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IN THIS ISSUE

In recognition of Albert G. Clay's long service to the Federal Reserve System, the Federal Reserve Bank of Cleveland, and the State of Kentucky, an article describing recent economic developments in the state is included in this issue of our *Economic Review*. Mr. Clay's term as Chairman of the Board of Directors of the Federal Reserve Bank of Cleveland terminated on December 31, 1972. He served nine years on this Bank's Board, the last five of those as Chairman and Federal Reserve Agent for the Fourth District. Also, he served as Chairman of the Conference of Chairmen of the Federal Reserve Banks during 1971. In addition to his service with the Federal Reserve System, Mr. Clay is Treasurer of Owensboro Tobacco Company and Vice Chairman of the Board of Trustees and Chairman of the Executive Committee of the University of Kentucky and has numerous other business and public activities.

THE IMPACT OF INFLATION ON THE ELDERLY

Theodore S. Torda

The elderly are frequently singled out as the group affected the most by inflation, primarily because of generally low, fixed income levels. Since the mid-1960's, however, both public and private actions have helped to offset some of the adverse effects of inflation on the elderly. For example, liberal increases in Social Security benefits in recent years have resulted in a rapid growth of real income for the elderly (greater than that achieved by the the general population).

According to this study of the effects of inflation on the elderly, there is little evidence to suggest that the cost of living has risen faster for the elderly than for the population as a whole. While consumer price increases for certain types of goods and services–such as food at home, shelter, and public transportation–hurt the elderly more than the urban wage and clerical worker, price increases for other items–such as food away from home, apparel and upkeep, and private transportation–affect them less. Moreover, the implementation of Medicare has resulted in a reduction of the share of income the elderly must devote to medical expense.

The effect of inflation on assets held by the elderly is more difficult to ascertain than for income. The principal asset of most elderly persons is a home. While property values have increased sharply since the early 1960's, property taxes and maintainenance costs have risen even more steeply. Financial assets held by the majority of elderly persons are relatively small, and apparently the recent wave of inflation has had only a minor effect on the income that the elderly receive from these assets.

Inflation presents many problems. One problem is that inflation—and attempts to curb it—affects the distribution of income and wealth of different groups in unequal ways. Some people are gainers and others are losers. Of all major groups, the elderly are widely believed to be among the principal victims of inflation. Typical of that view among economists is the statement by one former chairman of the Council of Economic Advisers,

> It is remarkably difficult to determine who gained and who got hurt (by inflation) in terms of real income. The retired aged are the only major specific demographic group of Americans that I can confidently identify as income losers.[1]

The impact of inflation on the elderly has been a matter of serious concern within the Congress, as exemplified by the following:

> Inflation is widely regarded as 'unfair' in its effects on income distribution. All too little is known about the distributional effects of inflation, and much more research needs to be done in this area. One group which obviously is hurt by inflation is older persons living on fixed retirement income.[2]

This article focuses on some of the major aspects of inflation as they affect the economic well-being of this nation's elderly population. First, the article discusses the general nature of the problem and some limitations inherent in the analysis of the data. At the forefront, emphasis is placed on the problem of inflation and the elderly poor and on how the poverty status of the aged has changed during the past decade or so. The question of the effects of inflation on expenditure patterns, cost of living, and income levels of the elderly is then examined. Because Social Security benefits figure importantly in the income of the aged, the history of changes in these benefits against the background of rising prices and wages is analyzed. The labor force status of the elderly, another major factor affecting income, is also discussed. Finally, the article examines the impact of inflation on the homeownership and financial asset positions of the elderly.

GENERAL NATURE OF THE PROBLEM

Rising prices have characterized the United States economy for most of the post-World War II period, and inflation has been a particular problem since the mid-1960's. The consumer price index rose at an average annual rate of 2.6 percent during the past quarter century and has averaged more than 4 percent a year since 1965. As a conservative estimate, most economists would probably agree that the cost of living is likely to rise by at least 2 percent a year for the next decade or so. Accordingly, for the person who retires today, the prospect of continued inflation is a serious matter. At age 65, life expectancy ranges from 12.1 years for nonwhite males to 16.4 years for white females, with 14.6 years the average for all persons. By way of example, a 2.6 percent annual rate of inflation would increase the cost of living by about one-third in 11 years, and by one-half in just less than 16 years.

There are more than 20 million persons in the United States—about 10 percent of the population—aged 65 or over. Most of the elderly have relatively low incomes, which are subject to an erosion of purchasing power as prices rise. In 1971, more

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[1] Arthur M. Okun, "Inflation: The Problems and Prospects Before Us," *Inflation: The Problems It Creates and the Policies It Requires,* (New York, New York University Press, 1970.)

[2] U. S. Congress, Joint Economic Committee, *Price and Wage Control: An Interim Report.* (Washington, D. C.: Government Printing Office, 1972.)

than half of all households with the head aged 65 or over had incomes below $4,000. About 5 million elderly Americans are living under conditions of poverty. Financial assets held by most elderly persons are also relatively low, and the annual income from those assets typically is only a few hundred dollars. Inflation can affect both the purchasing power and the yields of financial assets.

Fortunately, there are measures to reduce or offset some of the adverse effects of inflation on the elderly. Such measures may stem from actions by private institutions, by Federal, state, and local governments, or may be the result of impersonal market forces. For example, in recent years, there has been a considerable amount of Congressional legislation undertaken on behalf of the elderly (no doubt stimulated by cognizance of the damage that inflation was inflicting upon the aged—or the damage that would be done if action were not taken). Of all major groups in the economy, Social Security recipients have experienced the most pronounced adjustment to inflation in recent years. Benefits have been increased well in excess of the rise in the cost of living since 1965. Other sources of income of the elderly, such as interest and rent, wages and salaries for those who work beyond age 65, welfare payments, and many types of pensions also tend to adjust to rising price levels (albeit at irregular rates and with varying lags). In short, partly because of inflation, income levels of most elderly persons have risen by more than the price level during the past five years (as will be discussed later).

Cause and effect relationships between inflation and other economic variables tend to run in several directions. Consequently, it is a difficult task to disentangle the effects of inflation from other economic forces on the economic well-being of the elderly (or for that matter, any particular group in our society). Economic well-being, or the standard of living, basically reflects the level and pattern of expenditures, which depend importantly on income and relative prices. As shown by the diagram in Chart 1, inflation is one major factor affecting both income and spending, while spending patterns in turn influence things such as job opportunities for the elderly and the rate of inflation itself.

