Reassessment and Use Value Assessment of
Agricultural Land: Property Tax Effects*

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Abstract

Recent appreciation of real estate values has unevenly eroded as-
sessment levels from legal standards in many states. Inflation also
has affected the determination of use values for agricultural lands.
For Missouri counties, general reassessment is estimated to cause size-
able property tax shifts which ultimately would alter public service
demands.

Although the property tax has declined in relative importance since the early 1900's, it is still an important source of revenue for local governments. During fiscal 1976-77, property taxes collected in the U.S. accounted for just over 30 percent of local government funds (U.S. Department of Commerce). Of course, it represents an even larger share of revenue for shcool districts in many states. In short, it is a very important element in local government finance and likely to remain so (Johnson). It follows, therefore, that changes in the structure of property taxes have important implications for local provision of public services.

Recent periods of rapidly appreciating real estate values have caused real property assessments to quickly drop below legal standards in states without automatic updating. Outdated assessments, coupled with the practice of only reassessing real estate upon sale, can severely distort a community's public finance base from that which would occur with correct assessments. One outcome can be predicted: new property owners will claim property tax discrimination because they are paying much larger shares of property taxes than if all assessments equaled their legal levels.

Events similar to these took place in Missouri during the last decade, and culminated in a Missouri Supreme Court decision that will cause statewide reassessment by 1984 (State excel Cassilly v Riney). An important determinant to the Missouri reassessment outcome is the differential assessment of farmland at its use rather than market value. Two issues deserve attention. First, since Missouri's reassessment is expected to be accompanied by manda-

tory use value assessment for all eligible farmland, relative property tax burdens may be shifted among property categories. Second, it becomes a challenging task to determine use values for agricultural land when commodity prices and input costs change at different rates during inflationary periods. This paper reports estimates for Missouri counties of changes in taxes levied on different property categories. For a sample of counties, the property tax changes are re-estimated assuming that Missouri State Tax Commission (MSTC) farmland use values are revised to reflect current price, cost, and yield information.

Methodology

Separate analyses were conducted using MSTC and revised use values for agricultural land.

MSTC Use Values

The general process by which reassessment affects property tax incidence[1] can be visualized as follows. Missouri specifies four classes of taxable property: (1) real estate; (2) personal; (3) public utility, and; (4) merchant-manufacturer inventories. Only real estate will be reassessed. As a result of that process, all parcels' assessment ratios (i.e., ratio of assessed to market or use value) will be equalized at the 33 1/3 legal standard. Taxable property was divided into three categories for the analysis: (1) agricultural (F); (2) residential-commercial-industrial (RCI), and; (3) personal, public utility, and merchant-manufacturer (PPM). Since the F and RCI properties are not equally underassessed, reassessment will differentially affect their shares of a county's total tax base, thus differentially influencing the property taxes levied on each.

In fear of large windfall property tax increases, Missouri's General Assembly passed legislation requiring a "rollback" in property tax rates in

conjunction with reassessment (Laws of Missouri). The actual rollback provision allows some increase in property tax revenues reflecting the average annual growth rates in assessments over the past 3 or 5 years, whichever is greater. For this study, the rollback was assumed to generate the same tax revenues as before reassessment; in other words it equals 1 - (pre-reassessment tax base ÷ post-reassessment tax base). Of course, the reduced tax rates will apply equally to all categories of taxable property. Because of the rollback requirement, the total effect of reassessment on tax incidence is a combination of changing tax base shares and decreasing tax rates.

Symbolically, this total impact on a real property category (e.g., residential) can be expressed as:

$$\text{XTAX} = \text{NLEVY} \left[1 + \left(\frac{33.33 - \text{XRATIO}}{\text{XRATIO}} \right) \right]$$

where: XTAX = fraction of total pre-reassessment tax bill that X real estate owners are assessed after reassessment,

NLEVY = fraction of the pre-reassessment tax rate that the post-reassessment rate is (1 - rollback percentage),

XRATIO = weighted assessment ratio (by parcel value) of X real estate before reassessment.

For example, if the NLEVY = .5 (tax base doubles) and the XRATIO = 16.67 (one half of the legal standard), then X property as a group would pay the same property taxes after reassessment as before. However, if the tax base increases more or less than 100 percent, then their taxes would fall or rise, respectively, from pre-reassessment levels.

