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Trends in Forest Taxes in South Missouri

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SUMMARY

Assessed values and real property taxes on forest land and agricultural land in 26 counties in South Missouri during the period 1944-53 were reported previously (Smith, 1957). This report continues the study on the same sample properties from 1954 to 1963. The data show that:

1. Average assessed values per acre in 1963 were \$5.56 for forest land and \$18.14 for agricultural land.
2. For forest land, the median assessed value per acre in 1963 was \$5.16, and 50 percent of the samples were assessed between \$3.88 and \$7.12.
3. Real property taxes in 1963 averaged 21.0 cents per acre on forest land and 69.9 cents on agricultural land.
4. The median tax per acre on forest land was 19.7 cents, and one half of the tracts sampled were taxed between 14.2 cents per acre and 27.4 cents.
5. Assessed values per acre have increased steadily since 1944; forest land 52.3 percent and agricultural land 63.1 percent.
6. Taxes increased more than assessed values during the 20-year period; 262 percent on forest land and 272 percent on agricultural land.
7. If past trends continue, taxes by 1970 will be about 29 cents per acre on forest land and 91 cents per acre on agricultural land.
8. Land tenure stabilized slightly from 1954 to 1963 compared to 1944-1953, but one-half of the forest land sampled and 45 percent of the agricultural land was sold at least once during 10 years.
9. Taxes in 1963 consumed 28.5 percent of the annual value growth of timber and 4.1 percent of the gross income from agricultural land. In 1953, similar ratios were 21.0 percent for forest land and 2.9 percent for agricultural land.
10. The average assessed value of forest land in 1963 was 7.5 times the potential income as indicated by growth in value, and a similar ratio of assessed value to gross income for agricultural land was 1.06.
11. Inequity in assessing forest land was reduced slightly during the past 10 years, but forest landowners, on the average, still are taxed much higher than owners of other rural land.
12. For forest land owners the greatest need in administration of the real property tax is more equitable assessment. Standardization of assessment procedures and instruction of county assessors in assessment techniques applicable to forest land are suggested.

CONTENTS

Introduction	4
Taxing Real Property	6
Assessed Value	8
Taxes per Acre	11
Trends, 1944 to 1963	13
Land Tenure	21
Income as an Indicator of Equitable Taxation	22
Toward Equitable Assessment	24
Literature Cited	26
Appendix	27
Collection of Data	27
Tables 1 to 5	28

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Trends in Forest Taxes in South Missouri

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INTRODUCTION

The real property tax is one of the annual expenses associated with owning private land over which the owner has little direct control. Two inequities generally have been recognized in applying the property tax to forest land: (1) the tax is collected annually whether or not the land supports merchantable timber from which revenue can be received, and (2) incorrect assessment of forest land and timber value.

Owners of small forested properties often must pay taxes from resources other than timber income. Those who own large tracts can make regular timber harvests have annual incomes from which to pay taxes. However, when property taxes are excessive, both small and large scale landowners may have difficulty making tax payments.

Smith (1957) investigated taxation of forest land in the Missouri Ozarks from 1944 to 1953 as to (1) average levels and trends in assessed value and taxes, (2) the portion of timber income consumed by property taxes, and (3) assessment of value within and among counties. For comparison, taxation of agricultural land was reported. This report is a continuation of the initial study, based on essentially the same sample tracts of land. It reports assessed values and taxes for the years 1954 through 1963 and trends over the 20-year period, 1944 to 1963.¹

The State Forestry Act of 1946 contains a provision for reduced taxation of forest land.² At an owner's option he may apply to the Missouri Conservation Commission to have his property classified as "forest crop land" for a period of 25 years. Land eligible for classification must be primarily forested, at least 40 acres in size, and the value of this land may not exceed \$10 per acre.

Land so classified is assessed at \$1.00 per acre. The owner's taxes are computed at prevailing tax rates in the county and school and road districts. In re-

¹ The number of properties and area by county (Table 1) and a description of the method of collecting data are given in the Appendix.

² Originally passed as House Bill No. 1006, 63rd General Assembly. Various amendments made in subsequent years.

turn, the owner must follow prescribed simple forestry practices. His land is protected from fire and trespass by the state, and it is examined for compliance with management rules at about six-month intervals.

During the 25-year period, the owner may elect to harvest and sell timber. The manner in which the harvest is made must be approved by the Conservation Commission. Acting through its 19 farm foresters, the proposed plan of timber harvest is reviewed to determine whether it constitutes reasonably sound land management. After completion of the sale, the owner pays a yield tax to the Conservation Commission based on a percentage of value of trees sold computed at prevailing timber stumpage values. Yield tax rates vary with the number of years since initiation of the contract, as follows:

<i>Years</i>	<i>Percent</i>
0-10	4
11-20	5
21-25	6

If the owner elects to sell no timber during the 25 years no yield tax is paid. The yield tax is not paid on timber harvested for the owner's use. At the end of the 25-year contract period, the land is assessed for taxes as it originally was, *ad valorem*. If, while his land is classified as Forest Crop Land, the owner elects to remove his land from classification he must pay all back taxes that would have been due under usual assessment plus a penalty of 5 percent interest, less taxes already paid on the \$1.00 per acre valuation as Forest Crop Land, plus reimbursement to the state for its contributions to the county.

The Conservation Commission, in part, reimburses the county in which "forest crop land" is located for the loss of tax revenue from yield tax collections and state appropriations. The Commission also makes payment to counties for 178,998 acres of state forest land, in lieu of taxes that would have been received if the land had been privately owned. Current rates of payment to counties are:

	<i>Payment per Acre</i>
Forest Crop Land, privately owned	\$0.10
State Forest Land	\$0.07

The objective of this program is to encourage the practice of forestry during periods when owners are rehabilitating deteriorated timber growing stock. At such times, they experience considerable expense and little or no income. During the 25-year contract period the owner, it is reasoned, will develop an interest in growing timber, and, possibly, he will feel some sense of obligation to do his part in restoring natural resources because of preferential tax treatment. It would be pertinent to study several aspects of the impact of the Forest Crop Land Program, including (1) evaluation of its effectiveness in promoting the practice of forestry, and (2) determination of the net effect on tax revenues in counties with various proportions of forest land area entered in the program, when related to the total tax base.

As of 1964, a total of 499,827 acres of privately owned land were entered in the Forest Crop Land Program. From 1946 to 1962, only 30,345 acres had been withdrawn. Payments to counties by the Conservation Commission in 1965 will be about \$50,000 for privately owned land and \$12,500 for State Forest Land.

The total forest area in Missouri is 15,300,000 acres, of which about 15,000,000 acres are capable of producing commercial timber (Gansner, 1963). About 13,500,000 acres are privately owned. This report concerns taxation of approximately 6,000,000 acres of privately-owned land in 26 heavily forested counties in southern Missouri that are not classified as "forest crop land."

Taxing Real Property

The amount of money needed by government is the most significant factor influencing the tax paid by each owner. After individual properties are assessed, the budget for each county function is divided by the total assessed value of all property in the county to yield a tax rate. The sum of the rates, as decimals, when multiplied by an individual taxpayer's assessed value determines his total tax. Missouri statutes³ require that real property be assessed at actual cash value, which is usually interpreted to be market value.

The key man in the application of the property tax is the assessor. By setting the value of each property, he determines the relative tax that each landowner must pay. In Missouri, as in many other states, county tax assessors are elected officers. No formal training is required but assessors ordinarily are familiar with values of farms and town real property in their county from personal observation and experience. However, many assessors, even in the more heavily forested counties, have limited knowledge of factors that contribute to forest values and how to measure them.

Some possible consequences of poor assessment listed by Chryst and Miller (1952) are:

1. Unfair distribution of tax burdens among people who own property for the support of county functions.
2. Unfairness in the collection of that part of state revenue which is derived from the real property tax. Undervalued counties do not contribute their share of funds to support state government.
3. Inequity in the distribution of state aid. Under-valued counties receive more state aid than counties valued properly.
4. Lack of popular support for tax-financed projects which extend across county lines where unequal taxation among counties exists.
5. Restrictions placed on a community in voting bonds to construct public improvements.

Region Studied

The area studied (Fig. 1) contains one-half of the forest land in the state. South Missouri also contains the majority of wood-using industries in the state.

³ Section 53. 030 R. S. Mo. 1949.

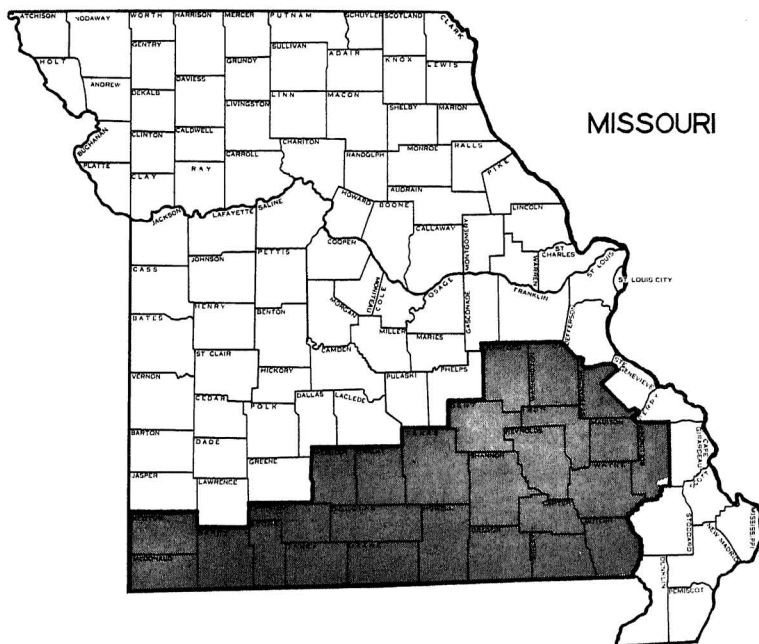


Fig. 1—Assessed value and taxes on forest land and agricultural land were sampled in 26 counties in South Missouri.