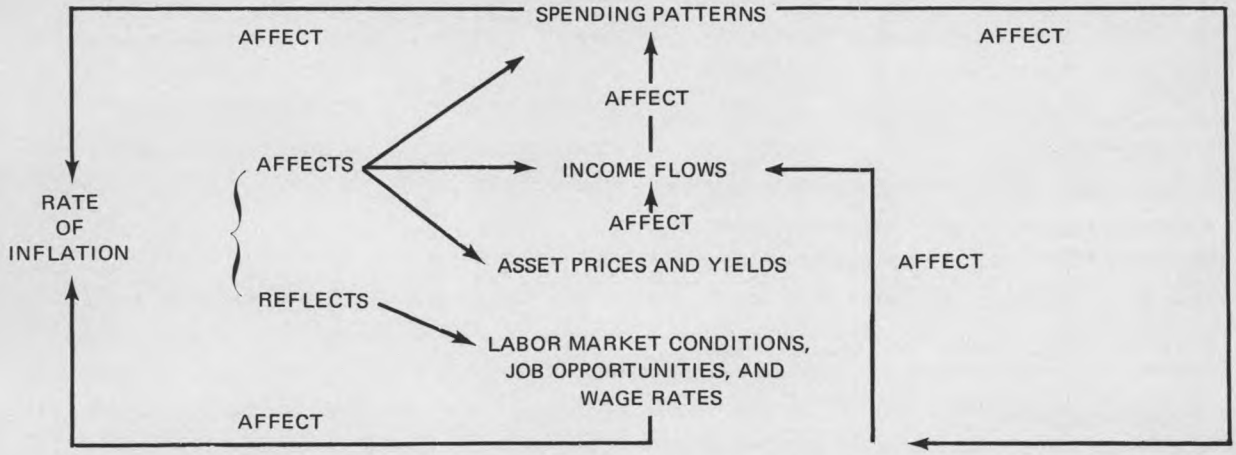
THE ELDERLY POOR

Any rise in the cost of living—even moderate increases of a few percentage points over the short run—can seriously impinge on the living standards of the aged who are considered poor.[3] As shown in Table I, the poverty threshold in 1971 for a two-person elderly family was less than $2,500, and less than $2,000 for elderly unrelated individuals (those living alone or with nonrelatives). Various public and private programs have had a major impact on reducing the incidence of poverty among the elderly during the past decade, despite the inflationary conditions of the late 1960's. The proportion of elderly families and unrelated individuals below the poverty level declined significantly between 1959 (the first year for which poverty data are available) and 1969. Further progress was made between 1969 and

[3] Poverty is a subjective concept, depending on factors such as age, size, and composition of a family, and place of residence. Poverty thresholds for elderly persons (and other demographic groups), based on the minimum money income necessary to support a family of a given composition at the lowest level consistent with the standards of living prevailing in this country, have been estimated by the Federal Government. The poverty thresholds are revised each year in line with increases in the cost of living. See Mollie Orshansky, "How Poverty is Measured," *Monthly Labor Review,* February 1969.

CHART 1.

INTERACTION OF INFLATION WITH KEY ECONOMIC VARIABLES



1971. Notwithstanding the improvement that has occurred, there were still more than one million elderly families and more than 2.5 million elderly unrelated individuals who lived below the poverty threshold in 1971.

An income equal to 125 percent of the poverty threshold is considered near-poverty status, according to the Federal Government. In 1971, more than one-fifth of the elderly families headed by a male had incomes below 125 percent of the poverty threshold (that is, their incomes were under $3,012). Almost one-third of the elderly families with a female head were living in poverty or near-poverty conditions last year. Of all aged groups, females living alone or with nonrelatives are the least well off (almost 60 percent lived in poverty or barely above the poverty level in 1971). Elderly unrelated Negro females, in particular, are overwhelmingly poor.

Without public welfare programs, the poverty numbers cited in Table I would be even larger. More than 2 million persons received Old-Age Assistance in 1971, with an average monthly payment of $77.50. The incidence of poverty among the elderly should be reduced further by Congressional legislation enacted in October 1972.

EXPENDITURE PATTERNS OF THE ELDERLY AND THE COST OF LIVING

Inflation will erode the real value of goods and services received from a steady stream of expenditures. The 25 percent increase in the consumer price index from 1967 to mid-1972 means that the purchasing power of the average consumer's dollar has declined to 80 cents. In other words, in mid-1972, one dollar could buy only 80 percent of the market basket of goods and

TABLE I

Poverty Status of Elderly Persons
1959, 1969, and 1971
(Thousands of Persons and Percent Distribution)

Families	Number as of March 1972	Poverty Threshold 1971	Below 125 percent of Poverty Level, 1971		Below Poverty Level, 1971		Below Poverty Level, 1969 Percent	Below Poverty Level, 1959 Percent
			Number	Percent	Number	Percent		
Male head, 65 and over	6,461	$2,450*	1,382	21.4%	828	12.8%	16.4%	29.1%
Female head, 65 and over	1,017	2,437*	334	32.8	234	23.0	23.6	28.8
Unrelated Individuals								
Males, 65 and over	1,365	1,959†	627	45.9	445	32.6	39.8	59.0
Females, 65 and over	4,695	1,934†	2,797	59.6	2,118	45.1	49.9	63.3
White	4,348		2,509	57.7	1,884	43.3	47.7	55.6
Negro	334		282	84.4	228	68.4	77.4	84.6

NOTE: Details may not add to totals because of rounding.
* Two-person families on nonfarm residence. Poverty thresholds in 1971 for elderly farm families with male heads and female heads were $2,081 and $2,089, respectively.
† Nonfarm residence. Poverty thresholds in 1971 for elderly unrelated individuals living on farms were $1,666 for males and $1,643 for females.

Source: U. S. Department of Commerce

services that one dollar bought in 1967.[4] Inflation also influences the pattern of spending. If relative prices of various goods and services change during inflation, as they usually do, people tend to rearrange their spending patterns to the extent that substitution is possible.

Unquestionably, inflation–coupled with the rise in income–has affected the level and composition of expenditures by the elderly over time. The 1972-1973 Survey of Consumer Expenditures, now being conducted by the Bureau of Labor Statistics, will shed some light on this matter when the results become available.

