

Trends and Variations
in Local Finances:
The Case of Iowa Counties

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Trends and Variations
in Local Finances:
The Case of Iowa Counties

Deil S. Wright
Associate Professor of Political Science

Institute of Public Affairs
The University of Iowa
Iowa City - 1965

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Foreword

One of the most discussed topics in Iowa today is the cost of local government—school, municipal, and county—and the heavy reliance on the property tax to finance local governmental functions. A recent study published by the Institute of Public Affairs and the Iowa Center for Research in School Administration, *A Half-Century of Local Governmental Finances: The Case of Iowa—1910-1960*, reviewed the finances of these units of government. This particular study focuses on counties—their expenditures and their tax revenues.

References to a "Technical Appendix to Iowa Local Governmental Finance Studies" will be found throughout this study. The technical appendix explains the sources and manipulation of data and presents tabular material in greater detail for both *A Half-Century of Local Governmental Finances* and this study. Copies are available on request to the Institute.

We hope this study will help provide a better public understanding of the financing of county government in Iowa and elsewhere.

Dean Zenor
Director

7-2-65 Institute Pub. Aff. Gift

Preface

The study of county government has seldom proved rewarding either from the standpoint of instituting major governmental reforms or from the standpoint of systematic empirical analysis. This publication attempts in a small way to correct the latter situation. It aims not only at substantive considerations in the field of county finance but is also intended to illustrate various methods of analysis that have wider applications than this particular study.

The time and effort spent in the pursuit of this research and associated writing tasks have been interesting and personally rewarding. These sentiments are in no small measure due to the counsel, encouragement, and patience of Professor Dean Zenor, Director of the Institute of Public Affairs.

My debt to several friends and associates who read a draft version of the manuscript is no less because I cannot recognize all of them by name here. I also wish to acknowledge the aid of a succession of graduate assistants who labored many hours in collecting, processing, and reworking the large amounts of data. To The University of Iowa Computer Center and to Dr. William Snider, Research Associate, I owe sincere thanks and acknowledge that without the Center's facilities the analysis in Chapters IX and X would not have been possible. I am also grateful to the staff of the Institute of Public Affairs for typing and editing the manuscript. In the latter respect Professor George B. Mather and Mrs. Donald Bryant aided immeasurably. Professor Mather also contributed substantially to the report by making some of his own data available for use in the statistical analysis.

For errors of fact and interpretation the writer alone assumes full responsibility.

D.S.W.

Iowa City
August, 1964



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Chapter I

Introduction

Public finances at the national and state levels receive so much attention and comment that many people lose sight of the fact that massive amounts of public expenditures are made at the local level. Total direct expenditures of units of local government in the United States—counties, cities, school districts, and special districts—was \$38.7 billion in 1960. This sum was substantially larger than the \$22.3 billion similarly expended by the states and about one-third larger than the \$29.3 billion in direct expenditures by the national government on civilian functions.¹

Magnitude alone, therefore, compels an awareness of local finances. But complaints about high taxes, inefficiency, corruption, and similar charges, aired in the mass media and in public and private debate, also draw attention to local finance. The interests of responsible citizens, public officials, and students of local finances stimulate the search for a clearer picture of the trends, variation, and current status of tax and expenditure levels. There seems to be a common idea: "If we could better know where we are and whither we are tending, we would better know what to do and how to do it."

Certain policy questions may be sharpened and clarified by research on local finances. For example: Are current tax (or expenditure) levels inordinately high, in comparison with those of earlier years? Does it appear that the present levels of expenditures by some units are the result of inefficient methods of operations or of faulty governmental organization? Hopefully this study will *clarify* some of these policy questions, but it neither intends nor pretends to answer them definitively.

¹ U.S. Bureau of the Census, *Governmental Finances in 1960* (C-GF60-No. 2), Tables 2 and 4. National civilian function expenditures include \$7.7 billion in interest on the national debt and \$3.7 billion in veterans' services, both of which could be considered war-related outlays. Since direct expenditures have been given it should be noted that \$7.0 billion and \$9.3 billion in intergovernmental expenditures are not included in the national and state totals respectively.

Other questions of less immediate policy significance also are worthy of systematic investigation. For example: Do the expenditure levels of general-purpose local units (e.g., counties) behave in a predictable fashion? That is, given knowledge about selected community characteristics, can we predict with any degree of confidence, what a unit's expenditures are likely to be?

Two types of questions, some oriented to policy and some to theory, are the combined concerns of this study. The broad illustrative questions mentioned in the preceding paragraph will give way to more specific questions raised as the analysis progresses. The investigation focuses almost exclusively on Iowa counties. It consists of two main parts. Part 1 examines trends over a period of time in the aggregate levels of county taxation and expenditures. Part 2 considers the variations in expenditure levels at one point in time among the ninety-nine Iowa counties.

PART 1

Historical Trends in County Expenditures and Property Taxes

Any trend analysis is, in simplest form, a consideration of changes through time. From it proceeds a fairly standardized set of questions: What, if any, consistent patterns appear? What are the magnitudes of changes during various periods of the time series? What are the character and extent of change over the entire series? How do selected parts of the time series compare with other parts? What different "levels" are reached in the series? Are the "levels" indicated by a particular series valid? That is, are they accurate measures of what they purport or intend to measure? What factors and what influences explain or account for changes observed? What accounts for the absence of change, if none is observed? How does one time series compare with another?

These questions, altered to apply to the particular type of local unit under discussion—Iowa counties—will concern us in Part I. The focal points of the discussion and analysis, the dependent variables so to speak, are the aggregate expenditures and property tax levies of the aforementioned units. Expenditure trends are considered first; trends in tax levies follow.

Chapter II

Iowa County Finances: an Overview

Counties, although technically administrative subdivisions of the state, are important units of government in all but a few states. The 1957 Census of Governments disclosed, for example, that the 3,000-plus counties in the United States spent \$5.9 billion in 1957 and raised \$2.6 billion in property taxes. These sums comprised 19.0 per cent of all local government expenditures and 21.1 per cent of all property taxes collected.¹ Iowa's ninety-nine counties in the same year were reported as spending \$129.5 million, 28.4 per cent of all 1957 local expenditures in the state. They collected \$73.4 million in property taxes which was 30.7 per cent of all property taxes collected in the state.² The financial significance of counties in Iowa is greater than in the nation as a whole.

The functions performed by counties are many, and the range of activities vary widely between states and even within states. In Iowa, county responsibilities are indicated by Table 1, showing 1957 county expenditures by function.

Highways, health and hospitals, and welfare are substantial portions of the county budget in Iowa, accounting for more than 75 per cent of county outlays. Nationally, in 1957, counties spent about 55 per cent of their total outlays on these three functions.³ Iowa counties spent larger proportions than the national percentages on highways and health-hospitals and a smaller proportion on welfare. Little significance can be attached to the divergences since the distribution of functions to counties varies widely among the states.

It should be emphasized, however, that counties are more than mere taxing and spending units although this analysis will treat their fiscal facets almost exclusively. Counties constitute a basic political unit in our two-party system. They also serve as the main organizational

¹ U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. III, No. 5, COMPENDIUM OF GOVERNMENT FINANCES, Tables 2, 5, pp. 17, 19.

² U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. VI, No. 13, GOVERNMENT IN IOWA, Tables 23, 25, pp. 10, 11.

³ *Compendium of Government Finances, op. cit.*, Table 8, p. 20.

Table 1
EXPENDITURES OF IOWA COUNTIES BY FUNCTION, 1957

Function	Total Expenditures (in millions)	Per Cent
Highways	\$ 64.4	49.8
Health and Hospitals	22.8	17.6
Public Welfare	12.4	9.6
Natural Resources	4.0	3.1
Education	3.8	2.9
Correction	.6	.5
General Control and Other	21.4	16.5
Total	\$129.5 ^a	100.0

^a Does not add because of rounding.

Source: U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. VI, No. 13, GOVERNMENT IN IOWA, Table 26.

building blocks of private and quasi-private organizations such as medical and legal societies. To a qualified extent counties also are social entities, commanding varying degrees of attachment and loyalties from differing numbers of their residents. These attachments can be quickly aroused when threats are posed to the institutional or territorial integrity of counties. County reorganization and consolidation are two of the more prominent threats.

One writer has observed that "the county is an old, familiar, honorable unit" in our governmental system.⁴ While some commentators might quibble with the third adjective, few would deny the appropriateness of the other two. But it seems necessary to add another modifier to describe the county; it is an *important* unit of government. This being the case, we take fiscal aspects of county-level activities in Iowa, spending and taxing, and subject them to historical analysis.

⁴ Ruth Baumann, *The County in Wisconsin* (Madison: Bureau of Government, University of Wisconsin, Circular 611, 1962), p. 22.

Chapter III

County Expenditures in Current Dollars, 1910-1960

Many questions might be asked about what has happened to county expenditures from 1910 through 1960. Initially we will observe and try to explain the trends in actual or current dollar outlays by Iowa counties over this fifty-one year span. The county expenditures are designated as *net* expenditures because outlays by the county boards of education have been deducted, this expense being considered in support of educational function and not a general-purpose county activity.¹

In 1910 Iowa's ninety-nine counties spent a total of \$10.6 million for county purposes. After that date county outlays followed a highly variable path before reaching a net expenditure level of \$147.7 million in 1960. The course followed by county outlays is shown in Table 2. The fluctuations in county outlays are shown in better perspective by the graphic presentation in Chart 1. The semi-logarithmic or ratio scale employed there makes it possible to show not only actual magnitudes but also comparative rates of change, since the slope of the lines shows the relative degree of change from one time period to another.² The lower line on the chart traces the trends in current dollar expenditures.

From the table and chart it is possible to isolate seven periods of varying duration in which discernible expenditure patterns exist. The periods are listed and the patterns described as follows:

¹ See the "Technical Appendix to Iowa Local Governmental Finance Studies" for sources, derivation, and characteristics of county expenditures. The "Technical Appendix" is available upon request from the Institute of Public Affairs, Iowa City. The expenditure amounts include capital outlay and interest payments on outstanding indebtedness. Payments for the retirement of debt are excluded as are the expenditures made for educational purposes.

² An excellent brief discussion of the utility, meaning, and interpretation of semi-logarithmic graphing can be found in Pauline V. Young ed., *Scientific Social Surveys and Research* (3rd ed.; Englewood Cliffs, N.J.: Prentice-Hall, 1956), pp. 384-390.

Table 2
NET EXPENDITURES OF IOWA COUNTIES IN CURRENT
DOLLARS, 1910-1960

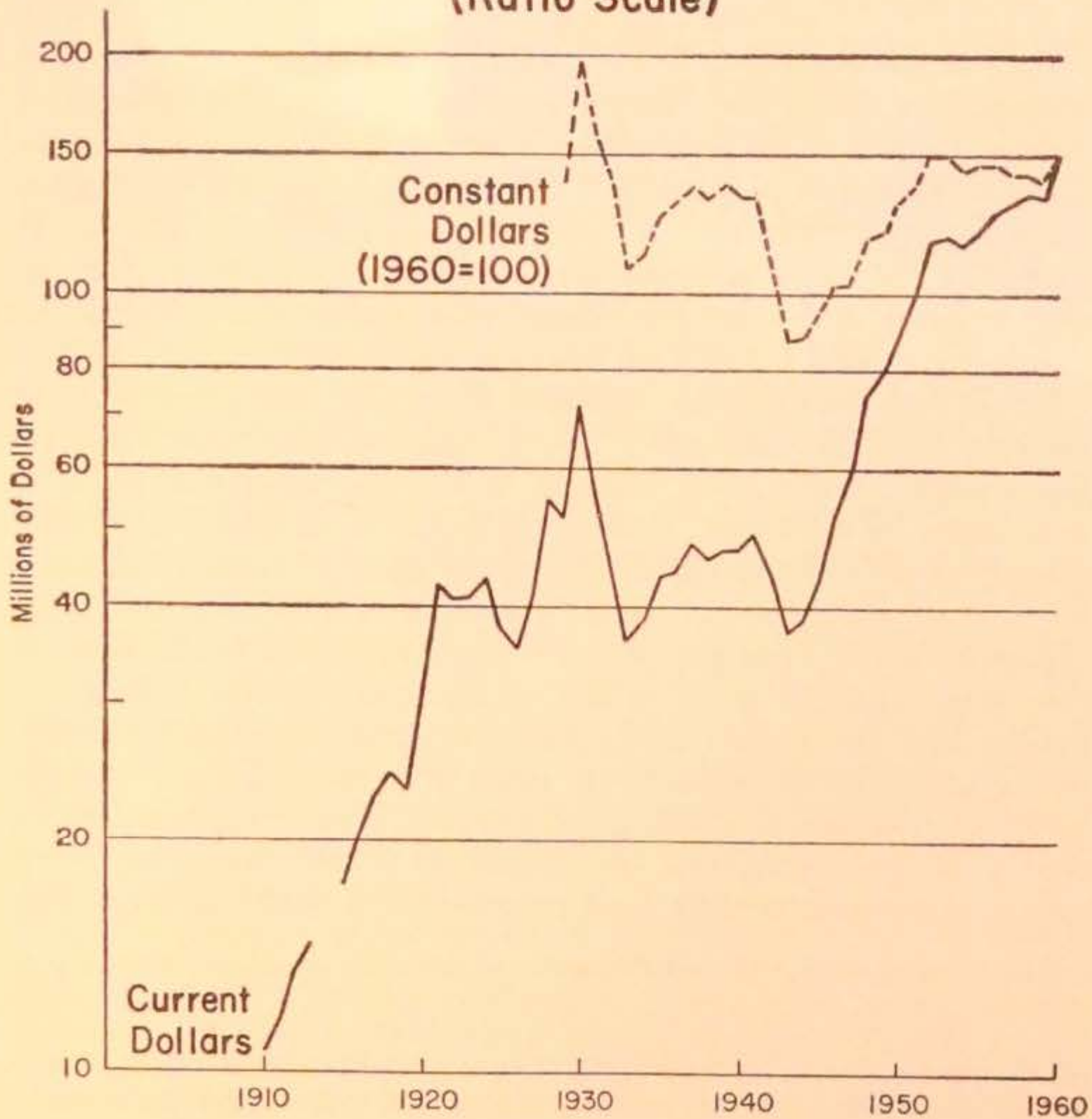
Year	Expenditures (in millions)	Year	Expenditures (in millions)
1910	\$10.6	1935	\$ 43.6
11	11.6	36	44.3
12	13.6	37	48.3
13	14.6	38	45.9
14	a	39	47.3
1915	17.4	1940	47.2
16	20.2	41	49.5
17	23.0	42	43.5
18	24.4	43	36.9
19	23.1	44	38.7
1920	31.5	1945	43.6
21	42.8	46	52.1
22	40.8	47	59.0
23	40.9	48	74.5
24	43.2	49	78.9
1925	37.2	1950	88.6
26	35.2	51	99.3
27	40.5	52	115.4
28	54.5	53	118.4
29	51.6	54	115.2
1930	72.2	1955	119.7
31	55.2	56	126.8
32	43.9	57	130.5
33	35.7	58	134.4
34	38.8	59	134.1
		1960	147.7

^a Figures not available.

Source: Derived from original data. Source references, detailed supporting figures, and discussion of methods and procedures are contained in "Technical Appendix to Iowa Local Governmental Finance Studies" (Iowa City: Institute of Public Affairs).

1. 1910-1921: sharply increasing expenditures; from \$10.7 million to \$42.8 million;
2. 1921-1930: expenditures fluctuated widely and inconsistently, from a low of about \$35.2 million to a high of \$72.2 million;
3. 1930-1937: expenditures plummeted to \$35.7 million in 1933 but rose to \$48.3 million by 1937, forming a v-shaped pattern over the eight-year span;

CHART I (Ratio Scale)



Expenditures of Iowa Counties: Current Dollars,
1910-1960; Constant Dollars, 1929-1960

4. 1937-1941: expenditures were relatively stable between \$46 and \$50 million;
5. 1941-1945: another v-shaped pattern occurred with a low of \$36.9 million reached in 1943;
6. 1945-1952: sharp and consistent increases in county outlays, with expenditures more than doubling from 1946 (\$52.1 million) to 1952 (\$115.4 million);

7. 1952-1960: moderate increases punctuated by two slight declines, with expenditures reaching their peak in 1960 at \$147.7 million.

Several observations and explanations follow from the patterns described. The first is that county expenditures, in Iowa at least, seem more vulnerable to influences that cause fluctuations in spending than do municipal units and school districts. Figures for the half century show that county expenditures varied substantially more from year to year than did those of municipalities and school districts: 11.2 per cent average fluctuation for county expenditures, 8.6 per cent for municipal, and 9.0 per cent for school expenditures.³

These variations may be explained on at least two grounds. First, the most costly functions performed by counties, those related to highways, health, and welfare, seem to be the ones most susceptible to contraction or expansion. General economic fluctuations, of course, directly affect welfare expenditures at any time. A second explanation for the ups and downs in county expenditures may be found in the character of the rural population which historically has constituted the main constituency of county government. Several students of politics have commented on the nature of agrarian political behavior, noting especially its variability in terms of participation and changeability of preferences.⁴ Perhaps, and this is little more than speculation, county budget-makers feel constrained to follow the rather sharp swings of attitudes of their rural constituents. It would be interesting

³ These percentages represent the mean of the fifty annual year-to-year percentage increases (or decreases) in aggregate expenditures for the particular type of unit. (The mean for counties is calculated on forty-eight percentage changes, because no figure exists for 1914 to show the 1913-1914 and 1914-1915 percentages.) That county expenditures are more variable comparatively speaking is further confirmed by the coefficients of variations for the annual percentage change amounts for the three types of units. The coefficients of variation (the standard deviation of the percentages divided by the respective mean and multiplied by 100) were 109.5 for county expenditures, 90.3 for municipal expenditures, and 67.7 for school expenditures. Detailed data for computation of the annual percentage changes for aggregate municipal and school expenditures are contained in the "Technical Appendix to Iowa Local Governmental Finance Studies." Throughout this study the computation of percentages, percentage changes, etc., for the county finance data have been made on the basis of original detailed figures. These detailed amounts have, in most instances, been rounded for presentation in the text tables. This may lead to slight discrepancies between these percentages and any percentages calculated from the rounded data in the text. The more detailed data on which the percentages are based appear in the "Technical Appendix."

⁴ See Angus Campbell and others, *The American Voter* (New York: Wiley, 1960), ch. 15, "Agrarian Political Behavior," pp. 402-440.

to examine this hypothesis by comparing the expenditures over time of predominantly urban as opposed to predominantly rural counties with population size held constant. The data on the variability of school district and municipal expenditures compared with county outlays given above lend some credence to the hypothesis.

It is worthwhile to seek explanations for the startling expenditure increases from 1910 to 1921; expenditures more than quadrupled in this twelve-year span. The most likely reason for such increases seems to lie in the addition of new activities to the counties' repertoire of services, chiefly drainage systems, roads, and bridges. This decade of expenditure increase coincides with the expanded use and mass production of the automobile. The advent of the automobile went hand-in-hand with changes in farming methods which permitted greater and greater emphasis on cash-crops production. Two statistics underline the farm-related mechanical revolution in this decade: in 1910 there were 50,000 autos and 1,000 tractors on U.S. farms; in 1920 the respective figures were 2,146,000 and 246,000.⁵ To raise better crops on existing land and to bring more land into production, adequate drainage systems were necessary. Adequate drainage also aided the construction of improved, all-weather roads, and the construction of roads and bridges was indispensable for the movement of crops to market. It is little wonder that considerable pressure developed for counties to build bridges, maintain roads, and provide adequate drainage systems for farm lands.

A gross measure of the impact of these pressures can be seen in county debt figures for drainage, bridge, and road purposes in the years 1910, 1915, and 1920. The indebtedness figures were, respectively (in millions), \$3.7, \$9.2, and \$16.2. Another measure of the increasing role of county government in this early era is found in the figures on the outstanding total indebtedness. As of December 31, 1910, Iowa counties had outstanding obligations of \$8.6 million. On the same date in 1915 the amount stood at \$15.9 million, and by 1920 it had skyrocketed to \$43.3 million. The expenditure and debt trends for counties in this decade can be seen as dramatic illustrations of the intertwining relationships between technology, economics, and politics.

⁵ J. Frederic Dewhurst and Associates, *America's Need and Resources: A New Survey* (New York: Twentieth Century Fund, 1955), p. 801. In Iowa the number of motor vehicles registered in 1910 was 18,870; in 1920 the number was 407,571. Most of these probably were owned by farmers. See Donald E. Boles and Karl A. Fox, *Welfare and Highway Functions of Iowa Counties: A Quantitative Analysis* (Ames and Iowa City: Iowa College-Community Research Center), p. 82.

That road, bridge, and drainage outlays were chiefly responsible for expenditure increases in the 1910-1920 decade cannot be doubted. Expenditures for these functions, especially in the form of capital improvements, certainly must have exerted a dominant influence, a supposition partly confirmed by the slackening and decline in outlays during 1917-1918 and 1918-1919. These war-related years would be precisely the ones in which local capital construction outlays for roads, etc., would have been curtailed.

But explaining political behavior in terms of one or two factors is seldom adequate. Were we to seek further explanatory factors, ones that would also account for increased expenditures for hospital, welfare, and other county activities, we should not have to search far. First, it appears that a new view of the role and scope of government was finding expression at the local level in the 1910-1920 decade. This attitude, arising in what is variously characterized today as the *positive* or *service* state, was represented and championed by the Progressive Movement from the turn of the century to World War I. Briefly and simply this view held that there are many instances when government—local, state, or national—must play an active and positive role in providing services and/or in ameliorating undesirable social conditions. That some forces were at work in Iowa counties altering traditional attitudes regarding welfare expenditures is borne out by total expenditures for county “welfare” activities: care of the poor; hospitalization of the insane, inebriates, feeble-minded, and tubercular patients; and net cost of county homes. The expenditures were:⁶

1910: \$1.625 million

1915: \$2.043 million

1920: \$3.789 million

It would be interesting and perhaps rewarding to test the hypothesis that these increases were related in impact to Progressivism by examining trends in welfare-related expenditures in Iowa counties where the progressive vote was larger as contrasted with expenditures in counties experiencing a lesser influence from the Progressive Movement. A trend analysis in forty-seven counties from 1926 to 1934 revealed that poor relief expenditures as a per cent of total county expenditures was consistently greater in the most populous counties.⁷ If these counties were also the ones experiencing the greatest impact of Progressivism, the hypothesis would be partially verified. Any firmer

⁶ Source of data: Auditor of State, *Biennial Report*, 1912, 1916, 1922.

⁷ Robert I. Wessel, *Iowa Rural Government Since 1900* (Ames: Agricultural and Home Economics Experiment Station, Special Report No. 32, April, 1963), p. 19.

statement would require the analysis of welfare-related outlays for selected counties from at least the turn of the century.

Prosperity appears to be a second broad explanatory factor underlying expanded outlays in the 1910-1920 decade. For counties to obtain and spend larger sums of money the financial resources, plus the willingness to part with them, had to exist in the private sector. That expanded resources did in fact exist can be documented from various sources. One study specifically applicable to Iowa revealed that per capita personal income increased from \$364 in 1910 to \$757 in 1919.⁸ Elsewhere it has been noted that farm income, which was unquestionably the major source of Iowans' income in this decade, increased nationally from \$7.349 billion in 1910 to \$17.681 billion in 1919.⁹

Technology and mechanization, prosperity and public attitudes combine to help explain the expanding role of county government in Iowa from 1910 to 1920. Insofar as government may be said to have life cycles, clearly this decade was a climax period for county government.

County expenditures reached an early peak in 1921 after which they fluctuated through the 1920's with no clear trend upward or downward. In addition to the two factors already noted as influences toward variable expenditures, namely, type of functions and character of constituency, three related and additional ones should be mentioned. In the first place, road and bridge expenditures continued at high levels during this decade and large amounts went for construction, a type of bond-financed outlay that characteristically varies substantially from year to year depending on judgments about service needs and the market for bond issues. Much of the road and bridge construction was financed by bonds in the 1920's, as witnessed by the massive increase in outstanding road and bridge bonds during the decade:

1920: \$ 7.7 million

1925: \$25.6 million

1930: \$92.5 million

An interesting sidelight and a matter of no small current significance is the legacy left to the state and counties by the extensive road-building activities of the 1910-1930 era. Iowa, ranking twenty-fifth in land area among the fifty states, ranks sixth in the number of miles in its rural-urban road system with 111,514 miles.¹⁰

⁸ Howard Bowen, *Iowa Income, 1909-1934* (Iowa City: Bureau of Business Research, Iowa Studies in Business, No. XIV, 1935), p. 26.

⁹ Dewhurst, *op. cit.*, p. 790.

¹⁰ U.S. Bureau of the Census, *Statistical Abstract of the United States, 1961*, pp. 161, 547.

The economic position of agriculture is a second factor that, if not contributing directly to expenditure variability, appears to be associated with the absence of an upward trend in this decade. After the sharp break in prices and the depression of 1920-1921, the agricultural sector of the economy remained in the doldrums. Per capital income figures for Iowa in the 1920's ranged mainly between \$600 and \$700.¹¹ This stability somewhat below the high income levels of 1916-1919 was in sharp contrast to the general prosperity present in other sectors of the economy during the decade of "normalcy."¹²

Willford King, in his book *The National Income and Its Purchasing Power*, shows the absolute stability and the relative decline of agricultural income in the 1920's. He comments:¹³

There seems, then, to be no ground for the frequently repeated assertion that, in recent years, the condition of the farmer has been absolutely worse off than it was before 1914, but it is true that he has failed to obtain his proportion of the remarkable increase in income characterizing the period beginning with 1923.

Iowa county expenditures in relation to local government expenditures nationally reflect a pattern similar to the one King describes regarding agricultural income. Elsewhere in the nation local units, in the aggregate, were increasing their expenditures substantially during the 1920's. Nationally, total local government expenditures increased from \$4.567 billion in 1922 to \$6.359 billion in 1927.¹⁴ By way of contrast, Iowa county expenditures dropped slightly from \$40.8 million in 1922 to \$40.5 million in 1927.

A third factor contributing to the fluctuations in county outlays during the 1920's was the legal arrangement for financing county road construction. Counties were permitted by state law to issue bonds for road construction after a favorable vote by the county electorate. Such a requirement might appear to be a substantial obstacle to road construction except for the fact that the bonds were not a direct general

¹¹ Bowen, *op. cit.*, p. 26.