Ninety-six percent of the forest land in Missouri is in holdings of less than 5,000 acres (King, Roberts, and Winters, 1949).

A recent forest inventory of the Eastern Ozark Region revealed that forest conditions have improved since 1947 (Mendel, 1961). The sawtimber area⁴ doubled and the volume increased 7.7 percent from 1947 to 1959. The volume of growing stock⁵ increased 36 percent. Mendel emphasized, however, that the quality of timber could be greatly improved. Increases in the area of sawtimber and volume of growing stock resulted substantially from growth of smaller trees into these classes. The increase in timber volume does not necessarily reflect better forest management on private lands. Rather, it is the result of (1) conservative cutting and increased growth of stands on national forest lands and large private holdings and (2) reduction in the frequency of wood fires, area burned, and damage caused by fire on all land.

⁴ 1,500 board feet or more, net volume per acre in live merchantable sawtimber trees.

⁵ Net timber volume from stump to a minimum 4-inch top diameter inside bark of the central stem contained in live merchantable trees 5 inches and larger in diameter at 4.5 feet above ground level.

ASSESSED VALUE

In 1963 the arithmetic mean⁶ assessed value per acre of forest land was \$5.56. The median or middle assessed value for all counties was \$5.16 (Fig. 2), and 50 percent of the samples fell between \$3.88 per acre and \$7.12 per acre. Plotting the number of properties over assessed value per acre on a graph indicated that the frequency distributions for many counties were strongly skewed to the left, that is, the assessed values of many of the tracts were clustered near the low end of the range of value, Fig. 3. Because measures of dispersion for a normal frequency distribution can be misleading when used to characterize a strongly skewed distribution, Fig. 2 was based on a non-parametric method of displaying an abnormal frequency distribution suggested by Snedecor (1956). Horizontal lines in Fig. 2 show the range of assessed values in each county, from lowest to highest. The mark extending vertically through the horizontal line indicates the median or middle value. The two smaller lines intersecting the horizontal line on either side of the median are the 25 and 75 percent quartiles, that define the limits of assessed value for the middle one-half of the properties.

It is apparent that forest land is not assessed at a flat rate within a county, contrary to often expressed statements. It should not be, of course, but rather, according to the value of the timber and other resources on it with consideration given to factors which affect these values, such as accessibility and distance from markets.

The average assessed value in 18 of the counties was between \$4.00 to \$7.00 per acre in 1963, Table 2, Appendix. Newton County, with \$15.36 per acre, had the highest average assessed value, and Iron County was at the other end of the scale, \$2.13 per acre. Wide differences exist in the range of assessed values among counties, Fig. 2. The following counties had a narrow range of assessed value: Bollinger, Howell, Iron, Reynolds, and Shannon. In these counties the average assessed value was less than \$5.00 per acre, except in Howell. A wide range of assessed values was found in Butler, Christian, Crawford, Newton, Oregon, and Wayne Counties. Of this group, Christian County was the only one with an average assessed value less than \$5.00 per acre. Reynolds County had the narrowest range (\$2.66) and Crawford had the widest range (\$43.50).

Of the tracts of agricultural land sampled, the average assessed value per acre in 1963 was \$18.14 (Table 3, Appendix), which was more than three times that of forest land.

The highest average assessed value per acre for agricultural land, \$32.06, was found in Stone County and the low of \$8.62 occurred in Ripley County. Neither county has a large area of cleared agricultural land. Stone County is 56 percent forested and Ripley County is 75 percent forested, but Stone County evidently relies on agricultural land for a greater portion of its tax revenue. Twelve counties had average assessed values between \$10 and \$20. Agricultural properties had wider ranges in assessed value than forest land because of greater variation in land productivity and physical improvements.

⁶ Hereafter termed average.

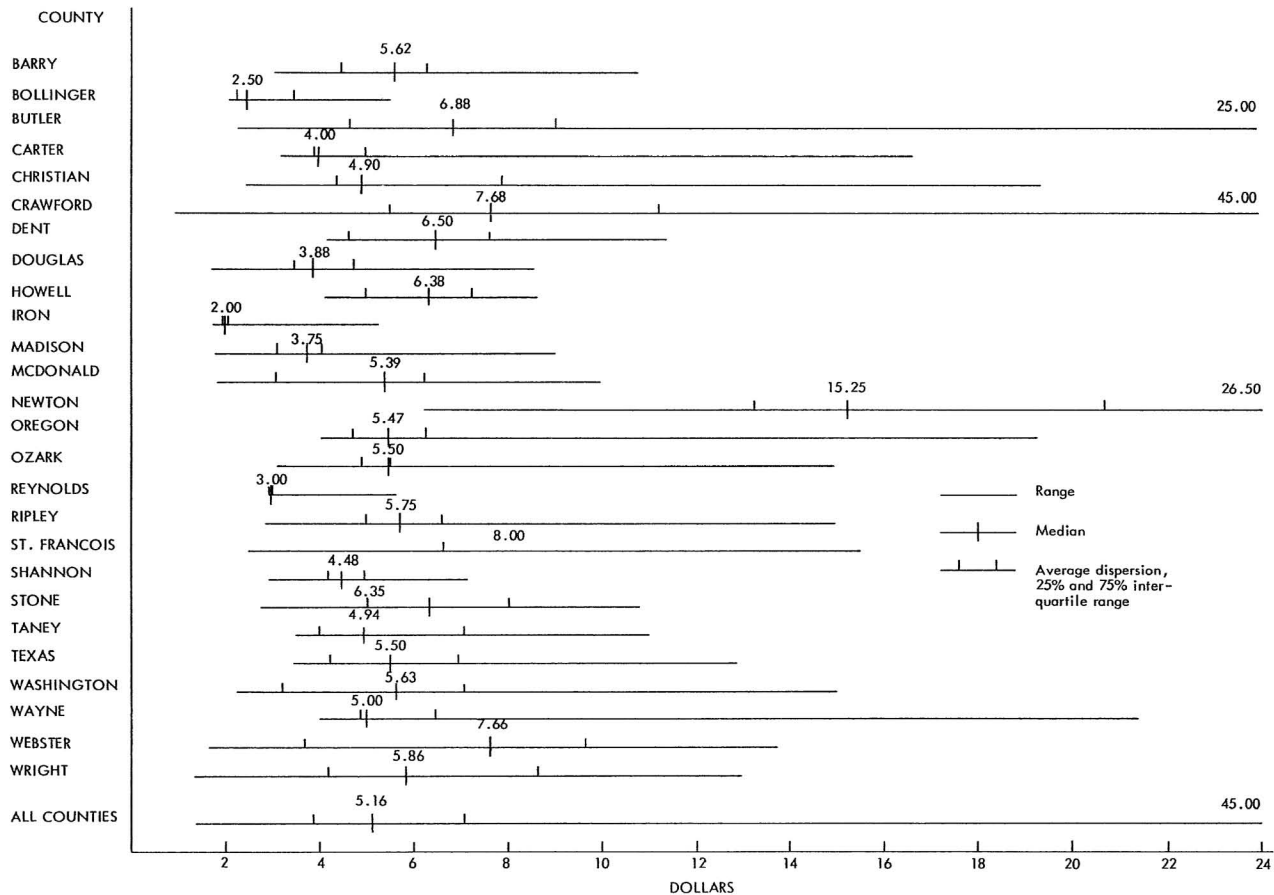


Fig. 2—Dispersion of assessed value per acre of forest land, 1963.

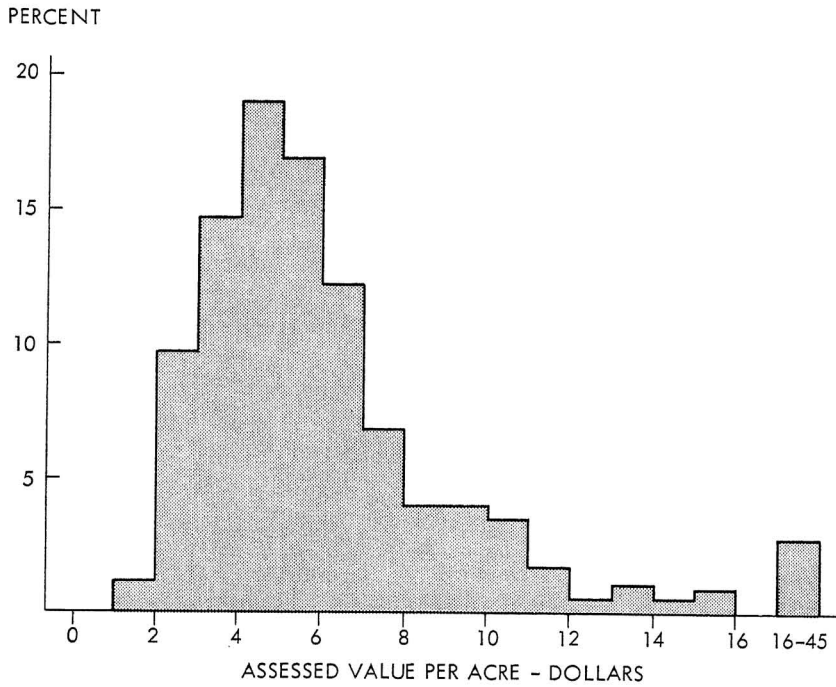


Fig. 3—Frequency distribution of assessed value per acre, 722 tracts of forest land, 1963.