The latest information on actual spending patterns of the elderly, for the years 1960-1961, is shown in Table II. Compared with urban wage earners and clerical workers, retirees allocated relatively more of their budget for current consumption on food at home, shelter (both rental and homeownership), fuel and utilities, public transportation, and medical care. Price increases for these types of goods and services therefore hurt the retiree more than the urban wage and clerical worker. Retirees spent relatively less of their budget on food away from home, apparel and upkeep, private transportation, personal care, reading and recreation, and other goods and services. Price increases for these items hurt the retiree proportionately less than the urban wage and clerical worker.

On balance, there is little evidence that the cost of living has risen faster for the elderly than for the general population. Reweighting the price changes for twelve major spending categories of

[4] The purchasing power of the dollar varies inversely with the rise in prices. Thus a price increase of 25 percent (125/100) is equivalent to a 20 percent decline in purchasing power (100/125).

TABLE II

Distribution of and Percent Change in Major Expenditure Classes in the Consumer Price Index
Retirees and Urban Workers
Selected Periods

Expenditure Class	Percent Distribution of Expenditures*		Change in Price	
	Retirees	Urban Workers	1960-1961 to mid-1972†	1967 to mid-1972†
Food	26.4%	25.2%	39.5%	23.6%
At home	22.6	20.0	35.2	21.7
Away from home	3.8	5.2	59.3	31.1
Housing	33.9	28.4	42.7	29.3
Shelter	16.8	13.3	52.5	34.5
Rent	7.7	6.5	28.8	18.9
Homeownership	8.3	6.3	61.9	40.2
Fuel and utilities	6.6	4.4	24.6	20.2
Household furnishings and operation	10.5	10.7	29.1	21.1
Apparel and upkeep	6.8	10.7	35.1	21.6
Transportation	11.0	15.1	33.3	20.1
Private	8.9	13.5	29.2	17.6
Public	2.1	1.6	72.9	43.2
Health and recreation	21.9	20.6	46.9	26.2
Medical care	10.2	6.2	65.1	32.6
Personal care	2.7	3.0	32.7	20.0
Reading and recreation	3.9	5.7	39.3	23.0
Other goods and services	5.1	5.7	42.5	25.7
All items	100.0%	100.0%	40.5%	25.3%

* 1960-1961.
† Average of June-July, 1972

Source: U. S. Department of Labor

urban wage and clerical workers by the expenditure weights of retirees indicates that, since 1960-1961, the cost of the retiree's market basket of goods and services has risen only 2 percentage points more than that of the urban wage and clerical worker. That extra 2 percent appears to have been offset by the effect of the Medicare program, which has helped to relieve the elderly (and their children) from the financial burden of illness in old age. Despite the rapid rise in the costs of medical care during recent years, out of pocket payments by the elderly for medical care declined from an average of $234 in fiscal year 1966 (the year before Medicare became effective) to $225 in fiscal year 1971. After reducing the 1960-1961 weight of the retiree's expenditures for medical care by 40 percent (to compensate for Medicare), the cost of living appears to have risen by virtually the same amount for retirees as for urban wage and clerical workers since 1967.

The reader should be cautioned that the crude reweighting procedures (referred to above) do not provide an accurate measure of any differences in

the rise in living costs between retirees and urban wage and clerical workers. The expenditure categories are too broadly defined to permit accurate comparisons. For example, the 62 percent increase in the cost of homeownership since 1960-1961 has been significantly influenced by the rise in mortgage interest rates, which account for about one-fifth the weight of homeownership. Most elderly homeowners, however, do not have any mortgage debt. As another case in point, the medical care component of the consumer price index would be inappropriate for the elderly because it includes items such as obstetrical care and pediatricians' services.

It would be extremely useful if there were a consumer price index (CPI) designed specifically for retirees. The increasing use of escalation clauses in public and private pension plans (based on the CPI) indicates that there is a need for a retiree's CPI.[5] Such an index would be weighted by the types of goods and services purchased by retirees (according to the types of stores where they shop), and by the appropriate geographical population weights of the elderly.

INCOME OF THE ELDERLY

Until evidence is available as to what a price index for retirees would show, it seems logical to assume that the rise in the cost of living for elderly persons has not differed significantly from that experienced by the younger urban population. Income then becomes the crucial factor for determining the course of economic well-being among the elderly during an inflationary period. The following considerations are among the most important: First, how does the level of income of elderly persons compare with the national average? Second, have gains in income of the elderly been keeping pace with the national average over time? Last, but not least, what has been the trend in real income of the elderly—i.e., how has income changed after allowance for rising prices?

Median income of all families in the United States is used in Table III as a benchmark in comparing income trends of elderly persons since 1960. In that year, median income of families where the head is age 65 or over was 51.5 percent of the median income of all families. Median income of elderly unrelated individuals was only 36.3 percent of the level attained by elderly families. In judging the adequacy of these income levels of the elderly, it should be noted that both individual and family budgets for a given level of earning vary considerably because of factors such as family size and composition, age, and location. The Bureau of Labor Statistics has estimated that a two-person family where the head is age 65 or over would need 52 percent of the income required by a typical family to provide the same level of living.[6] Equivalent consumption costs for single retired persons living alone are estimated to be 55 percent of the consumption total for a retired couple. Thus, the standard of living of the majority of elderly unrelated individuals in 1960 was (and still is) below that achieved by the average elderly family.

During the 1960-1965 period, when the consumer price index rose at an average annual

[5] See Janet L. Norwood, "Cost-of-Living Escalation of Pensions," *Monthly Labor Review,* June 1972.

[6] The typical or base family consists of a working husband, age 35-54, a wife, and two children (the older child between 6 and 15 years). See *Revised Equivalence Scale for Estimating Equivalent Incomes or Budget Costs by Family Type,* Bulletin No. 1570-2, U. S. Department of Labor, November 1968.

TABLE III

Trends in Median Income
Selected Years

Year	Median Income: All Families		Median Income: Families with Head Aged 65 & Over		Median Income: Unrelated Individuals Aged 65 & Over		Ratio of Median Income: 65 & Over Families to All Families	Ratio of Median Income: 65 & Over Unrelated Individuals to 65 & Over Families
1960	$5,620		$2,897		$1,053		.515	.363
1965	6,882	(22.5%)	3,460	(19.4%)	1,348	(28.0%)	.503	.390
1966	7,436	(8.0%)	3,645	(5.3%)	1,443	(7.0%)	.490	.396
1967	7,974	(7.2%)	3,928	(7.8%)	1,480	(2.6%)	.493	.377
1968	8,633	(8.3%)	4,592	(16.9%)	1,734	(17.2%)	.532	.378
1969	9,433	(9.3%)	4,803	(4.6%)	1,855	(7.0%)	.509	.386
1970	9,867	(4.6%)	5,053	(5.2%)	1,951	(5.2%)	.512	.386
1971	10,285	(4.2%)	5,453	(7.9%)	2,199	(12.7%)	.530	.403
Change 1965-1971		49.4%		57.6%		63.1%		

NOTE: Percent changes from preceding period in parentheses.