¹² Dewhurst gives the figure of \$13.468 billion for agricultural income in 1928 contrasted with \$17.681 billion in 1919. *Op. cit.*, p. 790. This indicates an absolute decline in the status of the agricultural sector of the economy.

¹³ Willford I. King, *The National Income and Its Purchasing Power* (New York: National Bureau of Economic Research, No. 14, 1930), p. 309; see also p. 94 (Table 14) and Chapter 19, "Facts Bearing on Agricultural Income," pp. 291-314.

¹⁴ U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. IV, No. 3, HISTORICAL SUMMARY OF GOVERNMENTAL FINANCES IN THE UNITED STATES, Table 6, p. 23.

obligation of the county. Instead, they were issued on the pledge of state-collected gasoline tax revenues returned to counties. Under this financing plan large but highly fluctuating amounts of road construction bonds were voted in the late 1920's. For example, the sudden increase in county expenditures from 1929 to 1930 can be accounted for chiefly by a huge bond-financed road construction program. At the end of 1929 county bonded indebtedness for road purposes stood at \$60.8 million. At the end of 1930 the figure was \$88.9 million. A more inauspicious time to issue nearly \$30 million in bonds could not have been selected by deliberate choice.

The depression had an acute impact on county expenditures. As personal income in Iowa halved itself from \$508 per person in 1930 to \$254 in 1933, so also did county expenditures drop to less than half their 1930 level in the four-year span.¹⁵ Considering the dire straits of the economy and the nation, Iowa county expenditures showed rather remarkable resiliency in returning to a level around \$44 million by 1937.

Stability, or perhaps caution as a result of the depression experience, was the watchword for county outlays in the five years from 1937 through 1941. They varied from a recession-year low of \$45.9 million in 1938 to a high of \$49.5 million in 1941.

World War II and a conscious policy of curtailing local government outlays brought about dips in county expenditures through 1943, but by 1945 expenditures had nearly returned to the immediate pre-war level and they exceeded that level in 1946. Although principal payments on debt are not included in county expenditures, it might be noted in passing that county indebtedness was reduced from \$99.4 million in 1940 to \$45.0 million in 1946. The war period was one in which counties, while restricting current services, met the obligations they had contracted in the 1920's.

From 1945 through 1952 county expenditures rose from \$43.6 million to \$115.4 million. The proportionate increases during this period were about the same as those from 1910 to 1921 as may be noted from the relatively similar overall slope of the lines (see Chart 1). The average year-to-year dollar increase during 1945-1952 was \$9.3 million; the

¹⁵ U.S. Department of Commerce, Office of Business Economics, *Personal Income by States Since 1929, A Supplement to the Survey of Current Business*, 1956, pp. 44-45. The Iowa per capita personal income figures cited in the text and presented in the appendix to this report differ slightly from those in the *Personal Income* volume since interpolated population figures, rather than Census estimates, were used. Dewhurst, *op. cit.*, p. 790, reports farm income at \$6.400 billion in 1932, less than half the \$13.468 billion reported for 1928.

average percentage increase was 13.5 per cent.¹⁶ The average percentage increase from 1910 to 1921, omitting 1913-1914, 1914-1915, and the 1918-1919 decline, was 17.8 per cent. In brief, the rate of post-World War II increases in county expenditures was slightly less than the rate of expenditure increase in the second decade of this century.

The possible causes of these sharp increases can at least be identified, although in most cases the precise measurement and/or verification of their influence remains to be determined. First, and perhaps foremost, the immediate post-war period was one in which local units sought to catch up on needs deferred because of the depression and war. If Iowa counties were at all representative, they had surpluses accumulated during the war that were quickly applied to capital improvements.

Inflation also contributed substantially to increased expenditures. Like Alice in Wonderland local units had to run faster to stay in the same place if they were to provide the same level of service while costs rapidly increased. For example, the implicit price deflators developed by the U.S. Department of Commerce for reducing state-local expenditures to constant dollar amounts rose from 71.5 in 1945 to 94.8 in 1952 (1954=100).¹⁷ In other words, it required about \$4.00 in 1952 to purchase the same level of services that \$3.00 had purchased in 1945.

Another influence on county expenditures came in the form of increased grants to counties from the state. Only in the area of highways does the State of Iowa make substantial direct grants to counties.¹⁸ In 1949 a revision of the distribution of state highway funds resulted in increased road grants to counties from \$8.1 million in 1949 (state fiscal year) to \$20.7 million in 1950.¹⁹ State action thus added approximately \$6 million to county expenditures during the calendar year 1949 and about \$12 million in calendar 1950.

An unfamiliar observer might suppose that increased population would add significantly to the upward push in county expenditures. The post-war population boom often serves to explain part of many

¹⁶ These averages represent the mean of the seven year-to-year dollar and percentage increases between 1945 and 1952.

¹⁷ U.S. Department of Commerce, Office of Business Economics, *Survey of Current Business*, July (National Income Number), 1958, pp. 10-11. A discussion of the derivation of the implicit price deflators for the state-local component of the gross national product, as well as other components, may be found in U.S. Department of Commerce, Office of Business Economics, *National Income, A Supplement to the Survey of Current Business*, 1954, pp. 153-58.

¹⁸ U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. VI, No. 13, GOVERNMENT IN IOWA, p. 15.

¹⁹ State Treasurer, *Biennial Report*, 1950, pp. 67, 69.

recent expenditure rises. Such an explanation does not seem to fit the case of Iowa counties, however. The entire state's population increased only 3.3 per cent from 1940 to 1950 and sixty-six of the ninety-nine counties *lost* population, thirteen losing more than 10 per cent. It might be contended that the populous urban counties are more responsible, *proportionately*, for the expenditure increases than are the smaller ones experiencing population declines. This seems doubtful for a variety of reasons including the fact that unincorporated urbanized areas which normally place heavy service demands on counties are rare in Iowa. Furthermore, state road grants and county-financed welfare needs are distributed disproportionately to the smaller counties.²⁰ The hypothesis, which deserves testing, is that Iowa small-county expenditures have increased at a higher rate in the post-war period than have large-county outlays.

Since 1952 current county expenditures have increased at a moderate overall rate although at two points, 1953-1954 and 1958-1959, outlays declined slightly. The immediate post-war expenditure surge clearly seems to have spent itself. A trend moderately upward seems to be the best characterization of the current direction of county expenditures. The inconsistencies even within this short span, however, recall the hypothesis about expenditure variability for counties as a unit.

Seven expenditure periods have been identified and discussed. No grand conclusions are appropriate; more questions have been raised than answered and a review of the findings would be repetitious. Of more significance is the broader question: What does this review of current dollar expenditures permit us to say about comparative expenditure levels at different points in the fifty-one year span? We can say, for example, that between 1910 and 1960 county expenditures increased 1,294.7 per cent and that the 1945-1960 increase was 239.0 per cent! Are these increases inordinate and unjustified? The question is premature. These percentages are actually or potentially misleading. What they fail to take into account are changes in important variables which directly or indirectly influence expenditure levels. Some of these variables, inflation and prosperity for example, have already been mentioned. We now turn to a systematic examination of the relation between three important variables and county expenditures.

²⁰ The percentage of the 1960 population over sixty-five in several of the smaller Iowa counties ranges from 16 to 19 per cent. (The state-wide figure, highest in the nation, is 11.9 per cent.) Because farming dominates as an occupation in the smaller counties proportionately fewer of these older persons are covered by Old Age and Survivors Insurance than in the larger urban counties. Failing eligibility for categorical assistance programs, a larger proportion of older persons in the rural than in urban counties appears to become a county financial responsibility. See also Wessel, *op. cit.*, p. 4.

Chapter IV

County Expenditure Levels: Price Changes, Population, and Prosperity

Prior to discussing the relationship between these three factors—price changes, population, and prosperity—and county expenditures a brief word is in order as to our general intent.

Nineteenth century German theorists in the field of public finance sought on the basis of historical evidence to draw laws regarding the constant increase in the sphere of state action. One such "law" was Wagner's "law of the increase of state activities," which stated:¹

Comprehensive comparisons of different countries and different times show that, among progressive peoples, with which alone we are concerned, an increase regularly takes place in the activity of both the central and the local governments. This increase is both extensive and intensive: the central and local governments constantly undertake new functions, while they perform both old and new functions more efficiently and completely. In this way the economic needs of the people, to an increasing extent and in a more satisfactory fashion, are satisfied by the central and local governments. The clear proof of this is found in the statistics which show the increased needs of central governments and local political units.

Considering the overall trend it would seem that Iowa county expenditures conveniently fall within and support Wagner's "law." But Wagner's "law" and other similar ones were subjected to searching criticism by such analysts as the Italian Professor F. S. Nitti. Nitti criticized the theorists for generalizing from nominal or apparent increases rather than "real" increases. Nitti observed:²

¹ *Grundlegen der politischen Oekonomie*, Bk. IV, ch. 3 (3rd ed., 1893), as cited by Charles J. Bullock, *Selected Readings in Public Finance* (3rd ed.; Boston: Ginn and Company, 1924), p. 32.

² Bullock, *op. cit.*, pp. 39, 40.

Without doubt the increase of public expenditures is general; but it is necessary to inquire how far it is real, to inquire whether our figures are absolutely valid, and, if not, to ascertain what other elements need to be taken into account in order to present the facts in their true light.

. . .

The statistics can easily deceive us, for in economic affairs . . . there is not only the 'seen,' but also the 'unseen.' And in dealing with budgets showing public expenditures it is necessary never to stop with the 'seen.'

Nitti recommended that in comparing budgets (expenditures) over a period of time five factors be taken into account: (1) dues formerly paid in services or in kind—he was trying to trace expenditures from feudal to post-feudal times; (2) the extent of a nation's territory—boundary changes were fairly common in territorial-conscious Europe; (3) population; (4) the amount of wealth belonging to private individuals; and (5) variations in the value of money.³ In looking at Iowa county expenditures we may ignore bartering and similar feudal practices as inappropriate. Similarly, we may dispense with the difficulties posed by boundary changes. County consolidation, despite articulate advocacy, has never occurred in Iowa. We are left with three factors which in our formulation we term (1) price changes, (2) population, and (3) prosperity.

Simply put, our purpose here and in later discussions is to employ these three factors in going beyond the "seen" to the "unseen" in search of "real" measures of expenditure levels and changes therein. Indeed, what will be advanced here are alternative measures of expenditure levels! The judgment implicit in proposing them is that they provide more accurate and complete representations of the actual levels of expenditure than the widely-used "nominal" measure of current dollars. These measures are in no sense new, as witnessed by the date of Nitti's discussion (1903), but their use here has double-barreled intent. First, they may aid in sharpening and clarifying public debate over appropriate and desirable expenditure levels. Second, in a modest way their use may contribute to a general fund of knowledge about how human affairs are ordered in the area of local finances. With these preliminary remarks on record, we consider alternative measures of expenditure levels for Iowa counties.

Table 3 presents data indicating varying levels of county expendi-

³ Bullock, *op. cit.*, p. 40.

Table 3
NET EXPENDITURES OF IOWA COUNTIES BY VARIOUS MEASURES
OF EXPENDITURE LEVELS, 1910-1960

Year	Expenditures (in millions)		Expenditures Per Capita		Expenditures as a Per Cent of Personal Income
	Current	Constant	Current	Constant	
	(1)	(2)	(3)	(4)	(5)
1910	\$ 10.6		\$ 4.75		1.7
11	11.6		5.17		1.6
12	13.6		6.02		1.9
13	14.6		6.37		1.7
14	^a				
1915	17.4		7.48		2.0
16	20.2		8.63		1.9
17	23.0		9.74		1.9
18	24.4		10.27		1.7
19	23.1		9.65		1.6
1920	31.5		13.08		2.6
21	42.8		17.72		4.3
22	40.8		16.84		3.4
23	40.9		16.85		3.2
24	43.2		17.75		3.2
1925	37.2		15.23		2.7
26	35.2		14.40		2.5
27	40.5		16.52		3.2
28	54.5		22.15		4.0
29	51.6	\$139.2	20.93	\$56.41	3.6
1930	72.2	197.1	29.18	79.72	5.7
31	55.2	159.5	22.26	64.33	5.5
32	43.9	137.2	17.66	55.18	6.1
33	35.7	107.8	14.31	43.23	5.5
34	38.8	112.5	15.53	45.01	5.9
1935	43.6	124.8	17.37	49.77	4.0
36	44.3	130.4	17.64	51.88	4.7
37	48.3	136.8	19.16	54.27	3.8
38	45.9	131.6	18.18	52.09	4.0
39	47.3	137.5	18.67	54.27	4.1
1940	47.2	133.8	18.58	52.63	3.8
41	49.5	133.1	19.42	52.20	3.2
42	43.5	108.5	17.01	42.41	2.2
43	36.9	86.9	14.36	33.86	1.5
44	38.7	88.0	15.05	34.20	1.7
1945	43.6	94.3	16.86	36.49	1.8
46	52.1	102.7	20.09	39.62	1.7
47	59.0	102.4	22.68	39.37	2.0
48	74.5	116.8	28.58	44.79	1.9
49	78.9	119.9	30.17	45.85	2.3

Table 3, *continued*

Year	Expenditures (in millions)		Expenditures Per Capita		Expenditures as a Per Cent of Personal Income
	Current	Constant	Current	Constant	
	(1)	(2)	(3)	(4)	(5)
1950	88.6	131.4	33.74	50.05	2.3
51	99.3	136.8	37.63	51.83	2.5
52	115.4	151.3	43.53	57.05	2.7
53	118.4	150.8	44.40	56.56	2.8
54	115.2	143.1	43.00	53.41	2.6
1955	119.7	145.5	44.45	54.00	2.8
56	126.8	145.1	46.85	53.60	2.8
57	130.5	142.0	47.99	52.21	2.6
58	134.4	142.4	49.16	52.07	2.6
59	134.1	138.4	48.80	50.36	2.5
1960	147.7	147.7	53.47	53.47	2.6

^a Figures not available.

Source: Derived from original data. Source references, detailed supporting figures, and discussion of methods and procedures are contained in "Technical Appendix to Iowa Local Governmental Finance Studies" (Iowa City: Institute of Public Affairs).

tures according to different measures. Current expenditures are provided in Column 1 for comparison purposes.

Price Changes

Current dollars for 1929 to 1959, as shown in Column 2 of Table 3, are inflated, or expressed in 1960 dollars, using the Department of Commerce implicit price deflators for state-local government purchases.⁴ Since the price deflators are available only from 1929 the time series begins with that year. The trends in constant dollar outlays are traced graphically by the broken line on Chart 1.

Detailed discussion of the patterns formed by the constant dollar expenditures is not required but five specific points deserve mention.

⁴ U.S. Department of Commerce, Office of Business Economics, *Survey of Current Business*, July (National Income Number), 1958, pp. 10-11, and July, 1961, p. 8. See U.S. Department of Commerce, Office of Business Economics, *National Income, A Supplement to the Survey of Current Business*, 1954, pp. 153-58, for a discussion of the derivation of the price deflators. The price deflators are currently stated with the base year 1954=100 but for this analysis were transposed to 1960=100 by dividing the 1929-1959 deflators by the value of the 1960 deflator. See the appendix in this report for these deflators and other price indexes.

First, the highest constant dollar expenditure occurred in 1930. The equivalent of \$197.1 million in 1960 dollars was spent in that abnormally high year. Second, the extent to which *real* as opposed to nominal retrenchment occurred during World War II is shown in the substantially lower constant dollar outlays from 1943 to 1945 than in the deep depression year of 1933. Third, the sharp increases between 1945 and 1952 in current dollar outlays are moderated considerably when the impact of post-war inflation is eliminated. In fact, the enlarged current expenditures in 1946 and 1947 were so eroded in their real impact that 1946 and 1947 constant dollar expenditures were below the 1933 constant dollar figure. Constant dollar expenditures increased 60.5 per cent between 1945 and 1952 whereas current dollar expenditures increased 165.0 per cent over the same span. Fourth, since 1952 inflation has held real dollar county outlays at approximately the same levels or at most introduced a slight overall *decline*. Other things being equal, Iowa counties are not providing more services as measured by *real* dollar expenditures in 1960 than they were in 1952. Fifth, constant dollar expenditures of Iowa counties in 1960 were not significantly greater than in 1929, \$147.7 million and \$139.2 million.

Population

Population—the number of people served by a governmental unit—is commonly supposed, in addition to inflation, to have an important effect on governmental expenditures. Population is held constant by dividing current outlays by the state population, giving per capita figures for county expenditures since 1910, shown in Column 3 of Table 3.⁵

Population alone does not substantially reduce nominal expenditure increases. For example, while current dollar county expenditures were increasing 1,294.7 per cent from 1910 to 1960, per capita expenditures were increasing from \$4.75 to \$53.47, or 1,025.7 per cent, hardly a striking reduction. The fact that the increases are not markedly dissimilar is explained by the fact that Iowa's population growth rate in each decade since 1910 has been gradual, if not indeed slight, in comparison with national figures.⁶

⁵ The state population in inter-census years was obtained by linear interpolation. See the "Technical Appendix to Iowa Local Governmental Finance Studies."

⁶ The decade-by-decade growth in percentage terms has been:

	<i>Iowa</i>	<i>U.S.</i>
1910-1920	8.1	14.9
1920-1930	2.8	16.1
1930-1940	2.7	7.2
1940-1950	3.3	14.5
1950-1960	5.2	18.4

If it were possible to accept the assumption that counties provided services *only* to rural residents it would be interesting and worthwhile to calculate county expenditures per capita using only the population outside incorporated villages and towns. Figured on this basis the alternate "per capita" figures would show much greater percentage increases because of declining rural populations. The assumption is false, however, that the locus of county services is completely outside the boundaries of incorporated units. It would seem desirable, nevertheless, to obtain knowledge about the comparative impact of county services in rural as opposed to urban areas.

Price Levels and Population

A more valuable interpretative measure of expenditure levels can be derived by simultaneously holding constant the population and price level changes. Such a two-fold control for county expenditures since 1929 is provided in Column 4 of Table 3. (The constant dollars in Column 2 have simply been expressed in per capita terms.) If we assume that expenditures provide a gross but reasonably accurate measure of services, then the figures in Column 4 may be taken as measure of the real services per person furnished by Iowa counties.

There are at least two striking features of this time series. First, expenditure levels at the beginning and end of the array are not greatly divergent: \$56.41 in 1929 and \$53.47 in 1960. Second, from 1952 to 1960 county per capita constant dollar expenditures have trended downward except for a slight increase in 1954-1955 and a moderate increase in 1959-1960. The 1960 level, however, remains below the 1952 level of real services per person.

If 1929 may be taken as a representative benchmark for county services in the 1920's, then the general conclusion follows that the real services per person provided by counties in the 1950's is not significantly different from real service levels per person in the 1920's. Some analysts might offer the hasty and more general comment that counties have not improved one iota in three decades! Ignoring the important question of what "improved" means, we might point out that changes in productivity and technology are not incorporated in the analysis. Nitti, in his discussion of securing comparability of expenditures through time, failed to mention the possibility of increased productivity and/or the increased *quality* of the services provided by expenditures. For example, \$10.00 in per capita constant dollars spent by counties in 1960 probably purchased more durable and serviceable roads than was purchased by \$10.00 in per capita constant dollars expended in 1929.

Our conclusion that "real" county expenditures were about the

same in the 1920's and 1950's presupposes that other things are equal or held constant. In fact, other variables are not held constant. However, the step-by-step analysis not only clarified our thinking regarding levels of county expenditures but pushes toward a more general observation that currently persons in the State of Iowa are probably receiving more services from county government than in the 1920's at approximately the same real level of expenditure.

Prosperity

The effect of one additional variable, prosperity, remains to be considered. Stated in broadest fashion the question is: What is the *scope* of county government in Iowa insofar as residents rely on counties for services? The question can be put in at least two alternative ways: (1) County services, as measured by total expenditures, constitute what proportion of the annual personal income of Iowans? (2) With changing prosperity levels, as measured by state personal income, are counties being called upon to provide an increasing, decreasing, or constant proportion of the goods and services that can be purchased by state residents?

To obtain interpretative measures of the scope of county government only a simple division process is necessary—total county expenditures are divided by total personal income within the state. (An alternative route to the same result is to divide per capita county expenditures by per capita state personal income.) Personal income figures by states are available for years beginning with 1929, and an income study focusing exclusively on Iowa furnished data for approximating personal income for the state back to 1910.⁷ It should be emphasized that the income figures, particularly for the pre-1929 years, are at best estimates of personal income, not firm, precise, and indisputably accurate amounts.

The results of the computations on the scope of county government since 1910 are presented in Column 5 of Table 3. The time series of percentages can be divided logically into six distinct and relatively

⁷ U.S. Department of Commerce, Office of Business Economics, *Personal Income by States Since 1929*, 1956, pp. 142-43, and *Survey of Current Business*, August, 1962, p. 11. Data on Iowa personal income from 1910 through 1928 were secured from Howard Bowen, *Iowa Income, 1909-1934* (Iowa City: Bureau of Business Research, Iowa Studies in Business, No. XIV, 1935). Bowen's figures were adjusted by a procedure described briefly in the Appendix of this publication and in greater detail in the "Technical Appendix to Iowa Local Governmental Finance Studies." The "Technical Appendix" also contains a full discussion of the assumptions, general limits, and problems surrounding the personal income data.

homogeneous time periods. From 1910 to 1919 the scope of county government ranged from a low of 1.6 to a high of 2.0. From 1920 to 1929 the range was from 2.5 to 4.3; from 1930 to 1934, 5.5 to 6.1; from 1935 to 1941, 3.2 to 4.7; from 1942 to 1948, 1.5 to 2.2; and from 1949 to 1960, 2.3 to 2.8. The averages of the percentages in each of the periods were:

1910-1919:	1.8
1920-1929:	3.3
1930-1934:	5.6
1935-1941:	4.0
1942-1948:	1.8
1949-1960:	2.4

If we treat these averages as characterizing the varying scope of Iowa county government in the periods since 1910 then the following observations are justified:

1. The scope of county government increased substantially in each time period from 1910 through the depression years of the 1930's;
2. During the mid-40's (1942-1948) the scope of county government dropped to a level equal to that of the 1910-1919 decade;
3. The scope of county government since 1949 averaged above that of the 1910-1919 and 1942-1948 periods but averaged somewhat *below* that of the 1920-1929 decade and substantially below the 1930-1934 and 1935-1941 periods.

Comparison of the individual annual ratios reveals that some percentages in the 1949-1960 years exceed a few of the proportions in the 1920-1929 decade. Recognizing this qualification we are led to a conclusion similar to the one drawn in the immediately preceding discussion on the real levels of county services, namely, that excluding productivity increases, the level of county expenditures in recent years is not greater than in the 1920's. Here our conclusion is expressed in terms of the similar *scope* of the county government, that is, expenditures as a proportion of income. Earlier it was stated in terms of real expenditures per person. However phrased the conclusion appears interesting, significant, and strongly supported by evidence.

Two additional points deserve discussion and emphasis by way of comments on the above conclusion. First, county expenditure levels have been equated with service levels. Although the two are clearly closely associated, they are not necessarily identical. It can be argued, however, that the best estimate of aggregate service levels is provided by total expenditures. Second, the aggregate character of the expenditure data obscures substantial internal shifts in the type of functional outlays made by the counties. For example, a marked shift from road

to relief expenditures took place between the late 1920's and the depression years of the 1930's.⁸ It is not possible in the space available or with the resources at hand to pursue an analysis of the shifts in county functional expenditures over a period of years. The comments here serve only to emphasize the desirability of an extended and exhaustive study.

At this point we leave the expenditure side of the ledger and turn to the revenue side. The pattern of analysis will be very similar although the focus of interest will not be on all county revenues but rather on one particular revenue source, general property tax levies.

⁸ Robert I. Wessel, *Iowa Rural Government Since 1900* (Ames: Agricultural and Home Economics Experiment Station, Special Report No. 32, April, 1963), p. 19.

Chapter V

County Property Tax Levies, 1910-1960

The property tax has long been a mainstay of local government revenues. Counties are no exception to this general practice. In 1957 counties in the United States obtained \$2.613 billion from property taxes, an amount that represented 75.0 per cent of all county revenues from county-tapped sources.¹ It should be added, however, that counties receive substantial amounts of revenues not only from their own sources but from other units of government, chiefly state governments. In 1957 this intergovernmental aid to counties was \$2.133 billion, or 38.0 per cent of the \$5.616 billion obtained by counties from all general revenue sources.² Thus counties not only rely heavily on the property tax but also are dependent on substantial state subventions.

Iowa counties, however, as the figures presented in Table 4 show, rely more heavily on the property tax and on their own revenue resources than is the case nationwide. Likewise Iowa counties receive a smaller proportion of their total revenues from the state than other counties in the country. These data are interesting but are slim and superficial as a base for interpretations or conclusions. Because of their aggregate character the nationwide data mask tremendous differences in sizes and types of counties. Furthermore, interstate variations in the division of functions between a state and its counties produce by accident, caprice, or design, considerable variations in what are considered "county" functions and "county" revenues. The data serve a simple descriptive function, namely, identifying the extent to which Iowa counties rely on the property tax and on intergovernmental revenue.

In this chapter we consider historical changes in the nominal levels of county property tax levies. In the following chapter we will treat the influence of price, population, and prosperity on county levies to

¹ U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. III, No. 5, COMPENDIUM OF GOVERNMENT FINANCES, Tables 1 and 2, p. 17.

² *Loc. cit.*

Table 4
REVENUE SOURCES OF IOWA COUNTIES AND COUNTIES NATION-
WIDE, BY TYPE OF REVENUE, 1957

Revenue Source	Iowa Counties		Counties Nationwide	
	Amount (in millions)	Per Cent	Amount (in millions)	Per Cent
Total General Revenue	\$132.1	100.0	\$5,616	100.0
General Revenue from Own Sources	91.7	69.4	3,482	62.0
Intergovernmental Revenue	40.3	30.6	2,133	38.0
Exhibit: Property Taxes	73.4	55.5	2,613	46.5

Note: Detail may not add to total because of rounding

Source: U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. III, No. 5, COMPENDIUM OF GOVERNMENT FINANCES, pp. 17, 94.

give a more complete historical perspective to the levels and burdens of county property taxation.

The net property tax levies of Iowa counties for county purposes are arrayed from 1910 in Table 5. They are *net* levies because: (1) amounts levied for the county boards of education and county school superintendents are excluded, and (2) the counties' proportionate share of the homestead tax credit or exemption (since 1936) and the military service tax credit (since 1947) have been deducted.³ In short, the *net* levy figures come as close as possible to expressing the actual amounts levied by counties and paid by taxpayers for general county purposes.⁴ Although the term *net* will not always be used in the following discussion of tax levies, the reader should continuously bear in mind that *net* levies are objects of reference.