TAXES PER ACRE

The average tax per acre for all forest land in 1963 was 21.0 cents, Table 4, Appendix. In Newton County an average tax of 60.0 cents per acre was highest; and Iron County had the lowest average tax, 8.1 cents per acre. The frequency distribution of per-acre taxes was strongly skewed to the left, Fig. 4. Fifty percent of the tracts were taxed less than 20 cents per acre. The 1963 median tax per acre for all counties was 19.7 cents, Fig. 5. Twenty of the 26 counties had average taxes per acre between 10 and 25 cents. Fifty percent of the properties were taxed from 14.2 cents per acre to 27.4 cents, a difference of less than 14 cents. The dispersion of taxes per acre in the counties is much narrower than the dispersion of assessed values because taxes are computed by taking a percentage (millage rate) of assessed value. Thus, within a taxing district, the range of taxes is equal to the range of assessed value multiplied by the millage rate.

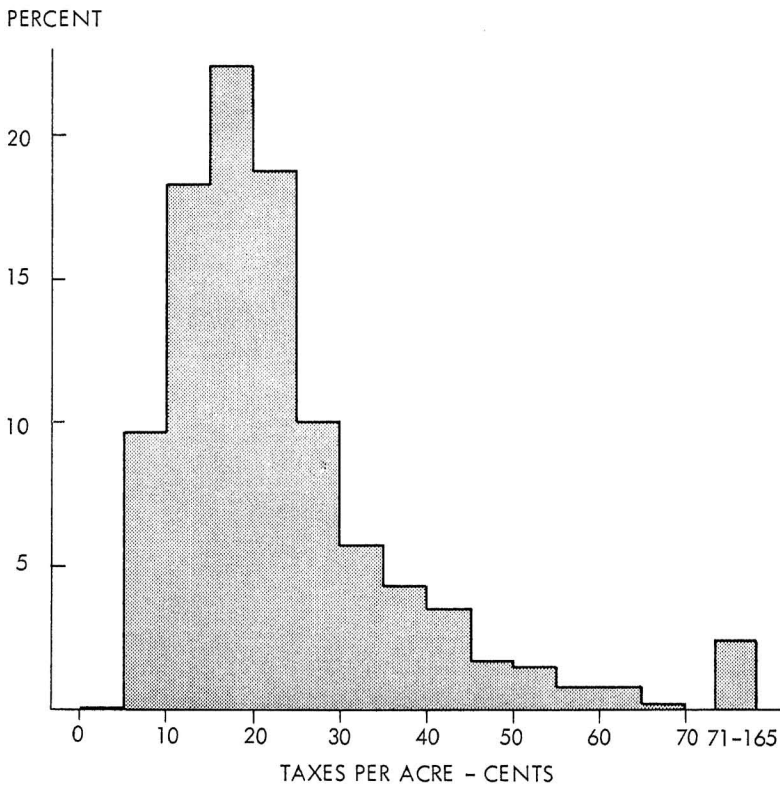


Fig. 4—Frequency distribution of taxes per acre, 722 tracts of forest land, 1963.

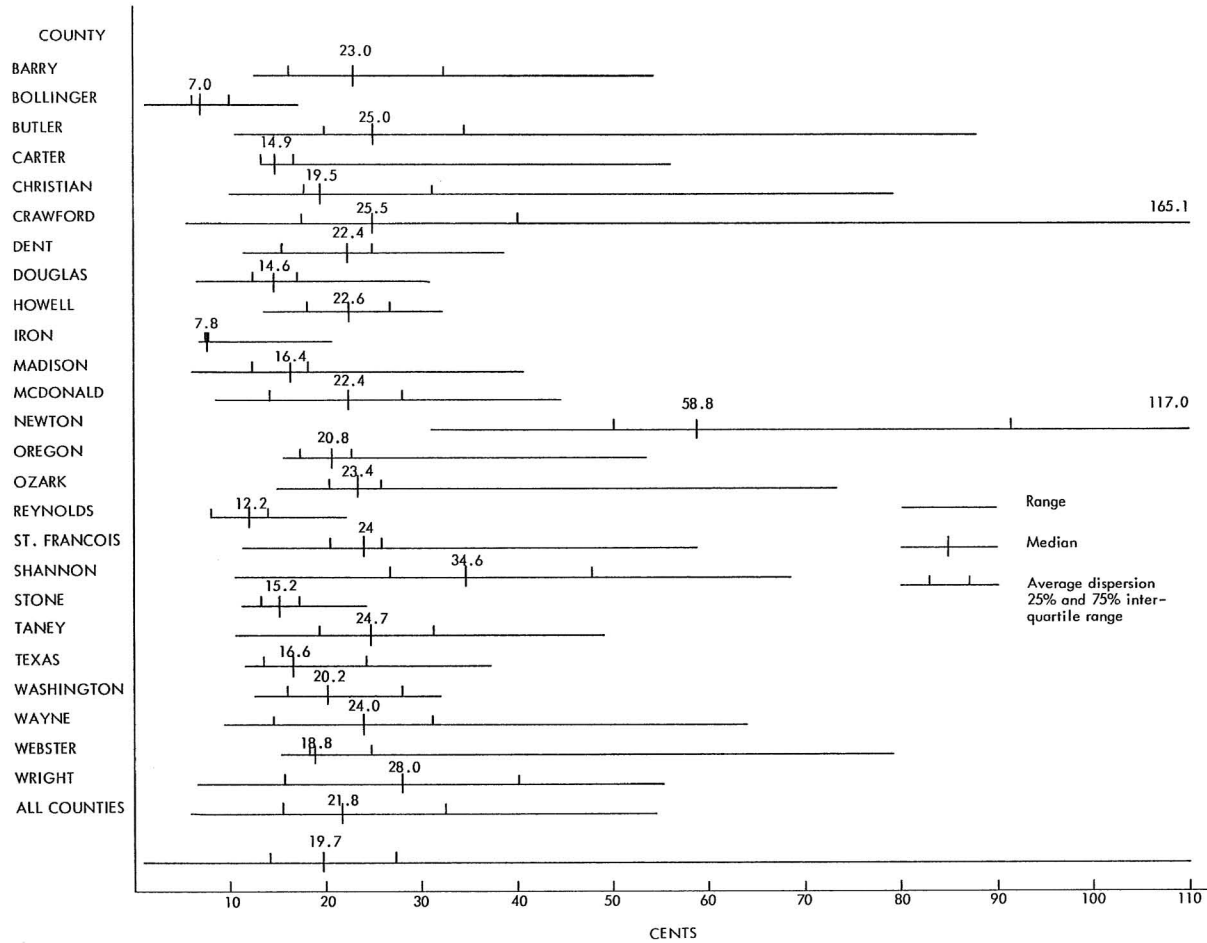


Fig. 5—Dispersion of taxes per acre on forest land, 1963.

The range of taxes per acre within most of the counties was quite large. Crawford County had the widest range, 159.5 cents per acre. Butler and Newton counties also had wide ranges. Shannon County had the narrowest range, 13.2 cents per acre. Bollinger, Dent, Douglas, Howell, Iron, Reynolds, Shannon, Taney and Texas County also had narrow ranges.

The average tax per acre in 1963 on agricultural land was 69.9 cents, more than three times that for forest land, Table 5, Appendix. Stone County had the highest average tax per acre, 127.6 cents, and Oregon County had the lowest, 32.9 cents per acre. In 15 of the 26 counties average taxes per acre were between 35 and 85 cents. In Barry, Christian, McDonald, Newton, St. Francois, Stone, and Washington Counties average taxes exceeded 100 cents per acre. At the low end of the scale, Oregon, and Ripley County average taxes were less than 35 cents per acre.

TRENDS, 1944 TO 1963

To indicate long-term trends and annual changes, the average assessed value and taxes for the years 1944 to 1953, reported by Smith (1957), and data for 1954 to 1963 were combined to form a single series. Average assessed values and taxes for the latter period are reported by county in Tables 2, 3, 4, and 5 in the Appendix. The average assessed value of forest land in all counties increased in 13 of the 20 years (Fig. 6). Increases in 1955 and 1956 were larger than in

DOLLARS

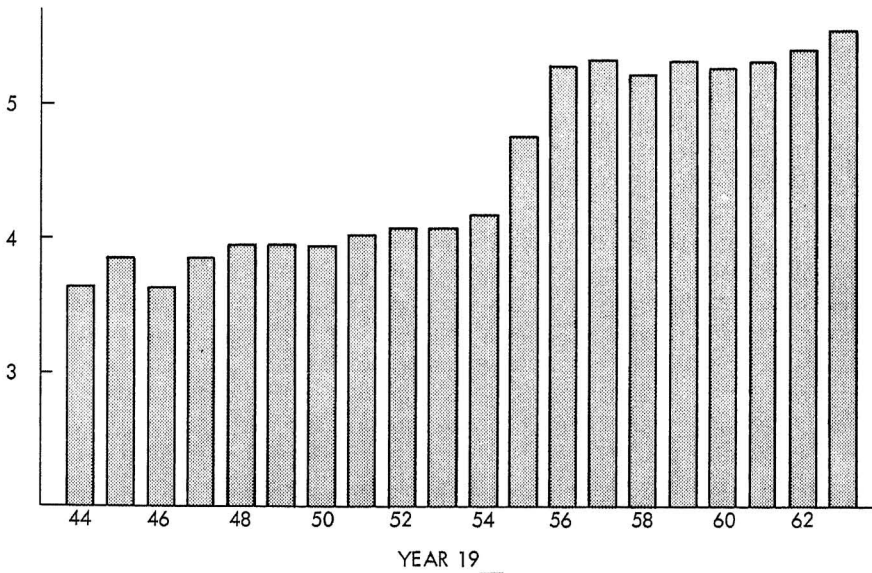


Fig. 6—Average assessed value per acre, forest land, 1944-1963, all counties.

other years because the State Tax Commission attempted to equalize assessed values among counties for the first time since 1921.⁷ The increase over 20 years was \$1.91 per acre of which about two-thirds occurred after 1954.

