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Assessment of Farm Real Estate for Taxation Purposes in Brown County, South Dakota

P. Hansen
South Dakota State University

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by

Peter Hansen

Agricultural Economics Department
Agricultural Experiment Station
South Dakota State College of Agriculture
and Mechanic Arts
Brookings, South Dakota

Preface

This brief study of assessment of real estate is to be considered only as a preliminary survey of some of the problems relating to the highly controversial subject of real estate taxation and, more especially, to the assessment problem. It is intended to be a statistical description of certain existing situations which are believed to be common in South Dakota land assessment and to point out problems arising from such situations. It also indicates some possible lines of further study for the correction of such problems but because of its limited scope, it permits very few definite conclusions.

Summary

The average assessments of townships showed little change relative to one another during the period covered by the study. That is, the percentage changes in the average assessed value show a surprising uniformity, or inflexibility, during the periods for which the fifteen townships are compared.

The assessments per quarter section in each of the six townships studied show that the largest number decreased or increased in assessed value by approximately the same per cent, or in other words, show uniform changes.

Townships with a low average assessed value tend to show the greatest range in the percentage change which took place in each quarter section during the periods shown.

Townships with high average assessments are shown to have decreased faster in assessed value since 1921 than townships with low average assessments.

Lower assessed values, unless followed by a decrease in public expenditures, will not result in a decrease in the taxes on the quarter section except where the assessment has been lowered relatively more than assessed values on other quarter sections.

Changes in assessments which are uniform for all quarter sections provide for no change in the relative tax paid by each quarter section in the township.

From the material presented it may be concluded that no evidence is here found which makes it imperative to reassess farm real estate annually or even biennially. Assessments could apparently be made much less frequently than is now the case. A period of five years between each general assessment year but with corrections every year for property showing a change in assessed value of 5 to 10 per cent may prove just as equitable and efficient as the annual assessments and perhaps with a lesser expense to the taxpayer. The yearly changes suggested in assessed values might be based upon reports which the owners could be required to give whenever improvements amounted to a certain amount (for instance, $100). The local assessor would in general be acquainted with such improvements in his township. If the change in assessed value was due to a general change in the price level, a percentage change could be made in a central office. A necessary and higly desirable prerequisite for a scientific determination of values would be a law requiring that the true value of the consideration be given with every transfer of title.

Assessment of Farm Real Estate for Taxation Purposes in Brown County, South Dakota*

by

Peter Hansen†

Introduction

In South Dakota farm real estate is assessed annually. In some other states the assessments are made at intervals of two or more years. This circular presents a study of the system in South Dakota and shows how it is working in Brown county. The results of the assessments which have been studied are presented on their own merits. While this brief study of assessment values does not go into the problem of the correctness of the individual assessments dealt with, it must be recognized that a just and accurate assessment system is necessary to a proper distribution of the tax burden.

Brown county, from which the basic data were obtained, is probably typical of the counties in South Dakota insofar as this study and its conclusions are concerned. Figure 1 presents a map which indicates the part of the county from which data were used. The problems of special interest were: First, the relationship between average assessment values in one township as compared to those of other townships. For this part of the study 15 townships were averaged. Second, the variation between actual assessments from one quarter section to another. For this part of the study data were taken for 6 townships as shown in Figure 1. Third, an attempt has been made to compare the assessments to the taxes paid, as this is the criterion by which they are judged in practice.

Because the basic material for this study was collected for a broader study of land valuation, it does not lend itself to treatment of the minute details of assessment variations either for very short periods or for small areas. An example of this is the fact that the assessment data include only every alternate year back to 1915 and every third year from 1915 back to 1900. This fact eliminates the possibility of making annual comparisons. There are, however, certain problems dealing with assessments for taxation purposes which it will be the purpose of this study to bring out. The answer will throw some light on the problem of the necessity for annual assessments of farm real estate as compared with assessments with longer intervals between them.

Comparison Between the Average Assessment Values (Actual and Relative) in a Number of Townships in Brown County

The average assessments in 15[1] of the 40 townships in Brown county are shown in Table 1 beginning with the year 1909 and for every third year up to 1915, after which every second year is shown. The table shows