Source: U. S. Department of Commerce

rate of 1.3 percent, median income of elderly families increased 3 percent less than median income of all families, while median income of elderly unrelated individuals rose about 5 percent more than that of all families. As a result, the relative income position of elderly families worsened slightly during the first half of the 1960's, while the relative income position of elderly unrelated individuals improved somewhat. Between 1965 and 1971, when the consumer price index rose at an average annual rate of 4.3 percent, income gains of both elderly families and elderly unrelated individuals outstripped median income gains of all families. Relative income positions of the aged were therefore better in 1971 than in 1965 or 1960.

Data in Table IV provide evidence that the aged, in general, have not been hurt by the inflationary conditions of the late 1960's. As shown in the table, there was a considerable improvement in the growth rate of real income of elderly persons between 1960-1965 and 1965-1971, particularly for elderly females. All categories of the elderly (families, unrelated individuals, males, and females) enjoyed growth rates in real income above the national average.

Social Security and Other Pensions. The old-age, survivors, disability, and health insurance program (more commonly referred to as Social Security) provides the basic source of income for the overwhelming share of the retired population. Ninety-three percent of America's citizens reaching age 65 in 1972 are eligible for Social Security benefits. About 28 million persons are currently receiving Social Security benefits, including 18 million persons aged 65 and over. (Persons under age 65 receiving Social Security benefits include 1.4 million retired workers, 1.7 million disabled workers, and 6.5 million survivors and dependents.)

In view of the growing importance of Social Security, the record of Congress in periodically

TABLE IV

Average Annual Rate of Change in Median Income
Based on Constant Dollars
1960-1971

	1960-1965	1965-1971
All families	2.8%	2.6%
Families with head, 65 & over	2.3	3.5
Unrelated individuals, 65 & over	3.7	4.1
All males, 14 & over	2.1	1.8
Males, 65 & over	3.2	4.1
All females, 14 & over	3.1	3.1
Females, 65 & over	2.4	5.1

Source U. S. Department of Commerce

adjusting benefits to compensate for the rise in the cost of living and to provide recipients an increased standard of living merits some examination. The history of benefit adjustments, shown in Table V, is spotty—at least until 1968. Since the original Social Security Act was passed in 1935, Congress has raised benefits on nine occasions. The first and largest adjustment took place in 1950 and was aimed at restoring the purchasing power of benefits deteriorated by the inflation of World War II. After 1950, increases in Social Security were not always large enough to offset the rise in consumer prices that had occurred since the previous benefit increase. Amendments of 1959 and 1965 are cases in point. It should also be emphasized that, during intervals between benefit increases, inflation has continuously eroded the value of fixed benefits. Apart from cost of living considerations, benefit increases during the better part of the past two decades failed to match the wage gains achieved by workers. Social Security recipients therefore frequently suffered an erosion of purchasing power of their benefits, or their standard of living failed to rise in line with that of the working population.

TABLE V

Percent Changes in Social Security Benefits, Consumer Prices, and Average Hourly Earnings*

Date of Increase in Social Security Benefits	Average Benefit Increase	Change in CPI Since Last Benefit Increase	Change in Average Hourly Earnings Since Last Benefit Increase
August 1952	12.5%	9.4%†	12.9%
September 1954	9.0	0.4	8.5
January 1959	7.0	8.0	21.9
January 1965	7.0	7.8	18.9
February 1968	13.0	9.3	14.0
January 1970	15.0	10.8	11.9
January 1971	10.0	5.2	6.4
September 1972	20.0	5.9	10.0

* Production workers, manufacturing.
† Measured from September 1950 to August 1952. (First amendment to Social Security Act was in September 1950, when benefits were raised between 50 percent and 100 percent.)

Sources: U. S. Department of Health, Education, and Welfare; U. S. Department of Labor

Beginning in 1968, Congress has been far more liberal with benefit increases than previously. The Social Security increases of 1968, 1970, 1971, and 1972 amounted to a cumulative gain of 71.5 percent, well above the rise in prices or wages. With the Social Security Amendments that were enacted in July 1972, for the first time Congress included an escalator clause that provides for an automatic increase in benefits to keep pace with the rise in the cost of living. Under the new law, Social Security benefits will be increased whenever the consumer price index rises by 3 percent or more.[7]

In recent years, it has been the express intent of Congress to raise Social Security benefits by more

[7] Barring future Congressional legislation raising Social Security benefits, the first escalator increase could occur in January 1975 if the consumer price index in the second quarter of 1974 is at least 3 percent above the CPI of the third quarter of 1972.

TABLE VI

Cumulative Percent Changes in Social Security Benefits, Consumer Price Index, and Wages* from Date of Retirement to Date of Increase in Benefits
1955-1972