The trend in assessment of agricultural land followed the same pattern, with the largest increase in 1955 (Fig. 7). The over-all increase in assessed value per acre for the 20 years was \$7.02 of which \$4.84 occurred after 1954.

The rate of change in assessed value per acre is expressed as a percentage of assessed value in the base year 1944 in Fig. 8. Both forest land and agricultural land experienced essentially parallel increases in assessed valuation. Forest land increased 52.3 percent and agricultural land increased slightly more than 63 percent. The fact that average assessed value progressed in an almost parallel manner over a 20-year period suggests that increases in timber volume and value have little effect on assessment of forest land. Although market value of both forest land and agricultural land undoubtedly increased significantly during this period, but not at the same rate, Fig. 6 suggests that increases in assessed value of all rural property are achieved by uniform percentage increases applied to all properties within a taxing unit.

Taxes on forest land increased every year except 1946 (Fig. 9). The average tax per acre of 21.0 cents in 1963 was 3.6 times that in 1944. Have "real" taxes on forest land increased or does the steady rise shown in Fig. 9 represent money inflation? In Fig. 10, taxes during the 20-year period are compared with price index series reported by the Bureau of Labor Statistics, U. S. Department of Labor. Fig. 10 depicts the relative slopes of several lines rather than absolute quantities. Prices are given in percentages with prices during the period 1957-1959 equal to 100.

No entirely satisfactory series of price indices could be found for this purpose. Expenses of county government increased and perhaps the largest share of county expense was salaries for personal services. The consumer price series may indicate the change in cost of living of county employees, if their living cost is considered comparable to that of city workers, for which the series was prepared. County salaries may not have kept pace with consumer prices. The index of wholesale prices of all commodities indicates, in general, the relative cost of materials purchased. Wholesale prices for lumber and wood products may represent, although indirectly, the purchasing power of forest landowners because the timber they sell is manufactured into lumber and other wood products. It assumes that stumpage prices paralleled those for products, which is not unreasonable. The three price series shown followed almost the same pattern. From 1944 to 1952 they rose rapidly—and at about the same rate as did taxes on forest land. After 1952, prices leveled off but taxes continued to rise.

Have taxes increased at a more rapid rate than the market value of forest land? The line near the bottom of Fig. 10 shows the tax per dollar of market

⁷ Equalization proceedings resulted in increases of more than 50 percent in total assessed value of real property in the counties of Christian, Crawford, Madison, McDonald, Newton, Stone, Taney and Wright. Average assessed value of forest land sampled in these counties increased 37 percent in 1955 and 6.5 percent in the following year.

DOLLARS

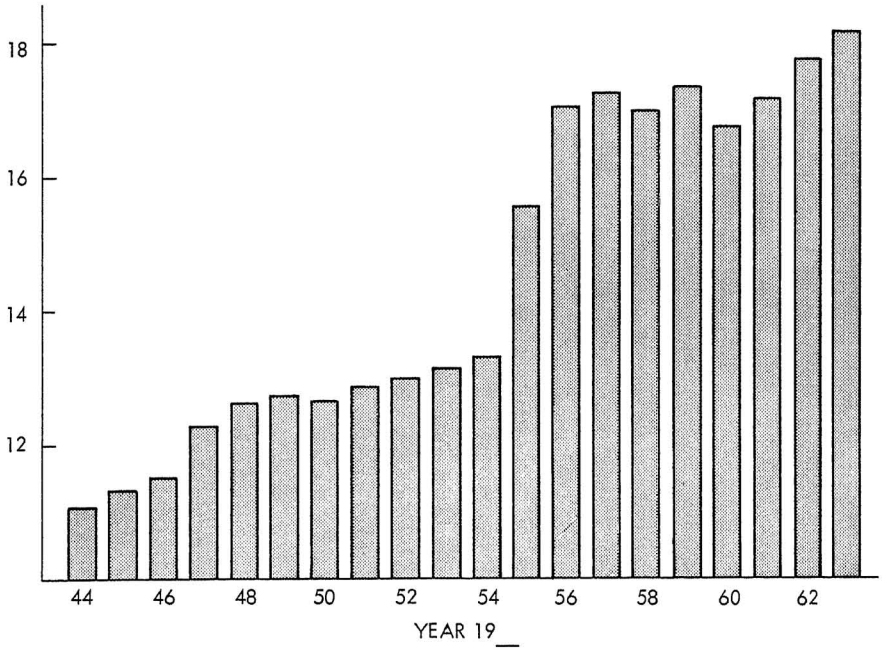


Fig. 7—Average assessed value per acre of agricultural land, 1944-1963, all counties.

PERCENT INCREASE

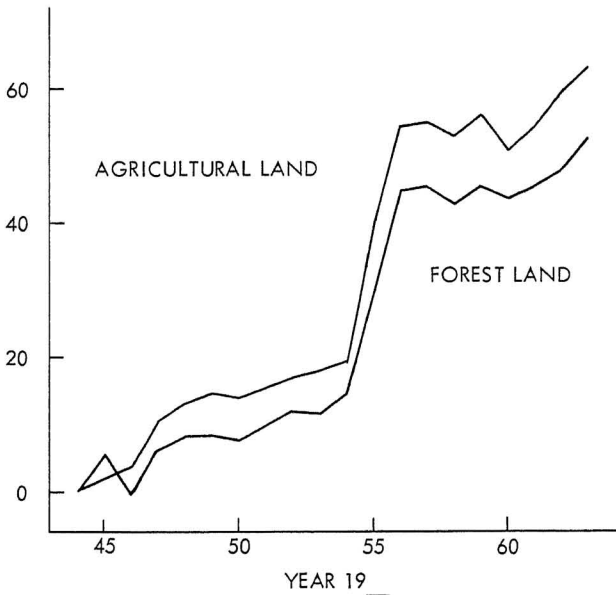


Fig. 8—Change in average assessed values per acre, 1944-1963, all counties.

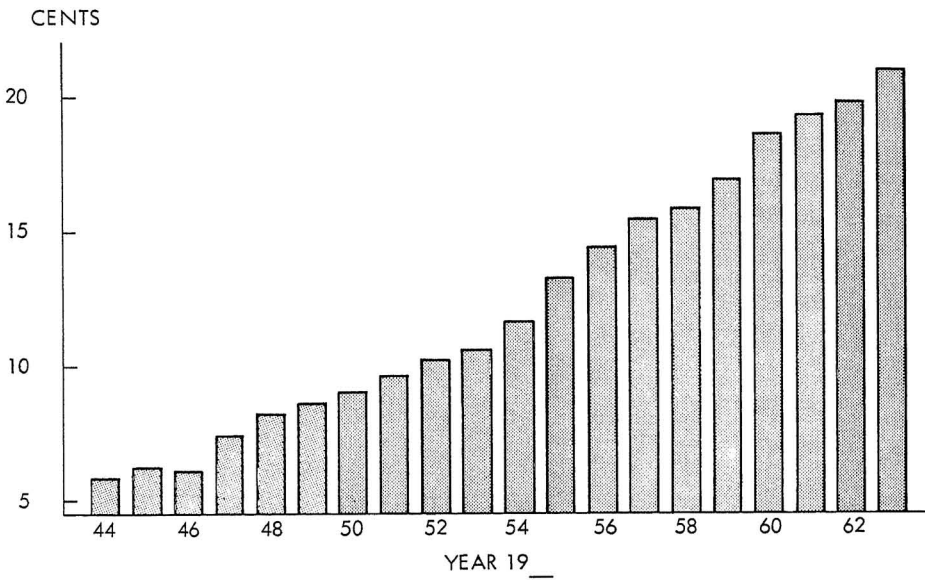


Fig. 9—Average tax on forest land, 1944-1963, all counties.