County net levies ranged from a low of \$10.6 million in 1910 to a

³ See the "Technical Appendix to Iowa Local Governmental Finance Studies" for gross levies, board of education and school superintendents' expenses, and the amounts allocated from homestead and military service tax credits to the benefit of counties. The extent to which counties were reimbursed by the state for tax revenue lost via homestead and military service tax credits was estimated on the basis of the ratio of county levies to the total of all property taxes levied by all units of government in the state. This proportion was multiplied by the total homestead and military tax credits and the product was subtracted from gross levies.

⁴ From the standpoint of the amounts actually paid by county taxpayers it would have been preferable to use property tax *collections*. Actual collections are usually slightly lower than the levies because of delinquencies. It was impossible, however, to develop a time series for county property tax collections. Iowa counties serve as tax collecting agents for all local units levying property

Table 5
NET PROPERTY TAX LEVIES OF IOWA COUNTIES IN
CURRENT DOLLARS, 1910-1960

Year	Levies (in millions)	Year	Levies (in millions)
1910	\$10.6	1935	\$29.5
11	12.3	36	26.6
12	13.5	37	27.3
13	18.2	38	27.3
14	17.1	39	29.5
1915	19.3	1940	30.2
16	20.5	41	30.4
17	21.9	42	30.2
18	23.1	43	28.7
19	28.4	44	27.2
1920	31.2	1945	31.0
21	31.2	46	32.6
22	30.5	47	39.9
23	32.9	48	47.8
24	33.6	49	52.2
1925	30.5	1950	54.7
26	31.3	51	58.5
27	30.9	52	61.1
28	31.4	53	64.2
29	34.6	54	64.6
1930	34.2	1955	69.8
31	30.0	56	71.3
32	27.0	57	75.3
33	21.7	58	78.8
34	26.7	59	84.1
		1960	86.4

Source: Derived from original data. Source references, detailed supporting figures, and discussion of methods and procedures are contained in "Technical Appendix to Iowa Local Governmental Finance Studies" (Iowa City: Institute of Public Affairs).

high of \$86.4 million in 1960. This represents more than an eight-fold increase over the fifty-year period. More specifically it constitutes an increase of 714.4 per cent. The dimensions of the printed page again restrict our perspective so the levies have been plotted on a semi-

taxes. No published or unpublished data give actual property tax collections for county purposes separate from tax collections for other units. The only significant differences in using levies instead of collections appeared in the early 1930's when state-wide total collections were substantially below levies in 1931 and 1932 and substantially above levies in 1933 and 1934. See the "Technical Appendix" for more detailed discussion.

logarithmic scale where it is possible to identify the absolute levels of the levies and compare rates of change over time by the slope of the lines. The solid line in Chart 2 depicts the fifty-one year pattern graphically. Three trend periods stand out: (1) 1910-1920, when levies rose sharply, (2) 1920-1945, a period of overall stability in tax levies marked by some sharp internal fluctuations in the early 1930's, and (3) 1945-1960, a second period of consistently rising levies. A few observations about each period are warranted.

The three-fold increase in tax levies in the ten-year span from 1910 to 1920 shows the side of the ledger supporting the rising expenditures noted earlier for this period. The demands for roads, drainage systems, and increased social services were buttressed by an obvious willingness to pay for them and, more significantly, to pay for them through the property tax. This willingness to pay was not confined to Iowa counties. The nationwide trend toward increased yields from the property tax slightly exceeded the Iowa increases for comparable years in this era. From 1913 to 1922 aggregate property tax revenues for all local units in the county increased 149.4 per cent.⁵ The percentage increase in Iowa county levies from 1912 to 1921 (revenues are realized the year after the levy) was 131.9 per cent.

The decade of the 1920's saw true "normalcy" in Iowa county levies. As was the case with expenditures, this stability in Iowa departed from trends nationwide. Whereas all local units in the country increased their property tax revenues 46.7 per cent between 1922 and 1927, Iowa county levies increased only 0.2 per cent from 1921 to 1926.⁶ The stable position of agriculture amid generally increasing prosperity in the 1920's is viewed as the main factor responsible for the Iowa levies departing from national trends. The fluctuations in Iowa county expenditures, it will be recalled, was traceable to road construction outlays financed by bonds and did not constitute a direct liability on the property tax.

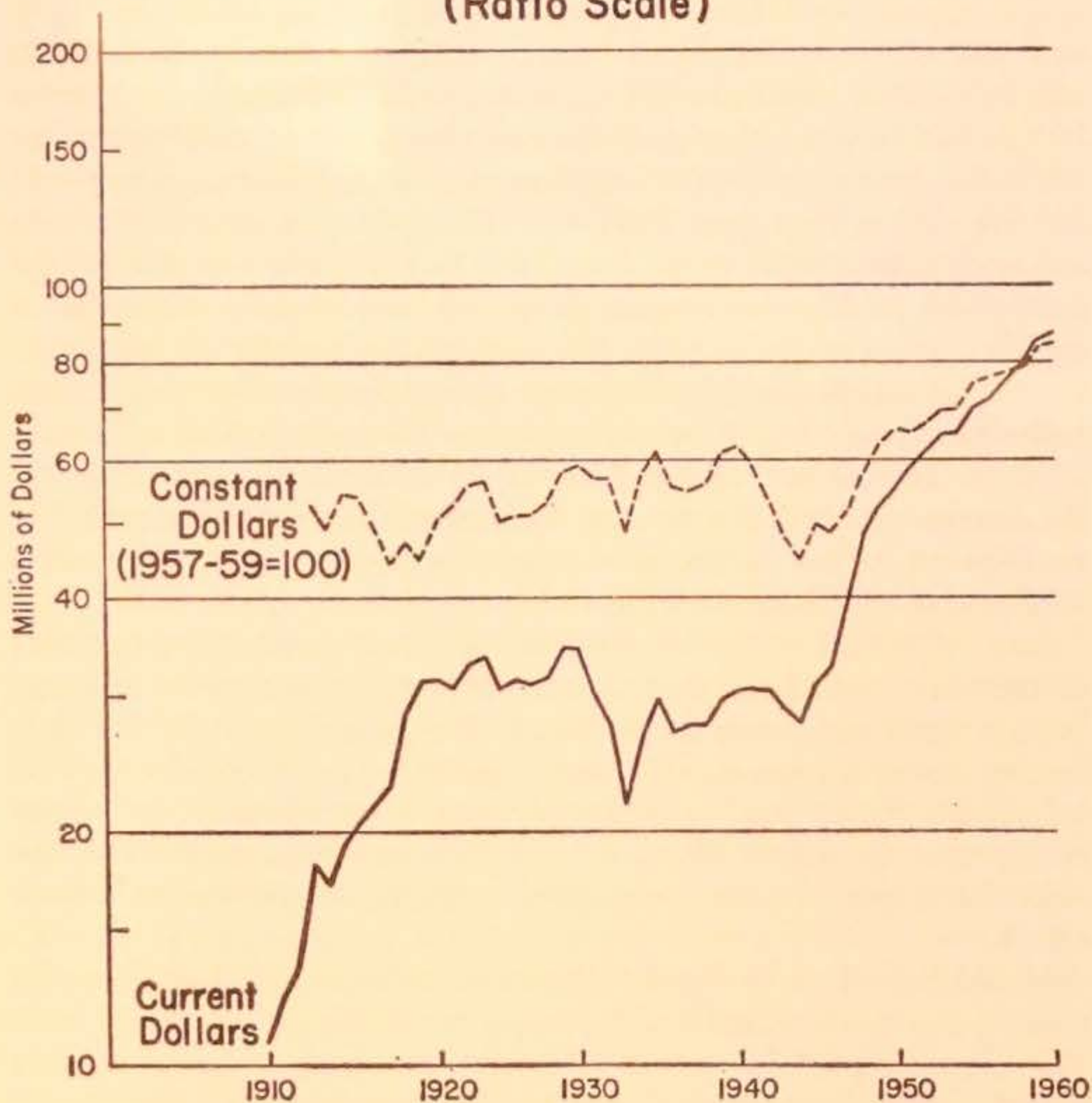
An additional factor that undoubtedly contributed to the stability of Iowa county tax levies in the 1920's was the heavy farm mortgage debt on agricultural land in Iowa during the 1920's.⁷ The estimated total farm mortgage debt in 1924 was \$1.6 billion compared with \$0.7

⁵ U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. IV, No. 3, HISTORICAL SUMMARY OF GOVERNMENTAL FINANCES IN THE UNITED STATES, Table 6, p. 23.

⁶ *Loc. cit.*

⁷ The author is grateful to Professor William G. Murray of the Department of Economics and Sociology at Iowa State University for calling this fact to his attention.

CHART 2 (Ratio Scale)



**Net Property Tax Levies of Iowa Counties: Current Dollars,
1910-1960; Constant Dollars, 1913-1960**

billion in 1915 and \$0.9 billion in 1934.⁸ The 1924 figure is generally typical of the farm debt figures through the 1920's, a time when the debt per acre of farm land mortgaged was also substantially above the figures for the preceeding and succeeding decades.⁹ Farm mortgage foreclosures were also much higher during the 1920's compared with

⁸ William G. Murray and Willard O. Brown, *Farm Land and Debt Situation in Iowa, 1935* (Ames: Agricultural Experiment Station, Bulletin No. 328, April, 1935), p. 10.

⁹ *Ibid.*

the 1910-1920 period but were much below the foreclosure rate in the 1931-1934 period.¹⁰

The impact of the Great Depression on county tax levies was sharp and severe. They plummeted by more than one-third between 1930 and 1933—\$34.2 million to \$21.7 million. Perhaps the most noteworthy fact of the 1930's, however, is the substantial rise in the levies after 1933. The levies rose to \$26.7 million in 1934 and fluctuated between \$26 and \$31 million from 1934 to 1940. Net levies remained within the same approximate range from 1940 to 1945. The adoption of the homestead credit, effective in 1936, was undoubtedly of moderate significance in contributing to the comparative stability of net levies in the 1936-1940 period. The estimated reduction in county gross levies as a result of the homestead credit device was \$3.7 million in 1936 and rose to \$4.8 million in 1940. By taking the cutting edge off the burden of the property tax the homestead exemption probably contributed to the maintenance of stable net tax levies in the late 1930's substantially above the 1933 low.

It is important to realize that the depression and recovery years marked important turning points in state and local revenue systems, both in Iowa and across the nation. In Iowa the state withdrew from levying property taxes shortly after it instituted both the sales tax and an income tax for state revenue purposes. It was largely out of the revenues of these new taxes that the broader fiscal resources of the entire state provided for progressive enlargement of the homestead credit.

World War II and a fiscal policy of curtailed expenditures brought about progressive reductions in county net levies in 1942, 1943, and 1944. In retrospect, Iowa counties might have been better advised to maintain their levies at 1941 levels. This would have fitted national fiscal policy by holding down private purchasing power and inflation. It would also have provided counties with larger surpluses at the end of the war, funds that would have met deferred needs more adequately and furnished a greater buffer against the eroding effect of post-war inflation.

Since 1945 county net levies have uniformly trended upward. The impact of post-war demands for services, the effects of inflation, and a web of other influences have pushed hard and steadily at the level of county property taxes. Consistently, if somewhat grudgingly, these seemingly irresistible forces have won successive battles with taxpayer resistance. Net levies have jumped from \$31.0 million in 1945

¹⁰ *Ibid.*, p. 16.

to \$86.4 million in 1960. There are superficial indications that since 1952 the rate of upward trend is diminishing.

Analysis of the year-to-year percentage changes in county tax levies reveals findings similar to those on the variability of county expenditures. County property tax levies were more variable in their annual percentage changes than was the case for municipal or school levies. The mean annual percentage changes were, respectively, 8.0 per cent, 7.0 per cent, and 7.8 per cent. The coefficients of variation (relating the standard deviation of the percentages to the mean) were for counties, municipalities, and school districts respectively, 90.8, 72.3, and 81.8. The character of county services and the type of political constituency are seen as primary influencing elements inducing more variability into county tax levies than into municipal or school levies. Whether the apparent leveling and stability in county levies since 1952 are indicative of an underlying change in county property tax trends cannot be inferred at this juncture.

If the past holds any clue to the future, it would appear that the presence or absence of increasing prosperity will be an important factor in conditioning future trends. If prosperous years similar to those of 1910-1920 develop (levies increased at an annual average of 13.8 per cent), we can probably expect a somewhat similar pattern of increasing levies to materialize. Increased prosperity, it should be noted, will have an economic base different from the agricultural one which buttressed taxes in the second decade of the century. Future increases in tax levies may also be predicated on a pattern of economic growth such as the one from 1945 to 1952 when net tax levies increased at an annual average of 10.4 per cent. These increases occurred at a time of moderate economic growth centering around industrial and commercial expansion. Any leveling-off in these growth factors, it is hypothesized, is likely to have an associated effect on trends in county tax levies similar to the pattern of the 1920's. Insofar as we posit future trends in county tax levies, we anticipate that they will follow as in the past the trend lines of economic prosperity, stability, or decline. This anticipation of trends in accordance with economic patterns expects that other factors will remain substantially equal. Runaway inflation, a population boom, or basic changes in state legislation concerning the property tax could significantly alter the association between tax levies and the economic cycle. An organized articulate taxpayer's protest movement could also alter future trends.

Although we may speculate on elements affecting future trends, a more immediate question confronts us. How can we more accurately

characterize the differing levels of county levies over time to offer some judgment as to the historical and comparative burden of the property tax for county purposes? We attack this question in the next chapter.

Chapter VI

County Property Tax Levels: Price Changes, Population, and Prosperity

In considering the levels of county taxation we are guided by considerations identical to those when we examined the "real" as opposed to "nominal" levels of expenditures. We wish to know the real levels, over time, of county property taxes when the "unseen" effects of price, population, and prosperity changes are taken into account.

Tax Levies in Constant Dollars

What effect has inflation had on county tax levies? How much more are taxpayers paying now than previously when the value of the dollar is held constant? The way the question is put is significant. In measuring the burden of taxes *on the taxpayer* we should employ a price index geared to translating the taxpayers' dollar into constant dollars. The Consumer Price Index (CPI) meets this criterion. Even more fortunately the CPI extends back to 1913 and recently has been adjusted to a base of 1957-1959=100.¹

Column 2 of Table 6 presents county net levies from 1913 expressed in constant dollars using CPI price relatives.² (Constant dollars are

¹ U.S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review*, Vol. 85, No. 3 (March, 1962), pp. 354-55; and *Consumer Price Index—U.S.: All Items: 1913 Forward, Series A* (processed), undated.

² It could be argued that a more appropriate price series, the index of prices paid by farmers, should be used because of the farm orientation of Iowa's economy. (The CPI is an urban-based price measure.) Three reasons prompted the use of the CPI rather than the alternative index. First, the CPI is widely used and generally well-understood. Second, the CPI is based on 1957-1959=100 whereas the index of prices paid by farmers is adjusted to the base 1910-1914=100. It seemed more suitable and comprehensible to state levies in recent dollar values than in 1910-1914 values. Thirdly, and most significantly, the two price indexes are very closely associated, tending to rise and fall in a highly similar fashion. (The two series are correlated positively to the extent that the linear product-moment $r = .979$.) Thus, no significant differences in the findings or conclusions would occur even if the farm price index had been substituted for the CPI. The CPI has been used with the recognition that there are some inherent limitations in it, as in all price indexes. See the appendix in this report for the annual price relatives.

Table 6

NET PROPERTY TAX LEVIES OF IOWA COUNTIES
BY VARIOUS MEASURES OF TAX LEVELS, 1910-1960

Year	Net Levies (in millions)		Net Levies Per Capita		Net Levies as a Per Cent of Personal Income
	Current (1)	Constant (2)	Current (3)	Constant (4)	
1910	\$10.6		\$ 4.76		1.6
11	12.3		5.46		1.7
12	13.5		5.95		1.9
13	18.2	\$52.6	7.95	\$23.04	2.3
14	17.1	48.8	7.42	21.20	2.1
1915	19.3	54.5	8.32	23.50	2.4
16	20.5	53.9	8.76	23.05	2.0
17	21.9	49.0	9.28	20.76	1.7
18	23.1	44.2	9.74	18.59	1.7
19	28.4	47.1	11.86	19.67	1.9
1920	31.2	44.6	12.95	18.55	2.6
21	31.2	50.2	12.94	20.77	3.1
22	30.5	52.2	12.60	21.58	2.5
23	32.9	55.4	13.56	22.83	2.6
24	33.6	56.3	13.79	23.14	2.5
1925	30.5	49.8	12.48	20.43	2.3
26	31.3	50.8	12.79	20.76	2.3
27	30.9	51.0	12.58	20.79	2.4
28	31.4	52.6	12.77	21.39	2.3
29	34.6	58.0	14.05	23.53	2.4
1930	34.2	58.7	13.82	23.75	2.7
31	30.0	56.6	12.11	22.85	3.0
32	27.0	56.7	10.86	22.82	3.7
33	21.7	48.2	8.72	19.33	3.4
34	26.7	57.2	10.67	22.90	4.0
1935	29.5	61.7	11.76	24.60	2.8
36	26.6	55.1	10.59	21.93	2.7
37	27.3	54.5	10.82	21.64	2.2
38	27.3	55.6	10.81	22.02	2.4
39	29.5	60.9	11.64	24.05	2.5
1940	30.2	62.0	11.91	24.41	2.4
41	30.4	59.2	11.92	23.24	2.0
42	30.2	53.1	11.80	20.77	1.5
43	28.7	47.6	11.18	18.54	1.2
44	27.2	44.3	10.56	17.23	1.2

Table 6, *continued*

Year	Net Levies (in millions)		Net Levies Per Capita		Net Levies as a Per Cent of Personal Income
	Current	Constant	Current	Constant	
	(1)	(2)	(3)	(4)	(5)
1945	31.0	49.5	12.03	19.19	1.3
46	32.6	48.0	12.59	18.51	1.1
47	39.9	51.2	15.34	19.72	1.3
48	47.8	57.0	18.33	21.87	1.2
49	52.2	62.9	19.97	24.06	1.5
1950	54.7	65.3	20.85	24.88	1.4
51	58.5	64.6	22.17	24.50	1.4
52	61.1	66.0	23.02	24.89	1.4
53	64.2	68.8	24.07	25.83	1.6
54	64.6	69.1	24.13	25.78	1.4
1955	69.8	74.8	25.91	27.77	1.6
56	71.3	75.3	26.34	27.81	1.6
57	75.3	76.9	27.69	28.26	1.5
58	78.8	78.3	28.83	28.63	1.5
59	84.1	82.8	30.60	30.15	1.6
1960	86.4	83.8	31.29	30.35	1.6

Source: Derived from original data. Source references, detailed supporting figures, and discussion of methods and procedures are contained in "Technical Appendix to Iowa Local Governmental Finance Studies" (Iowa City: Institute of Public Affairs).

based on 1957-1959 levels.) The data also are traced graphically by the broken line in Chart 2. The general pattern is quite evident.

From 1913, when the constant net levy was \$52.6 million, to 1949 there was an overall stability within a range of \$10 million on either side of the 1913 levy. Between 1913 and 1949 constant dollar levies ranged from a low of \$44.2 million in 1918 to \$62.9 million in 1949. The 1949 levy only slightly exceeded the previous high constant dollar levy of \$62.0 in 1940. The 1950 levy was the first one significantly to exceed any high during the preceding thirty-seven years. Even in the depression-bottom year of 1933, with all its pressures for tax-cutting, the constant dollar county levy did not stray far below the benchmark levy of 1913, although it did depart sharply from the levies in the years preceding and following 1933.

Prior peaks in constant dollar levies were not significantly exceeded until 1950. Nevertheless, levies rose markedly and consistently with one exception from 1946 to 1960. Constant dollar levies stood at \$48.0

million in 1946 and at \$83.7 in 1960, an increase of 74.7 per cent. We may juxtapose this percentage increase over fifteen years against two other statistics on constant dollar levies: (1) the percentage increase between 1913 and 1960, and (2) the percentage increase between the lowest levy (1918) and the highest levy (1960). The respective percentage increases are 59.3 per cent and 89.8 per cent. The bulk of the increase in constant dollar levies clearly came in the post-World War II period.

To show clearly the extent to which controlling for inflation alters the "nominal" increases in property tax levies, we may set the percentages just cited beside the percentage increases in actual levies for comparable years. This procedure is accomplished in Table 7. Under the column headed "Percentage Increase: Constant Dollars," all of the increases are below 100 per cent, the lowest being the 1913-1960 constant dollar increase of 59.3 per cent. In contrast, current dollar percentage increases are much higher, the 1914-1960 change representing an increase of 405.0 per cent.

On the basis of the preceding analysis the following conclusions about constant dollar tax levies are warranted:

1. Two patterns appear in the 1913-1960 series:
 - a. The absence of either an upward or downward overall trend between 1913 and 1949;
 - b. Rising levies from 1946 to 1960;
2. Constant dollar tax levies increased by more than one-half between 1913 and 1960, the precise percentage increase amounting to 59.3 per cent;
3. Controlling for inflation reveals that tax levies during the depression years were not radically lower than other years' levies in the 1913-1949 span;

Table 7

PERCENTAGE INCREASES IN NET PROPERTY LEVIES FOR IOWA COUNTIES FOR SELECTED TIME PERIODS, CURRENT AND CONSTANT DOLLARS, 1913-1960

Base Years	Percentage Increases	
	Current Dollars	Constant Dollars
Start-End (1913-1960)	376.0 %	59.3 %
Low-High	405.0 ^a	89.8 ^b
Post-War Increase (1946-1960)	164.8	74.7

^a 1914-1960

^b 1918-1960

Source: Derived from Table 6.

4. Controlling for inflation markedly reduces constant dollar tax levies as compared with current dollar tax levies.

Tax Levies Per Capita: Current and Constant Dollars

Tax levies per capita, expressed in current dollars, are arrayed in Column 3 of Table 6. Inspection of the data reveals that sharp as well as extensive variations appear within the time series. Detailed examination shows that the variations parallel closely the variations in actual levies, i.e., current levies *not* expressed in per capita terms. A ready explanation can be offered. Iowa's population growth has been very moderate and steady since 1910. Therefore, per capita expenditures reflect a patterning very similar to the one for current levies. Where current levies increased 714.4 per cent from 1910 to 1960, per capita current levies increased 557.4 per cent.

Per capita levies, like current levies, increased rapidly from 1910 to 1920, remained fairly stable through the 1920's, and decreased in the early 1930's. Another period of relative stability persisted from 1934 through 1946. Since the latter date a series of uninterrupted annual increases in the per capita levies has prevailed. The percentage increase from 1946 to 1960 was 148.5 per cent. This figure compares closely with the 1946-1960 increase in current levies of 164.8 per cent.

How much have county tax levies increased after we simultaneously control for population and price level changes? Our observations on this point are drawn from the data presented in Column 4 of Table 6.

A general and quite significant conclusion is derivable from a comparison of the first and last figures in the column, those for 1913 and 1960. Per capita constant dollar levies were at \$23.04 in 1913, and \$30.35 in 1960. The difference between the two figures, \$7.31, represents an increase of 31.7 per cent. This increase, spanning 47 years of county tax levies, is surprising and noteworthy. It is small in comparison to the 1913-1960 increase in current levies of 376.0 per cent and somewhat less than the 59.3 per cent increase between 1913 and 1960 in constant dollar levies. Controlling for the two "unseen" factors of price and population changes removes all but approximately a one-third increase in county tax levies from 1913 to 1960.

The fluctuations in the per capita constant dollar levies between 1913 and 1960 are several and varied, but in no case do they appear to be extreme. Low points, namely under \$20.00 per capita, appeared in the years 1917-1919, 1933, and 1943-1947. These low levels can be accounted for singly or in combination by curtailed levies, as in 1933 and 1943-1945, and by sharp rises in price levels, as in 1917-1919 and 1946-1947.

It is important to note, parenthetically, that per capita constant dollar levies were lower in the years 1944-1946 than in almost any other period from 1913 to 1960. Most taxpayers can recall this recent and comparatively low burden. No doubt this has contributed substantially to protests regarding county property taxes in particular and local property taxes in general.

The fairly consistent upward tendency in the figures since 1946 shows the impact of increasing pressures on the county tax base, pressures which have outstripped the effects of both increasing population and inflation. The question of whether the levies have outstripped rising prosperity leads us to the next topic.

Tax Levies as a Per Cent of Personal Income

Have the increases in tax levies for county purposes outrun the amount of resources in the private sector from which the taxes are drawn? Has the *burden* of county property taxes increased, decreased, or remained the same over a half-century? In more specific terms, have county property tax levies been an increasing, decreasing, or fairly constant proportion of personal income of Iowans? Column 5 of Table 6 provides the data from which our discussion proceeds.

It is necessary to caution the reader about the use and interpretation of these proportions. The annual personal income figures for the state (the denominator in the fraction from which the proportion is derived) are not "hard," precise, and unchallengeably accurate amounts particularly for the years prior to 1929. The proportions should therefore be understood as the best and most reasonable estimates ascertainable. Nevertheless, they remain rough approximations of the relation between county levies and state personal income.³

The beginning and ending proportions suggest that the burden of county property taxes was the same in 1910 as in 1960, namely, 1.6

³ See the discussion in "Technical Appendix to Iowa Local Governmental Finance Studies." Annual figures for state personal income and state personal income per capita are provided in the Appendix of this publication. Special attention is called to the fact that the per capita personal income figures will depart in varying amounts from the per capita personal income figures given in the published reports of the U.S. Department of Commerce, Office of Business Economics. (See especially the figures in the *Survey of Current Business*, August issue.) The discrepancies arise chiefly because of different population estimates for the state of Iowa used by the Office of Business Economics and those used in this study. The latter are derived from linear interpolation for the intercensus years. See the "Technical Appendix" for a more detailed discussion of this problem.

per cent. We should be quick to acknowledge, however, many fluctuations in the percentages in the intervening years.

The percentages exceeded 2.0 from 1913 to 1916 but dropped below the 2.0 figure during 1917-1919 chiefly because of agricultural and non-agricultural prosperity during World War I. They rose sharply in 1920 and 1921 as agricultural prices broke and personal income declined in the recession of 1921. (The index of prices received by farmers, on a base of 1910-1914=100, dropped from 211 in 1920 to 124 in 1921.) The percentages stabilized within a 2.2-2.7 range from 1922 to 1930. This stability further confirms the conclusion stated earlier regarding the constancy of Iowa's county finances in the 1920's, a constancy that departed from nationwide trends.

