs increased more rapidly than those of the high population counties. In 1956, the per capita expenditures were \$4.64, \$6.03, \$4.55, and \$4.56 for Butler, Oregon, Pemiscot, and Ripley, respectively. By 1965 these expenditures had increased to \$7.46, \$9.57, \$6.79, and \$8.42.

2. The operational economies in the two largest counties (Butler and Pemiscot) appeared to be primarily in the Class IV expenditure category (salaries and office expenditures). These economies did not appear as was hypothesized. However, the difference in costs between the high and low population counties appeared to be widening toward the end of the period. Some of the other studies reviewed indicated that a population of 10,000 was necessary at a minimum for economical local government services. The low population counties were dropping below the 10,000 level toward the end of the study period and this could account for the apparent widening of the differences in per capita government costs toward the end of the study period.

3. Cost savings were simulated for Oregon and Ripley County consolidation and for Ripley and Butler County consolidation. Several sets of assumptions were made for the simulated consolidations. Each set obviously produced different savings. The most probable simulated savings appeared to be those resulting from assuming that the low population counties could reduce their Class IV expenditures by joining a larger county. If half these salary and office expenditures were saved, a Ripley County taxpayer with an assessed valuation of \$10,000 would save around \$5.00 per year in taxes. However, extra travel costs would more than offset the savings.

4. The simulated merger of Ripley and Butler County would have resulted in about the same situation as an Oregon/Ripley merger. Most of any decrease in costs would accrue to Butler County residents unless Ripley County residents were compensated for their extra travel by lower tax rates than those of the Butler County residents.

5. The unequal distribution of benefits and costs to area residents could well turn out to be one of the more serious impediments to the practical problems of achieving county consolidation.

6. Because of the wide variation in population distribution in a particular county or region, any cost analysis of county consolidation must be made on a case basis.

7. It was necessary to assume static technology and services in this study. A logical extension of this research should involve a simulation of the impacts of electronic data processing systems for groups of counties. It is possible that much larger potential for savings and improvement in services rest with the adoption of computerized data record systems for individual counties or groups of counties. Such a hypothesis should be investigated.

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