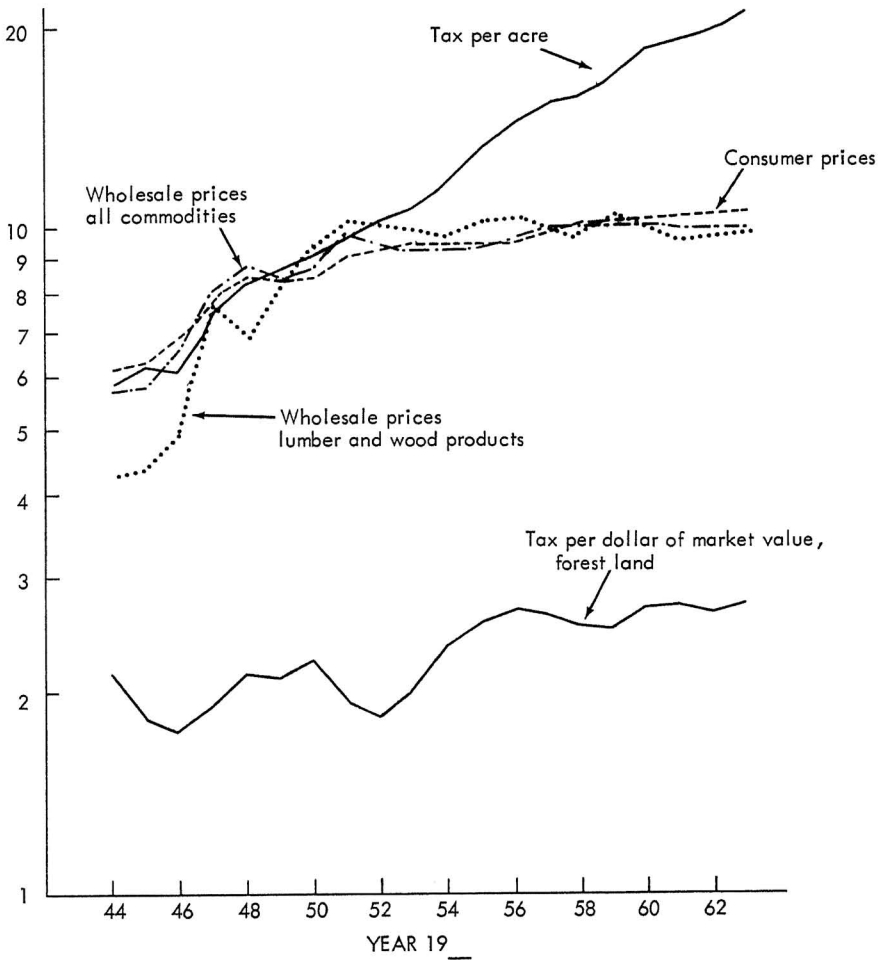


Fig. 10—Relative rates of change in tax per acre on forest land and indices of prices, 1944-1963.

value of forest land. It is based on imputed market values.⁸ Market values computed were, by general observation, somewhat low but not unreasonably so. Relative to each other, they satisfactorily represent the changes in land prices. For representative years computed average forest land values are:

Year	Value per acre
1945	\$3.40
1950	4.24
1955	5.20
1960	6.88

The tax per dollar of market value did not change markedly. However, the increase from 1951 to 1963 was 36 percent, more than the relative changes in prices for consumer items, lumber and wood products, and all commodities. Thus, it appears that taxes have increased more rapidly than prices; the increase has been "real."

Taxes per acre on agricultural land increased 42.6 cents per acre or 3.7 times, from 18.8 cents in 1944 to 69.9 cents in 1963 (Fig. 11). The greatest increase, 5.9 cents per acre, occurred in 1955.

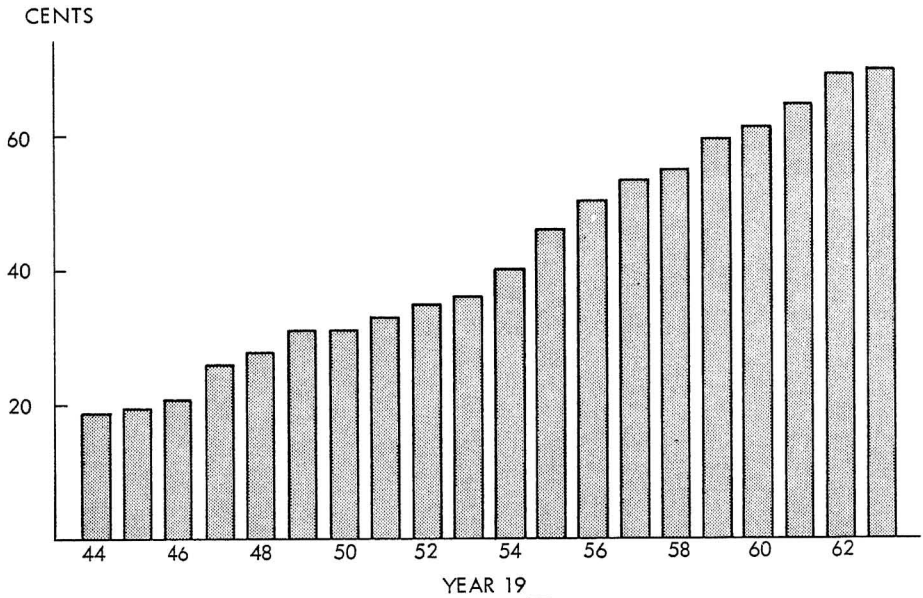


Fig. 11—Trend, average tax per acre on agricultural land, 1944-1963, all counties.

⁸ Forest land value was based on relative values of agricultural land in Missouri from 1944 to 1963 (with 1947-1959=100) and an average market price of \$4 per acre for forest land during the base period. Indices of agricultural land value were taken from various issues of *Agricultural Statistics*, published annually by the U. S. Dept. of Agriculture, and the market price of forest land was based on Smith (1957) Table 1, p. 29.

Percentage increases in average tax per acre since 1944 are shown in Fig. 12. Forest land increased a total of 262 percent, and agricultural land increased 272 percent. Sharp rises occurred from 1946 through 1948 and from 1954 through 1957 for both forest land and agricultural land.

Three-year moving averages of taxes on forest land during the 20-year period were projected to 1970 in Fig. 13. If past trends continue, taxes on forest

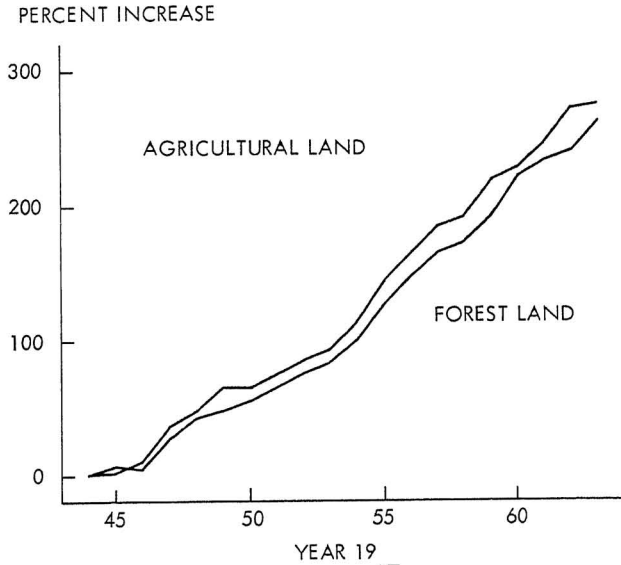


Fig. 12—Change in average tax per acre, 1944-1963, all counties.

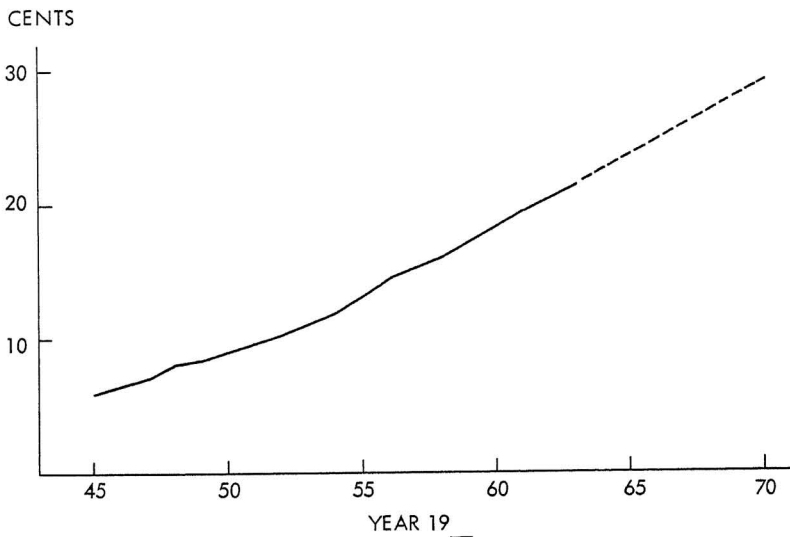


Fig. 13—Trend of average tax per acre, forest land, based on three-year moving averages, 1944-1963.

land may be about 29 cents per acre in 1970, a prospective annual increase of 1.04 cents. Projected three-year moving averages of taxes on agricultural land in Fig. 14 indicate that 1970 taxes may be about 91 cents per acre, an average annual increase of 2.93 cents per acre.

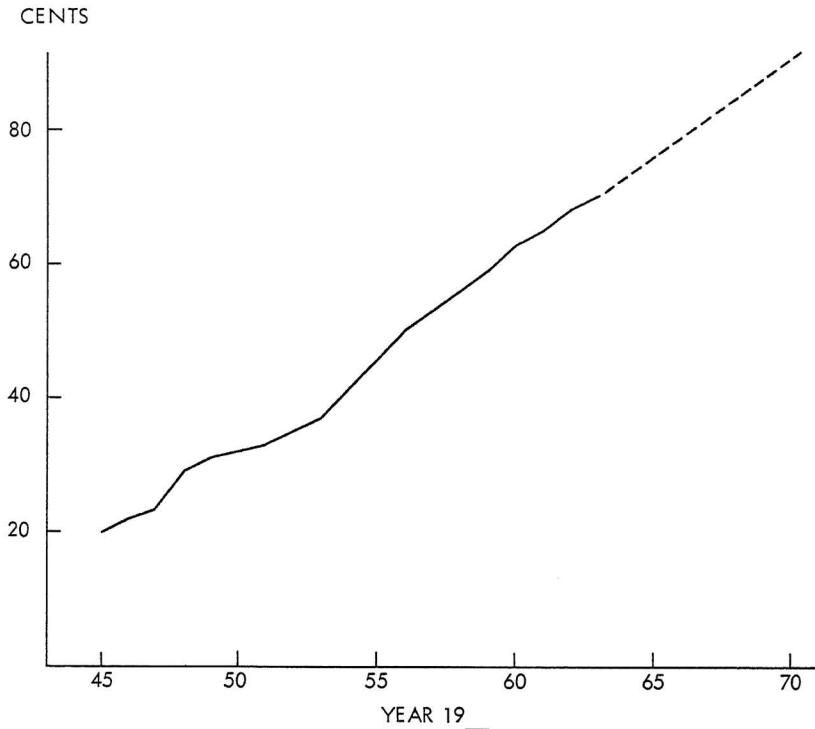


Fig. 14—Trend of average tax per acre, agricultural land, based on three-year moving averages, 1944-1963.