1. For three townships only a part of the civil township has been used in order to compare townships of equal size.

PRAIRIE OSCEOLA SAVO LIBERTY PORTAGE

ALLISON FREDERICK RICHLAND GREENFIELD LANSING DETROIT

FRANKLIN ONEOTA BRAINARD SHELBY

CARLISLE WESTPORT GARLAND COLUMBIA CLAREMONT

RAVINIA LINCOLN ORDWAY CAMBRIA PUTNEY RIVERSIDE

MERCIER ABERDEEN BATH HENRY GROTON

HIGHLAND WARNER GEM WEST HANSON HANSON

NEW HOPE RONDELL GARDEN PRAIRIE BATES
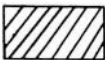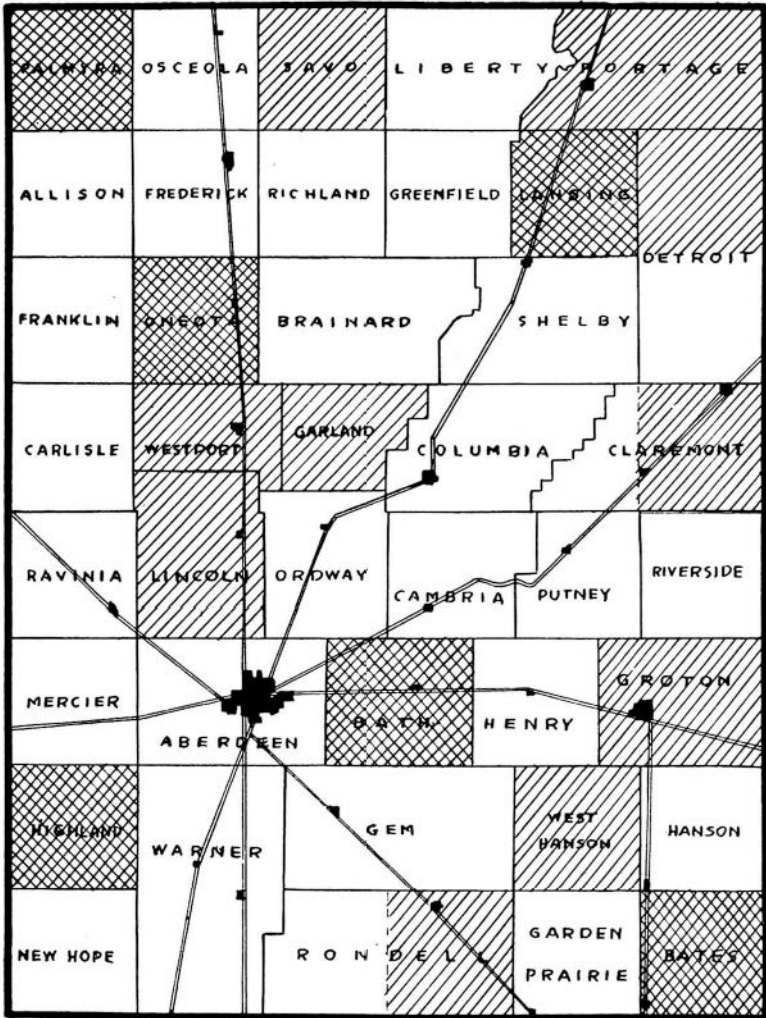
(1) Townships studied for average assessed values.

(1) Townships studied for average assessed values
and in addition for
(2) Changes in assessed value on the quarter sections.

Bath, Groton, and West Hanson as being among the townships with the highest average assessments, and Portage, Palmyra, and Lansing as being among the lowest in assessment values. The other townships in the table range between these in average assessments. The differences in average assessment values indicate, of course, differences in soils, buildings and improvements (such as fencing and drainage), location, topog-

TABLE 1.— Average assessments per quarter section in fifteen townships of Brown county

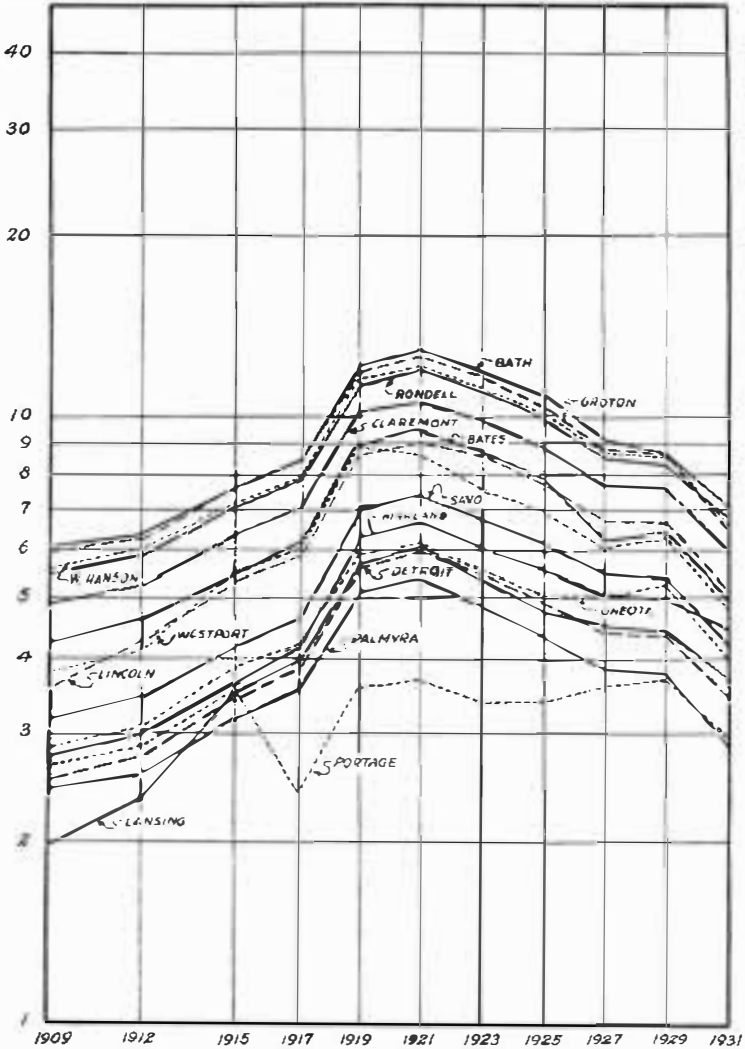| Name of Township	Years										
	1919	1912	1915	1917	1919	1921	1923	1925	1927	1929	1931
Bath	$6,057	$6,426	$7,718	$8,550	$12,162	$12,885	$11,957	$10,734	$9,130	$8,738	$7,004
Westport (inc. Garland)	3,784	4,104	5,517	6,066	8,864	8,640	7,593	6,925	6,080	6,228	4,760
Bates	4,243	4,622	5,456	6,130	8,904	9,470	8,719	7,859	6,221	6,398	4,915
Groton	5,919	6,255	7,650	8,502	11,945	12,531	11,700	10,324	8,875	8,720	6,524
Detroit (Rg. 60, Twp 127)	2,526	2,700	3,140	3,817	5,591	5,930	5,474	4,956	4,418	4,363	3,408
Portage	2,689	2,891	3,539	2,397	3,581	3,691	3,394	3,394	3,605	3,673	2,923
Rondell (Rg. 62, Twp 121)	5,454	5,335	7,184	7,830	11,340	12,054	11,086	9,906	8,559	8,394	6,711
West Hanson	5,580	6,009	7,262	7,940	11,506	12,086	11,124	10,162	8,751	8,607	6,540
Claremont (Rg. 60, Twp 125)	4,920	5,205	6,355	7,083	10,154	10,623	9,900	8,936	7,681	7,569	5,904
Lincoln	3,540	4,260	5,309	5,838	8,619	9,012	8,623	7,776	6,684	6,647	5,126
Lansing	1,980	2,346	3,512	3,941	5,670	6,084	5,418	4,868	4,512	4,458	3,683
Palmyra	2,445	2,595	3,179	3,531	5,129	5,329	4,895	4,322	3,814	3,714	2,875
Highland	2,799	3,015	3,622	4,181	6,307	6,580	6,058	5,562	5,090	4,997	4,445
Oneota	2,895	3,063	3,772	4,185	5,828	6,115	5,548	5,027	5,018	5,266	3,923
Savo	3,198	3,453	4,181	4,604	7,025	7,394	6,777	6,141	5,455	5,396	4,246