The high-level ratios of 1931-1934 reflect the severe drop in personal income during these years. They also reflect the emergency spending efforts by counties to meet rising welfare demands through increased public relief levies. County property tax levies took 4.0 per cent of personal income in 1934. Recalling that county taxes were (and are) substantially less than combined city and school taxes, we can readily understand the pressures that precipitated a taxpayer's "revolt" in Iowa at this juncture in its fiscal history. Statutory tax rate limitations and homestead exemptions were only two devices used to reduce or forestall the heavy burden of the property tax.

Following the depth of the depression the proportions repeated the pattern of the 1920's in both magnitude and in approximate stability. From 1935 to 1941 they ranged from 2.0 to 2.8 per cent. The low ratios in the war and post-war years (1942-1948) resulted from curtailed tax levies, at least for 1941-1944, and rapidly rising personal incomes from 1945 to 1948. For example, per capita state personal income rose from \$953 in 1945 to \$1,509 in 1948.

Perhaps the most significant group of figures in Table 6 shows the proportions from 1949 to 1960. The proportions exhibit a remarkable stability around 1.5. In other words, county net tax levies have annually claimed about 1.5 per cent of personal income since 1949; they have not outstripped nor been outstripped by the increasing prosperity of the 1950's. State per capita income increased from \$1,448 in 1950 to \$2,017 in 1960. Taking the levy-income ratio as a measure of the *burden* of the property tax, and we believe it is defensible to accept it as such a measure, we find the burden of county property taxes has remained *constant* since 1949. Of equal or greater significance is the finding noted earlier that the aggregate burden of county property taxes is about the same today as it was in 1910.

The data in Column 5 of Table 6 may be recast and presented in

a form such as Table 8. The proportions in Column 5 were grouped according to logical breaking points in the magnitude of the figures. Table 8 shows the range of the proportions in each period as well as the mean (average) of the proportions for that period.

The homogeneity of the proportions within each group is noteworthy as is the fact that the average for 1949-1960 is somewhat below the average for the 1910-1919 decade. The average for 1949-1960 is substantially below the average for the 1920's. The average burden of the county property tax in the 1950's is sufficiently below the burden in the 1920's that the recent average would need to be raised by about two-thirds to equal the burden level of the 1920's. Approximately the same proportionate increase would be required if the 1960 county property tax burden were made equal to the average burden for the 1920's. Thus, if the 1920's were taken as a currently acceptable "norm" so far as county taxes are concerned, counties would have voted net levies equal to 2.5 per cent of personal income in 1960, or \$143.6 million. By contrast, actual net levies in 1960 were \$83.4 million.

This contrast can easily be drawn in the opposite direction, however. If the 1960 levy were set equal to the average tax burden for 1942-1948, then 1960 county tax levies would have been at 1.3 per cent of personal income and would have resulted in an actual levy of \$74.9 million. County net levies would be reduced to about seven-eighths of their 1960 amount by taking 1942-1948 as an "acceptable norm." The conclusion to be drawn at this point must be obvious: different persons, with differing values and predilections, are likely to accept different "norms."

To the prior observations we should add two points. First, the greatest increase in the burden (proportion of income) of county property taxes has come within the post-war period. From a percentage

Table 8
COUNTY NET PROPERTY TAX BURDENS IN IOWA, NET LEVIES AS
A PER CENT OF PERSONAL INCOME BY TIME PERIODS, 1910-1960

Time Period	Range of the Levy-Income Percentages	Mean of the Levy-Income Percentages
1910-19	1.6-2.3	1.9
1920-30	2.2-3.1	2.5
1931-34	3.0-4.0	3.5
1935-41	2.0-2.8	2.4
1942-48	1.1-1.5	1.3
1949-60	1.4-1.6	1.5

Source: Derived from Table 6.

of 1.1 in 1946 county levies have risen approximately 50 per cent to 1.6 in 1960. This increase in the tax burden within the life span of many taxpayers has undoubtedly abetted sentiments critical of the levels of local taxation. Second, the proportions for the years intervening between 1910 and 1960 are, for the most part, equal to or above the proportions in the decade of the 1950's. This permits us to say that the *real* as contrasted with the *nominal* level of property taxes for county purposes has been lower in recent years than in most years since 1910.

That recent levels of county property taxation are lower than in most years since 1910 calls for some discussion and attempts at explanation. The constancy could be the result of a shifting of functions from the county to other units of government, especially to the state and national governments. This would leave counties with fewer responsibilities and therefore would not force the tax level upward. Unquestionably some centralization has occurred, particularly in the fields of welfare and highways. A comparison of county responsibilities in these two functional areas in 1910 and 1960 would probably reveal a substantial reallocation of activities upward but the comparison, even if possible, would offer only partial evidence. To the extent that an upward reallocation occurred, so much would the changes in division of functional responsibilities account for keeping the county tax burden constant.

The other side of the coin to functional centralization is fiscal decentralization; that is, central financing with local administration. The chief mechanism for accomplishing fiscal decentralization is the grant-in-aid device. The county in this situation serves as the administering and spending agent of a higher level of government. Under these conditions county expenditures would rise, as was the case with Iowa county expenditures. But the role assumed by the state (or national) government in raising funds relieves the county or other local unit of necessity for increasing its self-imposed tax burden. Long-term historical data on state grants-in-aid in Iowa are not available for local units generally or counties in particular. However, data on two major grant or subvention programs, highways and homestead and military service tax credits, permit some tentative inferences to be made.

Homestead and veterans tax credits (exemptions) constitute actual reductions in the property taxpayers' bill by reimbursement of local units out of state monies. The estimated extent to which these tax credits benefited counties is indicated for selected years in Table 9. Also presented in Table 9 are grants by the state to counties for highway purposes. The sum of these two subventions provides the

county tax burden. Few persons need to be reminded that in our federal system, with its multiple and overlapping political jurisdictions, we are subject to paying a variety of taxes to several different governments. Gross levies for property taxes in Iowa in 1960 were: school districts, \$191.3 million; municipalities, \$64.5 million; and counties \$93.8 million. It is hypothesized here by way of explanation that as the level or burden of taxation for one jurisdiction increases, the resistance to tax increases by other jurisdictions rises. As applied to Iowa counties this reasoning suggests that increases in national, state, school district, and municipal taxes have put pressure on the taxpayer's purse sufficient to keep counties from increasing, over the long haul, their claim to a larger share of personal income. Increases in national taxes are of special significance, since the federal personal income tax, which in 1960 claimed 9.8 per cent of personal income, was neither on the statute books nor judged constitutional in 1910.⁶ That counties in Iowa did lag behind other units of government in competing for property tax revenues can be demonstrated briefly. In 1910 Iowa counties levied 33.7 per cent of all property taxes spread against property rolls in the state; in 1960 they levied only 24.3 per cent of all property taxes.⁷ This decline takes on even more significance when one considers that the state government levied over 8 per cent of all property taxes in 1910. This proportion dropped to 1.0 per cent in 1960 with municipalities and school districts taking up the "slack" left by the state's practical withdrawal from the property tax field plus cutting into the share of total levies made by county governments.

In addition to the four influences mentioned above a further and fairly obvious reason may account for the 1910-1960 constancy of county tax levies. This additional factor is the legal restriction placed on certain county levies by various state statutes. A comprehensive analysis of the legal ceilings set on county levies for various purposes is beyond the scope of this study. There is a body of opinion which holds that statutory limits on taxation and bonded indebtedness are unrealistic and fail to hold property taxes down. Those opinions can neither be confirmed nor denied on the basis of the evidence at hand. There is simply the possibility, buttressed by a few instances of actu-

output and input. Such measures, especially in governmental activities, are not easily arrived at. For an analysis of the term efficiency and for a definition of the term similar to the one used here, see Herbert A. Simon, *Administrative Behavior* (2d ed.; New York: Macmillan, 1957), chapter 9, pp. 172-197.

⁶ U.S. Bureau of the Census, *Statistical Abstract of the United States, 1962*, pp. 318, 393.

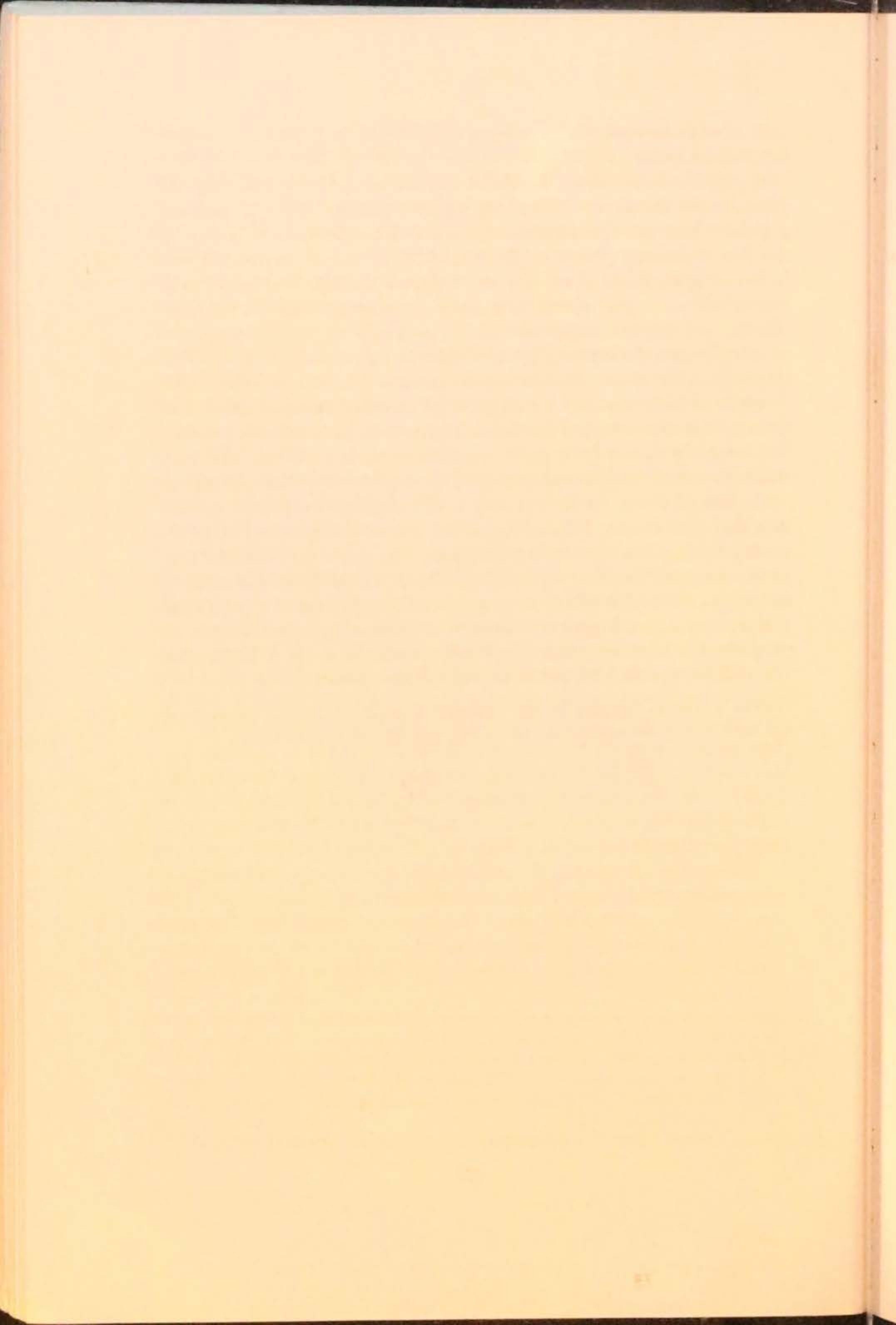
⁷ "Technical Appendix to Iowa Local Governmental Finance Studies."

ality, that state controls have been effective in restraining or reducing county levies.

A possible sixth reason has been offered as a factor inducing the comparative constancy of county property levies. This is partisan popular election.⁸ The contention here is that the county is one of the few remaining places at the local level where a measure of collective responsibility is or can be enforced through the ballot box. Almost all other local elections in Iowa are non-partisan. This responsibility, it is argued, compels county candidates to "stand-up-and-be-counted" when questions of greater spending are raised. Fear of voter reprisal under these circumstances prompts county officials, irrespective of their partisan leanings, to be more economy-minded than their school or municipal brethren. The argument is most interesting and certainly cannot be completely discounted. It would require considerable research skill and ingenuity to firmly verify the contention.

No one of these six factors singly, nor perhaps even in combination with the others, fully accounts for the maintenance of a stable county tax burden. As much as anything else these explanations may serve as a basis for more rigorous and detailed analysis of the nominal as well as the real levels of county taxes through time. To the extent that county expenditures are affected in greater or lesser degree by property tax revenues, these explanations also provide a foundation for additional critical analysis of expenditure levels.

⁸ The author is indebted to Mr. Raymond Edwards, Executive Secretary of the Iowa Taxpayers' Association, for calling this item to his attention.



PART 2

Variations in Per Capita County Expenditures

It is common knowledge that in any given year expenditure levels vary among counties or among units of any type of local government. The expenditure levels are customarily stated in per capita terms to provide a basis for comparison between units. In Part 2 we examine variations in per capita expenditures among Iowa's 99 counties at one point in time. Initially we describe variations present in total or aggregate outlays; then we identify variations in per capita expenditures for several functional outlay categories. Finally we attempt to weigh the importance of various factors in explaining or accounting for the varying levels of per capita total expenditures among Iowa counties.

This analysis utilizes expenditure data for one year, 1957. This year was selected because of the availability of detailed published data on local finances by the U.S. Bureau of the Census. The fact that data from only one year is employed clearly limits the conclusions that can be drawn. However, a description of expenditure variations plus some tentative conclusions about factors explaining the variations should provide a benchmark from which other comparisons and subsequent research can proceed. For Iowa counties these comparisons could be both backward and forward since records of prior expenditures, detailed by individual counties, are readily available. Future state reports and census data should provide the basis for a trend analysis on the relative weights various factors play in accounting for expenditure variations. Such an analysis should be especially interesting, instructive, and significant as Iowa undergoes the transition from a rural to an urban, semi-industrialized state.

Some anticipatory remarks are in order. In describing per capita expenditures we wish to know the typicalness and the variability in county outlays. By typicalness, we refer to measures that best represent the various per capita expenditure levels of the counties. Standard measures of typicalness are measures of central tendency such as the mean (average) and median. By variation in per capita ex-

penditures we mean the diversity or spread among counties according to statistical measures such as the range, quartiles, and coefficients of variation.

Following our descriptive efforts, we will attempt to explain the variations in total expenditures by examining through multiple correlation and regression analysis the degree to which several economic, social, and demographic factors are associated with varying levels of per capita expenditures. Are per capita expenditures closely correlated with population size? With measures of industrialization? With assessed valuation per capita? If we select measures of fiscal capacity, need, tax effort, and policy environment, which of these measures is more helpful in explaining the variations in per capita total expenditures among Iowa's ninety-nine counties?

Chapter VII

County Expenditure Variations: Operating and General Expenditures

Two different total expenditure categories will be used to describe variations in per capita total county expenditures. The first, Total Operating Expenditures, is the sum of the non-capital county outlays for eight functional expenditure categories reported by the Bureau of the Census for Iowa counties.¹ The eight functional categories are correction, general government, health, highways, natural resources, other expenditures, police, and public welfare. Total Operating Expenditures is the sum of current outlays for these functions.

The second summary expenditure category is Total General Expenditures. Expenditures for this category are arrived at by adding to Total Operating Expenditures the amount spent for the following three items: capital outlay, hospitals, and interest on debt. Expenditures for these three items are subject to considerable variation both from year to year and among counties. For this reason the three categories were separated from the more-or-less common functions represented in the eight categories above. For every county the two expenditure aggregates were divided by the estimated July 1, 1957, population to obtain per capita figures for each classification.²

Patterns in Per Capita Total Outlays

Table 10 presents measures of central tendency and dispersion in 1957 per capita expenditures for county operating and general expenditures. Clearly there is considerable variation in per capita expenditures among the ninety-nine counties. Operating expenditures range from a low of \$14.07 per capita (Scott County) to a high of \$90.60 (Monona County). A wider range is recorded for general expenditures which vary from \$19.86 (Black Hawk County) to

¹ U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. VI, No. 13, GOVERNMENT IN IOWA, pp. 29 ff., and Annual Reports of the Clinton and Winneshiek County Auditors for 1957.

² Population estimates for each county for 1957 were obtained by linear interpolation from the 1950 and 1960 census figures for each county.

Table 10
SELECTED MEASURES OF PER CAPITA OPERATING AND GENERAL
EXPENDITURES IN IOWA COUNTIES, 1957

Selected Measures	Per Capita Expenditures	
	Operating	General
Low	\$14.07	\$ 19.86
1st Quartile	29.31	48.48
Median	38.92	61.09
3rd Quartile	48.72	77.80
High	90.60	116.90
Mean (average)	39.73	62.07
Coefficient of Variation ^a	.50	.48
Coefficient of Variation ^b	.37	.34
Number of Counties	99	99

^a The difference between the 1st and 3rd quartile values (interquartile range) divided by the median.

^b The standard deviation of the distribution divided by the mean.

Source: Per capita operating and general expenditures are provided on Map 1 (see *infra*) and also in "Technical Appendix to Iowa Local Governmental Finance Studies."

\$116.90 per capita (Davis County). Supplementing Table 10 is Map 1 on which the 1957 per capita operating and general expenditures have been indicated. The general expenditure amounts are in parentheses.

The first quartile in Table 10 denotes the expenditure value below which one-fourth of the counties lie. One-fourth, or twenty-four Iowa counties, had per capita general expenditures below \$48.48. The third quartile figure is the expenditure value below which three-fourths of the counties lie and above which one-fourth of the counties fall. One-fourth of all Iowa counties had 1957 per capita operating expenditures above \$48.72 and general expenditures above \$77.80.

The mean (unweighted average) per capita expenditure level for Iowa counties in 1957 was \$39.73 and \$62.07 for operating and general expenditures respectively. Both averages are slightly above the respective medians of \$38.92 and \$61.09. The median value is the mid-point value of the distribution, the expenditure value of the case (county) that divides the distribution into equal groups.

Do general expenditures vary more than operating expenditures? We might expect the former to vary more than the latter on at least two grounds. First, the range (low-high difference) in general expenditures among the 99 counties is greater than for operating ex-

penditures. Second, the commonality of functions present in the operating expenditure category should seemingly produce more homogeneity among counties as contrasted with the general expenditure category where, for example, only about thirty counties operate a county hospital. To compare variability between two distributions, that is, relative variability, it is necessary to relate the measure of dispersion to a common measure of central tendency. The two types of coefficients of variation presented in Table 10 accomplish this purpose. The first relates the interquartile range to the median of the respective distribution; the second relates the standard deviation to the mean. The coefficients show that contrary to expectations, there is little difference in the comparative variability of operating and general expenditures. In fact, both methods of computation reveal that general expenditures are slightly *less* variable than operating expenditures.

That general expenditures are not more variable than operating expenditures may be indicative of a "ceiling" expenditure situation in county budgets. Expenditures for the supposedly variable outlays—capital outlay, hospitals, and interest—may be internally competitive with the eight "common" operating functions. More outlays for the "variable" categories result in less for the "common" operating outlays, preserving the similar variability ratios.

In the absence of expenditure data for other years, the statistics in Table 10 provide little basis for further interpretative discussion. Before leaving the limited and essentially descriptive information we might propose some general lines of further investigation. It would be interesting to know whether per capita county expenditures have become more or less variable over extended historical periods. One supposition is that the relative variation has increased over time as counties have become less and less similar in their economic base and social and demographic composition. In other words, at some prior historical points or periods we hypothesize that counties were more homogeneous in socio-economic make-up. If socio-economic characteristics are important in influencing expenditure levels (it will be argued later that they are), then county per capita expenditures should be more variable in recent years when differences among counties have presumably become greater. Indeed, the presumption of greater current socio-economic differentiation itself warrants investigation as a general hypothesis.

The inter-relationship of socio-economic variables to expenditures at one point in time neglects long-term trends and changes that might shape the inter-county variation in per capita expenditure levels.

The trend analysis of aggregate county outlays from 1910 revealed several distinct trends or periods. It would be desirable to know how per capita expenditures varied among Iowa counties during and between these periods. One hypothesis suggests that in the years when county expenditures were sharply decreasing the variability in expenditures would be comparatively small in relation to years when aggregate county outlays were relatively stable. The rationale for the hypothesis is grounded on the supposition that the years of sharp increase or decrease were "crisis" years in which similar environmental pressures pushed per capita expenditures among Iowa counties toward more uniform levels than in stable or "normal" periods. On the other hand, the opposite situation might also be hypothesized, namely, that expenditure levels among counties were more uniform (less variable) in periods of stable aggregate expenditures and were more variable in "crisis" years when, it might be supposed, the impact of environmental influences affected counties quite differently. Evidence supporting both of these seemingly contradictory hypotheses has been assembled by Robert Wessel in his pamphlet *Iowa Rural Government Since 1900*.³ Wessel's scatter diagrams of per capita costs among Iowa counties for 1920, 1930, 1940, 1950, and 1959 indicate the following: per capita costs clustered closely around \$15.00 in 1920; they were far more variable in 1930, ranging from about \$15.00 to \$75.00 per capita; they clustered exceptionally closely around \$20.00 per capita in 1940; they again exhibited wide variations in 1950, from \$20.00 to \$80.00 per capita; in 1959 they displayed their greatest variation, ranging from \$30.00 to \$110 per capita. Of course, the apparent trend toward more variability since 1940 may reflect the trend toward greater socio-economic differentiation in the changing post-war period. There is clearly a need for studies of per capita county outlays for several if not all of the years since the turn of the century.

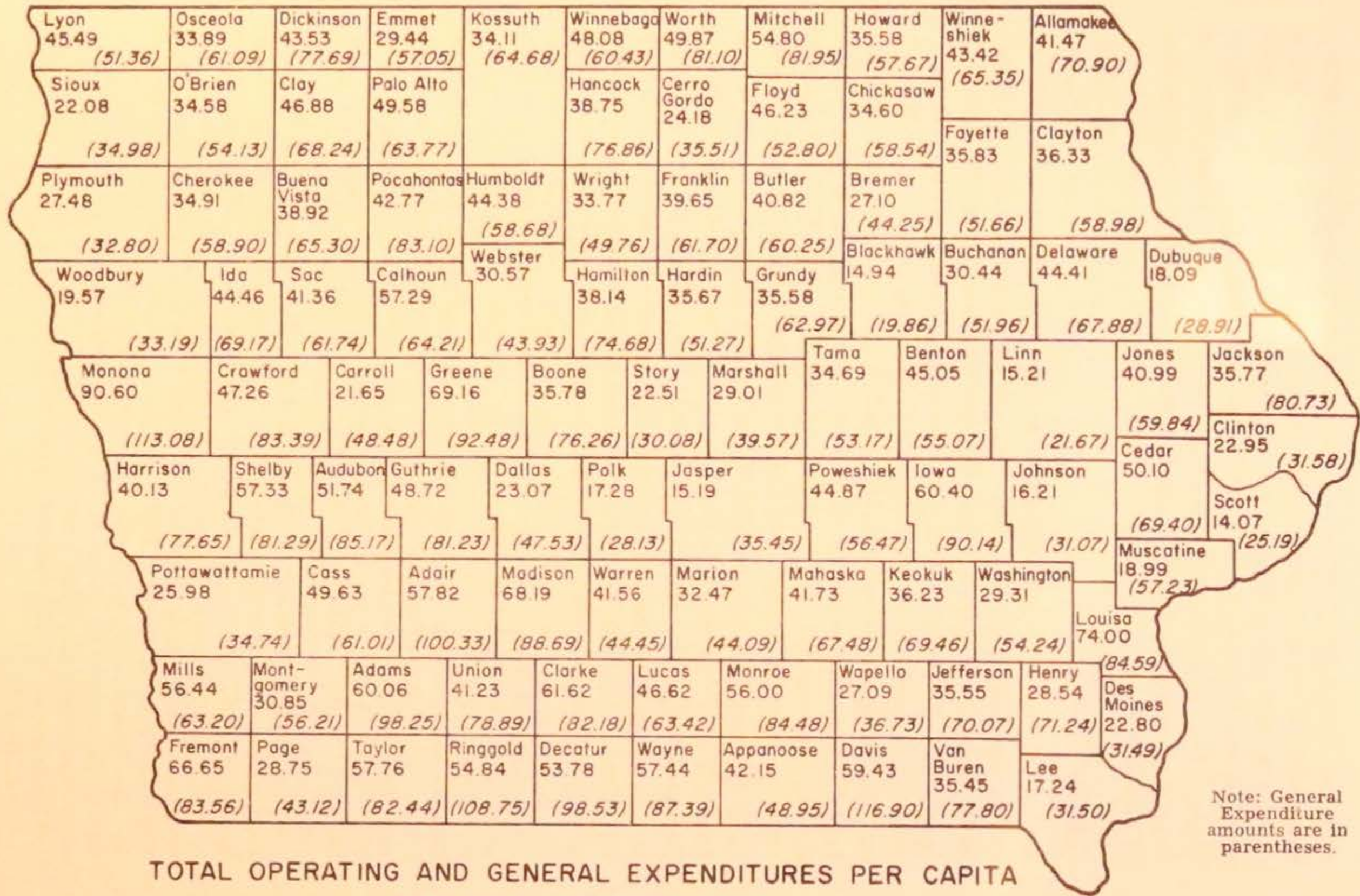
Geographic Patterns

An additional perspective, a geographic one, on the variations in 1957 per capita expenditures may be obtained by inspection of the figures entered on Map 1.

The general pattern apparent from the map is that there is no pattern. No concentration of similar expenditure levels occurs in any selected geographic area of the state. Per capita expenditures are neither uniformly high nor uniformly low in particular sections of Iowa; great heterogeneity prevails geographically. Anyone familiar

³ Special Report No. 32, Agricultural and Home Economics Experiment Station, Iowa State University, Ames, 1963, p. 30.

MAP I



TOTAL OPERATING AND GENERAL EXPENDITURES PER CAPITA
FOR IOWA COUNTIES, 1957

Note: General Expenditure amounts are in parentheses.

with the demography of Iowa would note rather quickly that populous counties such as Polk, Linn, Scott, and Woodbury have comparatively low per capita expenditures whereas counties with small populations, Adams, Adair, Davis, and Ringgold, tend to have relatively high per capita expenditures. These observations lead us to an inquiry of how per capita expenditures vary by the population size of counties.