LAND TENURE

In addition to assessed value and taxes on each sample tract, the name of the owner was recorded to determine tenure from 1954 to 1963. About half of the forest land area of 105,624 acres was sold one or more times in this period (Fig. 15). Tenure on 55,738 acres of forest land in southwest Missouri during the period 1944 to 1953 was similar; 52 percent of the area was sold one to nine times. Even with slightly improved tenure during recent years, a large proportion of the forest land probably will change hands during 60 or more years required to grow sawtimber. A forest landowner often cuts most of the sawtimber before selling the land or the new owner cuts the timber to pay for his purchase. If forest land continues to change hands frequently, timber growing stock probably will not be built up to produce growth that forest sites are capable of.

Tenure of agricultural land was only slightly more stable than that of forest land. Forty-five percent of 20,461 acres was sold in 10 years (Fig. 16). From 1944 to 1953, records on 10,033 acres of agricultural land in southwest Missouri show that 42.5 percent of the area was sold.

The cause of frequent sales of forest land and agricultural land was not investigated. The need for credit to enable an owner to retain his land is not known. Numerous sources of credit, both private and government, are available to farm owners for agricultural purposes. Credit for forest owners is limited but it is increasing. The recently expanded forest credit program of the Farmers Home Administration offers credit for farm owners unable to obtain satisfactory credit through commercial channels.

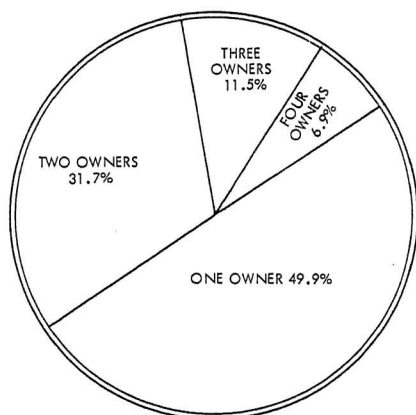


Fig. 15—Number of successive owners of 722 tracts of forest land, total area 105,623 acres, 1954-1963, by percent of area.

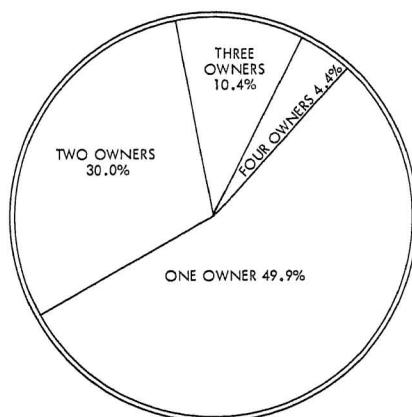


Fig. 16—Number of successive owners of 269 tracts of agricultural land, total area 20,461 acres, 1954-1963, by percent of area.

INCOME AS AN INDICATOR OF EQUITABLE TAXATION

Current revenue potential from forest land in Missouri is indicated by income records of the Clark National Forest.⁹ Annual revenues, Fig. 17, increased steadily from 5.5 cents per acre in 1944 and reached a peak of 29.9 cents per acre in 1956. The rapid increase resulted from both increasing volumes of timber sold and rising stumpage prices. After 1956, per-acre incomes fluctuated because of unstable market conditions. Methods of harvesting timber on national forest land were designated primarily to improve the quantity and quality of residual timber stands. Incomes were received without sacrificing desirable growing stock. National forest revenue for the years 1954-60 averaged 22.3 cents per acre. Taxes on the properties sampled for this study averaged 18.6 cents per acre in 1960. If the above income is representative of that attainable from large forest areas undergoing transition to an organized, managed condition, it appears that a forest owner can expect to pay more than 80 percent of his gross revenue for

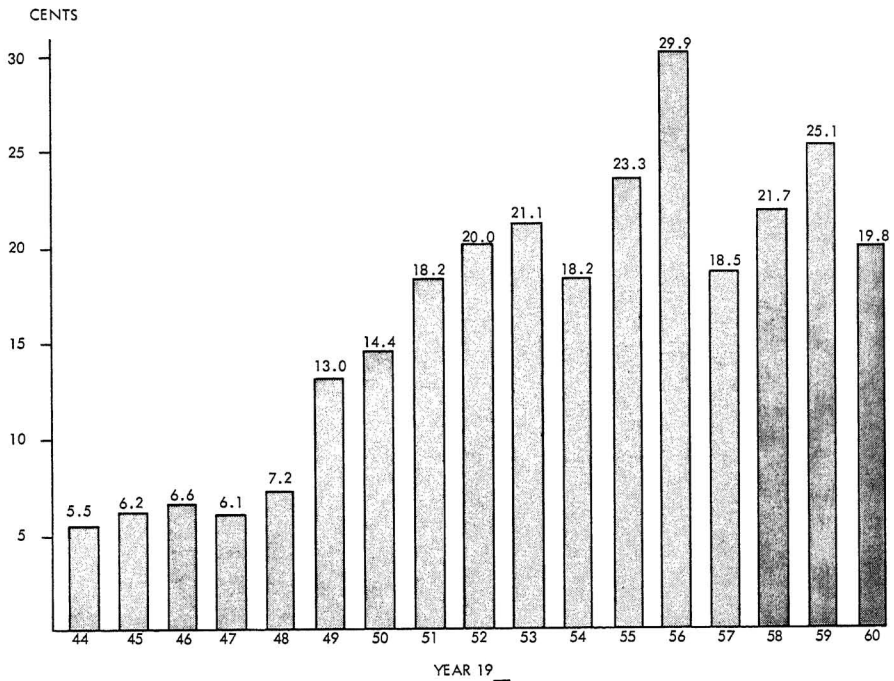


Fig. 17—Gross income per acre. 1944-1960, from approximately 900,000 acres, Clark National Forest.

⁹ Furnished by the Regional Forester, North Central Region, Milwaukee, Wis.; Forest Service, U. S. Dept. of Agriculture.

property taxes while building up timber growing stock for systematic forest management.

Smith (1957) suggested using annual growth in value of trees as a measure of income potential of forest land. Current growth in the entire region is not known, but a recent estimate of net annual growth on all commercial forest land in the Eastern Ozark Region was 73.6 board feet per acre (Mendel, 1961).

If this rate is accepted for all 26 counties and if timber is valued at \$10 per thousand board feet, the value of annual growth would be \$0.736 per acre. The average tax per acre was \$0.210 in 1963. The ratio of taxes to potential gross income is $\$0.210/0.736$ or 28.5 percent. That is, on the average, 28.5 percent of the annual growth in value was collected in taxes. It is even higher than the ratio of 0.21 for 1953 based on annual growth of 50 board feet per acre, \$10 stumpage, and averages taxes in the 26 counties of 10.6 cents reported for 1953.

The estimate of potential forest income is admittedly crude. In addition, non-timber forest income, such as that from recreation, was not included. Most forest recreation occurs on a small portion of forest land. It is usually associated with water. Over large forest areas the pro-rated share of recreation income is small at present. If recreational use of private forest lands continues to expand, recognition of non-timber forest revenues will need to be considered in the future.

According to the Bureau of the Census (1961), the value of all agricultural products sold (except forest products) in the 26 counties in 1959 was \$108,483,290. The gross area in farms, including grazed woodlands, was 6,328,039 acres in 1958. Grazed woodlands were included in the farm area because income from livestock raised in woodland pasture added to gross income. The average per-acre income for farms in the Ozark Region of Missouri in 1960 was \$17.14. The ratio of taxes to gross income for farms was $0.699/17.14$ or 4.1 percent in 1963, compared to 2.9 percent in 1953. The ratio of taxes to potential gross income for forest land in 1963 was seven times larger than the ratio of taxes to gross income for agricultural land. It was nine times greater for forest land in 1953, probably because of lower annual timber growth.

A comparison of the ratio of assessed value to potential income shows similar differences between forest land and agricultural land. The average assessed value for forest land in 1963 was \$5.56. The ratio of assessed value to potential gross income is $5.56/0.736$ or 7.55 times. The average assessed value for agricultural land in the 26 counties for 1963 was \$18.14. The ratio of assessed value to gross income was $18.14/17.14$ or 1.06. Thus, forest owners were taxed approximately seven times higher than farm owners. A similar comparison for 1953 showed that forest land was taxed eight times higher. Although the inequity was reduced slightly during the past ten years, forest landowners are still subject to discrimination.

TOWARD EQUITABLE ASSESSMENT

Williams (1961) describes three situations related to taxation which may affect timber growing adversely: (1) high cost of local government, (2) faulty administration of the property tax, and (3) forest land that offers little prospect of timber income for many years from which to meet annual taxes. All three situations are found in Missouri. State and county officials are confronted with a difficult task in bringing about tax reforms while faced with need for increasing tax revenue with which to finance rising expenditures. Continued increases in county expenditures can be expected because the cost of county services which citizens demand is increasing.