raphy, etc. To bring out more clearly the relationships involved in the assessments as shown in Table 1 it is desirable to reduce them as indices of change or, in other words, to index numbers. This will enable one not only to see where changes have taken place but also to obtain measures of the amount of such changes. Such index numbers are shown in Table 2.

TABLE 2.—Index of average assessment values per quarter section in fifteen townships of Brown county

Name of Township	Years										
	1909	1912	1915	1917	1919	1921	1923	1925	1927	1929	1931
Bath	100	106	127	141	201	213	197	177	151	144	116
Westport (inc. Garland)	100	108	146	160	234	228	201	183	161	165	126
Bates	100	109	129	144	210	223	205	185	147	151	116
Groton	100	106	129	144	202	212	198	174	150	147	110
Detroit (Rg. 60, Twp 127)	100	109	136	151	221	235	217	196	175	173	135
Portage	100	108	132	89	133	137	126	126	134	137	109
Rondell (Rg. 62, Twp 121)	100	107	132	144	208	221	202	182	157	154	123
West Hanson	100	108	130	142	206	217	199	182	157	154	117
Claremont (Rg. 60, Twp 125)	100	106	129	144	206	216	201	182	156	154	120
Lincoln	100	120	150	165	243	255	244	220	189	188	145
Lansing	100	118	177	199	286	307	274	246	228	225	186
Palmyra	100	106	130	144	210	218	200	176	156	152	118
Highland	100	108	129	149	225	235	216	199	182	179	159
Oneota	100	106	130	145	201	211	192	174	173	182	136
Savo	100	108	131	144	220	231	212	192	171	169	133

The increase shown in Table 1 from the low values in 1909 and to the peak in average assessment values in 1921 in most cases was more than 100 per cent. In Bath township, for instance, the assessments increased from $6,057 in 1909 to $12,885 in 1921, which according to Table 2 gives an increase of 113 per cent. Lansing township shows the largest increase from 1909-1921, namely, from $1,980 to $6,084, or 207 per cent. The least increase is found for Portage township where the rise was 33 per cent during this period. The decreases since 1921 have been almost as large as the increases shown above. Bath township shows a drop in assessment values from $12,885 in 1921 to $7,004 in 1931. In Lansing township the assessment values in 1931 were 86 per cent above 1909. It is also interesting to note that in Bath township the average assessed value per quarter section in 1931 was $947 higher than in 1909, while in Palmyra township the average assessed value in 1931 was only $430 higher than in 1909. Nevertheless, in 1931 average assessments in Palmyra township were 18 per cent above 1909, while in Bath township they were but 16 per cent above that year. Table 2 relates each year with the base year 1909. In other words, it shows the change that has taken place between 1909 and any given year thereafter. Such an index gives a fairly adequate picture of longtime changes but is not so useful in showing short-

TABLE 3.—Index of change in average assessment values computed for two three-year and eight two-year periods