Patterns by Population Size

One theme appearing frequently in the literature on public expenditures has held that expenditures vary directly according to population size—the larger the unit the larger is its per capita expenditure.⁴ Early evidence of such a relationship as it applied to per capita *municipal* expenditures has been sharply challenged by recent rigorous and more sophisticated investigations.⁵ Very few systematic investigations, however, have been pursued with respect to per capita county expenditures. One analysis of county expenditures from the 1942 Census of Governments discovered that smaller counties in the United States, those under 10,000, had higher per capita expenditures (circa \$23.00 per capita) than groupings of counties with larger populations (per capita costs \$12.00-\$14.00).⁶ The same study found, however, that per capita municipal costs were positively related to city size.⁷ A more recent study dealing with California counties found a slightly positive association between county population and per

⁴ Josef Berolzheim, "Influences Shaping Expenditures for Operation of State and Local Governments," *Bulletin of the National Tax Association*, Vol. 32, Nos. 6, 7, and 8 (March, April, May, 1947) pp. 170-77, 213-19, and 237-44; Gerhard Colm, "Public Expenditures and Economic Structure in the United States," *Social Research*, Vol. 3 (February, 1936), pp. 57-77; Solomon Fabricant, *The Trend of Government Activity in the United States Since 1900* (New York: National Bureau of Economic Research, 1952), especially p. 129; and Mabel L. Walker, *Municipal Expenditures* (Baltimore: Johns Hopkins Press, 1930), especially p. 117.

⁵ John A. Vieg and others, *California Local Finance* (Stanford: Stanford University Press, 1960), chapter 4; Stanley Scott and Edward L. Feder, *Factors Associated with Variations in Municipal Expenditure Levels* (Berkeley: Bureau of Public Administration, University of California, 1957); Seymour Sacks and William F. Hellmuth, Jr., *Financing Government in a Metropolitan Area* (New York: Free Press of Glencoe, 1961), chapter 4; John C. Bollens (ed.), *Exploring the Metropolitan Community* (Berkeley: University of California Press, 1961), chapters 14, 15; Robert C. Wood, *1400 Governments* (Cambridge: Harvard University Press, 1961), chapter 2.

⁶ Berolzheim, *op. cit.*, No. 6 (March, 1947) p. 171.

⁷ *Ibid.*, p. 173.

capita county operating expenditures.⁸ However, when population was considered together with several other variables in an attempt to explain county expenditure variations, it was not a statistically significant variable. Another recent investigation made by Donald E. Boles and Herbert C. Cook, this one focusing directly on selected expenditures of Iowa counties, revealed a general *inverse* relationship between population size and the per capita cost of various county offices such as board of supervisors, auditor's office, treasurer's office.⁹ As the size of counties increased, the per capita cost for a particular office decreased. For example, Adams County, the smallest county in the state, recorded a per capita figure of \$1.17 for board of supervisors' costs in 1954-55, contrasted with a figure of \$0.11 for Polk County, the most populous county in the state.¹⁰

The data presented in Table 11 are consistent with the Boles-Cook finding of an inverse relationship between population size and per capita costs. In contrast to the Boles-Cook study, however, this analysis deals with total operating and total general expenditures rather than the cost of specific county offices. For both expenditure categories and for every measure of central tendency and dispersion presented in Table 11 a consistent drop in per capita expenditures occurs as one proceeds up the population size groupings. The mean operating expenditure for counties under 15,000 was \$51.27; for counties with populations between 15,000 and 24,999 the mean was \$39.47; for counties 25,000 and over the mean was \$23.14. Wherever one turns in the table, except for the coefficients of variation, the same consistent pattern exists.

The relationship between population size and per capita operating expenditures may be shown in sharp relief graphically. Figure 1, a scatter diagram, displays the two-dimensional relationship after the population size and corresponding per capita expenditure for each county have been plotted on standard graph paper. Selected plottings have been designated with the appropriate county names. It is evident from the scatter diagram that the relationship between population size and county operating expenditures is not only inverse but curvilinear. A line that would best describe the average relationship between the two variables would arc downward to the right and level off as it approached the horizontal axis. The larger counties tend

⁸ Vieg and others, *op. cit.*, pp. 107, 131-32.

⁹ Donald E. Boles and Herbert C. Cook, *An Evaluation of County Government* (Ames and Iowa City: Iowa College-Community Research Center, 1959), pp. 27-43.

¹⁰ *Ibid.*, p. 29.

Figure 1.

Per Capita Total Operating Expenditures of Iowa Counties by Population Size, 1957

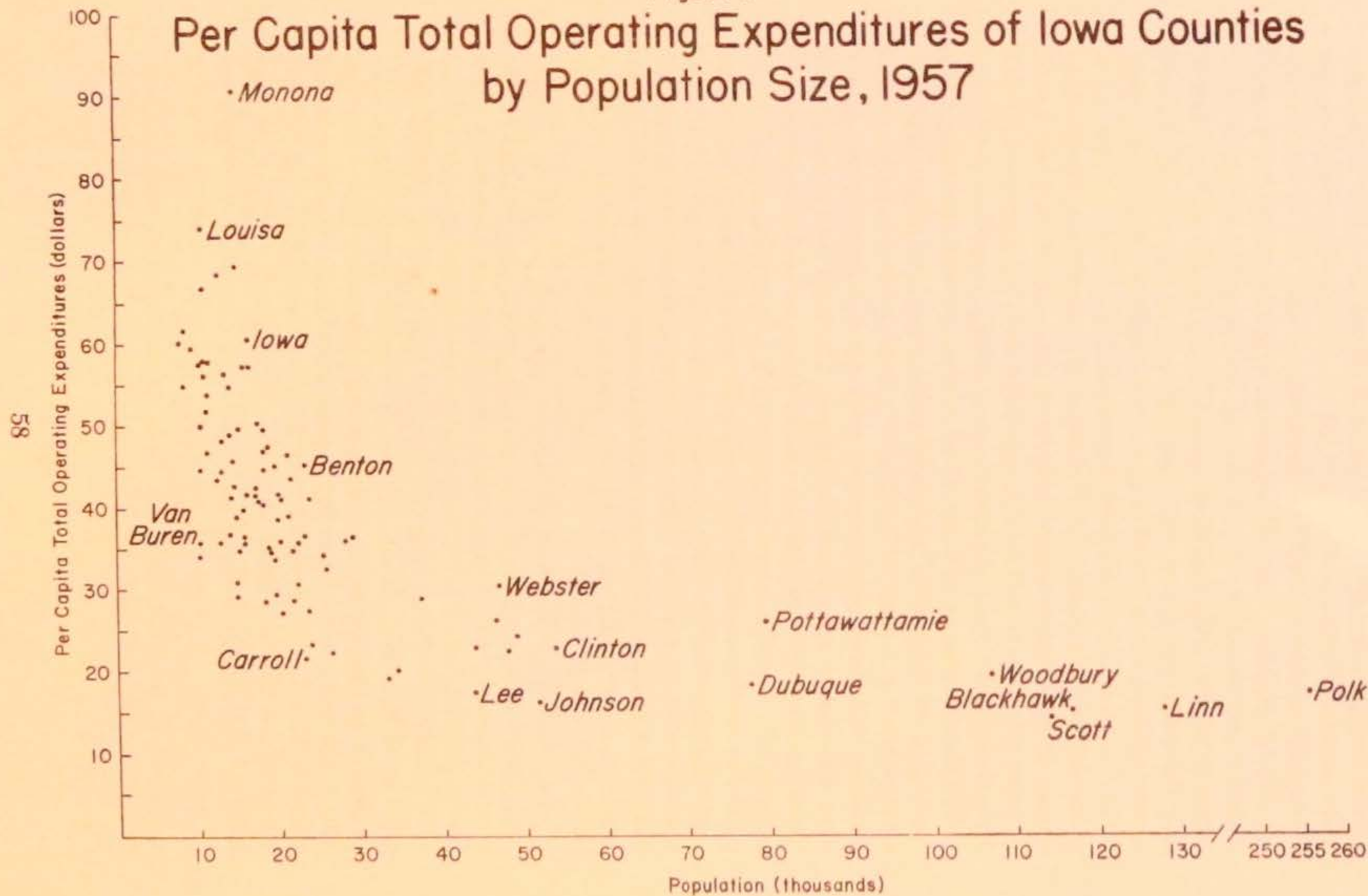


Table 11
 SELECTED MEASURES OF PER CAPITA OPERATING AND GENERAL
 EXPENDITURES FOR IOWA COUNTIES BY POPULATION SIZE, 1957

Population Size	Operating Expenditures			General Expenditures		
	Under 15,000	15,000- 24,999	25,000 and over	Under 15,000	15,000- 24,999	25,000 and over
Low	\$29.44	\$21.65	\$14.07	\$ 51.36	\$32.80	\$19.86
High	90.60	60.40	35.83	116.90	90.14	76.26
1st Quartile	42.38	34.60	17.24	63.14	52.59	30.08
3rd Quartile	58.22	44.92	29.01	87.72	69.42	43.93
Mean	51.27	39.47	23.14	79.61	61.20	37.72
Median	50.80	39.89	22.51	81.59	60.63	34.74
Coefficient of variation ^a	.31	.26	.52	.30	.28	.40
Coefficient of variation ^b	.26	.22	.30	.21	.20	.35
Number of Counties	34	42	23	34	42	23

^a The inter-quartile range divided by the median.

^b Standard deviation divided by the mean.

Source: Per capita operating and general expenditures are provided on Map 1 (see *supra*) and also in "Technical Appendix to Iowa Local Governmental Finance Studies."

to have lower per capita operating expenditures; the smaller counties tend to have higher per capita operating expenditures.

It is tempting to move from the size-per capita cost relationship to the conclusion that the *efficiency* of county government is greater in the larger counties than in the smaller ones. We emphasized earlier that any judgment regarding efficiency is contingent on a thorough and detailed analysis of the means and ends surrounding the performance of governmental activities. Per capita operating costs are data too gross to permit valid statements regarding the efficiency of a unit of government. Furthermore, a serious question may be raised as to whether per capita cost data for specific county offices permit the implicit and explicit judgments offered in the Boles-Cook monograph concerning the inefficiencies of Iowa county government operation.¹¹

Because they find wide variations in per capita costs of boards of supervisors' expenses, Boles and Cook suggest the presence of "wide variations in the efficiency with which different boards carry out

¹¹ *Ibid.*, especially pp. 29, 42-43.

similar functions and, perhaps, wide differences in the ways in which different boards define their functions."¹² They infer that in those counties with high per capita board costs the boards of supervisors are more concerned with administrative detail than in those counties with lower per capita board costs. In our judgment per capita board costs, or per capita costs for any other particular function or activity, constitute data too tenuous for direct inferences regarding the efficiency and/or the behavioral patterns of public officials. To contend that governing boards are inefficient because their per capita expenses show no clear or consistent relationship to area, to population, to urbanization, or to any other selected variable is to make the concept of efficiency synonymous with a particularized mathematical model. In the case of the Boles-Cook analysis the model is a single-variable product-moment linear correlation model.

Further investigations along two general avenues are necessary before direct inferences regarding efficiency are appropriate. First, models that are far more elaborate and systematic need to be developed. Second, precise, detailed, and comparative on-the-spot research needs to be pursued before more confident judgments as to relative efficiency can be stated.

The coefficients of variation presented in Table 11 provide the basis for an additional brief comment. Within each expenditure category and irrespective of the method of measurement, the variability in per capita expenditures is highest among counties of 25,000 and over. The smallest amount of variation is present among counties in the 15,000-24,999 range. The smallest counties, those under 15,000, occupy an intermediate position in terms of expenditure variability. These orderings indicate that the greatest homogeneity or uniformity in per capita expenditures exists in medium-sized Iowa counties. The least uniformity is present among the largest counties despite the fact that per capita expenditures in these counties are lowest. These conditions may be the result of economic, social, demographic, and political circumstances indigenous to counties in these particular population groups.

Patterns by Population Change

Does any pattern exist among county expenditure levels when related to population change? Between 1950 and 1960 fifty-eight Iowa counties lost population; forty-one counties gained. Do counties that have lost population have higher per capita expenditures than those whose population has increased? The percentage population change

¹² *Ibid.*, p. 29.

from 1950 to 1957 was calculated for each county and the counties were grouped according to the magnitude of percentage increase or decrease. The mean and median per capita outlays for operating and general expenditures were found for each group. The results of these computations are presented in Table 12.

It is evident from the ordering of the data in Table 12 that counties experiencing the greatest population increases have, typically, the lowest per capita expenditures. Counties with the largest population declines are found on the average to have the highest per capita expenditures. Between these two extremes the means and medians for both expenditure categories show a consistent progression upward as the population increase is less or as the population decrease becomes greater.

Table 12
MEAN AND MEDIAN PER CAPITA OPERATING AND
GENERAL EXPENDITURES OF IOWA COUNTIES IN 1957
BY POPULATION CHANGE, 1950-1957

Percentage Population Change 1950-1957	Operating Expenditures		General Expenditures		Number of Counties
	Mean	Median	Mean	Median	
<i>Increase</i>					
10% and over	\$20.80	\$16.21	\$29.30	\$28.13	7
5%-10%	24.54	23.56	41.30	35.48	8
0%-5%	35.79	35.75	57.06	51.96	26
<i>Decrease</i>					
0%-5%	40.46	39.20	62.65	61.05	32
5%-10%	49.15	49.15	77.77	79.99	18
10% and over	60.41	57.60	90.12	92.82	8
All Counties	39.73	38.92	62.07	61.09	99

Source: Per capita operating and general expenditures are provided on Map 1 (see *supra*) and also in "Technical Appendix to Iowa Local Governmental Finance Studies."

Given the benefit of our earlier finding regarding population size and per capita expenditures, it is not surprising that the pattern disclosed by the data in Table 12 should appear. As a general rule the smaller counties have been losing population while the larger ones have been gaining. The pattern simply reflects in an alternate fashion the inverse relationship between size and per capita expenditures.

Chapter VIII

Per Capita County Expenditure Variations: Functional Categories of Expenditures

Variability of Functional Outlays

In Part I the functional expenditures of Iowa counties in 1957 were presented. Highways, health and hospitals, public welfare and general control were the large items in county budgets (See Table 1). We now turn to a consideration of the variations among the counties when these and other functional expenditures are expressed in per capita terms. Table 13 accomplishes this purpose by showing for several functional categories measures of central tendency and dispersion. Because of extreme variations in the per capita functional amounts the median is probably more representative of the expenditure distribution than is the mean.¹

It is apparent from the figures that highway expenditures are largest in per capita terms. The median county spent \$20.79 per capita in

¹ It should be acknowledged at the outset that there appears to be considerable reporting error in the figures reported by Iowa counties for particular functional categories of expenditure. The source of the error is not fully determinable. It appears, however, that most of the error comes from the difficulty county auditors and treasurers in Iowa had in completing the Bureau of the Census mail questionnaire forms on county finances. The forms called for a reporting of expenditures by the standard functional categories widely used by the Bureau of the Census. It is a herculean task, however, to translate the expenditures from the numerous funds and accounts prescribed by state law for county financial operations into the functional categories set by the Bureau of the Census.

Spot checks and comparisons between the census-reported published figures and the amounts spent by a county as reported in the county auditor's annual report for the particular county resulted in some substantial differences (10-20 per cent) between the two sources. It should be added that the general and operating expenditures obtained from the two separate sources generally coincided quite closely.

In two instances—for Clinton and Winneshiek counties—it was necessary to obtain the functional expenditure amounts as well as the general and operating outlays from the auditors' reports in the two counties, respectively, in 1957. The Bureau of the Census published no financial figures for these two counties.

In spite of the probable error inherent in the functional amounts it still seemed advisable to perform a brief and general analysis of the data.

Table 13
 SELECTED MEASURES OF CENTRAL TENDENCY AND DISPERSION
 IN PER CAPITA FUNCTIONAL EXPENDITURES
 OF IOWA COUNTIES, 1957

Function	1st Quartile	3rd Quartile	Median	Mean	Coefficient of Variation ^a
Police	\$.62	\$.91	\$.78	\$.79	.37
General Control	7.40	11.08	9.10	9.38	.40
Welfare	3.49	5.81	4.56	4.92	.51
Highways	12.52	28.63	20.79	21.52	.77
Natural Resources ^b	.75	2.11	1.28	2.26	1.06
Correction ^c	.09	.27	.16	.28	1.12
Health ^d	.20	1.04	.60	.72	1.40
Operating Expenditures	29.31	48.72	38.92	39.73	.50
Capital Outlay	6.89	19.56	13.05	14.00	.97
Interest on Debt	.08	.42	.19	.30	1.78
Hospitals	3.88	14.14	5.24	8.82	1.96
General Expenditures	48.48	77.80	61.09	62.07	.48

^a The inter-quartile range divided by the median.

^b 96 counties reported expenditures in this category.

^c 91 counties reported expenditures in this category.

^d 90 counties reported expenditures in this category.

Source: Calculated from expenditure data in U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. VI, No. 13, GOVERNMENT IN IOWA, Table 26.

highway operating expenses. Median per capita expenditures for general control and hospital functions were \$9.38 and \$5.24 respectively. Median welfare outlays were \$4.56 per capita. The other "functional" expenditure of major magnitude was that of capital outlay, where the median per capita expenditure was \$13.05. Strictly speaking, capital outlay is not a functional expenditure category since it contains capital outlay from such functions as highways, hospitals, and natural resources. Because of its magnitude, however, it is included to furnish a more complete description of the types and ranges of county expenditures. Interest on county debt was also included for the sake of completeness. The median per capita interest expenditure was \$0.19. Apart from interest payments counties also spent small amounts per capita on correction, health, and police functions. The respective median per capita outlays were \$0.16, \$0.60, and \$0.78. Natural resource expenditures were not large, with a median outlay of \$1.28.

The median, mean, range, and quartile data furnish precise characterizations of per capita function expenditures in Iowa counties. These measures do not, however, permit statements as to the comparative variability of the functional outlays. The coefficients of variation do permit such observations. The coefficients for each function are shown in the last column of Table 13. The least variable functions are police and general control. The most variable categories of the standard functional classification are health and correction with natural resource outlays not far behind. The coefficient of variation, it will be recalled, is a measure stating the comparative degree of clustering and dispersion of values in a distribution. The lower the coefficient the greater the clustering around a central value, in this case, the median. Per capita county police and general control expenditures in 1957 were more uniform—more concentrated around a central value—than other per capita functional outlays. Stated more broadly, counties provided these activities with a greater degree of uniformity (per capita-wise) than other functions. Welfare and highway expenditures per capita were only moderately more variable than the police and general control functions.

Is there any common factor that might explain the lesser variability of these four functions—law enforcement, general control, welfare, and highways—as contrasted with the variability of correction, health, hospital, and natural resource expenditures? One element the first four functions share in contradistinction to the remaining ones may be labeled *tradition*. The first four are all long-standing responsibilities of county government in Iowa. In contrast, correction (chiefly incarceration and parole), health, hospitals, and natural resource promotion are all activities marked by one or both of the following characteristics: (1) they have a less long-standing tradition of county performance than do the former group of functions, or (2) they are less fixed and less compulsory responsibilities of counties than the former functions. Given one or both of these conditions, expenditures for the more variable functions may take on the characteristic of optional outlays. The existence of option or discretion in the level of performance of certain functions should be reflected in larger coefficients of variation for the discretionary as opposed to the traditional, non-discretionary or compulsory functions.

This analysis suggests a more general hypothesis that outlays for longstanding functions tend over time toward a central value. In other words, the passage of time tends to produce higher degrees of uniformity in per capita outlays for particular functions. It would be especially interesting to examine this hypothesis by analyzing the

variability among units for several functional expenditure categories or even outlays for a single function over a long historical period.

Functional Expenditures by Population Size

What patterns are present in per capita functional expenditures according to population size groupings? Does the inverse relationship between total operating (or general) expenditures and population size hold for each category of functional expenditure? In Table 14 two measures of central tendency and one of variability are presented for the functional expenditure categories of Iowa counties grouped by population size.

The inverse relationship between population size and per capita expenditures generally holds for all functional categories of expenditures. The only inconsistencies are in correction and health outlay categories. Otherwise, the larger the size of a group of counties, the lower is the per capita expenditure for nearly all categories of county functional outlays.

Are the so-called traditional functions less variable than the optional ones throughout each population size grouping? With minor exceptions we find that the coefficients of variation in Table 14 for general control, highways, police, and welfare are smaller than the coefficients for correction, health, hospitals, and natural resources. This finding tends to confirm the hypothesis that independent of county size there is a difference in the variability and uniformity of expenditures for the first contrasted with the second group of functions. The exceptions to the lesser variability of traditional county functions arise among counties of 25,000 and over. The coefficients for correction (.85) and hospitals (.82) are lower than the coefficient for highways (1.00). This particular reversal, suggesting that the larger counties spend in a more uniform per capita manner for correction and hospitals than for highways, may result from a number of factors.

Highways in these large counties may be more of an optional or variable type of expenditure in the county budget because of the central role of a major municipality in providing road services. Furthermore, per capita highway expenditures are strongly and inversely related to population density. In addition, population density is strongly and positively related to population size. To make the cycle complete, there are wider variations in the population densities of counties of 25,000 and over than in the two groups of smaller counties. Densities range from twenty-six to 425 persons per square mile in large counties. By contrast, the ranges for counties of 15,000-24,999 and under 15,000 are 25-46 and 15-37 per square mile, respectively.

Table 14

SELECTED MEASURES OF CENTRAL TENDENCY AND DISPERSION
IN PER CAPITA FUNCTIONAL OPERATING EXPENDITURES OF IOWA
COUNTIES BY POPULATION GROUPS, 1957

Functional Category	Median Per Capita Expenditure			Mean Per Capita Expenditure			Coefficient of Variation ^a		
	Under 15,000	15,000-24,999	25,000 and over	Under 15,000	15,000-24,999	25,000 and over	Under 15,000	15,000-24,999	25,000 and over
General Control	\$11.35	\$ 8.86	\$7.27	\$11.04	\$ 9.12	\$7.38	.27	.28	.20
Police	.94	.70	.61	1.00	.72	.61	.29	.31	.48
Welfare	4.93	4.64	4.05	5.60	4.77	4.20	.62	.54	.41
Highways	28.08	22.26	7.92	29.16	22.24	8.94	.72	.50	1.00
Correction	.14 ^b	.15 ^c	.26	.38 ^b	.20 ^c	.29	1.07 ^b	1.18 ^c	.85
Natural Resources	2.07 ^d	1.37 ^d	.58 ^d	3.56 ^d	1.80 ^d	1.16 ^d	1.20 ^d	.58 ^d	1.41 ^d
Health	.82 ^e	.54 ^f	.52 ^g	.89 ^e	.63 ^f	.68 ^g	1.24 ^e	1.37 ^f	1.95 ^g
Hospitals	9.70	4.95	4.54	11.69	8.04	6.13	1.40	1.78	.82
Number of Counties	34	42	23	34	42	23	34	42	23

^a Inter-quartile range divided by the median.

^b 6 counties in this group did not report any correction expenditures.

^c 2 counties in this group did not report any correction expenditures.

^d 1 county in this group did not report any natural resource expenditures.

^e 6 counties in this group did not report any health expenditures.

^f 2 counties in this group did not report any health expenditures.

^g 1 county in this group did not report any health expenditures.

Source: Calculated from expenditure data in U.S. Bureau of the Census, *U.S. Census of Governments: 1957*, Vol. VI, No. 13, GOVERNMENT IN IOWA, Table 26.

The coefficients of variation in population density for the large-, medium-, and small-county groups are, respectively, .89; .25; and .31. Therefore, the exceptional variation in per capita highway expenditures for the larger counties appears to be the result of wide variations in the population densities of those counties.

What explanations might be offered for the comparatively low variability of correction and hospital expenditures among the largest counties? Here, perhaps, we see the effect of tradition in different guise. Correction activities and hospital services were probably first provided on a substantial scale in the larger counties. This might account for the greater uniformity present in per capita correction and hospital expenditures.

Verification of the "tradition" hypothesis as applied to differences in functional outlays would depend on both a statistical analysis of variations in functional outlays over time and a thorough historical review of state legislation and county board actions establishing and expanding various functions and services. For example, we pointed in Part I to the impact of the Progressive Movement on public expenditures. According to our hypothesis we should find the establishment and/or significant expansion of the various functional activities roughly in line with the orderings of the coefficients in Tables 13 and 14.

The historical explanation implicit in the optional versus non-optional (or traditional versus non-traditional) basis for explaining inter-functional variations applies to contrasting differences between functions. But why are there differences in expenditure variations between units of different size for the same function? Why, for example, are correction and hospital outlays less variable in counties of 25,000 and over than in the two smaller population size groupings (Table 14)? One plausible reason is that for these functions the larger counties seem subject to the impact of more uniform environmental forces, chiefly of an urban nature, that could bring about a convergence or clustering in the per capita service levels for the hospital and correction functions. A similar but alternate explanation suggests that in large counties these two functions lose in some degree the optional or discretionary character apparently present in the smaller counties. In other words, the discretionary character of correction and hospital expenditure levels may be not only a matter of historical time sequence but also may operate differentially among units at a particular point in time. (It is important to keep in mind that the concept of option or discretion is one of degree rather than one of categorical absolutes.)

We may explore and illustrate aspects of environmental influences by looking at two additional contrasts in expenditure variability by population size: (1) the low variability (.50) of highway operating outlays in counties of 15,000-24,999, and (2) the low variability (.58) of per capita expenditures for natural resources in the same population size grouping. We have already noted the relationship between population density and per capita highway outlays and also the variability of population densities by county population size-groups. The 15,000-25,000 grouping had the smallest variability in population density, suggesting that factors of area and population contribute to more uniform per capita expenditures for highways and, conceivably, to more uniform expenditure levels for other functions that are *area-oriented*.

The same area orientation is present for the natural resource function. At .58 its variability is nearly as low as the .54 coefficient for welfare expenditures. We need not, however, limit our explanatory efforts only to factors of area and population density to deduce influences toward uniformity in natural resource expenditures in medium-sized Iowa counties. In fact, as a substitute for population density we might consider the agricultural character of the different size groups of counties since natural resource expenditures might likely arise from considerations that are closely associated with agricultural factors. One barometer of the agricultural character of a county is the value of farm products sold. We expressed the 1959 value of farm products sold in per capita terms for each county and grouped the counties by the three population sizes. We then calculated the measures of central tendency and dispersion for the farm products variable. In accordance with our expectations the greatest uniformity in per capita value of farm products sold occurred among counties in the 15,000-24,999 category. The coefficient of variation was .39 contrasted with coefficients of .43 for counties under 15,000 and .99 for counties of 25,000 and over. The difference between the medium- and small-county coefficients was much less than we anticipated. Nevertheless, the rank ordering of the coefficients for per capita value of agricultural products sold was the same as the ranking of the coefficients for per capita natural resource expenditures.