Retiree (Month/	January 1959			January 1965			February 1968			January 1970			January 1971			September 1972		
Year)	S.S.	CPI	Wages	S.S.	CPI	Wages	S.S.	CPI	Wages	S.S.	CPI	Wages	S.S.	CPI	Wages	S.S.	CPI	Wages
6/55	7.0	8.4	17.9	14.5	16.9	40.2	29.4	27.7	59.8	48.8	4.14	78.8	63.7	48.8	90.2	96.3	56.9	106.0
6/56	7.0	6.6	11.3	14.5	15.0	32.3	29.4	25.7	50.8	48.8	39.2	68.7	63.7	46.4	79.5	96.3	54.4	94.4
6/57	7.0	3.0	6.4	14.5	11.0	26.5	29.4	21.4	44.1	48.8	34.4	61.3	63.7	41.4	71.6	96.3	49.1	85.8
6/58	7.0	0.1	3.3	14.5	8.0	22.9	29.4	18.0	40.0	48.8	30.7	56.7	63.7	37.5	66.7	96.3	45.0	80.5
6/59				7.0	7.2	16.7	20.9	17.2	33.0	39.0	29.8	48.9	52.9	36.5	58.4	83.5	44.0	71.5
6/60				7.0	5.5	14.2	20.9	15.3	30.1	39.0	27.7	45.6	52.9	34.4	54.9	83.5	41.7	67.7
6/61				7.0	4.7	11.2	20.9	14.4	26.7	39.0	26.7	41.8	52.9	33.3	50.9	83.5	40.6	63.4
6/62				7.0	3.4	7.9	20.9	13.0	23.0	39.0	25.2	37.7	52.9	31.7	46.4	83.5	38.9	58.6
6/63				7.0	2.1	4.9	20.9	11.6	19.5	39.0	23.6	33.7	52.9	30.0	42.3	83.5	37.1	54.1
6/64				7.0	0.8	2.0	20.9	10.1	16.2	39.0	22.0	30.0	52.9	28.3	38.3	83.5	35.3	49.8
6/65							13.0	8.0	12.6	30.0	19.6	26.1	43.0	25.9	34.1	71.5	32.7	45.2
6/66							13.0	5.4	8.5	30.0	16.7	21.4	43.0	22.8	29.2	71.5	29.5	39.9
6/67							13.0	2.6	4.3	30.0	13.6	16.7	43.0	19.6	24.1	71.5	26.1	34.4
6/68										15.0	8.9	9.7	26.5	14.6	16.7	51.8	20.9	26.3
6/69										15.0	3.3	3.5	26.5	8.7	10.1	51.8	14.6	19.2
6/70													10.0	2.5	4.2	32.0	8.1	12.8
6/71																20.0	3.5	10.2
6/72																20.0	1.0	1.6

* Average hourly earnings, production workers in manufacturing.

Sources: U. S. Department of Labor; U. S. Department of Health, Education, and Welfare

than the rise in prices in order to provide the elderly and other Social Security beneficiaries with a higher standard of living. Even though recent benefit increases have been large in percentage terms, the bases on which they were computed have been relatively low. Thus, the September 1972 benefits for an average retired couple were raised to $270 a month, or $3,240 a year (which is about 68 percent of the budget the BLS estimates is necessary to provide an intermediate level of living for a retired couple as of autumn 1971). The new legislation raises benefits for the typical retired individual to $161 a month, or $1,932 a year (which is still below the poverty threshold and only 70 percent of the BLS intermediate budget for aged single persons).

How well retirees covered under the Social Security program have fared over time (that is, the extent to which benefits have kept pace with inflation and the general improvement in the standard of living of the working population) depends on when a worker retired. Table VI documents the history of Social Security benefits, prices, and wages (from the standpoint of retirees as of June each year beginning with 1955).[8] A worker who retired in June 1955, had to wait until January 1959 to receive a 7 percent increase in Social Security benefits. Meanwhile, prices had risen 8.4 percent and wages had risen 18 percent.

[8] Less than 8 percent of retired workers currently drawing Social Security benefits retired prior to 1955.

Benefits for the 1955 retiree still lagged the rise in prices and wages with the Social Security increase in January 1965. Not until February 1968, did benefits for the 1955 retiree catch up with the cumulative rise in prices since retirement, and only with the September 1972 Social Security increase did his benefits begin to approach parity with the cumulative wage increases that had occurred since retirement.

Retirees of more recent years have fared much better than those who retired in the 1950's or early 1960's. For example, a 1967 retiree has experienced gains in Social Security benefits consistently above increases in prices and wages. As of September 1972, the 1967 retiree had been given a cumulative increase in benefits amounting to 72 percent, while prices had risen 27 percent and wages 37 percent since June 1967.

Chart 2 provides graphic perspective on trends in Social Security benefits, prices, and wages for retirees of 1959 and 1965.[9] The step increases in benefits are shown against the background of continuous increases in prices and wages, with the gaps periodically widening and then narrowing. Clearly, the 1965 retiree has had a more favorable experience than the 1959 retiree.

Some public retirement programs, in addition to Social Security, provide a purchasing power guarantee, based on either the rise in consumer prices or wage levels. Since 1963, military pensions have been adjusted automatically by the behavior of the consumer price index. Pensions for Federal civil service retirees and their beneficiaries have been raised automatically since 1965 by a formula linking benefits to increases in the cost of living. The Federal judiciary system and some state and local government agencies increase retirement benefits in line with changes in wage levels of the positions formerly held by the retiree.[10]

About 5 million persons in the United States currently receive private pensions. Most private pension programs, with the exception of a large number of collectively bargained plans, do not automatically raise benefits for retired workers.[11] As a general matter, that portion of the elderly's income provided by a private pension appears to be most vulnerable to a depreciation of purchasing power during inflation. Although comprehensive information is not available, the inflation of recent years has induced a number of ad hoc adjustments in the private pensions of workers already retired. (Retirees of the 12 Federal Reserve Banks, for example, have experienced ad hoc cost of living adjustments.)

Labor Force Status of the Elderly. The net impact of inflation on the elderly depends to some extent on whether public policy is passively allowing inflation to occur. For example, when tight labor markets accompany inflation (as in the late 1960's), an inflationary environment actually may benefit the elderly, on balance, to the extent that more jobs are available for those who wish to supplement their incomes. (It should be noted that the Social Sacurity laws have always included a restriction on earnings without loss of some benefits; in the legislation enacted in October