For the owner of forest property with little prospect of income for many years, the Forest Crop Land program offers a means of escaping burdensome taxes. With such aid available, it appears unnecessary to devise other modifications of the ad valorem tax. Preferential tax systems designed to benefit a given class of property owners possess disadvantages. The Advisory Commission on Intergovernmental Relations (1963) states that they appear to operate without cost to state and local governments, but they do, in fact, impose a forced expense on the taxpayers to whom the burden has been shifted, complicate the work of property tax administration, and progressively weaken the property tax system.

The most significant improvement in taxation, from the viewpoint of the forest owner and other taxpayers, can be achieved through more equitable assessment of forest land. The Advisory Commission on Intergovernmental Relations (1963) concluded that the achievement of equitable assessment is primarily a matter of personnel, organization, and equipment. Once there is recognition that the assessment of property for taxation is a technical administrative function which can be performed competently only by well trained specialists using all of the appropriate tools and techniques, the prerequisites for success become clear.

The solution of the assessment administration problem calls for professionalization of the assessment function and development of an administrative organization within which the professional staff can work effectively and which permits efficient statewide coordination. State assessment of all property with more centralization to utilize the advantages of central data processing methods offers sufficient potential benefits to justify serious consideration. The alternative—continuation of joint state-local assessment administration—needs drastic modernizing and strengthening to make it work well.

The above proposal, though undoubtedly sound, would require a drastic upheaval in state and local government functions. If attempted, many years probably would be required to gain public and legislative support. Additional time would be needed to design a specific plan and assemble a competent organization. It appears highly desirable therefore, even for an interim period, to make every effort to improve the present structure for tax assessment.

Two measures for improving the quality and uniformity of assessment practice and for making the assessors' efforts more effective are proposed: (1) standardization of assessment procedures and (2) instruction of county assessors in assessment techniques applicable to forest land. Because of its investigative and regulatory functions, the Missouri State Tax Commission is in a strategic position to provide leadership for accomplishing both measures. Employment of a qualified forester by the Commission to carry out both tasks is highly desirable.

In 27 states, guides for assessing forest property are given in an assessment manual prepared, in most cases, by the state tax agency. State guides for assessing forest land range from brief instructions to comprehensive separate manuals. Williams (1961) mentions increasing emphasis in state assessment manuals on the classification of forest land and timber by use of aerial photography. Aerial photointerpretation offers a relatively inexpensive means of estimating timber stand conditions for mass appraisals of forest land. The Arkansas Assessor's Manual,¹⁰ for example, offers well prepared guides for classification and valuation of forest land, including aerial stereograms and corresponding ground view of typical timber types, tree sizes, and stand densities. The preparation of similar guides for Missouri forest conditions may improve assessment of about 12 million acres of forest land — 30 percent of the land area of Missouri.

Additional guidance can be offered to assessors by the Commission through training sessions; periodic publication of suggestions and examples of valuation of specific tracts; and, when requested by an assessor, on-the-ground assistance.

¹⁰ Assessor's Manual, Real Estate, State of Arkansas; compiled and published by Assessment Coordination Division, Arkansas Public Service Commission. November 1956.

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APPENDIX

Collection of Data

Assessed value and total taxes on 836 tracts of forest land and 281 tracts of agricultural land for the years 1944 to 1953 were reported in 1957.¹¹ Similar records were continued for the years 1954 to 1963 on essentially the same properties.

For the previous study, tracts of forest land and agricultural land were delineated on aerial photographs selected by random sampling within each county. Areas such as 40 acres or multiples of 40 acres were selected which logically could occur as one ownership. Forest land was defined as land essentially all in forest cover with no visible evidence of physical improvement such as buildings or fences. Agricultural land was defined as being at least 80 percent cleared of forest, in pasture or crops, with no restriction as to improvements. The method of selection is more fully described in Res. Bul. 624, pp. 9-12.

In each county collector's office, tax records were examined to identify delineated areas that were reported as a complete but separate tax unit in 1953. For each property, the owner's name, legal description of the land, the area, total assessed valuation, and total taxes paid after equalization were recorded. Each sample unit was traced in the tax books for the preceding years.

An attempt was made to obtain data on 35 forest properties and 15 agricultural properties in each county. Because of difficulty in tracing individual properties from year to year, some sample tracts were eliminated. Others with distorted assessed values, indicating the presence of minerals or other unusual values, were discarded. Forest land taxed under the Forest Crop Land program of the State Forestry Act of 1946 was not included because it was assessed at \$1.00 per acre and taxed at prevailing rates.

In compiling records for the years 1954-1963, additional properties were eliminated. Some tracts had been sold to holders of other property in the same section of land. The ownership was consolidated in the tax books and the sample tract had lost its identity as a separate tax unit. Other properties classified under the State Forest Act were dropped. By 1963, eliminations reduced the forest land 20,461 acres. The number of tracts sampled in 1963 and area of forest land and agricultural land by county are shown in Table 1.

¹¹Taxation of Forest Land in South Missouri by Richard C. Smith. Mo. Agri. Expt. Sta. Res. Bul. 624. March 1957.

TABLE 1 -- NUMBER OF TRACTS AND AREA IN EACH COUNTY FOR WHICH DATA WERE COLLECTED, 1963.

County	Forest Land		Agricultural Land	
	Tracts	Area	Tracts	Area
	Number	Acres	Number	Acres
Barry	31	5,719	12	831
Bollinger	31	2,456	10	964
Butler	26	2,700	7	337
Carter	26	2,766	5	521
Christian	20	3,961	12	854
Crawford	29	5,017	12	750
Dent	27	4,580	14	1,520
Douglas	32	4,970	12	959
Howell	26	6,530	15	1,205
Iron	29	3,389	7	494
Madison	31	5,025	11	649
McDonald	18	1,836	4	166
Newton	30	1,932	11	580
Oregon	33	7,548	7	1,000
Ozark	30	2,430	13	1,252
Reynolds	30	6,290	14	965
Ripley	31	3,402	12	637
St. Francois	23	1,791	13	1,109
Shannon	28	5,503	10	984
Stone	28	4,139	11	620
Taney	31	4,677	6	592
Texas	22	4,880	12	994
Washington	20	2,866	11	528
Wayne	30	2,445	4	413
Webster	34	4,753	13	720
Wright	26	4,019	11	817
All Counties	722	105,624	269	20,461

TABLE 2 -- AVERAGE ASSESSED VALUE PER ACRE OF FOREST LAND BY COUNTY, 1954-1963

County	Year									
	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Barry	\$ 4.02	\$ 4.47	\$ 5.86	\$ 5.86	\$ 5.97	\$ 5.58	\$ 5.64	\$ 5.56	\$ 5.36	\$ 5.57
Bollinger		2.84	2.73	2.91	2.77	2.91	2.76	2.77	2.80	2.91
Butler	4.09	4.09	5.54	5.53	5.47	5.53	6.07	6.02	6.16	6.24
Carter	4.04	4.21	4.23	4.12	4.05	4.07	4.07	4.04	4.06	4.00
Christain	3.81	6.18	5.38	5.71	5.75	5.71	5.67	5.41	5.37	5.40
Crawford	5.31	7.73	7.84	7.60	7.54	7.44	7.59	6.97	7.35	7.21
Dent	5.53	5.53	5.53	5.53	5.53	5.90	5.90	6.20	6.20	6.20
Douglas	2.84	2.81	3.60	3.50	3.65	3.49	4.03	3.74	3.74	3.70
Howell	4.32	4.39	5.48	5.50	5.41	5.38	5.46	5.44	6.00	6.51
Iron	2.07	1.99	2.09	1.99	2.04	1.95	2.11	2.13	2.13	2.13
Madison	2.60	2.40	3.86	3.61	3.81	3.43	4.08	4.81	5.20	5.18
McDonald	3.91	5.74	5.51	5.38	5.27	5.11	5.14	4.07	3.81	4.17
Newton	11.54	17.31	16.51	16.66	16.20	16.35	15.94	15.68	15.36	15.36
Oregon	4.40	4.42	4.40	4.64	4.65	4.70	4.67	4.63	5.08	5.50
Ozark	4.66	4.58	5.12	5.17	5.11	5.17	5.00	4.98	5.46	5.45
Reynolds	2.29	2.41	2.74	2.70	2.80	2.75	2.81	2.81	2.81	3.08
Ripley	4.88	4.91	5.64	5.65	5.66	5.64	5.64	5.75	5.93	5.93
St. Francois	3.92	7.72	6.72	7.36	6.68	8.31	6.63	10.31	9.98	9.28
Shannon	4.68	4.68	5.49	5.59	5.66	5.66	5.66	5.55	4.86	5.17
Stone	3.38	3.42	5.14	5.17	4.85	4.94	5.22	5.17	5.28	5.29
Taney	3.86	3.82	5.61	5.61	5.61	5.61	5.61	5.70	6.23	6.91
Texas	5.25	5.26	5.13	4.92	4.77	4.71	4.64	5.33	5.32	5.40
Washington	2.43	2.77	4.39	4.39	4.39	5.22	5.22	5.08	5.09	5.02
Wayne	3.97	4.02	4.86	5.25	5.50	5.52	5.53	5.46	5.46	5.79
Webster	6.05	6.05	7.78	7.40	7.04	6.97	6.70	6.72	6.69	7.28
Wright	3.79	5.77	5.90	5.68	5.62	4.82	4.89	4.88	4.81	5.07
All Counties	4.18	4.76	5.29	5.31	5.21	5.31	5.28	5.31	5.40	5.56