Name of Township	Base years Year computed	1909 1912	1912 1915	1915 1917	1917 1919	1919 1921	1921 1923	1923 1925	1925 1927	1927 1929	1929 1931
Bath		106	120	111	142	106	93	90	85	96	80
Westport (inc. Garland)		108	134	110	146	97	88	91	88	102	76
Bates		109	118	112	145	106	92	90	79	103	77
Groton		106	122	111	140	105	93	88	86	98	75
Detroit (Rg. 60, Twp 127)		109	125	111	146	106	92	91	89	99	78
Portage		108	122	68	149	103	92	100	106	102	80
Rondell (Rg. 62, Twp 121)		107	123	109	145	106	92	90	86	98	80
West Hanson		108	121	109	145	105	92	91	86	98	76
Claremont (Rg. 60, Twp 125)		106	122	111	143	105	93	90	86	99	78
Lincoln		120	125	110	148	105	96	90	86	99	77
Lansing		118	150	112	141	107	89	90	93	99	83
Palmyra		106	123	111	145	104	92	88	88	97	77
Highland		108	120	115	151	104	92	92	92	98	89
Oneota		106	123	111	129	105	91	91	100	105	74
Savo		108	121	110	153	105	92	91	89	99	79

time variations. This is avoided in the next table, where the index num-ber has been computed for the last year in each given period with the first year as the base or 100 per cent.

Table 3 shows the variation for three-year periods to 1915 and for two-year periods from 1915 to 1931. Thus, in the period from 1909 to 1912 Bath township showed a 6 per cent increase while between 1912 and 1915 it showed a 20 per cent increase. It will be noted that this 20 per cent increase is over 1912 valuation and not 1909. The most frequent change during the period 1909-12 is a 6 to 9 per cent increase while the three-year period 1912-15 most frequently shows a 20 to 25 per cent increase. With a few exceptions where the increases have been somewhat above these percentages it must be pointed out that the changes in the most townships show a very uniform increase in the average assessments. During the first of the two-year periods, 1915-1917, the uniformity is even greater, as only one township (Portage) differs radically from the other townships which show increases from 9 to 12 per cent, with a single township increasing 15 per cent in assessed value. In the other two-year periods shown it is found that this uniformity in changes of the average assessed value as between townships has been maintained.

The question now arises whether the uniformity shown in these short periods is continued into longer periods.

TABLE 4.—Index of change in average assessment values computed for periods of four years

Name of Township	Base year Year computed	1915 1919	1919 1923	1923 1927	1927 1931
Bath		158	98	76	77
Westport (inc. Garland)		161	86	80	78
Bates		163	98	71	79
Groton		156	98	76	74
Detroit (Rg. 60, Twp 127)		163	98	81	77
Portage		101	95	106	81
Rondell (Rg. 62, Twp 121)		158	97	78	78
West Hanson		158	97	79	76
Claremont (Rg. 60, Twp 125)		160	97	78	77
Lincoln		162	100	78	77
Lansing		161	96	83	82
Palmyra		161	95	78	75
Highland		174	96	84	87
Oneota		155	95	90	78
Savo		168	96	80	78

In Table 4 the chain index is computed for four periods of four years in duration. Here the index numbers show that even for periods as long as four years there is but little change in the relative average assessment value. For the period 1915 to 1919 all townships except three increased by 56 to 63 per cent, or at a rate which showed no material difference between townships. This difference was (with the exception of two townships) even less during the next four-year period, when it amounted to only 3 per cent. The variation during the next two periods is somewhat greater but the uniformity in change is likewise very great.

Figure 2 shows graphically the relationship between the average assessment values in the 15 townships and the variations from this relationship. This is a ratio chart; that is, the actual figures have been plotted on a scale such that the percentage changes are pictured, rather than the absolute changes. This brings out the uniform, almost inflexible, relationship as between townships. Especially is this the case during the

period of high land values. Variation from the trend of assessment values in the other townships is shown for Lansing and Lincoln townships during the years 1909 to 1915, and from the last year mentioned the figures show an extreme variation for Portage township which does not again approach normal average assessment values until 1927. Other townships show variations from the normal relationship for shorter periods, especially during the last years shown. Such deviations in the relative average assessment values as compared to other townships have accounted for the larger changes shown in the tables previously presented.

The uniformity of change in assessed valuation as shown by the tables (especially 3 and 4) and by Figure 2 brings up the question of the necessity of annual assessments of farm real estate. If it is true, as these data seem to indicate, that township land valuations move together upward and downward with so great a uniformity, then it appears that annual assessments or even assessments every other year are not necessary except under conditions involving extreme changes. The work of adjustment between assessment periods could be done from a central office nearly as effectively and with far less cost to the tax payers.

Variations in Assessment Value per Quarter Section in Six Townships in Brown County

In order to study the variations in the assessment values by quarter sections it was necessary to adopt some measure by which it would be possible to show the variation conveniently for a large number of observations. A frequency distribution of two-year relations has been used as it seems to be the most convenient gauge for this purpose, since absolute measures of dispersion would probably be too greatly affected by differences due to the value of buildings and improvements. Because of the large amount of work connected with the conversion of the assessed value to an index basis for each quarter section, the number of townships was limited to six and only the years since 1919 were considered. The six townships selected and shown in Figure 1 are: Bath, Bates, Palmyra, Highland, Oneota, and Lansing.