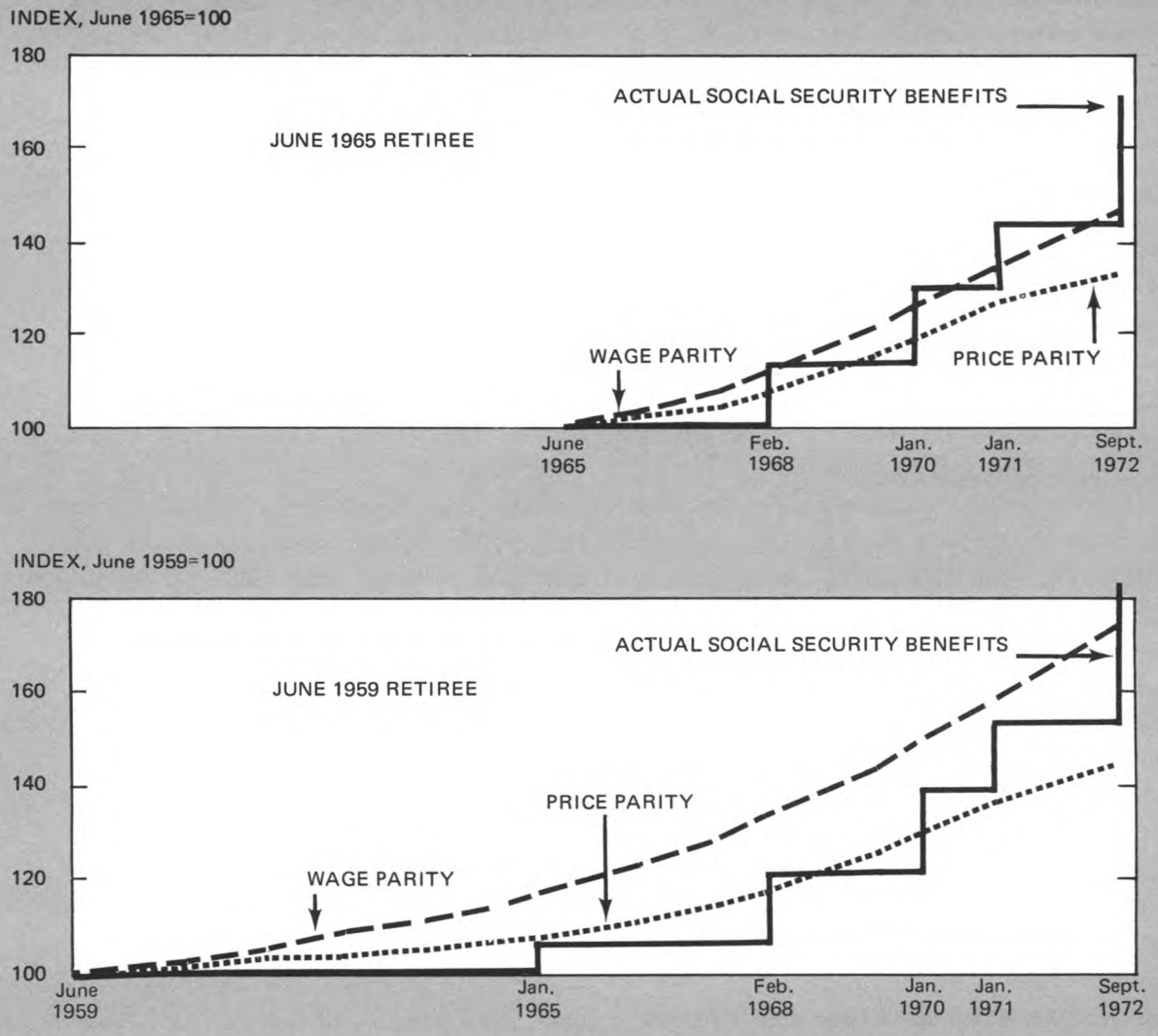
[9] More than three-fourths of the retirees currently drawing benefits retired after 1958.

[10] See Daniel N. Price and Robert O. Brunner, "Automatic Adjustment of OASDHI Cash Benefits," *Social Security Bulletin,* May 1970.

[11] See Walter W. Kolodrubetz, "Two Decades of Employee-Benefit Plans, 1950-1970: A Review," *Social Security Bulletin,* April 1972; Peter Henle, "Recent Trends in Retirement Benefits Related to Earnings," *Monthly Labor Review,* June 1972; and Janet L. Norwood, *op. cit.*

CHART 2.

SOCIAL SECURITY BENEFITS FOR RETIREES OF JUNE 1959 AND JUNE 1965, AND BENEFITS NEEDED TO MAINTAIN PARITY WITH WAGES AND PRICES FROM DATE OF RETIREMENT



Last entry: September 1972

Source: U. S. Department of Labor; Department of Health, Education and Welfare

TABLE VII

Labor Force Status of Persons Aged 65 & Over
Selected Years

Males	1960	1965	1969	1970	1971
Participation rate	33.1%	27.9%	27.2%	26.8%	25.5%
Number in labor force (000's)	2,287	2,131	2,170	2,164	2,089
Percent unemployed	4.2%	3.5%	2.2%	3.3%	3.4%
Percent working full time*	45.5	46.2	46.4	43.7	42.5
Percent working part time, voluntarily*	16.3	20.4	23.7	25.1	25.0
Percent working part time, economic reasons*	3.1	1.9	2.1	2.1	2.2
Females					
Participation rate	10.8%	10.0%	9.9%	9.7%	9.5%
Number in labor force (000's)	907	976	1,056	1,056	1,057
Percent unemployed	2.8%	2.8%	2.3%	3.1%	3.6%
Percent working full time*	49.2	44.9	44.8	44.8	39.2
Percent working part time, voluntarily*	33.3	35.9	40.2	39.1	41.3
Percent working part time, economic reasons*	4.0	3.8	2.6	3.3	3.8

* Payroll employment, nonagricultural industries. Unallocated share employed in agriculture or self-employed.

Source: U. S. Department of Labor

1972, maximum earnings without any reduction in benefits were raised from $1,680 to $2,100 a year.) On the other hand, when public policy is actively attempting to curb inflation by restraining the rise in aggregate demand, which leads to higher unemployment rates (as in 1970 and 1971), job opportunities for the elderly can be adversely affected.

Data in Table VII provide evidence that the foregoing occurred. As shown in the table, there are about 2 million elderly males and 1 million elderly females in the labor force, most of whom are employed either full- or part-time. When the rate of inflation accelerated between 1965 and 1969 and labor markets tightened, there was an increase in employment among the aged and a decline in unemployment. By 1969, the unemployment rate of elderly males had declined to a post-World War II low of 2.2 percent, while unemployment among elderly females was at a similar low rate of 2.3 percent. Between 1969 and 1971, when growth in aggregate demand slowed in response to anti-inflationary public policies, unemployment rates of both elderly males and females increased, and there was a decline in the percent of the aged labor force working full-time.

ASSETS OF THE ELDERLY

It is far more difficult to assess the impact of inflation on the asset position of the elderly than on their income position. One reason is that comprehensive asset data are not published on a regular basis. The price of each asset, or its yield, probably adjusts to inflation in its own unique way, and it would be difficult to find any single asset whose price or yield is perfectly correlated with the rate of inflation.