We have attempted to account for the variability of per capita functional expenditures on the basis of inter-functional differences, namely traditional (non-discretionary) contrasted with less traditional (optional) functions. We have also considered differences in the variability of per capita expenditures by county size groups, suggesting that these inter-county differences may be understood on the

basis of environmental influences having a special relation to functional programs, such as population density and per capita value of farm products sold. In addition, we indicated the basic nature of a function, its area orientation in the case of highways and natural resources, may exert an influence on the level and variability of functional outlays.

Speculations on the Nature of County Expenditure Variations

Can we weld the preceding observations into a more general and integrated formulation, however tentative and speculative the formulation may be? One speculation may be set forth. This hypothesis suggests that for those functions which are primarily person-oriented, e.g., welfare, hospitals, correction, and general control, greater uniformity in service levels exists in larger than in smaller counties. By contrast, those functions less directly person-oriented and more directly area-oriented, such as police, highways, and natural resources, are less variable and more uniform among small- or medium-sized counties than among large counties. These hypotheses are so tentative that they ought to be characterized as speculations. It would appear, however, that the notions contain sufficient rationale and encouraging scraps of empirical evidence to warrant further investigation.² Added research might be undertaken on counties in additional states and also through time.

Evidence of the changing emphasis in our urbanizing society appears in the increased local expenditures for direct services to persons. Fabricant, in his book *The Trend of Government Activity in the United States Since 1900*, shows that the greatest increases in local government expenditures between 1902 and 1942 were in the

² Research dealing with the *number* of activities performed by sixty-six county governments in Wisconsin produced evidence that is generally consistent with the findings and the speculations of the Iowa data. The coefficients of variation in the number of activities performed by the counties in various functional categories were as follows:

	<i>Coefficient of Variation</i>
Welfare	13.2
General Government	14.0
Highways	15.3
Justice	18.2
Protection of Persons and Property	36.3
Health	55.2
Parks and Conservation	65.9

See Harvey Shapiro, "Measuring Local Government Output," *National Tax Journal*, Vol. 14, No. 4 (December, 1961), pp. 394-397.

two functional categories of (1) hospitals, public welfare, and correction, and (2) schools and libraries.³ The smallest increases occurred in general control, highways, and public safety (police and fire). Except for the general control category (and eliminating education as not a county activity), these relative increases conform exactly to the pattern of variations in 1957 expenditures for Iowa counties when the crosscutting impacts of inter-functional and inter-unit differences are noted.

Iowa's general control expenditures are comparatively a larger part of the county budget (See Table 1) than for other units of government or for aggregate local expenditures. Fabricant dealt only with the latter. The number of independently elected county officers dealing to a great extent in personal services, such as treasurers and registrars of deeds, suggest that we might expect increases in county expenditures for general control to be substantially greater than those for local units in the aggregate. Such increases, especially if related to servicing larger population concentrations, would tend toward greater uniformity in per capita general control outlays when compared with other functional outlays. We would also expect that general control outlays per capita would be less variable in larger counties than in smaller counties. The coefficients for general control (Table 14) are in conformity with these expectations.

In broadest terms we suggest provisionally that the uniformity in per capita county functional expenditures varies both as to temporal and spatial dimensions. The temporal dimension is one characterized by inter-functional contrasts where it is expected that functions of a traditional or compulsory character are provided at a more uniform per capita level than functions of an optional or less traditional nature. The spatial dimension is featured by inter-unit contrasts in the variability of functional outlays at one point in time. Space *per se* is not seen as a critical factor related to varying expenditure levels. Rather, population differences and other environmental factors that are spatially differentiated assisted in describing and understanding the variability in per capita outlays. There was some doubt, however, as to the value of population alone contributing significantly to our grasp of expenditure levels and variations therein. Finally, we suggested the presence of another dimension, the nature of the functional outlay. Here we distinguished between functions that are chiefly person or personal-service oriented, and those that are less person-oriented and more place or physically oriented.

³ Solomon Fabricant, *The Trend of Government Activity in the United States Since 1900* (New York: National Bureau of Economic Research, 1952), p. 77.

In closing the discussion, we wish to emphasize two points. One is the highly speculative character of these observations. They rest on empirical evidence about variations at one point in time for a comparatively small number of units in one state. Second, further empirical research on a broader and a historical basis would be highly desirable. Additional and more sophisticated conceptualization might also accompany any expanded investigation.

Chapter IX

Variations in Per Capita Expenditures: Simple Linear Correlation Analysis

The two preceding chapters have documented variations in per capita operating, general, and functional expenditures for Iowa counties. We attempted to make order out of the seemingly chaotic variations in the data by introducing such factors as population, population change, and value of farm products sold as elements associated with differing levels of county expenditures per capita. There was sufficient logic as well as evidence behind our results to suggest the value of analyzing factors associated with per capita expenditures on a more systematic and rigorous basis.

Statistical Methods

We start by selecting several measurable factors—-independent variables—that we expect to be related to varying expenditure levels. We employ these variables in two statistical analyses: (a) simple linear correlation analysis discussed in this chapter, and (b) multiple correlation and regression analysis described in the following chapter.¹ The first identifies the degree of relationship or association between an independent and a dependent variable. The second method of analysis permits several independent variables to operate simultaneously and to observe which independent variables contribute the most, statistically speaking, toward explaining variations in a given dependent variable. The two dependent variables used are the per capita operating and general expenditures of Iowa counties in 1957.

The chief virtues of correlation analysis are two in number. First,

¹ One of the classic advanced works on methods of correlation and regression analysis is Mordecai Ezekiel and Karl A. Fox, *Methods of Correlation and Regression Analysis* (3rd ed.; New York: Wiley, 1959). An excellent statistics text containing a lucid discussion of correlation and regression methods especially useful for the social scientist is Hubert Blalock, *Social Statistics* (New York: McGraw-Hill, 1960), especially chapters 17-19. A standby for political scientists, especially those interested in voting statistics and trend analyses, is V. O. Key, *A Primer of Statistics for Political Scientists* (New York: Crowell, 1954). See especially chapters 4 and 5.

it is a precise way of determining the degree of association between two variables; the association can be expressed in exact numerical terms. Second, it provides a means for testing which relationships are sufficiently strong not to have occurred by random chance. Correlation analysis has certain limitations and potential pitfalls, however. In the first place, the assumption must be made that the data in a distribution of values are normally distributed, that is, they form a bell-shaped curve. This assumption is not always met by some of the data used by social scientists. To a high degree the assumption of normality is met by the two dependent variables—operating and general expenditures.² But the normality assumption does not hold for a few of the independent variables, especially population. While a measure of caution needs to be introduced by slightly non-normal distributions, it is not felt that any of the results are significantly affected by these circumstances.

Perhaps the major problem in correlation analysis is the care necessary in making causal inferences. Causal relations must be deduced on the basis of logic rather than on the basis of a high correlation coefficient that may be spurious. For example, the mean temperature during the year in Canada is highly correlated with the sale of blankets in England. The English do not buy blankets to keep the Canadians warm; both phenomena are the result of a common third variable, the geographic location and similar climates of England and Canada.

When one variable changes and another changes exactly proportionately and in the same direction, the correlation between the two variables is perfect and the coefficient of correlation is 1.0 (or $+1.0$).

² A chi-square test was run of the degree to which the two expenditure distributions departed from normality on a chance basis. For operating expenditures (grouped into six classes) the observed distribution departed from an expected normal distribution (where $N = 99$, $\bar{X} = 39.73$, $\sigma = 14.58$) to the extent that chi-square = 0.888. With three degrees of freedom the probability of obtaining a chi-square value this small is approximately .85. In other words, about 85 per cent of the time we could expect to get a chance deviation from normality as large as the observed distribution departs from normality. This is hardly a sufficient departure from normality on a chance basis to cause us to question the normality of the per capita operating expenditure distribution.

For per capita general expenditures the distribution of observed values (grouped into six classes) produced a chi-square of 3.31 (where $N = 99$, $\bar{X} = 62.07$, $\sigma = 20.96$). With three degrees of freedom the probability of obtaining a chi-square this large is approximately .30. Thus 30 per cent of the time are we likely to get a departure from normality as great as this. While the degree of normality is considerably less for general expenditures than for operating expenditures it is still not sufficiently great to cause us to reject our assumption of normality.

If the relationship is exactly proportionate but the values of the two variables move in opposite directions the coefficient of correlation is -1.0 . An additional qualification of this correlation analysis is that to the extent that relationships exist between variables, they are assumed to be linear. That is, the cases (counties) are distributed around a straight line (regression line) that best fits or describes the relationship between the two variables.

Independent Variables

What factors or variables will help us explain variations in per capita expenditure levels in Iowa counties? Six types of forces logically appear to influence the expenditure level of a unit of local government:

1. *Fiscal ability* (or fiscal capacity)—the presence or absence of fiscal resources in the community from which a governmental unit draws its support.

2. The degree of *demand* in the community for public services and therefore, for public expenditures. Demand is a highly subjective and illusive concept. Nevertheless our political institutions have developed complex processes by which demands are evaluated and met in varying degrees.

3. The amount of *effort* a county or other local jurisdiction is willing to exert to raise monies through taxation and other means to finance public programs.

4. *Policy environment*—political predispositions toward public outlays and the attitudes of citizens, both local and state-wide, toward the scope of services which a local government (a county in this instance) shall provide.

5. *Efficiency*—the ratio of output to input measured against some standard. Consistent with earlier statements, we reject judgments about efficiency on the basis of the gross data available to us. Furthermore, without the resources for painstaking detailed research we acknowledge our inability to determine the efficiency with which Iowa counties operate.

6. *Quality*—the kinds, amounts, and levels of services financed by expenditures. There is a substantial body of literature developing on the subject of the quality of government services.³ Given our limited resources we are not able to deal with or measure the quality of county services.

³ See Werner Z. Hirsch, "Quality of Governmental Services," and references cited therein, in Howard G. Schaller, ed., *Public Expenditure Decisions in the Urban Community* (Washington: Resources for the Future, 1963), pp. 163-180.

Bypassing but not denying the importance of efficiency and quality questions, we turn instead to assessing the relationships of fiscal capacity, demand, effort, and policy environment in relation to expenditure levels.

The first step in ascertaining the relation between these four factors and county expenditures is to employ or develop operational measures for the four concepts. One of the requirements of correlation analyses is that the variables be measured in precise quantitative terms.⁴ There is a wealth of data of various types available for counties in the United States.⁵ The sources cited were consulted for variables representative of the four concepts. In addition, various sources exclusive to Iowa were reviewed to obtain data on variables not otherwise available.⁶ The variables ultimately selected for the correlation analyses are listed below according to the general concept to which they relate:

A. Fiscal Capacity:

1. value of farm products sold in 1959, per capita
2. value added by manufacture in 1958, per capita
3. retail sales tax collections in 1957, per capita
4. assessed valuation in 1957, per capita
5. median family income in 1959
6. payroll of retail trade establishments in 1958, per capita
7. payroll of selected services businesses in 1958, per capita

B. Demand:

1. population size, July 1, 1957 (obtained by linear interpolation of county populations in 1950 and 1960 according to the U.S. Census)
2. population change (ratio of 1957 interpolated population to 1950 population)
3. population density, 1957
4. per cent of the population over 65 in 1960
5. index of urbanism

⁴ In statistical parlance the terms interval and ratio scales designate the levels of measurement required to employ product-moment correlation and regression analysis.

⁵ See for example, U.S. Bureau of the Census, *City and County Data Book*, 1962. Other major primary sources are the publications of the various censuses taken by the Bureau of the Census:

- Census of Population (decennial)
- Census of Business (quadrennial)
- Census of Manufacturers (quadrennial)
- Census of Agriculture (quinquennial)
- Census of Governments (quinquennial)

⁶ Iowa State Tax Commission, *Annual Report, 1957*, and *Annual Tabulation of Retail Sales and Use Tax*, 1958.

C. Effort:

1. county property tax collections in 1957, per capita
2. effective property tax rate in 1957 (ratio of property tax collections to assessed valuation)

D. Policy Environment:

1. political tendency (degree Republican or Democratic)
2. intergovernmental revenue

The selection of these variables furnished us with sixteen independent variables. A brief explanatory word should be said concerning the selection of these various measures.

Only a few comments are necessary about the measures of fiscal capacity. All the variables represent barometers of the economic health of a county. Farming, manufacturing, retail trade, property valuations, family income, and business payrolls—all have clear connections with the fiscal capacity of an area and thereby a potential for affecting the expenditure level of the county.⁷

Measures of demands were difficult to select. The guiding rationale for using the five finally chosen was that of population. Numbers of persons to be served, changes in these numbers, age patterns of the population (especially the proportion over sixty-five), density, and urbanization appear on the surface to be specific variables that might condition requirements of appropriate expenditure levels.⁸ To call these variables measures of demand requires no small stretch of logic. Yet a *prima facie* case can be made that in a democratic society,

⁷ These fiscal capacity measures were selected so as to represent both major measurement dimensions of fiscal capacity, namely, (1) economic indicators, particularly measures of income, and (2) tax bases or taxable resources. See in this connection [U.S.] Advisory Commission on Intergovernmental Relations, *Measures of State and Local Fiscal Capacity and Tax Effort*, 1962, especially pp. 3-11.

⁸ The measure of urbanization used was that developed by Stuart A. Queen and David B. Carpenter in *The American City* (New York: McGraw-Hill, 1953), chapter 3. Briefly, this measure is derived as the arithmetic mean of the percentages of the population of a county residing in ten different size categories of incorporated places (ranging from under 500 to 500,000 and over). This measure had a special advantage in overcoming the Bureau of the Census' arbitrary breaking point of 2,500 as the minimum size for calculating its measure of urbanism. Iowa has many small towns, 816 under 2,000 population in 1960. The Queen-Carpenter measure of urbanism takes these smaller but nevertheless corporate units into account. Iowa counties ranged on this urbanism measure from 5.5 per cent in Adair and Adams counties to 67.0 in Polk County. The author is deeply indebted to Professor George B. Mather of The University of Iowa Division of Extension and University Services for making these data available. (See *Effects of the Use of Voting Machines in Voter Turnout: Iowa—1920-1960*, Iowa City: Institute of Public Affairs, The University of Iowa, 1964).

where government is an instrument to serve popular demands, valid measures of the demand for governmental services should reflect the characteristics and distribution of the population. This logic, plus the objective nature of the population figures, argues that population-based measures are probably the best starting points for gauging community demands.

The third group of variables was selected to secure approximations of tax effort. Per capita tax collections and effective tax rate are reasonably self-evident as indicators of the local effort of a county to finance its expenditure levels.

Two measures of the policy environment were employed in this analysis. The first, partisan political tendency, was designed to measure the extent to which each county preferred Democratic or Republican candidates in national and state elections. The figures used were the average percentage of the two-party vote cast for Republican candidates in the presidential, gubernatorial, and senatorial elections from 1954 to 1958.⁹ The variable of intergovernmental revenue per capita constituted a second measure of the policy environment, especially the disposition of the state-wide constituency to support county services. The intergovernmental revenue variable reflects the impact of a state-wide policy over which the county has little or no direct control.

A word of caution should be entered regarding the categorizations of the sixteen variables. It is a simple matter to assert and proceed on the assumption that assessed valuation and median family income, to take two examples, measure fiscal capacity. On the other hand, it would be possible to construe these variables as reflecting some measure of demands or needs, e.g., need for state aid in the case of low valuation counties, or requirements for welfare services in the case of low income counties. This possible two-fold interpretation suggests that the four general concepts measured by these variables are not neat, precise, and mutually exclusive divisions. There are unquestionably overlapping relationships and/or interaction between the conceptual categories as well as between the variables used to measure them. Part of our task, in addition to seeking explanations of the expenditure variations, will be to identify and interpret these interrelationships.¹⁰

⁹ The data for this variable also were made available to the author by Professor George B. Mather who utilized them in connection with his research on Iowa voting and the use of voting machines.

¹⁰ The matrix of the simple correlation coefficients of each variable with every other variable is provided in the "Technical Appendix to Iowa Local Govern-

The Analysis: Linear Correlation Coefficients

Table 15 presents the coefficients of simple linear correlation between per capita operating and general expenditures and each of the sixteen independent variables. The coefficients for general expenditures are in most instances larger than those for operating expenditures. The general similarity of the respective coefficients in the two sets makes it unnecessary, with one or two exceptions, to comment on individual differences. However, we observed earlier that general expenditures, namely those including capital outlay, interest on debt, and hospital outlays, were slightly less variable, on a comparative basis, than were operating expenditures. Their lesser variability comes into clearer focus when the coefficients for general expenditures are compared with their counterparts for operating expenditures. Most of the independent variables are more highly correlated with general expenditures than with operating expenditures. Alternately, we might say that the independent variables *predict* per capita general expenditures better than they predict operating expenditures.¹¹

In the presence of these data we might elaborate the "ceiling" feature mentioned earlier with respect to variations in general and operating expenditures. That the independent variables correlate higher with general expenditures suggests the possibility that fiscal capacity, need, effort, and policy environment constrain the levels of total (i.e., general) county outlays in a more pronounced fashion than is the case with operating outlays. In other words, there is more discretion in the setting of a sub-component of total outlays than in the determining of the level of total outlay itself. In the latter case, environmental influences limit (or predict) the expenditure levels to a greater extent.

The predictive or explanatory power of each independent variable for both expenditure variables is shown by the coefficients of determination in Table 16. Here the correlation coefficients in Table 15 have been squared and multiplied by 100 to show the percentage

mental Finance Studies." In addition, the "Technical Appendix" contains the values (figures) for each variable for every county.

The author recognizes that multiple factor analysis would be an appropriate statistical technique to apply to these data. The broad character of audience to which this publication is addressed dictated that this type of analysis be deferred until a later date.

¹¹ The terms *predict*, *explain*, and *account for* will subsequently be used to indicate the extent to which a knowledge of one (or more) variable(s) permits us to estimate correctly the actual values of the dependent variable for the several counties. In other words, a knowledge of one variable (x) permits us to explain a certain proportion of the variation in another variable (y).

Table 15

COEFFICIENTS OF SIMPLE LINEAR CORRELATION:
 MEASURES OF FISCAL CAPACITY, DEMAND, EFFORT, AND POLICY
 ENVIRONMENT CORRELATED WITH PER CAPITA OPERATING AND
 GENERAL EXPENDITURES IN IOWA COUNTIES, 1957

	Operating Expenditures (coefficients of linear (r)	General Expenditures (coefficients of linear (r)
<i>Fiscal Capacity</i>		
1. Value of Farm Products Sold (per capita)	.45	.42
2. Assessed Valuation (per capita)	.42	.36
3. Median Family Income	-.67	-.75
4. Value Added by Manufacture (per capita)	-.60	-.61
5. Sales Tax Collections (per capita)	-.59	-.60
6. Retail Trade Payrolls (per capita)	-.57	-.61
7. Selected Services Payrolls (per capita)	-.46	-.50
<i>Demand</i>		
1. Population Change	-.68	-.72
2. Urbanization	-.67	-.72
3. Population Size	-.54	-.58
4. Population Density	-.53	-.57
5. Per Cent of the Population over 65	.47	.55
<i>Effort</i>		
1. Property Tax Collections (per capita)	.71	.77
2. Effective Property Tax Rate	.47	.58
<i>Policy Environment</i>		
1. Intergovernmental Revenue (per capita)	.73	.81
2. Political Tendency (Republican)	.07	.02

^a Minus signs indicate negative correlation; no sign signifies positive correlation.

of expenditure variability explained or accounted for by each independent variable.

Our discussion of the several coefficients in the two tables will deal with three main aspects: (1) the direction of the association between the variables, i.e., positive or negative, (2) the size of the correlation, i.e., its explanatory power as shown in Table 16, and (3) the inter-correlations between some of the independent variables, especially where these are relevant to understanding the expenditure relationships. These topics will be treated within each of the generalized categories of variables.

Fiscal Capacity

Per capita expenditures in Iowa counties in 1957 were *positively* correlated with only two fiscal capacity variables: the per capita value of farm products sold and the assessed valuation of property

Table 16

COEFFICIENTS OF DETERMINATION FOR MEASURES OF FISCAL CAPACITY, DEMAND, EFFORT, AND POLICY ENVIRONMENT CORRELATED WITH PER CAPITA OPERATING AND GENERAL EXPENDITURES IN IOWA COUNTIES, 1957

	Operating Expenditures (coefficients of determination) ^a (percentages)	General Expenditures
<i>Fiscal Capacity</i>		
1. Value of Farm Products Sold (per capita)	20.4	17.5
2. Assessed Valuation (per capita)	17.7	13.1
3. Median Family Income	44.9	56.6
4. Value Added by Manufacture (per capita)	35.7	37.3
5. Sales Tax Collections (per capita)	34.6	35.7
6. Retail Trade Payrolls (per capita)	32.6	36.6
7. Selected Services Payrolls (per capita)	21.4	25.5
<i>Demand</i>		
1. Population Change	45.7	51.8
2. Urbanization	45.0	52.1
3. Population Size	29.0	34.6
4. Population Density	28.0	32.1
5. Per Cent of the Population over 65	22.1	32.3
<i>Effort</i>		
1. Property Tax Collections (per capita)	50.9	58.6
2. Effective Property Tax Rate	22.1	33.8
<i>Policy Environment</i>		
1. Intergovernmental Revenue (per capita)	53.0	66.1
2. Political Tendency (Republican)	0.5	b

^a Derived from Table 15: $r^2 \times 100$.

^b Less than .1 of one per cent.

per capita. That per capita expenditures rise as per capita assessed valuations increase is not surprising. Several recent correlation analyses of city and county expenditures have pointed to assessed valuation as a prime factor in explaining expenditure variations.¹² The surprising fact about the assessed valuation coefficients (.42 and .36) is not that they are positive but that they are not higher. John A. Vieg and his associates, in a study on California local finance, re-

¹² John A. Vieg and others, *California Local Finance* (Stanford: Stanford University Press, 1960), chapter 4; Stanley Scott and Edward L. Feder, *Factors Associated with Variations in Municipal Expenditure Levels* (Berkeley: Bureau of Public Administration, University of California, 1957); Seymour Sacks and William F. Hellmuth, Jr., *Financing Government in a Metropolitan Area* (New York: Free Press of Glencoe, 1961), chapter 4; John C. Bollens (ed.), *Exploring the Metropolitan Community* (Berkeley: University of California Press, 1961), chapters 14 and 15.

ported a correlation coefficient of .70 between per capita county operating expenditures and assessed valuation per capita.¹³ Assessed valuation explained 49 per cent of the variation in California county operating outlays whereas the same variable explained only 17.7 per cent of the 1957 expenditure variation in Iowa counties.

Some perspective on this low association can be obtained by considering the variable, value of farm products sold. This variable is associated in the same direction and in about the same degree with the two expenditures variables as is the assessed valuation variable. The reason for the like association is obvious when we examine the inter-correlation between value of farm products sold and assessed valuation. The coefficient is .87, exceptionally high. This highly significant correlation apparently reflects the extent to which agriculture, especially prominent in Iowa's economy, influences the assessment valuation process in the state. The high inter-correlation between these two independent variables far exceeds the modest correlations between each one singularly and the expenditure variables. The limited extent to which each is correlated with per capita expenditures suggests that agriculturally-oriented factors exert comparatively modest influences on Iowa county expenditure levels. To the extent that such influences do operate, however, they operate in a positive direction, namely toward raising per capita outlays.

The degree to which assessed valuation is agriculturally-oriented is revealed by the consistently negative coefficients between it and urban-, industrial-, and commercial-oriented variables. Per capita assessed valuation is correlated in the following manner with these variables:

Urbanization	-.58
Population density	-.43
Population size	-.42
Value added by manufacture	-.39
Median family income	-.38
Selected services payrolls	-.36
Retail trade payrolls	-.32
Sales tax collections	-.25

Median family income is clearly an urban-oriented measure of wealth, correlating positively with urbanization at .86 and with population size at .73. One note of caution should be entered here. Family income is perhaps not a very good measure of income in heavily rural jurisdictions where agricultural activities provide undetermined amounts of income in kind.

¹³ Vieg, *op. cit.*, p. 132.

One fact is clear, however. Per capita assessed valuation is a poor indicator of urban, industrial, and commercial wealth in Iowa counties. The consistent negative correlations between assessed valuation per capita and urban-oriented measures of fiscal capacity raise questions that cannot be explored fully here, such as, do assessment practices produce results in terms of assessed valuations that reflect agricultural wealth disproportionately? Or are the higher per capita assessed valuations in the smaller, agricultural counties an artifact of their declining populations on which the per capita valuations are based? The questions deserve further investigation with similar data for other years as well as with additional variables. Until the results of further studies are known the implications of state policies in Iowa that employ or propose to employ per capita assessed valuation of counties as a measure of wealth are unclear at best.

The five remaining measures of fiscal capacity shown in Table 15 all correlate negatively with the expenditure variables. The highest correlation is between median family income and general expenditures ($-.75$). Value added by manufacture, sales tax collections, and retail trade payrolls are negatively correlated with operating and general expenditures around the $-.60$ level. For selected services payrolls the negative correlation coefficients drop to $-.50$ and below. The individual explanatory power of these variables ranges from around 20 per cent to above 55 per cent.

What general conclusion can be drawn from the size and direction of these coefficients? Clearly, among Iowa counties those with higher levels of industrial, commercial, and urban-based wealth have lower per capita expenditures. (All five of these economic measures reflect an urban orientation; they are positively correlated with county population size at levels ranging from .48 to .73 and with urbanization at levels ranging from .71 to .86). The strong negative correlations between these fiscal capacity measures and county expenditures contrast sharply with the findings disclosed by the study of California counties. In that context mean income, manufacturing wages, and retail sales showed no clear association with 1957 per capita operating expenditures. The respective correlations were .03, $-.07$, and $-.08$.¹⁴ For Iowa counties similar economic measures reveal clear and strong associations in a negative direction.