The distribution of the quarter sections in each township is shown in a number of tables according to the percentage variation over a two-year period, computed by means of an index number or link relative. The first year in each period is taken as the base year and equal to 100 per cent. The last year in each period is the year measured and is represented by the index number as a percentage of the base year. Thus, a new base year has been taken to measure the change for each two-year period, as this part of the study is concerned with that phase of assessment values which brings out the variations during different periods and not the total change, over a longer period of time.

The period 1919-1921 is shown in Table 5. This happens to be the only period covered by this portion of the study with increasing average assessment values. By far the largest number of quarter sections during this period show a rise in assessed value. For the most part they fall in the index groups 100-104 and 105-109, or, in other words, show an increase in assessment values up to 10 per cent. However, the number showing identical increases is even greater than indicated from this table. In Bath township 60 of the 139 quarter sections show an increase of exactly 5 per cent. In Bates township out of a total of 131 quarter sections, 86 increased by 6 per cent. In Palmyra township 87 of 123 quarter sections

TABLE 5.—The number of quarter sections in each of six townships distributed according to change in assessed value from 1919 to 1921. (1919 assessed value = 100%.) The townships are ranked from high to low according to the average assessed value.

| Index of change | Per cent change 1919 to 1921 | Number of quarter sections in each township showing a given change | | | | | | |
		Bath	Bates	Palmyra	Highland	Oneota	Lansing	Total
Less than 70	−31 or more						1	1
70–74	−26 to −30						1	1
75–79	−21 to −25							
80–84	−16 to −20				1	1		2
86–89	−11 to −15			2		1		3
90–94	−6 to −10		2	3		7	2	14
95–99	−1 to −5	8	2	19	7	13	5	54
100–104	0 to 4	35	16	91	58	45	65	310
105–109	5 to 9	84	101		55	58	31	331
110–114	10 to 14	9	5	6	9	2	7	88
115–119	15 to 19	1	1		3	2	2	9
120–124	20 to 24	2	3		1	1	2	9
125–129	25 to 29		1				1	2
130–134	30 to 34						1	1
135–139	35 to 39						4	4
140–144	40 to 44							
145–149	45 to 49							
150–154	50 to 54							
155–159	55 to 59						2	2
More than 160	60 or more						1	1
Total		139	131	123	134	130	125	782

increased by exactly 4 per cent. Almost as great uniformity is found for the other townships during this period. A pecularity that is worth noting is the fact that there seems to be a definite tendency for greater variation in assessment values in townships with low average assessed values than in townships with higher average assessments. In Table 5 and in the tables following, the two first townships have a high average assessment value and the last four townships have a low average assessment value. The variation from year to year for the four low value townships is shown to be much greater than for the first two townships which are assessed much higher. It will be noted that whereas the range of percentage change in Bath township is from a decrease of 5 per cent to an increase of 24 per cent, the range in Lansing township, with a lower assessment value, is from a 31 per cent decrease to more than a 60 per cent increase. The same tendency appears to a greater or lesser extent in other periods.

TABLE 6.—The number of quarter sections in each of six townships distributed according to change in assessed value from 1921 to 1923. (1921 assessed value = 100%.) The townships are ranked from high to low according to the average assessed value.

| Index of change | Per cent change 1921 to 1923 | Number of quarter sections in each township showing a given change | | | | | | |
		Bath	Bates	Palmyra	Highland	Oneota	Lansing	Total
Less than 54	−46 and more				1		10	10
70–74	−26 to −30				1		1	2
75–79	−21 to −25	1	1		1	4		7
80–84	−16 to −20	2			1	9	3	15
85–89	−11 to −15	14	3	2	6	9	1	35
90–94	−6 to −10	90	103	94	102	79	107	675
95–99	−1 to −5	25	18	21	18	19	10	111
100–104	0 to 4	2	3	3	2	5	3	18
106–109	5 to 9	3		3		1		7
110–114	10 to 14	2				3	1	6
115–119	15 to 19		1		1		1	3
120–124	20 to 24				1			1
125–129	25 to 29				1			1
Total		139	129	123	134	129	137	791

Table 6 shows the changes in assessment values for 1921-1923. The largest number of cases show a decrease of 6 to 10 per cent in assessments and fall in the index group of 90-94 per cent. It is again noted that the majority of the cases shows a surprisingly uniform variation. In Bath township 46 of the 139 quarter sections decreased by 9 per cent; the corresponding number of quarter sections which showed a 9 per cent decrease in the other townships are: Bates, 83 out of 129; Palmyra, 90 out of 123; Highland, 78 out of 134; Oneota, 54 out of 129; and Lansing, 80 out of a total of 137 quarter sections. In other words, 431 or 54.5 per cent of the 791 quarter sections during this two-year period showed identically the same change.

TABLE 7.—The number of quarter sections in each of six townships distributed according to change in assessed value from 1923 to 1925. (1923 assessed value = 100%.) The townships are ranked from high to low according to the average assessed value.