To conduct the analysis, assessment levels of each real estate class and the pre-reassessment tax base were needed. Annual county assessment ratios estimated by the MSTC filled the first requirement. Ratios weighted by sam-

ple parcel value were available for residential, commercial-industrial, and agricultural classes. Because of insufficient commercial-industrial sample observations for many counties, the general analysis combined residential with commercial-industrial parcels. For 22 counties with sufficient commercial-industrial sample points, a partial analysis was conducted to estimate separate impacts on the residential and commercial-industrial classes. County property tax bases consist of the sum of real, personal, public utility, and merchant-manufacturer assessed property, and are reported yearly to the MSTC. As explained above, the increase in a county's tax base due to reassessment of real estate determines the required rollback in tax rates.

Since the data available for this study have the county as the unit of observation, results strictly pertain only to "countywide" taxes. Obviously, the boundaries of many, if not most, tax districts do not coincide with county lines (e.g., school districts). However, if a sub-county tax district has similar assessment patterns to the county as a whole, then the county estimates give a good indication of reassessments' effects on that district. For this study, the county data were sufficient since the objective was to estimate overall property tax shifts between categories.

Revised Use Values

Missouri became the thirty-third state to enact an agricultural use value assessment law with the passage of its Agricultural Valuation and Assessment Act in 1975. It is of the preferential assessment variety in that it imposes no penalty on lands assessed at use value that are subsequently transferred to non-agricultural uses. Under that law, the MSTC is required to publish use values for several land classifications which the local assessors can employ, if they desire.

During the study year (1978), the MSTC use values available to assessors (and used to calculate county assessment ratios) reflected 1975 and prior agricultural conditions. To update them through 1978, net returns for 8 land classes reflecting appropriate average prices, regional input costs, and yields were estimated.[2/] Using a 7 percent discount rate suggested by the legislature, the net returns were capitalized into revised use values. Crop rotation (2 years corn, 2 years soybeans, 1 year wheat) was held constant to focus on the effect of the updated information. Appendix 1 compares the yields, prices, and some costs used in the MSTC and revised procedures.

Table 1 presents the MSTC and revised returns to land and capitalized use values. Note that the new information results in an approximate 75 percent increase in use values. Obviously, the revised figures would greatly increase agriculture's share of the post-reassessment property tax bill. To guage the magnitude of this impact, the assessment ratios of sample agricultural parcels in three counties were changed to reflect the revised use values. Then, the countys' post-reassessment property tax incidences were re-estimated.

Results

MSTC Use Values

Using 1978 data, estimates of the post-reassessment property tax changes were made for each Missouri county. Table 2 presents the highest and lowest county estimates for each property category to assess the range of impacts. Lower and upper bounds of a 95 percent confidence interval accompany each point estimate.[3/] Of course, the point estimate is the most likely value, but the confidence interval widths for many estimates caution against heavy reliance on a single number. Wide confidence intervals reflect the large variability of sample data and small sample sizes. Rather than rely on a specific

Table 1

Missouri State Tax Commission (MSTC) and Revised

Use-Value Estimates for Agricultural Land Classes (1978)

MSTC Land Class	MSTC Productivity Rating	MSTC Return to Land	Revised Return to Land	MSTC Use-Value	Revised Use-Value
			-----------$-----------		
1	100	28.00	49.92	400.00	713.14
2	86	24.50	42.93	350.00	613.30
3	75	20.00	37.44	300.00	534.86
4	62.5	15.63	31.20	250.00	445.71
5	43.75	12.25	21.84	175.00	312.00
6	25	7.00	12.48	100.00	178.29
7	13.25	3.85	6.86	55.00	93.06
8	7.5	2.10	3.74	30.00	53.49

Table 2

Estimates of High and Low Post-Reassessment Property Tax Changes by

Property Category for Selected Missouri Counties

(Pre-Reassessment = 1.00)

County	Agricultural			Residential-Commercial-Industrial			Personal, Public Utility, and Merchant-Manufacturer		
	Point Estimate	Lower Bound	Upper Bound	Point Estimate	Lower Bound	Upper Bound	Point Estimate	Lower Bound	Upper Bound
Dallas	1.49	1.10	1.89	1.00*	.65	1.36	.68	.50	86
Mississippi	.98	.84	1.12	1.10	.77	1.43	.92**	.79	1.05
Osage	1.64**a/	1.40	1.88	1.55	1.18	1.92	.58	.51	.65
Reynolds	.86	.69	1.03	2.04**	1.41	2.66	.64	.46	.83
St. Louis	.38*b/	.06	.71	1.11	1.09	1.12	.76	.72	.79
Washington	.93	.45	1.40	1.54	1.27	1.81	.50*	.40	.60

a/** Indicates highest county point estimate for property category.

b/* Indicates lowest county point estimate for property category.