One major asset held by most elderly persons is a home. As shown in Table VIII, the overwhelming

TABLE VIII

Homeownership Status of Elderly Units, 65 Years & Over
1967

Distribution	All Units	Married Couples	Nonmarried Persons
Total elderly units (000's)	15,779	5,989	9,789
Homeowners (000's)	8,234	4,598	3,635
Percent of total	52%	77%	37%
Reporting on home equity (000's)	7,102	4,086	3,016
Equity			
Under $5,000	15%	13%	18%
$5,000-$9,999	25	24	26
$10,000-$14,999	23	24	23
$15,000-$19,999	16	16	16
$20,000 or more	21	23	17
Total	100%	100%	100%
Median equity	$11,000	$12,000	$10,000
Percent of homeowners mortgage fee	82%	79%	86%

Source: U. S. Department of Health, Education, and Welfare

majority of elderly married couples and a significant number of elderly nonmarried persons are homeowners. Most of these homeowners have no mortgage debt, and the 1967 median equity values of their homes were in the range of $10,000 to $12,000 (probably somewhat higher in 1972). The fact that elderly persons who live in their own homes receive an imputed income should also be taken into consideration.

Inflation can be a mixed blessing for elderly homeowners. On the one hand, property values of their homes presumably increase during inflation, more or less in line with values of new homes. According to the Bureau of the Census, prices of new one-family homes have risen more than 40 percent since 1964 and more than 27 percent since 1967.[12] But rising property values do not necessarily benefit the elderly unless they sell their homes, and many are reluctant to do so. If they sell, there is still the problem of buying another home or renting at current values, or investing the proceeds of their equity position to protect the purchasing power. Increases in property taxes can impose a severe burden on elderly homeowners. Since 1964, property taxes have risen by 65 percent, the cost of maintenace and repairs by58 percent, and home insurance rates by 47 percent. No doubt there are instances in which some elderly persons have been forced to sell their homes because they could no longer afford the outlays for taxes and upkeep.

According to a staff report of the Advisory Commission on Intergovernmental Relations,

> When compared to the property tax burden borne by the average family, the property tax load carried by elderly householders appears so heavy as to constitute a national scandal.[13]

[12] Those percent increases are based on actual sales prices of new homes that are essentially the same in physical characteristics (with the value of the land included).

[13] U. S. Advisory Commission on Intergovernmental Relations, preliminary draft report on property tax, September, 1972.

TABLE IX

Financial Assets and Income from Assets of Elderly Units, 65 Years & Over
1967

Distribution	All Units	Married Couples	Nonmarried Persons
Total	15,779	5,989	9,789
Reporting on financial assets (000's)	12,040	4,397	7,643
Amount of assets			
None	36%	26%	42%
$1-$999	19	17	19
$1,000-$2,999	12	15	11
$3,000-$4,999	7	8	6
$5,000-$9,999	10	12	9
$10,000-$19,999	8	11	7
$20,000 or more	8	13	5
Total	100%	100%	100%
Median amount			
All reporting units	$ 550	$1,800	$ 250
Units with financial assets	$3,000	$4,000	$2,200
Income from assets			
None or loss	52%	42%	57%
$1-$149	18	19	17
$150-$999	22	26	19
$1,000-$1,999	4	7	4
$2,000-$2,999	2	3	1
$3,000-$4,999	1	2	1
$5,000 or more	1	2	1
Total	100%	100%	100%
Median income of units with asset income	$250	$300	$210

Source: U. S. Department of Health, Education, and Welfare

The report states that in 1970, the average homeowner paid 3.4 percent of his income in residential real estate taxes, while elderly homeowners paid an average of 8.1 percent of their income in property tax. Over one million elderly homeowners with incomes less than $2,000 paid real estate taxes equal to 15.8 percent of their income, and in the high-tax Northeastern part of the nation, low-income elderly homeowners paid almost 30 percent of their income in property tax. The report, however, also notes that "States are beginning to take action to relieve extreme property tax overburdens, especially for the elderly."

Other than a home, relatively few aged persons have a significant amount of assets. Table IX shows the most recent data available covering the financial asset position of the elderly. The major types of financial assets include cash, deposits in banks, savings and loan associations, or credit unions, insurance, U. S. savings bonds, corporate stocks and bonds, and loans and mortgages. Other nonfinancial assets, which may produce income or at least yield services, include equity in homes, various durable goods such as autos, household appliances and furnishings, art collections, investment in business, and real estate.

Only 13 percent of elderly nonmarried persons

had financial assets of $20,000 or more in 1967. More enlightening are the median values. Half of all elderly married couples had financial assets under $1,800, and half of all elderly unmarried persons had financial assets under $250. As indicated in the lower portion of the table, income received from the financial assets held by the elderly is relatively low, except for a very small share of the aged. About 14 percent of elderly married couples and 7 percent of elderly unmarried persons received income of $1,000 or more from their financial assets. For most elderly persons, income from financial assets is only a few hundred dollars.

Based on the data shown in Table IV, it seems safe to generalize that, for the large majority of elderly persons, inflation has only a marginal impact on the value of and income from financial assets. The limited financial assets of most elderly persons are mainly in the form of time and savings deposits at banks, savings and loan associations, and credit unions.[14] Maximum interest rates permitted by law on deposits of less than $100,000 have tended to discriminate against the small saver,. During the inflation of recent years, those who had a significant amount of financial assets often were able to realize yields (from, say, large certificates of deposit or corporate and Government bonds) well in excess of those obtained by small savings accounts at financial institutions.

Ownership of corporate stock is assuming a more important role for the elderly and for those who are planning for retirement.[15] According to the 1970 Census of Stockholders conducted by the New York Stock Exchange (NYSE), 4.3 million persons 65 or older (one-fourth of the elderly population) held stock in public corporations in 1970, up about 1 million persons from 1965. The group just below retirement age (55-64) numbered over 6 million in 1970, compared with 3.5 million in 1965. Some elderly persons with low incomes hold sizable stock investments. Within the household income group of under $10,000, there were 819,000 shareholders in 1970 with portfolios valued at over $25,000. The NYSE survey points out that those shareholders were primarily retirees who had built their portfolios during their working years, but were no longer receiving high incomes.

INFLATION AND LIFE INSURANCE BENEFITS TO THE ELDERLY

Inflation can significantly erode the purchasing power of life insurance benefits between the time a policy is taken out and benefits are paid. According to a recent survey, about 40 percent of total death benefits from ordinary life insurance is paid on lives of policyholders aged 65 and over. Twenty-nine percent of ordinary life insurance death benefits are paid on policies in effect 30 years or more, and about 17 percent is on policies in effect between 20 and 30 years.[16] A $10,000

[14] See Janet Murray, "Homeownership and Financial Assets: Findings From the 1968 Survey of the Aged," *Social Security Bulletin,* August 1972.