Index of change	Per cent change 1923 to 1925	Number of quarter sections in each township showing a given change						
		Bath	Bates	Palmyra	Highland	Oneota	Lansing	Total
Less than 50	−50 and more						2	2
65− 69	−31 to −35				1			1
70− 74	−26 to −30			1				1
75− 79	−21 to −25						1	1
80− 84	−16 to −20	1		3		2	3	9
85− 89	−11 to −15	9	23	118	5	6	56	217
90− 94	−6 to −10	128	104	1	122	123	46	524
95− 99	−1 to −5	1	1		3		13	18
100−104	0 to 4	2	1		1	1		5
105−109	5 to 9							
110−114	10 to 14				1			1
115−119	15 to 19				1			1
Total		141	129	123	134	132	121	780

During the period 1923-1925 the massing of the number of cases in each township into one group is greater than in the previous two periods. The variation again is the least for Bath and Bates townships—the ones with the highest assessed values. In Bath township the table shows that 128 quarter sections fell in the 90 to 94 index group, or in other words, 128 of the 141 quarter sections measured decreased in assessed value be-

TABLE 8.—The number of quarter sections in each of six townships distributed according to change in assessed value from 1925 to 1927. (1925 assessed value = 100%.) The townships are ranked from high to low according to the average assessed value.

Index of change	Per cent change 1925 to 1927	Number of quarter sections in each township showing a given change						
		Bath	Bates	Palmyra	Highland	Oneota	Lansing	Total
Less than 50	−50 and more						4	4
50− 54	−46 to −50							
55− 59	−41 to −45						1	1
60− 64	−36 to −40		1					1
65− 69	−31 to −35		4					4
70− 74	−26 to −30		17					17
75− 79	−21 to −25	3	34	1				38
80− 84	−16 to −20	124	64	1	2	3	1	191
85− 89	−11 to −15	13	6	5	36	3		64
90− 94	−6 to −10		3	106	90	2	115	316
95− 99	−1 to −5	2		6	4	102		114
100−104	0 to 4	1	1	3	1	8	2	16
105−109	5 to 9				1	13		14
110−114	10 to 14	1		1		2		4
115−119	15 to 19							
120−124	20 to 24					1		1
Total		144	130	123	134	131	123	785

tween 6 and 10 per cent. Of these 128 quarter sections 90 dropped by exactly 10 per cent and 33 by 9 per cent. In Bates township the assessments in 103 of the 109 quarter sections was lowered by 9 to 10 per cent. In Palmyra township 80 of 123 quarter sections showed a decrease of 15 per cent, which show a relatively larger change, indicating, perhaps, an adjustment in assessments as compared to other townships. In Highland, Oneota, and Lansing townships about the same change is shown as in the townships already mentioned.

The period 1925-1927 shown in Table 8 appears to be a period where assessment values were materially lowered and to a different extent. Thus, it seems evident from this table that assessments in the townships with high valuations dropped considerably more than assessments in the lower valued townships. For instance, in Bath township the table shows that 124 of 144 quarter sections dropped by 16 to 20 per cent, while in Oneota, a township with much lower assessment values, 102 of a total of 130 quarter sections dropped by only 0 to 5 per cent. And in Lansing, another township with low average assessments, the decrease for 115 of 123 quarter sections was only 6-10 per cent. In Bates, Palmyra and Highland townships similar reductions in assessment values are indicated, with Bates township showing the greatest decrease and Palmyra township the least.

TABLE 9.—The number of quarter sections in each of six townships distributed according to change in assessed value from 1927 to 1929. (1927 assessed value = 100%.) The townships are ranked from high to low according to the average assessed value.

Index of change	Per cent change 1927 to 1929	Number of quarter sections in each township showing a given change						
		Bath	Bates	Palmyra	Highland	Oneota	Lansing	Total
75– 79	−21 to −25		1	1			2	4
80– 84	−16 to −20	1						1
85– 89	−11 to −15		3		1		2	6
90– 94	− 6 to −10	3	8	12	4		14	36
95– 99	− 1 to − 5	125	13	110	113	4	47	412
100–104	0 to 4	12	71	1	13	108	53	258
105–109	5 to 9	1	23		1	14	1	40
110–114	10 to 14		7			4	1	12
115–119	15 to 19		2				1	3
120–124	20 to 24		3					3
125–129	25 to 29							
130–134	30 to 34							
135–139	35 to 39		1					1
140–144	40 to 44							
145–149	45 to 49							
150–154	50 to 54		1					1
More than 200	100 or more						2	2
Total		142	128	124	132	130	123	779

In Table 9, which shows the change in the period 1927-1929, the three townships, Bath, Palmyra, and Highland show the largest number of quarter sections decreasing in assessments by 0-5 per cent. The greatest number (73 per cent) of these changed in assessed value by only 1 per cent. Most of the changes which took place in Bates and Oneota townships are about equally small. The main difference in these townships is that the changes are upward. In Lansing township an almost equal number of quarter sections showed increases and decreases in assessment. A total of 47 quarters decreased in value by from 0 to 5 per cent, while 53 quarter sections showed an increase of 0 to 4 per cent.

TABLE 10.—The number of quarter sections in each of six townships distributed according to change in assessment value from 1929 to 1931. (1929 assessed value = 100%.) The townships are ranked from high to low according to the average assessed value.