Further contrasts to the negative correlations in Iowa come from a study analyzing the correlation between average per capita income and per capita expenditures in Iowa counties for the period 1927-29. Using the 1927-1929 averages for income and expenditure variables

¹⁴ *Ibid.*

the investigator found a *positive* correlation of .61.¹⁵ This high positive correlation reflects two aspects: (1) the overwhelming position of agriculture and agricultural income in the state's economy in the 1920's and (2) the tendency of expenditures to be directly related to an agriculturally-oriented measure of wealth. This latter tendency corresponds to the two positive associations previously identified, namely expenditures and assessed valuation, expenditures and value of farm products sold. Interestingly, a correlation analysis for the 1931-1933 period revealed a sharp reduction in the degree of income-expenditure correlation to .14; the direction was still positive, however.¹⁶ The reduced correlation was attributed to the differential impact of the effects of the depression on Iowa counties.¹⁷ It also seems possible that the lowering of the coefficient could be an indication of a transitional stage, undoubtedly precipitated by the depression, in which Iowa counties began to diverge into two significantly distinct economic categories, one distinguished by commercial-industrial wealth, the other predominated by agricultural wealth.

Other research and logic suggest that county expenditure levels should be positively correlated with these five fiscal capacity measures. The more income, manufacturing, and commerce within a unit, the greater, it would seem, is the likelihood of higher per capita expenditures. We might expect that the concentration of wealth and intense economic activity should require high levels of public services and be reflected in high per capita expenditures.¹⁸ How then do we explain these negative correlations? The explanation can be traced to the circumstances and nature of county government in Iowa.

Iowa counties provide services primarily to non-urbanized areas. This is especially true in the case of highways, an item constituting about 50 per cent of aggregate county expenditures (See Table 1). This non-urban focus of county services is also true with respect to natural resources and, to a much lesser degree, to health, hospital, and welfare outlays. Where substantial population concentrations

¹⁵ J. Reed Jorgensen, "A Comparison of Taxes Levied, Expenditures, and Income of the Ninety-nine Counties of Iowa for Two Periods, 1927-29, 1931-33" (Unpublished master's thesis, State University of Iowa, 1937), p. 10.

¹⁶ *Ibid.*, p. 12.

¹⁷ *Ibid.*

¹⁸ Two studies dealing with *municipal* units found predominantly positive associations between various measures of fiscal capacity and per capita municipal expenditures. See Harvey Brazier, *City Expenditures in the United States* (New York: National Bureau of Economic Research, Inc., 1959), pp. 76-79; Robert C. Wood, *1400 Governments* (Cambridge: Harvard University Press, 1961), chapter 2.

have occurred in the larger counties the areas of concentration have almost always been annexed to existing municipalities or incorporated, thus reducing much of the service responsibility of the county to those residents. For example, per capita highway operating expenditures are correlated $-.50$ with population density and $-.51$ with population size. These correlations tend to confirm the observation that the intensity of service levels for the main expenditure component of county expenditures is proportionately greater in the smaller rural counties. Rarely even in the largest counties are county governments in Iowa called upon to provide intensive, urban-type services. While the county still performs its traditional general control services such as registering deeds, collecting taxes, etc., for all residents in the more populous, urbanized counties, it can provide such services at a relatively low per person cost because of economies of scale not present among the smaller counties. Nor are the more urbanized counties likely to have relatively larger road, policing, and other duties than the less populous counties. Incorporated units provide these services for the bulk of the residents within the confines of county boundaries.

The findings in the previous chapter that per capita highway expenditures in counties over 25,000 were both lower and more variable or optional than in small counties also argue for the lesser significance of this functional outlay in the larger counties. In addition, the higher coefficients of variation for the counties over 25,000 than under 25,000 for police, natural resources, and health suggest that the same factor might be operating with respect to these functions to reduce the extent of county responsibility for these services in the large, urbanized counties (See Table 14).

The net effect of these influences is to produce a situation in which county government in the larger counties plays a comparatively smaller role than it does in the smaller counties. This circumstance was reflected previously in the inverse relationship between per capita expenditures and population size. At this juncture it produces a situation in which urban-oriented measures of wealth are inversely associated with per capita outlays. County expenditures are smaller per capita in these "urban-wealthy" counties because these measures of wealth are associated with circumstances that make it less necessary to call upon the county for services.

Demand

Examination of the measures of demand discloses relationships already treated, in part. The negative association between population size and expenditures has been referred to earlier and several of its

implications explored. One additional comment may be added. It seems quite possible that because of extensive incorporated territory within the most populous counties, the geographic area and the actual number of persons served by some of the smaller and medium-sized counties are perhaps as great as the area and persons served by county government in the most populous counties.

Per capita expenditures are negatively correlated with population change between 1950 and 1957. Generally, the greater the population decline the higher is the per capita outlay of Iowa counties. The loss of population leaves fewer *persons* to be served but several of the county functions, especially roads, remain fixed area-oriented responsibilities that do not alter significantly as persons move away. What does happen is that fewer persons remain to finance the services, hence the higher per capita costs.

As we might expect from the preceding discussion, measures of urbanization and population density are rather strongly negatively correlated with per capita operating and general expenditures. Other research has tended to treat these variables as measures requiring higher per capita expenditures;¹⁹ we are forced to recognize that in dealing with Iowa counties these measures are inverse measures of demands or service requirements. Therefore, they are negatively correlated with per capita outlays.

One direct measure of demand employed in the analysis did reveal a positive correlation with per capita county expenditures. The percentage of the population over 65 years of age correlated .47 with operating expenditures and .55 with general expenditures. A normal expectation here would be that the proportion of the population over 65 in Iowa counties correlates most highly with welfare and hospital expenditures. There is a positive correlation of .24 and .34 between the percentage over 65 and welfare and hospital expenditures respectively. The two coefficients are statistically significant but are considerably lower than expected. Furthermore, they are exceeded by correlations of .44 and .53 between the percentage over 65 and highway and general control expenditures respectively. The proportion of persons over 65 years of age in Iowa counties helps explain variations in per capita expenditures in the expected direction but not in a manner that is entirely clear and unmistakable.

Effort

The two measures of tax effort, property tax collections per capita and the effective property tax rate, are positively correlated with varying county expenditure levels. The associations are reasonably

¹⁹ Brazer, *op. cit.*; Sacks, *op. cit.*; Scott, *op. cit.*; and Wood, *op. cit.*

strong and quite consistent with expectations. The more a unit taxes the property within its boundaries the higher we would expect its expenditures to be.

Property tax collections are a direct and important revenue source for Iowa counties (See Table 4). For this reason, as well as the fact that both the expenditure and property tax variables are expressed in per capita terms, this effort variable explains from 50 to nearly 60 per cent of the variation in the two expenditure variables. The explanatory power of the variable in 1957 was considerably greater than it was twenty-five years earlier. In 1931-1933 the correlation coefficient between per capita property taxes levied and county expenditures was .41, yielding a predictive value of 16.8 per cent.²⁰ The correlation coefficient for the pre-depression period, 1927-1929, was .53 and accounted for 28.1 per cent of the variation in per capita expenditures.²¹ The relationship of property tax levels to expenditures is substantially greater in the more recent year, 1957. This fact suggests a greater reliance on the property tax recently compared with depression and pre-depression periods. An examination of the levels of state aid to counties in the 1920's and 1930's compared with the 1950's would be particularly relevant and necessary for a firmer statement on this problem.

The other effort variable, effective property tax rate, might in some respects be considered a preferable measure of effort since it is less directly the antecedent of expenditure amounts. It explains about 22 per cent of the variation in operating expenditures and about 34 per cent of the variation in general expenditures. Local tax effort, as measured here, exerts an important influence on the level of county expenditures.

Policy Environment

The fourth sector adjudged to influence expenditure levels has been termed policy environment. Of the two measures of policy environment, local political tendency shows no relationship with expenditure levels. Republican tendency in Iowa counties correlates only .07 with operating expenditures and even lower with general expenditures. These extremely low correlations do not permit us to say with absolute assurance that there is no association between partisan leanings and expenditure levels. We can say, however, that given the assumptions, the methods of analysis, and the time period

²⁰ Jorgensen, *op. cit.*, p. 55.

²¹ *Ibid.*, p. 10.

and units selected, we find no significant association between partisan inclinations and county expenditure levels.

Contrasted to the preceding lack of association, we find the second measure of policy environment, intergovernmental revenue per capita, highly correlated (positively) with county expenditures. Previously we found that in 1957 Iowa counties received 30.6 per cent of their revenues from an intergovernmental source. This is a substantial portion but it does not fully explain why this variable (or source of revenue), allocated on a formula established by the state legislature, should correlate with expenditure levels at a level higher than any other variables. Intergovernmental revenue per capita explains 53 and 66 per cent of the variations respectively in per capita operating expenditures and per capita general expenditures.

It is appropriate to ask: How is intergovernmental aid distributed among Iowa counties? How is the variable of intergovernmental revenue per capita associated with other variables? Several statements, in the form of summary observations, are pertinent.

First, state funds, on a per capita basis, go more to smaller counties, to counties losing population, and to the less urban counties. Intergovernmental revenue is correlated $-.44$ with population, $-.64$ with population change, and $-.68$ with urbanism.

Second, state monies are allocated in greater amounts to counties with higher proportions of persons over age sixty-five. The correlation coefficient is $.50$ between the two variables.

Third, state grants to counties are moderately correlated with the agricultural orientation of the counties, the association between per capita grants and value of farm products sold reaching $.39$. The association between per capita assessed valuation and state grants is $.30$. Counties with higher assessed valuations per capita are receiving more state funds per capita.

Fourth, state monies are allocated in a manner that is inversely related to measures of fiscal capacity that tap the urban, industrial, and commercial components of the state's economy. For example, intergovernmental revenue is negatively associated with the following variables: value added by manufacture, $-.55$; sales tax collections, $-.58$; retail trade payrolls, $-.59$; and selected services payrolls, $-.57$.

Fifth, intergovernmental revenue on a per capita basis is allocated to those counties in Iowa that seem to be making the greatest tax effort to support county services. Intergovernmental revenue is correlated $.68$ in the *positive* direction with per capita property tax collections. Similarly, intergovernmental revenue is correlated $.55$ with the effective property tax rate. In other words, the higher the level

of the property tax for county purposes, the higher the level of state funds returned to the county. Greater tax effort by an Iowa county is partially recompensed or "rewarded" by larger sums from the state. Considered strictly from a county standpoint, it appears that from an equalization standpoint state aid was dispensed in 1957 on a more rational and sensible basis than commonly imagined. It is clear that state grants were not distributed so as to reward those counties that put forth relatively less tax effort.

It could be suggested additionally that a sequence of political events and relationships is largely responsible for the present distributional pattern of state monies and for the statistical correlations between state grants and other variables. Specifically, one could argue as follows: the counties putting forth the greatest tax effort *for county purposes* are the smaller agricultural, declining-population counties. These counties have been substantially over-represented in the state legislature. The strong pressures to keep taxes, especially property taxes, from going higher in these counties, when taken in conjunction with the representational advantages enjoyed by these counties in the legislature, has produced the situation described by the quantified relationships between the variables. The legislative reapportionment plan passed by a 1964 special session of the General Assembly substantially reduced rural over-representation. Only the future will reveal whether state aid patterns will be altered by a differently-weighted legislature.

Summary

We might sum up our analysis of variables correlated with county expenditures in the following statements:

1. Fiscal capacity variables that measure or reflect agricultural wealth in the state are positively correlated with per capita county expenditures.

2. Fiscal capacity variables that tap dimensions of urban wealth are negatively correlated with per capita county expenditures.

3. Several measures of demand—population size, population change, population density, and urbanization—are negatively correlated with expenditures. One demand or service requirement measure, the proportion of the population over 65, is positively correlated with expenditure levels.

4. Measures of property tax effort are positively correlated with per capita expenditure levels.

5. Partisan political tendency appears to be unassociated with expenditures levels. On the other hand, funds returned by the state

to counties in the form of intergovernmental payments are positively and highly correlated with expenditure levels.

Thus far we have observed and commented on the separate association of the several independent variables with the two expenditure categories. We noted that many of the variables contributed in substantial measure toward explaining variations in county expenditures. Now, instead of conceiving of the independent variables acting separately and individually we wish to learn (1) how well we can account for variations in Iowa county expenditures when all sixteen variables are allowed to operate simultaneously and (2) when the variables operate in combination, which ones contribute the most toward explaining expenditure variations. These purposes are accomplished by multiple correlation and regression analysis.

Chapter X

Variations in Per Capita Expenditures: Multiple Correlation and Regression Analysis

Multiple Correlation and Regression Analysis

Table 17 presents the results of a multiple correlation and regression analysis using the sixteen independent variables with the two expenditure categories alternating as dependent variables. The multiple correlation coefficients are .8367 for operating expenditures and .8905 for general expenditures.¹ Squaring these values (and multiplying by 100 to express the result in percentage terms) we find that the sixteen variables explain 70.0 per cent of the variation in per capita operating expenditures and 79.3 per cent of the variation in per capita general expenditures. In the coefficients of multiple correlation and determination we again see reflected the ability to predict or explain with greater accuracy levels of general expenditure than operating expenditure. This further confirms the observation that these specified sources of influences on county budgets circumscribe the aggregate level of county outlays to a greater extent than they limit a sub-component of county expenditure.

A brief comment should be made concerning interpretation of the figures cited as "Standard Error of the Estimate." Briefly, these figures are the standard deviation of the deviations from the line of regression of the actual per capita expenditures for each county. The line of regression, or of best estimate, was developed by the least squares method. For each county an expected per capita expenditure was computed based on the actual values for each of the sixteen independent variables for that county. For example, Adair County had an *expected* per capita operating expenditure of \$58.33 based on its assessed valuation, value of farm products sold, etc., on through the entire sixteen variables. Adair County had an *observed* or actual operating expenditure of \$57.82 per capita in 1957. The difference between the observed and expected per capita figures in this instance

¹ Other results of the regression analysis—the regression coefficients, constant terms, and beta coefficients—are presented in the "Technical Appendix to Iowa Local Governmental Finance Studies."

Table 17

COEFFICIENTS OF MULTIPLE CORRELATION, DETERMINATION, AND
RELATIVE IMPORTANCE BETWEEN MEASURES OF FISCAL CAPACITY,
DEMAND, EFFORT, AND POLICY ENVIRONMENT AND PER CAPITA
OPERATING AND GENERAL EXPENDITURES IN
IOWA COUNTIES, 1957

	Operating Expenditures	General Expenditures
Coefficient of Multiple Correlation (R)	.8367	.8905
Coefficient of Determination ($R^2 \times 100$)	70.0%	79.3%
Standard Error of the Estimate (S_y)	\$8.78	\$10.48
	Coefficients of Relative Importance (Beta Weights)	
<i>Fiscal Capacity</i>		
1. Value of Farm Products Sold (per capita)	.17	.15
2. Assessed Valuation (per capita)	.07	.16
3. Median Family Income	.33 ^a	.02
4. Value Added by Manufacture (per capita)	.12	.06
5. Sales Tax Collections (per capita)	.30 ^a	.01
6. Retail Trade Payrolls (per capita)	.19	.04
7. Selective Services Payrolls (per capita)	.15 ^a	.10
<i>Demand</i>		
1. Population Change	.41 ^b	.18
2. Urbanization	.25	.23
3. Population Size	.18	.10
4. Population Density	.15	.04
5. Per Cent of the Population over 65	.08	.03
<i>Effort</i>		
1. Property Tax Collections (per capita)	.56 ^a	.54 ^b
2. Effective Property Tax Levy	.31	.26
<i>Policy Environment</i>		
1. Intergovernmental Revenue (per capita)	.41 ^c	.45 ^c
2. Political Tendency (Republican)	.06	.03
^a Statistically significant at the .10 level of confidence ^b Statistically significant at the .05 level of confidence ^c Statistically significant at the .01 level of confidence		

was only \$0.51. In other words, we "predicted" Adair County's per capita operating expenditure quite accurately on the basis of the sixteen independent variables.² In other instances the predictions were far less accurate. The standard error figures in Table 17 are the

² See the "Technical Appendix," *op. cit.*, for a discussion of the regression or estimating equation and its use. The residuals or deviations from the line of regression based on the estimating equation, plus the residuals expressed in standard error units, are presented for each county in the "Technical Appendix."

standard deviations of each of the ninety-nine deviations from the lines of regression for the two dependent variables. The standard error values form the basis for a specific interpretation regarding the deviations of the observed county expenditures around the line of regression, namely, that we would expect to find about two-thirds of the actual per capita expenditures falling within the given standard error amounts above or below (+ or -) the regression line. The standard error figure will serve an analytic purpose later in the discussion.

The ability to explain 70.0 and 79.3 per cent of the variability in operating and general expenditures is no small achievement. By contrast, Vieg and his associates could explain 62.8 per cent of the variation in per capita operating costs of California counties in 1957 using seven independent variables.³ The use of alternate and additional independent variables in the Iowa setting enhances our explanatory power for operating outlays by seven percentage points, not as much as we might hope for but nevertheless some gain.

The explanatory power of the several variables when related to general expenditures is somewhat higher. Only about 20 per cent of the variations in per capita general expenditures remains unexplained. It is highly probable that the source of influences that might have reduced this unexplained variation could well come from the two major dimensions we were unable to include in the statistical analysis, (1) the quality of services provided and (2) the efficiency with which the services are provided. Whether 20 per cent is a large or small amount of variation to be accounted for by quality and efficiency cannot be answered with any confidence or assurance, especially since there are no comparable studies to serve as a basis for comparison. Intuitively it appears reasonable to expect that these two dimensions would explain the remaining amount of variation, provided we could validly measure them. The quality and efficiency of services provided by counties in Iowa could well vary as much as 20 per cent from the least efficient, lowest quality services provided by a given county to the most efficient and highest quality of services provided by another county.

There are interesting similarities and contrasts between the results of this analysis and those from the study of California counties. The seven independent variables used in the far-west study were: population, assessed valuation per capita, mean income, per cent living in unincorporated areas, manufacturing wages divided by income, popu-

³ John A. Vieg and others, *California Local Finance* (Stanford: Stanford University Press, 1960), p. 131.

lation per square mile, and retail sales per capita. The single most significant independent variable correlated with per capita operating expenditures in the fifty-seven California counties was assessed valuation per capita.⁴ The correlation, as previously indicated, was positive at .70 contrasted with a .42 coefficient in Iowa.

One other independent variable showed a strong association with operating costs—the percentage of the total county population living in unincorporated areas. The positive association was .63.⁵ The comparable variable in the Iowa analysis is the measure of urbanism, except that the measure is scored in the reverse direction. (It states a figure indicating the extent to which people live in incorporated units rather than in unincorporated areas in the county.) The correlation between urbanism and Iowa county operating expenditures was $-.67$, strikingly similar to the result obtained in California. The similar strength of the associations tends to confirm the earlier observation that county government outlays per capita are conditioned by the proportion of residents residing (or not residing) in incorporated units. Additional evidence in support of this contention is found in the negative correlations revealed in the California study between county operating costs and population, population density, and retail sales per capita. The correlations, $-.19$, $-.32$, and $-.08$ respectively, were much lower than for similar variables in Iowa where the correlations were $-.54$, $-.53$, and $-.59$ for population, population density, and sales tax collections respectively.⁶ The significant point is that they all are correlated in the same direction, that is, negatively.

Comparisons of the California and Iowa studies have prompted us to review some of the two-variable or paired relationships. We return to the multiple-variable analysis with the question: When all but one of the sixteen independent variables are taken into account (held constant), how much does the one individual variable contribute toward explaining the variations in either operating or general expenditures per capita? In other words, what is the relative importance of each independent variable when the remaining fifteen variables are held constant? Coefficients derived from the regression analysis furnish the basis for interpretations. These coefficients, designated beta weights or measures of relative importance, appear in the lower part of Table 17 and provide the basis for responding to the questions posed above. The exact numerical levels of the beta weights should not be overlooked. However, we will focus our attention and

⁴ *Ibid.*, p. 132.

⁵ *Loc. cit.*

⁶ *Loc. cit.*

interpretations on the relative ranking of the several independent variables as determined by the beta weights.

For operating expenditures the most important independent variables rank themselves in the following order: property tax collections (.56), intergovernmental revenue (.41), population change (.41), median family income (.33), effective tax levy (.31), sales tax collections (.30), and urbanism (.25). Referring to the general categories in which each of the above variables falls, we find that all four generalized sectors of influence are represented. In fact, among the four variables ranking highest in relative importance as indicated by the beta weights, one variable comes from each of the general categories in the following order: (1) effort, (2) policy environment, (3) demand, and (4) fiscal capacity. Each of the four variables is statistically significant at or beyond the .10 level of confidence. The next three variables in order of importance—effective tax levy, sales tax collections, and urbanism—come from three different categories of generalized influence.

Per capita operating expenditures in Iowa counties do not appear to be powerfully associated with only one group or category of like variables. Significant contributions toward explaining operating expenditures come from diverse sectors and variables. This finding stands in clear contrast to the results and interpretations arising from the study of California counties. The general conclusion arrived at there stated: "The economic characteristics that appear to have the most influence on operating costs of local governments in California are clearly those connected with the availability of revenue."⁷ It is possible to reconcile or at least explain these seemingly contradictory results.

In the first place, of course, the contrast may reflect true differences that exist between the patterns of county expenditures in the two states. The similarities are sufficient, however, to question how divergent the patterns are. Secondly, and on the other hand, it may be that the smaller number of variables employed in the California study directed the researchers' attention chiefly to economic variables. One of these, assessed valuation, was exceptionally important in explaining expenditure variations when used alone and when employed in a multiple correlation and regression analysis. The use of additional variables from more diverse general dimensions reveals a more complex picture of several factors importantly associated with Iowa county expenditures. Thirdly, if we overlook the qualification in the above statement concerning "economic characteristics," there is a substantial

⁷ Vieg, *op. cit.*, p. 108.

amount of accuracy in a statement applying to the Iowa findings that "characteristics that appear to have the most influence on per capita operating costs are those connected with the availability of revenue." We should expect that property tax collections per capita and intergovernmental revenue per capita, the two most important and significant variables, would be prominently associated with levels of county outlays. They were selected in part because they reflect more fully the totality of influences affecting county government. One group of researchers recently noted, "In effect, it is impossible to explain the fiscal activities of the [local] system of government without reference to the other elements of the overall governmental system of which they are component parts."⁸

The accuracy of the preceding observation is sharply evident when we attempt to interpret the relative importance of variables associated with per capita general expenditures of Iowa counties. In several instances the beta weights for general expenditures are drastically different from those for operating expenditures. This is particularly true with respect to fiscal capacity and demand variables. The results show that property tax collections per capita and intergovernmental revenue per capita are the two outstanding and significant variables affecting county general expenditures. Furthermore, the shift from operating to general expenditure categories slightly reduced the beta weight for property tax collections and modestly increased it for intergovernmental revenue. These shifts, together with the disappearance of other variables from levels of relative importance and significance, can be explained largely in terms of the policy environment variable—intergovernmental revenue.

Intergovernmental revenue to Iowa counties contains a very large portion of state grants for highway purposes. Substantial proportions of the highway monies usually go for road construction, a capital outlay expenditure excluded from operating expenditures but included in general expenditures. The impact of intergovernmental revenue should be and is reflected to a greater degree in per capita general expenditures than in operating expenditures. The changes in the beta weights between the two expenditure categories reveal alterations in direct conformity to expectations. What was not anticipated was the extent to which fiscal capacity and demand variables would be excluded from importance and significance.

The results of this analysis lead to the conclusion that local tax

⁸ Seymour Sacks and others, *State and Local Government: The Role of State Aid* ("Comptroller's Studies in Local Finance, No. 3" [Albany: New York State Department of Audit and Control, 1963]), p. 138.

effort and intergovernmental aid are of prime significance in influencing per capita general expenditure levels in Iowa counties. Furthermore, state-level policy considerations take on special significance when general expenditures, contrasted with operating expenditures, are examined. In a broader context, applying to both county general and operating expenditures, per capita outlays are the apparent resultant of interacting influences from diverse dimensions. These dimensions encompass variables that are specific to localized fiscal capacities, demands, and tax efforts in Iowa counties as well as a policy dimension variable that reflects the larger political system of which the counties are a part.

Analysis of Deviant Cases

At a prior point in the discussion we referred to the standard error of the estimate as having some analytic use. We employ it here as a criterion for selecting those counties that are the most deviant cases in the regression analysis. By deviant cases we mean the counties for which the regression line in the multiple regression analysis was the *poorest* predictor of expected per capita expenditure.

For example, the multiple regression equation produced an expected per capita general expenditure for Appanoose County of \$62.59 whereas the actual per capita general expenditure for that county was \$48.95 (See Map 1). Thus, the computed value exceeded the actual value by \$13.64 per capita. (It could also be stated correctly that the actual expenditure was below the expected expenditure by the same per capita amount.) Consulting the standard error for the general expenditure category in Table 17 (\$10.48) we find, by a simple division process, that Appanoose County fell 1.3 standard errors below the regression line. A similar division process applied to the difference (deviation) between the actual and expected per capita general expenditure amounts for each county made it possible to designate those counties that deviated more than one standard error above or below the regression line. A like computation and selection process was applied to the operating expenditure variable. The results of these procedures are indicated in Table 18 where the names of the deviant counties are presented. (It should be emphasized that the term *deviant* implies no judgment about the appropriateness or inappropriateness of the expenditure levels of any county. The word is used in a purely descriptive sense to designate those counties whose per capita expenditures are the least predictable based on the sixteen independent variables selected.)

The counties listed in Table 18 are those whose per capita expendi-

Table 18

IOWA COUNTIES WHOSE 1957 OBSERVED PER CAPITA OPERATING OR GENERAL EXPENDITURES DEVIATED MORE THAN ONE STANDARD ERROR ABOVE OR BELOW THE LINE OF MULTIPLE REGRESSION BASED ON SIXTEEN INDEPENDENT VARIABLES

Operating Expenditure		General Expenditure	
$Y_o > +1S_y^a$	$Y_o > -1S_y^b$	$Y_o > +1S_y^c$	$Y_o > -1S_y^d$
Cedar	Carrolle	Boone	Appanoose
Delaware ^e	Dallas	Decatur	Carrolle ^e
Greene ^e	Grundy	Delaware ^e	Cass
Linn	Hancock	Emmet	Howard
Louisa ^e	Harrison	Greene ^e	Kossuth ^e
Lyon	Henry	Hamilton	Page ^e
Madison	Keokuk	Henry	Plymouth ^e
Mitchelle ^e	Kossuth ^e	Jackson	Warren
Monona ^e	Osceola	Jefferson	
Shelby	Page ^e	Louisa ^e	
	Plymouth ^e	Mitchelle	
	Washington	Monona ^e	
		Muscatine	
		Pocahontas	
		Union	
		Van Buren	

^a The observed per capita operating expenditure for the county was greater than one standard error above the line of multiple regression.