TABLE 3 -- AVERAGE ASSESSED VALUE PER ACRE OF AGRICULTURAL LAND, INCLUDING IMPROVEMENTS,
BY COUNTY, 1954-1963

County	Year									
	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Barry	\$21.24	\$21.23	\$28.64	\$28.87	\$28.87	\$28.87	\$28.29	\$29.05	\$29.05	\$29.04
Bollinger		15.49	12.19	14.93	11.66	14.93	11.66	12.21	12.83	12.83
Butler	13.05	13.03	17.65	17.63	20.10	20.07	20.07	20.60	20.60	21.49
Carter	18.70	19.65	18.70	19.65	18.70	19.65	18.70	19.62	19.67	19.77
Christain	22.06	36.29	35.46	32.75	31.34	32.20	30.39	30.07	30.52	30.30
Crawford	13.94	19.53	19.29	19.27	19.29	19.27	19.03	19.05	17.86	17.86
Dent	10.91	10.88	10.88	10.88	10.89	11.11	10.74	11.90	11.54	11.54
Douglas	11.90	11.89	14.87	14.89	14.41	14.08	14.67	14.67	14.88	14.66
Howell	11.99	11.99	14.40	14.48	14.41	14.59	14.41	14.41	16.04	18.71
Iron	11.36	11.36	11.36	11.36	11.36	11.36	11.36	13.64	17.03	17.03
Madison	16.52	18.25	11.10	13.20	10.56	13.20	10.56	25.61	25.46	26.52
McDonald	16.43	24.63	24.44	24.63	24.63	25.46	25.46	10.51	10.51	13.04
Newton	19.68	27.14	29.49	29.49	29.49	27.95	27.95	27.95	27.56	27.56
Oregon	7.66	7.80	7.80	8.19	8.04	8.20	7.90	7.90	8.69	9.20
Ozark	8.79	9.14	9.68	10.15	9.73	9.91	9.73	9.73	10.72	9.18
Reynolds	7.45	8.79	8.96	10.58	8.97	11.06	8.84	9.20	10.86	11.02
Ripley	7.43	7.23	7.98	8.13	7.60	8.28	7.17	7.83	8.62	8.62
St. Francois	17.29	32.08	32.52	31.73	31.61	32.06	30.17	30.04	30.04	30.04
Shannon	8.78	8.37	9.88	9.90	9.88	9.90	9.88	10.08	9.88	9.88
Stone	21.54	21.16	32.91	31.34	33.71	31.34	30.45	31.74	32.06	32.06
Taney	10.79	10.45	14.62	14.54	14.62	13.59	13.59	13.58	14.93	16.44
Texas	17.69	17.12	17.40	16.06	16.94	17.11	16.81	17.21	17.40	17.93
Washington	12.74	12.74	17.08	18.26	15.84	18.26	17.71	21.05	20.48	22.02
Wayne	10.95	10.81	13.84	13.66	13.66	13.66	12.13	12.13	12.13	12.13
Webster	15.58	17.46	20.71	22.21	22.71	22.21	22.71	22.71	22.71	24.97
Wright	10.21	16.25	16.11	16.11	18.18	17.31	19.61	19.85	20.17	20.97
All Counties	13.30	15.66	17.05	17.23	16.97	17.34	16.74	17.16	17.74	18.14

TABLE 4 -- AVERAGE TAX PER ACRE ON FOREST LAND BY COUNTY, 1954-1963

County	Year									
	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Barry	13.8¢	17.5¢	18.7¢	19.6¢	21.7¢	20.9¢	22.3¢	22.0¢	21.9¢	24.4¢
Bollinger		7.8	8.8	9.2	10.3	9.5	9.7	8.1	8.2	8.4
Butler	9.8	10.0	12.0	14.2	13.6	15.9	20.3	21.0	20.4	24.1
Carter	11.9	13.3	12.4	11.8	10.4	13.7	15.3	15.4	15.9	14.4
Christain	13.2	18.8	17.2	17.8	18.0	19.6	21.3	20.8	20.5	21.6
Crawford	14.7	18.0	18.7	19.1	21.5	22.2	23.2	23.2	24.8	25.5
Dent	9.6	11.0	11.0	11.7	12.5	14.5	18.1	20.9	21.0	20.3
Douglas	6.3	6.3	10.5	10.1	12.0	11.3	13.2	12.7	13.3	13.3
Howell	10.4	10.2	11.4	14.4	16.1	16.6	18.0	18.3	20.6	23.1
Iron	5.5	5.5	5.9	5.7	6.9	6.9	7.4	7.6	7.6	8.1
Madison	7.5	7.5	10.5	11.6	14.5	12.8	16.1	16.4	18.6	21.6
McDonald	14.3	18.4	17.8	18.6	17.6	17.0	18.1	16.9	16.0	17.6
Newton	37.3	44.3	46.7	51.8	50.0	54.4	53.1	53.0	53.5	60.0
Oregon	9.4	11.3	11.1	11.7	11.8	15.9	15.4	15.1	19.4	20.1
Ozark	11.8	11.2	14.5	15.6	15.4	17.5	18.4	19.6	21.0	23.5
Reynolds	9.8	10.3	11.4	11.4	11.7	11.5	13.8	12.6	11.4	12.4
Ripley	11.4	13.6	14.0	18.2	18.1	20.7	20.8	21.1	22.8	23.9
St. Francois	8.3	16.7	14.0	22.3	19.7	19.6	26.6	42.2	41.4	38.4
Shannon	13.2	13.6	16.4	18.1	18.7	18.1	19.4	19.6	14.8	14.8
Stone	11.4	11.5	14.6	15.4	15.2	15.8	17.1	19.0	19.3	20.6
Taney	13.7	13.6	13.1	13.5	14.6	15.5	18.4	19.2	20.8	23.3
Texas	10.4	11.2	12.5	13.0	11.6	13.6	17.5	19.5	19.6	19.4
Washington	8.2	8.9	12.3	12.6	14.2	17.4	18.7	20.5	20.8	22.2
Wayne	8.4	9.9	11.5	12.5	14.8	14.5	19.0	19.9	20.5	21.7
Webster	18.3	18.9	22.6	23.6	22.1	22.7	25.7	27.9	27.6	29.2
Wright	12.6	18.0	17.9	16.7	17.8	15.5	16.3	17.9	18.5	19.8
All Counties	11.6	13.2	14.4	15.4	15.8	16.9	18.6	19.3	19.8	21.0

TABLE 5 -- AVERAGE TAX PER ACRE ON AGRICULTURAL LAND, INCLUDING IMPROVEMENTS,
BY COUNTY, 1954-1963

County	Year									
	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Barry	70.0¢	78.5¢	94.0¢	100.2¢	103.4¢	103.3¢	108.0¢	118.1¢	119.5¢	123.1¢
Bollinger		49.1	43.9	54.4	41.9	56.2	43.6	37.1	38.7	39.0
Butler	38.6	44.2	50.5	54.7	63.0	63.8	65.8	68.1	68.1	73.6
Carter	40.3	50.5	47.6	47.6	33.4	63.4	79.4	79.9	79.7	72.2
Christain	77.9	109.3	112.8	106.2	103.5	109.5	112.5	113.4	115.9	127.5
Crawford	40.4	52.8	51.6	53.4	57.1	64.9	62.1	68.7	65.5	67.2
Dent	18.2	21.1	21.5	21.9	23.3	26.1	31.3	40.6	40.8	39.6
Douglas	36.6	36.9	45.6	45.6	49.1	48.5	51.2	51.1	52.8	53.9
Howell	27.8	28.4	29.8	38.8	43.2	44.0	42.4	67.0	50.1	60.9
Iron	27.1	26.2	23.5	27.8	29.4	32.8	35.8	37.8	62.2	64.2
Madison	49.3	50.3	29.7	40.1	41.7	50.5	41.5	86.2	86.2	104.2
McDonald	52.7	67.9	67.4	77.3	78.8	80.7	86.3	39.8	40.9	50.8
Newton	71.4	78.2	90.9	93.8	93.8	102.8	103.3	103.3	103.7	114.0
Oregon	19.6	20.4	20.4	20.2	20.8	26.4	25.5	25.4	33.2	32.9
Ozark	21.7	23.8	27.6	30.3	28.5	32.3	32.5	36.9	38.6	37.6
Reynolds	32.0	37.8	39.7	48.4	39.9	49.2	43.0	41.1	44.8	44.4
Ripley	18.3	20.3	22.3	25.5	24.6	30.5	25.2	28.8	33.3	33.4
St. Francois	57.9	81.9	86.9	97.3	104.4	117.9	117.5	115.9	115.9	114.7
Shannon	19.9	21.5	28.8	36.1	36.0	39.2	38.1	39.5	39.8	36.4
Stone	70.0	66.5	100.8	97.4	110.1	107.1	111.4	119.7	122.8	127.6
Taney	36.7	35.5	36.2	34.8	35.8	42.3	42.6	43.9	49.8	55.5
Texas	54.2	56.1	57.2	54.7	59.5	60.8	64.0	68.3	67.3	71.6
Washington	51.9	55.1	64.1	66.5	60.7	69.4	75.0	96.5	99.4	104.1
Wayne	27.1	29.1	33.3	33.8	35.3	33.7	43.4	44.5	45.4	45.4
Webster	59.4	61.7	73.1	80.3	80.5	81.0	90.6	94.0	90.1	99.7
Wright	37.7	53.2	54.4	55.6	69.8	68.2	82.4	87.3	89.6	89.2
All Counties	40.1	46.0	50.2	53.5	54.7	59.7	61.4	64.4	69.2	69.9