Index of change	Per cent change 1929 to 1931	Number of quarter sections in each township showing a given change						
		Bath	Bates	Palmyra	Highland	Oneota	Lansing	Total
Less than 50	-5 0 or more						3	3
50- 54	-46 to -50							
55- 59	-4 1 to -45						2	2
60- 64	-36 to -4 0						1	1
65- 69	-3 1 to -35	2		1	1	12	1	17
70- 74	-26 to -30	3	14	5		72	2	96
75- 79	-2 1 to -2 5	85	97	82	89	38	5	396
80- 84	-16 to -2 0	43	15	18	9	6	54	145
85- 89	-11 to -15	4	2	13	24	1	41	85
90- 94	- 6 to -10			1	7	1	7	16
95- 99	- 1 to - 5				1		1	2
100-104	0 to 4	1			1			2
105-109	5 to 9						1	1
Total		137	129	126	132	130	118	766

In the period 1929-1931, which is shown in Table 10, practically all assessments show a decrease. The massing of cases in one group is not as great as in some of the earlier periods discussed. However, the tendency to change at the same rate is as pronounced, the largest number showing a decrease of about 25 per cent. The largest drop appears to have taken place in Oneota township with 72 of 130 quarter sections decreasing 26-30 per cent, while in Lansing township, out of 118 quarter sections, 54 dropped 16-20 per cent and 41 dropped 11-15 per cent.

The analysis of the variations in the assessments per quarter section has not been applied to the four-year period. But it is more than likely that such an analysis would have shown the same characteristics as are found in the two-year period. The figures already presented indicate beyond doubt that the greatest number of the quarter sections in these townships changed in assessed value at nearly the same rate, and many of them showed exactly the same rate of change. From this it appears that the annual assessment of farm real estate could be greatly simplified. One example of how this might be done can be shown for Bath township for the period 1925 to 1927. During that period 124 of the 144 quarter sections used in this study show a decrease in assessed value of 16-20 per cent, or a decrease of very nearly the same extent. Assuming that the changes made were equitable, this indicates that it was more a question of adjusting the assessed values of these quarter sections to a new price level than of actually making new assessments. Only 20 of the 144 quarter sections appear to have needed reassessing and no more than 4 of these needed reassessing badly as compared to the other 140 quarter sections. The much smaller decrease in assessed value of the 4 quarter sections probably was due to changes in improvements. The same township during the period 1927-1929 shows that only 4 quarter sections changed more than 5 per cent in assessed value. It appears that it would be preferable to make a reassessment only for such property where it is obvious that there has been a significant increase or decrease in value of the property, such changes in assessments to be made by the county assessor when recommended by the representative in the township.

Differences Between the Changes in Average Assessments on Land With High Average Assessment Value as Compared With Low Average Assessment Values

In the tables presented thus far some indications are found of differences in the relative variations of the average assessment values between townships with high values as compared to townships with low values. Futhermore it is found by comparing the townships (Table 5-10) that the variations in the assessments per quarter section seem to be greatest on the land with the lowest average assessments.

TABLE 11.—An index number comparison of five townships with high average assessed value to five townships with low average assessed value

Group	Year		
	1909	1921	1931
Five high townships* ------------------ 100		215	116
Five low townships† ------------------ 100		233	148

* Includes Rondell, Groton, Bath, West Hanson and Claremont townships.
† Includes Palmyra, Portage, Detroit, Lansing, and Oneota townships.

Table 11 shows the index of change in five high and five low townships for 1921 and 1931 as compared to the base year 1909. The increase for the high value townships was 115 per cent up to 1921, which is expressed by the index number 215; this increase compares to 133 per cent in the low value townships. For the period 1921 to 1931 the decrease was 46 per cent in the high value townships and 36 per cent in the low value townships. The explanation for this tendency of the lower valued land to decrease at a slower rate than the higher valued land may be a desire to keep the tax rate down, and perhaps it also is due to the possibility that more improvements have been placed on this land since 1921 than on the land in the townships with higher average assessment. The greater percentages variation in the assessments on the quarter sections in townships with low, as compared to townships with high assessed value, is perhaps caused in part by improvements such as buildings, fences, etc.

Extreme Variations.—Such were found for several quarter sections during the time covered by this study. These extreme variations are inter esting because they show how much assessment values eventually may fluctuate unless some statistical measure is introduced by which land values can be measured, and which can be used by the assessors in their work of assessing farm real estate. One section in Lansing township was found to show particularly large variations during the period covered.

TABLE 12.—Showing extreme variations as expressed by index numbers of assessed value in one section in Lansing township. (Base year 1909 = 100%.)

Description	1912	1915	1917	1919	1921	1923	1925	1927	1929	1931
Lansing township, Section 1,										
NE¼ ------ 112		167	194	176	20	16	71	15	37	31
NW¼ ----- 116		178	208	239	302	282	245	141	158	157
SE¼ ------ 107		167	184	186	134	42	131	9	9	66
SW¼ ---- 117		181	199	134	140	128	107	5	31	61

The index numbers in Table 12 are figured with 1909 as the base. The greatest increase during the period 1909 to 1921 is shown by the NW quarter which increased 202 per cent in assessed value, and in 1931 still was 57 per cent above the 1909 value. The greatest variation is found in the index number for the SE quarter which increased by 86 per cent in assessment from 1909 to 1919. During the next period it dropped so much that in 1921 it was only 34 per cent above the 1909 value. This drop continued and in 1923 the assessed value was less than half of the 1909 value. This changed during the next period when the assessed value was tripled. However, this gain was completely lost in 1927 when the assessed value was slashed to less than one-tenth of the 1909 value. A still more remarkable change is shown from 1929 to 1931 when the quarter was assessed at more than six times its 1929 value. That these changes are very exceptional and very erratic is true, but it shows, nevertheless, what extreme changes may occur in assessments.