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number in those cases, it is more appropriate to look for the direction and general magnitude of change.

Point estimates showed that residential-commercial-industrial properties are expected to experience the largest tax increase in about 80 percent of the counties. The largest estimated change was a doubling of taxes in Reynolds County, while Dallas County taxes were estimated to stay the same. When separate impacts were estimated for the residential versus commercial-industrial sectors, 16 of 22 counties showed the largest increase for residential owners. Therefore, residential generally appears to be the most underassessed category. Some might attribute its lower current valuations to elected assessors' attempts to garner the greatest block of votes.

Taxes on PPM property, which is largely non-real estate, were estimated to decline for all counties. The uniform decrease simply reflects that these properties are not a part of general reassessment, and therefore were assumed to be assessed at the 33 1/3 percent legal standard.[4/] Values ranged from 8 to 50 percent reflecting the levels of the estimated rollbacks in each county. If the assumption of legal 1978 PPM assessments is accurate, then owners of these properties have paid increasingly large proportions of property taxes during the last decade due to lagging assessments for real estate.

Over 70 percent of the counties showed an estimated rise in property taxes for agricultural real estate. Since these estimates assumed all farmland would be reassessed at lower use values rather than the current market value basis, this outcome could be interpreted as a surprise. However, it probably indicates that Missouri assessors have been practicing de facto use-value assessment in most counties. The fact that there is very low enrollment in the Missouri differential assessment program adds more evidence to that hypothesis. Flinchbaugh and Edelman also note that current valuations fall far short of use values for Kansas farmland.

For a sizeable number of counties, agriculture's property taxes were estimated to decline. This outcome could be the result of lower assessed values with use value assessment, and/or rate rollbacks swamping slight increases in agricultural assessments. Figure 1 shows the geographical distribution of those counties. The predominant share were rural-urban fringe or urban counties (e.g., St. Louis County, Jackson County-Kansas City). Evidently, their 1978 agricultural assessed values were closer to the statewide uniform use values than were those for rural counties. This presumably reflects the greater demand pressure (and/or increased turnover) on agricultural lands surrounding urban areas. Regardless of the reason, these agricultural landowners would benefit in general due to reassessment. This outcome takes on increased significance when one considers that Missouri's use value assessment law contains no penalties for lands converted to non-qualifying uses. Note that the "Bootheel" counties (e.g., Pemiscott), mostly Mississippi delta lands, were also estimated to have a decline in taxes on farmland. It is possible that the MSTC use values under estimate the productivity of those lands.

Revised Use Values

With MSTC use values, agricultural real estate in most counties fares well compared to the residential-commercial-industrial category. However, it was shown above that the MSTC figures may significantly underestimate use values reflecting appropriate price, cost, and yield information.

In general, the impact of substituting the higher revised use values will depend primarily upon two factors: (1) the proprotion of farmland assessed value in the county's total tax base, and (2) the degree of under-assessment of agricultural land prior to reassessment. Predominantly rural agricultural counties should be affected most unless their current farmland valuations are near the legal standard. Urban counties should show little