^b The observed per capita operating expenditure for the county was greater than one standard error below the line of multiple regression.

^c The observed per capita general expenditure for the county was greater than one standard error above the line of multiple regression.

^d The observed per capita general expenditure for the county was greater than one standard error below the line of regression.

^e Exceeds one standard error (above or below the line of multiple regression) for both operating *and* general expenditures.

tures are poorly explained by the variables included in our analysis. In other words, variables we have failed to take into account or assumptions we have made are operating to place these counties substantially above or below the expected per capita outlay specified by the line of multiple regression. What other influences might be operating? An effort to answer this question compels us to look at the characteristics of the counties named. Prior to that, however, we need to recognize that the separation of expenditures into operating and general outlay categories introduces a special problem.

As indicated earlier, the primary source of difference between operating and general expenditure is the capital outlay item. This item is usually subject to considerable variation from year-to-year. Since

the regression analysis is a one-time, cross-section analysis, it is especially susceptible to temporary aberrations from this source. We may hedge against this limiting condition by further restricting our definition of the most deviant counties. We shall consider as most deviant only those counties whose per capita expenditure exceeded one standard error above or below the regression lines for both operating *and* general expenditures. Five counties—Delaware, Greene, Louisa, Mitchell, and Monona—exceeded one standard error above the regression lines for both operating and general expenditures. Four counties were more than one standard error below the regression line for both expenditure categories—Carroll, Kossuth, Page, and Plymouth.

Are there any unusual characteristics that the former group of counties, those well above the regression lines, have in common? A similar question may be asked about those below the regression line. An examination of several social, economic, demographic, and political characteristics of these counties provided a basis of explaining some of the unexplained expenditure variations in the two regression analyses. Among the five most deviant counties above the regression lines there was a clustering of the values for these counties on two variables—population and urbanism. Four of the five counties had populations between ten and fourteen thousand with the fifth county, Delaware, recording a population slightly over 18,000. All five of these counties fell within a narrow range of from 6 to 11 per cent urban. Moreover, of the total of twenty-one different counties that deviated one standard error above the regression line for either operating or general expenditures, sixteen had populations between 10,000 and 20,000. This finding further emphasizes the concentration of the more deviant cases in this particular population class.

Turning to the four most deviant counties below the regression lines we find a like tendency for them to cluster insofar as their populations were concerned. All four had populations between twenty and twenty-five thousand. There was much less tendency for these counties to cluster on the urbanism variable, although the percentages urbanized ranged between 11 and 24 per cent.

Normally, deviant case analysis is utilized to point the researcher in the direction of new variables to be included in later analysis. From the evidence above we have observed a distinct tendency for the deviant cases to cluster along variables we have already used, namely population size and urbanism. What this suggests is that our assumption about the nature of the relationship was faulty. Our correlation analysis indicated the presence of a strong relationship between the

two variables and per capita county expenditures based on the assumption of linearity. What in fact appears to be the likely case is that the assumption of a curvilinear relationship must be made in the multiple regression analysis. We had an earlier clue that this might possibly be the case. Figure 1 visually suggests this for the population variable at least.

Until a subsequent time when we shall incorporate into a regression analysis a curvilinear assumption for the population and urbanism variables, we are limited to tentative observations with respect to the general factor of demand as it has been measured and associated with county expenditure levels. Inclusion of a curvilinear assumption into the analysis and computations will undoubtedly elevate somewhat both the total explanatory power of the correlation (R^2) and increase the relative importance of demand factors in relation to Iowa county outlays. It should be recalled, however, that population and urbanism as measures of demands for county outlays are *reverse* scored. We think the findings show that the more populous and urbanized counties require comparatively fewer services from county government. In view of a scrap of corroborating evidence in this direction from the California study, it would seem most worthwhile to examine this one-time, cross-sectional relationship in other states as well as in prior and subsequent periods in Iowa.

Chapter XI

Summary and Concluding Observations

Research on county government has not been one of the mainstreams of interest for students of politics, public administration, and public finance. Furthermore, much of the work that has been done on county government has had a strong reformist orientation. Nearly a half-century ago H. S. Gilbertson coined a phrase that has remained closely associated with county government whenever the subject is discussed. The phrase, of course, refers to the county as the "dark continent of American Politics."¹ The frontispiece of Gilbertson's volume depicts an elaborate and complete diagram of the structure of a typical county government. The diagram's title includes the summary adjectives: "headless," "irresponsible," "inefficient," and "obscure." Fifteen years after Gilbertson's work was published Arthur W. Bromage, in a major study of county government, observed, "The county is no longer the 'Dark Continent' of American politics."² However, Bromage viewed the effectiveness of county government with substantial skepticism, calling it part of the "labyrinth of local government," established in a "horse-and-buggy age," generally unsuited to the twentieth century, and strongly resistant to major reforms because it is one of the "traditional instruments of government with the force of precedent behind them."³

A mid-century review of the status of county government published in 1952 identified the very limited adoption of the many proposed reforms in county government.⁴ The writer urged that the second half of the century be devoted to implementing the several reforms, fourteen in all, among counties.⁵

¹ H. S. Gilbertson, *The County: The "Dark Continent" of American Politics* (New York: National Short Ballot Organization, 1917).

² Arthur W. Bromage, *American County Government* (New York: Holston House, 1933), p. vii.

³ *Ibid.*, pp. 3-9.

⁴ Clyde F. Snider, "American County Government: A Mid-Century Review," *American Political Science Review*, Vol. 46 (March, 1952), pp. 66-80.

⁵ *Ibid.*, p. 80.

A noticeable resurgence of interest in county government within urban areas has occurred in the last decade as numerous and extensive investigations have explored the problems of metropolitan areas. It is perhaps a little known fact that of the 3,043 counties in the nation 277 had populations in excess of 100,000 in 1960.⁶ Furthermore these 277 counties served slightly over 60 per cent of the nearly 160,000,000 persons served by county governments across the nation.⁷ Population pressures and a changing urban environment have created problems for numerous counties. Some adjustments have been made in the legal, administrative, and organizational formats of highly urban counties. Two recent analytical discussions examine briefly the developments and changes in urban county government.⁸ For the vast majority of county governments, however, no significant organizational alterations have occurred since they came into existence more than a century ago.

Contrasted with the studies cited above, this study has not focused on the structural, legal, and organizational aspects of county government. Neither has it had a basic reformist orientation, although the writer would agree with the many critics of county government to the extent that some changes in county government are past due. The focus of this study has aimed at being explicitly descriptive and explanatory. We have attempted to describe and explain in more complete fashion than previously attempted a half-century of trends in Iowa county expenditures and property taxes. We also sought to describe and explain differing per capita levels of county expenditures at one point in time. It is appropriate to review some of our findings and to offer some observations regarding their significance for further research on counties in general and county finances in particular.

County Expenditure Trends

Expenditure data reveal that counties, especially in Iowa, are important units of government. The three largest functional outlays of Iowa counties are for highways, health and hospitals, and general government, in that order.

⁶ U.S. Bureau of the Census, *Census of Governments: 1962*, Vol. I, GOVERNMENTAL ORGANIZATION, p. 2.

⁷ *Ibid.*

⁸ Gladys M. Kammerer, *The Changing Urban County* ("Civic Information Series No. 41" [Gainesville: University of Florida, 1963]); "The Urban County: A Study of New Approaches to Local Government in Metropolitan Areas," *Harvard Law Review*, Vol. 73 (January, 1960), pp. 526-582.

When the annual expenditures of Iowa counties are traced over a half-century period, three general findings are evident:

1. County expenditures have fluctuated greatly, their annual variation (percentage-wise) being comparatively greater than annual municipal or school expenditures.

2. The annual variations in county expenditures correspond closely to fluctuations in economic conditions in the state. In the earlier years expenditures were especially responsive to trends in the agricultural sector of the economy.

3. County expenditures also reflect the influence of other factors besides economic prosperity (or decline). Among these are a changing industrial and agricultural technology, popular attitudes, wartime fiscal policies, price level changes, and, to a slight extent, population increases.

The influence of price level changes, population increases, and changing levels of prosperity prompted us to examine more systematically the relation between these factors and county expenditures. Controlling for population increases via per capita expenditure amounts did not greatly alter or reduce trends in current (or nominal) expenditures over the half-century. With both population and price changes held constant the per capita constant dollar expenditures of Iowa counties was slightly *less* in 1960 than in 1929. When changing prosperity levels were held constant by expressing county expenditures as a per cent of state personal income, the *scope* of county government in 1960 was substantially less than the average scope of county activities in the 1920's but somewhat more than the extent of county government in the periods 1910-1919 and 1942-1948.

County Property Tax Trends

Iowa counties receive more than half of their general revenues from the property tax. A consideration of county property tax levies from 1910 to 1960 discloses that:

1. County property tax levies, like county expenditures, are subject to greater variation than levies for municipal or school purposes.

2. Levies have tended to follow state economic trends quite closely.

3. County levy trends also reflect the impact of changing price levels, and in recent years levies have followed general price level indicators quite closely. The recent pattern seems to be the result of Iowa's shifting economic base toward a greater industrial-agricultural balance.

When changing price levels are eliminated through the use of the constant dollar (Consumer Price Index), a comparatively modest in-

crease of about 60 per cent is recorded in the change in county tax levies from 1913 to 1960. If population increases and price changes are held constant simultaneously, the 1913-1960 increase in tax levies (per capita constant dollars) is reduced to approximately 32 per cent. Of some significance, however, is the fact that the post-war increase in per capita constant dollar levies is somewhat greater than the 1913-1960 increase in county levies.

Holding prosperity levels constant we find that the *burden* of county property taxes in 1910 was about the same as it was in 1960. There were considerable fluctuations in the proportion of county tax levies to state personal income, the highest occurring in the early depression years. The lowest average *burden* of county levies in relation to income came in the period 1942-1948, followed closely by the 1949-1960 period.

The apparent factors that have enabled Iowa counties to hold tax levies in relation to income at a relatively constant level in recent years are: (1) a shifting of functions to other levels of government, (2) increases in state grants-in-aid, (3) increases in efficiency, (4) state statutory restrictions on county levies, and (5) competition for property tax dollars from other units of governments. On the last point it is interesting to note that in 1910 counties levied slightly more than one-third of the property taxes spread against the tax rolls in the state whereas in 1960 the proportion had dropped to less than one-fourth. This decline takes on greater significance when the withdrawal of the state government from the property tax field is noted. In 1910 the State of Iowa levied for state purposes 8.2 per cent of all property taxes levied. In 1960 the proportion was 1.0 per cent.⁹

Additional evidence regarding the comparative position of Iowa counties in relation to other local units was available from a half-century trend analysis of all local governmental expenditures in Iowa.¹⁰ Separate time series data for school, municipal, and county expenditures and tax levies were available. These time series were separately correlated with the annual personal income figures from 1910 to 1960 and a statistic, the elasticity coefficient, was calculated. Simply stated, the elasticity coefficient expresses the degree of change in a dependent variable that is associated with a 1 per cent change in an independent

⁹ See "Technical Appendix to Iowa Local Governmental Finance Studies."

¹⁰ Deil S. Wright, Robert W. Marker, and Garlyn H. Wessel, *A Half-Century of Local Governmental Finances: The Case of Iowa—1910-1960* (Iowa City: Institute of Public Affairs and Iowa Center for Research in School Administration, University of Iowa, 1963).

variable, both variables taken at their respective means.¹¹ In this instance the independent variable is state personal income; the dependent variables are the expenditures and tax levies of the respective types of local units. The income elasticity coefficients for expenditures were:

Counties:	.85
Municipalities:	1.24
School Districts:	1.16

The income elasticity coefficients for property tax levies were:

Counties:	.69
Municipalities:	.97
School Districts:	.93

These coefficients give a rough indication of the sensitiveness of the expenditure and tax levy variables to changes in personal income. The conclusion drawn from these statistics is quite apparent. Counties rank considerably below municipalities and school districts in the degree to which their expenditures and tax levies respond to changes in personal income. A 1 per cent change in personal income, for example, was associated with only a .69 per cent change in county property tax levies compared with .97 and .93 percentage changes in municipal and school levies respectively.

In Iowa, at least, school and municipal units appear to be "working" the property tax harder. Their expenditures also exceed unit elasticity whereas county expenditures fall somewhat short of unity. We might strongly suspect that this pattern is very similar in other states. It could well be, however, that Iowa is in some respects unique in the extent to which county finance trends have lagged behind municipal and school finances in their respective responsiveness to changing economic circumstances. This hypothesis derives from the general impression that the impact of urbanization has resulted in more duties and responsibilities being placed on counties in other states than has occurred in counties in Iowa. It is likewise possible that for some selected states the responsiveness of county finances has

¹¹ The statistical computation of elasticity coefficient is quite simple. It is the ratio of the mean of the independent variable to the mean of the dependent variable multiplied by the value of the b coefficient (the slope value in the standard

linear regression equation). The formula may be written as follows: $e = b_{yx} \frac{\bar{X}}{\bar{Y}}$

where e is the elasticity coefficient, b_{yx} is the slope coefficient in the regression of y on x , \bar{X} is the mean of the independent (x) variable, and \bar{Y} is the mean of the dependent (y) variable.

been less, comparatively speaking, than in Iowa. Inquiry into long-term local finance trends in other states is a prerequisite for any firm comparative statements.

Describing Per Capita Expenditure Variations

Wide variations were found to exist in 1957 per capita expenditures among Iowa's ninety-nine counties. Of the two expenditure aggregates used in the analysis, per capita operating and per capita general expenditures, the latter was slightly less variable than the former. Analysis revealed that per capita general expenditures were more predictable from several independent variables than per capita operating expenditures. This finding suggests the general observation that environmental restraints are more effective in conditioning total per capita outlays than in influencing the level of any expenditure sub-component.

Per capita operating and general expenditures were lowest among the large, urban, and growing (population-wise) counties; per capita expenditures were highest among the small, rural, population-declining counties. Further analysis suggested that several factors contributed to this patterning. State subventions, an important source of county revenues, are greater per capita in the smaller rural counties. Generally, these same counties also exert a greater tax effort than the larger urban counties. Another major consideration is the nature and service orientation of county government as an agent of the state for providing services primarily to rural areas. It appears that among counties with larger percentages of the total population residing in incorporated units, two developments occur: (1) economies of scale take effect with regard to those activities provided by the county to persons in the incorporated units, and (2) the demands for county-provided intensive services tend to diminish because of the services provided by the incorporated units.

Variations among county per capita expenditures for 1957 provided little basis for generalizing about trends. We did hypothesize that per capita outlays were becoming more divergent possibly as a result of lesser social and economic homogeneity among the counties. A recent publication contains data demonstrating that this divergence is apparently occurring in Iowa counties.¹² Average per capita costs for four groups of Iowa counties classified roughly by urbanization progressively diverged in the years 1940, 1950, and 1959. More complete

¹² Robert I. Wessel, *Iowa Rural Government Since 1900* (Ames: Agricultural and Home Economics Experiment Station, Special Report No. 32, April, 1963).

analysis of those data, specifically the coefficients of variation, plus data for additional years, is necessary to lend more credence to the hypothesis.

There is considerable variation in per capita outlays for different functional programs undertaken by Iowa counties. Efforts to explain the contrasting variability of different functional outlays led us to speculate on three elements that might account for differences. First, we noted that the non-discretionary or compulsory character of the function might play some role in inducing more uniform levels of per capita expenditure among Iowa counties for certain functions, such as police, welfare, highways. Second, we observed that spatial or inter-unit similarities (or differences) might produce more uniformity (or variability) for certain types of functional outlays, as, for example, natural resource expenditures in dominantly agricultural counties. Finally, we suggested that the nature of the function *per se* may be of importance in understanding the uniformity or variability of per capita outlays in certain circumstances. By "nature of the function" we refer to whether it is primarily a person-oriented activity or an area-oriented type of program.

Explaining Per Capita Expenditure Variations

Efforts to explain per capita expenditures in Iowa counties culminated in simple and multiple correlation and regression analyses. Selecting sixteen independent variables intended to measure the general dimensions of fiscal capacity, demand, effort, and policy environment, we first examined the paired or two-variable relationships. The variables positively or directly associated with per capita operating and general expenditures were value of farm products sold, assessed valuation, proportion of the population over sixty-five, property tax collections, effective property tax rate, and intergovernmental revenue. All the correlation coefficients were rather high, ranging from .42 to .81. The variables negatively correlated with per capita operating and general expenditures were median family income, value added by manufacture, sales tax collections, retail trade payrolls, selected services payrolls, population size, population change, population density, and urbanization. Here, too, the correlation coefficients were high, ranging from .46 to .75. One variable, political party tendency, showed an insignificant correlation with per capita expenditures.

Besides the relationships indicated above, the inter-correlations between some of the independent variables deserve restatement. Assessed property valuations are closely and positively correlated with an

agriculturally-oriented variable, the value of farm products sold. On the other hand, assessed valuations are negatively correlated with all variables reflecting on urban, commercial, industrial orientation. Assessed valuation per capita does not constitute a very good measure of *general wealth for Iowa* counties. Intergovernmental revenue per capita is distributed with a distinct preference toward the smaller rural counties—the correlation between intergovernmental aid per capita and the degree of urbanization was minus .68. However, intergovernmental aid was strongly and positively correlated with per capita property tax collections (.68). In other words, state grants to counties in Iowa are closely associated with tax effort, suggesting that state subvention policies to counties may be intentionally or unintentionally more rational from an equalization standpoint than popularly perceived.

When the sixteen independent variables were employed in a multiple correlation and regression analysis, it appeared that the tax effort and policy environment dimensions included variables that contributed the most to explaining expenditure levels. Variables from the demand and fiscal capacity dimensions followed in that order. The two general observations drawn from the findings were (1) that county per capita expenditure levels can be predicted to a fairly high degree on the basis of the several variables employed (70-80 per cent of the variation could be explained), and (2) that county expenditure levels appear to be the result of a combination of influences which are complex, interacting, and resist over-simplified explanation.

At various junctures in this study arrows pointing the way for further research have been presented, most often in the form of hypotheses. Hopefully some of these will be pursued by the author and/or others. It would seem especially desirable to revise or modify the multiple correlation and regression analysis in several ways. Additional and perhaps better measures of demand might be employed. For example, since highways are an important part of county outlays, road mileage might well be included in a reanalysis. It also might be advisable to reduce the number of variables used in the multiple-variable analysis. This course of action might be helpful to see in clear juxtaposition the relative importance of a few key variables. Further it would be highly desirable if some measures of quality and efficiency could be developed for inclusion in the analysis. One refinement to the sixteen-variable analysis follows from the deviant case analysis. The explanatory power of the sixteen variables would undoubtedly increase if we could apply statistically the assumption of curvilinearity to the population and urbanization variables. Factor analysis of the several variables is also indicated.

To the foregoing observations it might be added that Iowa counties appear to be units of government with what might be termed high fixed costs. As populations decline without compensating reductions in services, per capita costs naturally tend to be higher. The reverse holds true for counties experiencing population increases. These comments raise basic policy questions. Are Iowa counties an outmoded unit of government that should be abolished or reduced in number? Could the state government provide services to these areas at less cost than currently? These questions are not the likely alternatives presently facing policy makers or interested citizens. From the standpoint of political reality counties are governmental systems in being that seem to have responded not wholly inadequately to a complex and changing environment. It is undoubtedly true that changes, improvements, and savings in county government operations could be made. County consolidation is one such change, but it is not one recommended either on the basis of the findings of this study or on the writer's own predilections. A more feasible course of action, both politically and administratively, would seem to lie in state legislation which would permit (1) county reorganization or home rule, and (2) intergovernmental cooperation among counties and/or between a county and municipality. These suggestions are not offered as cure-alls. They certainly are not new proposals. But it does appear that they might materially improve the effectiveness of county government in some areas. A pertinent observation on the effectiveness of our governments has been offered by Professor York Willbern:¹³

It is a little unfair to ask our governmental institutions to work at full efficiency in helping to produce the good life when we change its content so rapidly. Our structures may be somewhat confused, but our value systems are themselves none too orderly.

Generally, the findings of this study indicate that the county is an important unit of local government, that it is a unit strongly affected by state actions, and that it is a unit responding to shifting circumstances and different localized economic and social situations. With greater discretion available counties in Iowa would be in a better position to respond to the increasingly complex and differing conditions that face them now and will continue to confront them in the future. County government has lost some of the opprobrium associated with the "dark continent" remark of nearly a half-century ago; it has yet to sharpen and clarify any "new image."

¹³ York Wilbern, "The States as Components in an Areal Division of Powers," in Arthur Maass (ed.), *Area and Power* (Glencoe: The Free Press, 1959), pp. 86-87.



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Appendix

IOWA POPULATION FIGURES AND ECONOMIC INDICATORS

1910 - 1960

Year	State Population July 1	State Per Capita Personal Income	Total State Personal Income (in millions of dollars)	Index of Prices		Consumer Price Index (1957-59=100)	Implicit Price Deflator (1960=100)
				Paid by Farmers All Items (1910-14=100)	Index of Prices Received by Farmers All Farm Products (1910-14=100)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1910	2,228,616	296	659	97	104		
11	2,247,072	318	713	98	94		
12	2,265,528	314	712	101	99		
13	2,283,984	346	790	101	102	34.5	
14	2,302,440	355	819	103	101	35.0	
1915	2,320,896	346	804	105	99	35.4	
16	2,339,352	427	998	116	119	38.0	
17	2,357,808	537	1267	148	178	44.7	
18	2,376,264	576	1368	173	206	52.4	
19	2,394,720	615	1471	197	217	60.3	
1920	2,407,285	493	1189	214	211	69.8	
21	2,413,813	422	1017	155	124	62.3	
22	2,420,341	507	1227	151	131	58.4	
23	2,426,869	528	1281	159	142	59.4	
24	2,433,397	559	1362	160	143	59.6	

1925	2,439,925	554	1352	164	156	61.1	
26	2,446,453	560	1371	160	145	61.6	
27	2,452,981	528	1297	159	140	60.5	
28	2,459,509	545	1339	162	148	59.7	
29	2,466,037	575	1419	160	148	59.7	37.1
1930	2,472,622	508	1255	151	125	58.2	36.6
31	2,479,355	398	988	130	87	53.0	34.6
32	2,486,088	296	735	112	65	47.6	32.0
33	2,492,821	254	633	109	70	45.1	33.1
34	2,499,554	269	673	120	90	46.6	34.5
1935	2,506,287	420	1052	124	109	47.8	34.9
36	2,513,020	386	971	124	114	48.3	34.0
1937	2,519,753	504	1270	131	122	50.0	35.3
38	2,526,486	450	1136	124	97	49.1	34.9
39	2,533,219	467	1183	123	95	48.4	34.4
1940	2,540,338	501	1272	124	100	48.8	35.3
41	2,548,619	593	1511	133	124	51.3	37.2
42	2,556,901	788	2014	152	159	56.8	40.1
43	2,565,181	905	2321	171	193	60.3	42.4
44	2,573,462	877	2258	182	197	61.3	44.0
1945	2,581,743	953	2460	190	207	62.7	46.2
46	2,590,024	1150	2978	208	236	68.0	50.7
47	2,598,305	1149	2986	240	276	77.8	57.6
48	2,606,586	1509	3934	260	287	83.8	63.8
49	2,614,867	1301	3403	251	250	83.0	65.8

Year	State Population July 1	State Per Capita Personal Income	Total State Personal Income (in millions of dollars)	Index of Prices Paid by Farmers All Items (1910-14=100)	Index of Prices Received by Farmers All Farm Products (1910-14=100)	Consumer Price Index (1957-59=100)	Implicit Price Deflator (1960=100)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1950	2,624,485	1448	3799	256	258	83.8	67.4
51	2,638,131	1544	4072	282	302	90.5	72.6
52	2,651,777	1611	4272	287	288	92.5	76.3
53	2,665,423	1542	4110	277	255	93.2	78.5
54	2,679,069	1676	4489	277	246	93.6	80.5
1955	2,692,715	1582	4260	276	232	93.3	82.3
56	2,706,361	1689	4572	278	230	94.7	87.4
57	2,720,007	1879	5110	286	235	98.0	91.9
58	2,733,653	1919	5245	293	250	100.7	94.4
59	2,747,299	1970	5412	297	240	101.5	96.9
1960	2,761,000	2017	5568	299	238	103.1	100.0

IOWA POPULATION FIGURES AND ECONOMIC INDICATORS
1910-1960

[References Are to Columns]

1. Except for 1960, these figures represent the estimated July 1 population based on linear interpolation from the actual population figures on the various census dates. The actual population of the state and the dates of decennial censuses are:

1910 (April 15)	2,224,771
1920 (January 1)	2,404,021
1930 (April 1)	2,470,939
1940 (April 1)	2,538,268
1950 (April 1)	2,621,073
1960 (April 1)	2,757,537

The July 1, 1960, estimate is from U.S. Bureau of the Census, *Governmental Finances in 1960*, G-GF60-No. 2, p. 37.

2. Per capita personal income was obtained by dividing total state personal income by the estimated July 1 state population figures. State personal income from 1910-1928 was obtained from Howard Bowen, *Iowa Income, 1909-1934* (Iowa City: Bureau of Business Research, Iowa Studies in Business, No. XIV, 1935), p. 26. Bowen's figures were adjusted downward by multiplying by a factor of 81.42 per cent, the percentage representing the average of the ratios that the Department of Commerce personal income figures were to Bowen's figures for the years the two series overlapped, 1929-1933. From 1929-1954, state personal income figures were obtained from U.S. Department of Commerce, Office of Business Economics, *Personal Income by States Since 1929*, 1956, pp. 142-43. Personal income since 1954 was obtained from U.S. Department of Commerce, Office of Business Economics, *Survey of Current Business*, August, 1962, p. 11.

3. See discussion in 2 above.

4. U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, p. 283, and U.S. Department of Agriculture, *Agricultural Chart-book, Outlook 1963*, November, 1962, p. 14.

5. *Ibid.*

6. U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Price Index—U.S.: All Items, 1913 Forward, Series A* (processed), undated, 2 p.

7. Implicit price deflators with 1954 as the base year were obtained from U.S. Department of Commerce, Office of Business Economics, *Survey of Current Business*, July, 1958, pp. 10-11, and July, 1961, p. 8. These deflators or price relatives on a base of 1954=100 were transposed to a base of 1960=100 by dividing the 1929-1959 price relatives by the 1960 price relative.