Assessment Values and Taxes

Before proceeding with a discussion of assessments and taxes it may profitably be pointed out that certain differences exist between individuals and government agencies in their approach to the problems of expenditure. The individual makes up his budget according to his income and governs his expenditures accordingly. The governmental units, however, make up the budgets according to what they determine is needed for the support of governmental services and then proceed to fit the income to these expenditures. The only possibility for a decrease in taxes is then seen to be a slash in public expenditures. It therefore becomes apparent that without a decrease in expenditures no benefit can be derived from a drop in assessment because the tax levy in that case is bound to go up. Following the same reasoning it is evident that a rise in assessments does not necessarily mean an increase in the tax paid, since the tax rate obviously will decrease unless there have been increases in expenditures.

TABLE 13.—Comparison between average assessments, tax rates, and tax paid in Bath, Lansing, and Palmyra townships biennially, 1919 to 1931

	Years						
	1919	1921	1923	1925	1927	1929	1931
Bath: Average assessment	$12,162	12,885	11,957	10,734	9,130	8,738	7,004
Tax rate (mills)	10.65	11.65	12.83	15.04	17.16	18.76	15.69
Total average tax paid	$129.53	150.11	153.41	161.44	156.67	163.92	109.89
Lansing: Av. assessment	$ 5,670	6,084	5,418	4,868	4,512	4,458	3,683
Tax rate (mills)	11.25	12.15	13.00	16.74	17.32	15.95	13.73
Total average tax paid	$ 63.79	73.92	70.43	81.49	78.15	71.11	50.57
Palmyra: Av. assessment	$ 5,129	5,329	4,895	4,322	3,814	3,714	2,875
Tax rate (mills)	11.55	16.75	15.86	22.82	23.20	25.48	21.84
Total average tax paid	$ 59.24	89.26	77.63	98.63	88.48	94.63	62.79

In studying assessment values and taxes as shown for Bath, Lansing, and Palmyra townships in Table 13, it is seen that a decrease in assessments often is followed by a rise in the tax rate. The fact that assessments are lowered is therefore not equivalent to lower taxes. Only when the assessments on certain quarters are lower in comparison with other quarters than they were previously, the rate being the same, will the tax paid be decreased in actual amount as the result of a decrease in assessment.

The taxes paid to state and county are paid according to the same levy for all townships in the county. Since the average assessments in the townships, as seen from Figure 2, maintained about the same relationship during these years it means that the changes in the relative amount of tax paid as between townships was rather unimportant. It may therefore be said that there is no need for annual assessment as shown from this evidence.

The total property taxes paid include state, county, and local taxes. Local taxes are mostly school and road taxes, and in many cases include a levy for the release of a bond issue. Together the state, county, township, and school levies make up the total tax levy. The changes taking place in the assessments of the different quarter sections is then significant as it determines how much tax one quarter section shall pay as compared to the neighboring quarter section. The changes in relative assessments which have taken place between the major part of the quarter sections in the townships during each two-year period has already been shown to be insignificant. However, an example may make this clearer.

Perhaps one of the most characteristic examples is to be found in Bath township and has already been mentioned earlier in this study. During the period 1927 to 1929 of a total of 142 quarter sections in Bath township, 98 were found to have decreased by one (1) per cent in assessed value. A decrease of from 0 to 5 per cent was found for 125 quarter sections. This example is chosen because of the low percentage change, but it does not represent the greatest uniformity of change. Bath township for the period 1923-25 shows that 128 quarter sections changed by 6 to 10 per cent and Palmyra township during the same period shows that 118 out of 123 quarter sections changed by 11 to 15 per cent. According to Table 13 the tax paid per quarter section in Bath township in 1927 was $156.67 while in 1929 it was $163.92. If we consider the 98 quarter sections which showed a decrease of one per cent in assessed value during this period as representing the average assessment, we should expect the tax paid to be one per cent lower, or $155.10, assuming that no change took place in the tax levy. Instead we find that the average tax was $163.92, or 4.6 per cent higher, due to a rise in the tax levy from 17.16 to 18.76. However, if there had been no decrease in the assessments it may be said that the tax would have been one per cent or $1.65 higher. But it is quite evident that had it not been for the decrease in assessments it would not have been necessary to increase the tax levy quite so much. In other words, the decrease in tax paid, due to the change in assessment, was insignificant and would have approached zero if all the 142 quarter sections in this township had decreased in assessed value by one per cent. The point emphasized is not that the change was only one per cent, but the fact that even when the changes are greater they become insignificant relative to the tax paid when all or the major part of the quarter sections in a township show changes which are nearly indentical. It makes no difference to anyone in the township whether the tax is levied on 50 per cent or 100 per cent of the actual value as long as the assessments are uniform.

A small number of quarter sections, in each township during the periods covered, show a rather large change which in general may be expected to be caused by improvements such as new buildings erected or by fencing, etc. Such quarter sections should, of course, be reassessed, but it seems unnecessary to reassess 142 pieces of real estate because four pieces need to be reassessed.