Figure 1

Estimates of Post-Reassessment Property Tax Changes for
Agricultural Real Estate (County-Wide Taxes)
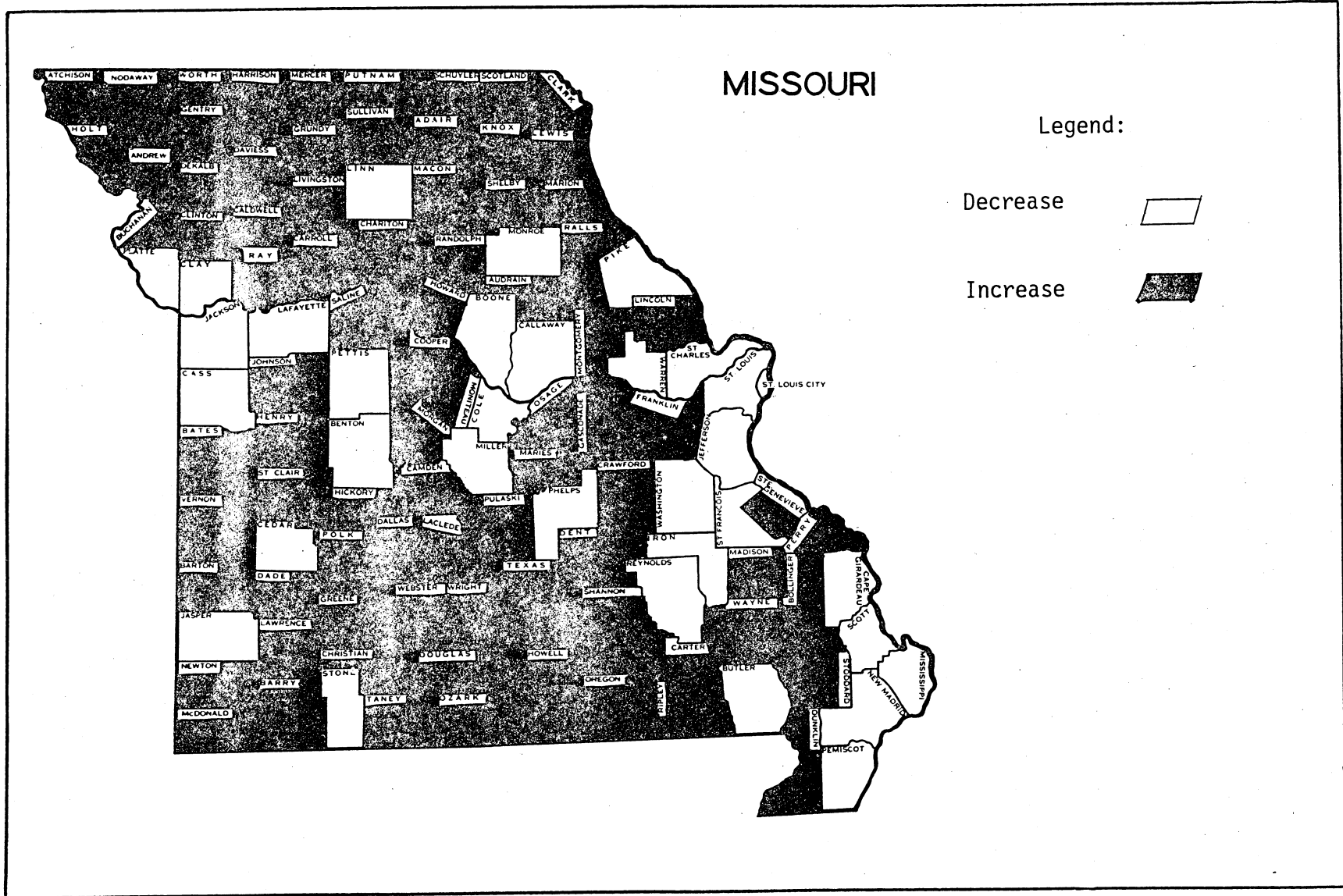
little impact because of the preponderance of non-agricultural land in their tax bases. To illustrate these effects, three counties with different combinations of the factors were selected for analysis.

Atchison County has a high proportion of its pre-reassessment tax base from agriculture (73%), and a medium 1978 agricultural assessment ratio (21%). Representing less agricultural influence, Callaway County had a high ratio (28%), and a small percentage of its total real property value from agriculture (37%). St. Clair had a high percentage of agricultural real property (78%), but a relatively low agricultural assessment ratio (13%). Based on these characteristics, St. Clair County should show the largest change in agriculture's percentage of the county's tax base under the revised use values, and Callaway the smallest.

Study estimates illustrate the expected relationships (see Table 3). All counties show large increases in property tax incidence on agriculture, with St. Clair showing a doubling of pre-reassessment levels. Correspondingly, the tax incidences on RCI and PPM property decrease dramatically. Note that property taxes on RCI properties in Atchison and St. Clair counties are estimated to decrease after reassessment. This happens in spite of the fact that RCI properties were significantly underassessed in both counties in 1978. The reason is that use of the revised agricultural use values causes the counties' tax bases to increase so much that the required rollback in rates more than offsets the increased RCI assessments. In effect, the increased assessed values of farmland absorb the reductions in tax bills for the RCI and PPM properties. If the revised use values were adopted statewide, a massive shift in property taxes from other sectors to agriculture would take place, especially in rural counties.

Table 3

Post-Reassessment Property Tax Estimates With

Missouri State Tax Commission (MSTC) or

Revised Farmland Use Values

(Pre-Reassessment = 1.00)

County	Agricultural		Residential-Commercial-Industrial		Personal, Public Utility, and Merchant-Manufacturer	
	MSTC Use Values	Revised Use Values	MSTC Use Values	Revised Use Values	MSTC Use Values	Revised Use Values
Atchison	1.12	1.44	1.36	.95	.71	.50
Callaway	.90	1.42	1.40	1.22	.76	.67
St. Clair	1.54	2.09	1.23	.69	.60	.34

Implications

Rapidly escalating real estate values during the last decade may portend increased stress on a major source of local public finance, the property tax. At rates of up to 20 percent per year, real property assessments quickly diverge from legally mandated levels. Moreover, not all assessment rates change at the same rate, thus precluding formula adjustments for entire property categories. If this divergence of actual and legal assessment ratios persists for an extended period of time, then an abrupt change in property tax incidence brought about by large scale reassessment may singificantly change the structure of public service demand.[5/] Shifts in property tax incidence essentially cause changes in prices of public services (e.g., schools). This change could be very important if property taxes are shifted from property categories with fewer votes (e.g., commercial) to those with more votes (e.g., residential). In that case, future attempts to increase property tax rates to offset inflationary effects on public service expenditures, may prove especially difficult, since many real estate owners will have just received increased tax bills due to reassessment.

More than 40 states allow assessment of agricultural land on a use-value basis (Dunford). However, use-value assessment (thus obviating the need for land market data) is not immune from our economy's inflationary effects. Unless use-values are updated to reflect current trends in commodity prices, input costs, and yields, the assessments of agricultural land could diverge sharply from that which is legislatively mandated. This study of reassessment in Missouri shows that updating of agricultural use values would cause a substantial shifting of property tax incidence among property categories. If the updated use values place too heavy a burden on the farm sector, state legislatures always have the perogative of lessening that load.

An important issue brought to light in this study is the difficulty of determining appropriate use values for different agricultural lands. Questions regarding the appropriate discount rate, expected returns, etc. are very relevant but unsettled issues among land economists. The wisdom of uniform statewide use values to lessen administrative problems versus regional use values to reflect different agriculture types also deserves attention.

Footnotes

1/   Incidence in this context refers to "legal" incidence which defines the property owner responsible for remitting the taxes to the assessing government jurisdiction (e.g., county). This concept should be differentiated from "economic" incidence which refers to the ultimate parties who may bear the property tax burden (e.g., renters).

2/   For a detailed discussion of the budgeting procedure, see Schoening, pp. 113-132.

3/   The point and interval estimates were based on ratio estimates (see Cochran, Ch. 6).

4/   The assessment of most public utility real estate is currently conducted by MSTC staff, and is at the 33 1/3 standard. Local assessments of public utility property (which might be below one-third) were not available. Therefore, the analysis assumes this property category's county assessments will not change.

5/   In Missouri, the associated rollback from increased assessments will also affect the allocation of state aid to education among counties. The states equalization formula uses a school district's tax rate to determine the distribution of state funds among districts.

Appendix 1

Missouri State Tax Commission (MSTC) and

Revised Use Value Information (1978)

Item	MSTC	Revised
Yields (highest grade land)		
Corn	100	108
Soybeans	35	43.5
Wheat	30	46
Prices		
Corn	$2.00	$2.37*
Soybeans	$5.00	$5.96*
Wheat	$3.00	$2.28*
Management and Taxes	$7.00/acre	15% of gross returns
Capitalization Rate	7%	7%

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*/ United States Department of Agriculture normalized prices.

References

Cochran, William G. 1977. <u>Sampling Techniques</u>. New York: John Wiley and Sons.

Dunford, Richard W. 1980. "A Survey of Property Tax Relief Programs for the Retention of Agricultural and Open Space Lands." <u>Gonzaga Law Review</u> 15(3):675-699.

Flinchbaugh, B.L. and Edelman, Mark A. 1981. "Agricultural Land Reappraisal Options." <u>Journal of the Society of Farm Managers and Rural Appraisers</u> 45:6-9.

Johnson, Marvin B. 1979. "The Property Tax is Here to Stay." Economic Issues, Dep. Agr. Econ., University of Wisconsin, Madison: 32 (April).

Laws of Missouri. 1979. "House Substitute for Senate Bill No. 247 and Senate Committee Substitute for Senate Bills No. 333 and 254, 80th General Assembly." Page 332.

Missouri State Tax Commission. 1978. "1978 Assessment Ratio Study and Thirty-third Annual Report of the Proceedings and Decisions of the Missouri State Tax Commission." Jefferson City, MO.

Schoening, Robert M. 1980. "Real Property Assessment Equalization and Preferential Assessment of Missouri's Agricultural Land: Effects on the Tax Incidence of Real Property Categories." (unpublished M.S. thesis) Columbia, MO: Department of Agricultural Economics, University of Missouri.

<u>State excel Cassilly v Riney</u> [576 S.W. 2d 325 (Mo. 1979)].

U.S. Department of Commerce, Bureau of the Census, <u>Governmental Finances in 1976-1977</u>, GF77, No. 5, Table 5, p. 19.