[15] The impact of inflation on stock prices is, of course, an unresolved question. The consensus appears to be that stock prices fare better during periods of relative price stability than under inflationary conditions. One major reason is that nominal interest rates on bonds rise in response to inflation, and as a result, yields from common stocks become relatively less attractive.

[16] *Life Insurance Fact Book, 1971,* (New York: Institute of Life Insurance, [1971]).

life insurance policy purchased in 1942 and payable in 1972 to a widow (widows claim most death benefits) has the purchasing power of only $3,900 (in terms of the dollar's value 30 years ago). A $10,000 policy purchased in 1952 and payable in 1972 has had its purchasing power reduced to $6,360 (in terms of the dollar's value 20 years ago). It should be noted, however, that most of the premiums were also paid with dollars whose purchasing power was less than when the policy was purchased.

SUMMARY AND CONCLUSIONS

The major conclusion of this study is that the majority of elderly persons have not been adversely affected by the inflationary conditions of recent years. Although the aged have spending patterns different from the younger population, there is little evidence to support the view that the cost of living has been rising faster for elderly persons than for urban wage and salary workers. The behavior of income is the key factor in determining whether elderly persons are "hurt" during inflation. Compared with the relatively noninflationary years of the early 1960's, growth rates in real income for all major classifications of the elderly (families, unrelated individuals, males, and females) were higher during the inflationary years of the late 1960's and early 1970's. More importantly, the elderly population has experienced growth rates in real income above the national average during the latter period. Liberal increases in Social Security benefits since 1968, coupled with increasing use of escalator clauses to protect the purchasing power of pensions, have helped to bolster income of the elderly. However, the current level of Social Security benefits for the average single retiree is still below the poverty threshold. Tight labor markets and increased job opportunities that accompanied the inflationary conditions of the late 1960's benefited the elderly who wished to supplement their income through part-time or full-time work. Above-average income gains for the elderly in recent years have helped to lift many elderly persons out of poverty. Even so, a significant share of this nation's elderly population still lives in poverty or near-poverty conditions, particularly single elderly persons. Inflation can have a serious impact on the standard of living of the elderly poor.

The majority of elderly persons own their homes, which are mostly mortgage free. Although inflation has raised home property values significantly since the early 1960's, there have also been sharp increases in property taxes, insurance rates, and maintenance and repair costs. Elderly homeowners have been severely burdened with property taxes. Most elderly persons have little in the way of financial assets, and income from those assets typically is only a few hundred dollars per year. Accordingly, it would seem that inflation has relatively little impact on the financial asset position of the elderly compared with their income position. One final conclusion is that elderly widows who recieve life insurance benefits today on policies taken out by their husbands twenty or thirty years ago suffer a significant loss in the purchasing power of the proceeds.

ANATOMY OF PROFITABLE MEDIUM-SIZE BANKS IN THE FOURTH DISTRICT, 1966-1970

Richard L. Gady

This study examines various components of commercial bank operations to determine how some banks in the Fourth Federal Reserve District were able to earn a higher rate of return on capital than other banks. The study was limited to 100 banks of comparable size with assets under $50 million. A total of 33 factors affecting the operations of these banks were statistically analyzed for each of three years—1966, 1968, and 1970—in an effort to pinpoint consistent differences in investment behavior and operational practices.

Banks that were the most successful in controlling operating costs—such as salaries and interest rates paid on time and savings deposits—and banks that received high gross interest from outstanding loans consistently earned the highest rates of return of the banks examined. Other factors that contributed to greater profits were higher proportions of loans and tax-exempt securities in asset portfolios and lower losses on loans and securities. For reasons explained in this article, neither rapid growth in bank assets nor location was found to have a consistent relationship with high profits.

Commercial banks are like other business firms in that profits are considered to be a major operational goal. Knowledge of what constitutes a profitable operation is essential for bank management in maintaining an efficient banking organization. This article reports on a study made to identify those characteristics that account for differences in relative profitability of commercial banks within a specified size range ($23-$50 million in assets) and located within the Fourth Federal Reserve District. The approach employed in the study involves estimating the statistical relationship between bank profits and a number of variables representing assets and liabilities, expense and revenue measures, growth rates, and location[1] of commercial banks in order to determine which of these are systematically related to profits. (Profit is defined as the ratio of net return after taxes and gains or losses from loans and securities to capital and surplus).

[1] The relationship between banking competition, or the structure of the market in which a bank competes, and bank profits would be a fifth area of concern. However, this relationship was discussed in an earlier *Economic Review* of this Bank and is not considered here. See, Robert F. Ware, Banking Structure and Performance: Some Evidence from Ohio, *Economic Review,* Federal Reserve Bank of Cleveland, March 1972.

The results indicate that a key to higher bank profits is the minimization of cost, especially interest and salary expense. Rates earned on loans are also an important determinant of profit. Other characteristics of profitable banks include a high ratio of loans to assets, a high ratio for holdings of non-U. S. Government securities, and, on the liability side of the ledger, high levels of demand deposits relative to time and savings deposits.

Rapid asset growth by sample banks was not consistent with higher profits. Furthermore, growth of individual components of bank portfolios and demographic or other characteristics of the areas in which the sample banks were located appeared to have a minimal effect on bank profits.

FACTORS AFFECTING BANK PROFITABILITY

Banks, like other financial institutions, are different from other business firms in that most of their assets are held in the form of loans and securities. Each particular type of asset possesses a specific rate of return, risk, liquidity, and acquisition cost. Thus, the composition of assets is one determinant of profitability. Another factor is the composition of liabilities, which determines the cost of acquiring funds. For example, maintaining a high level of time and savings deposits requires large outlays for interest payments to attract and keep these deposits. Obtaining demand deposits involves costs such as advertising or the restructuring of assets to bring in deposits; i.e., granting more loans and requiring that new recipients of loans become depositors of the bank.

Bank profitability, however, is not solely determined by the composition of assets and liabilities. Banks are multi-product firms involved in servicing customers' deposits, extending loans to varied groups and individuals, and providing trust and other services. Therefore, the cost of bank operations also has an important role in the determination of profits. This is substantiated by the empirical results of two earlier studies,[2] which indicate that banks that economize on many kinds of expenses obtain relatively higher profits than other banks.

The growth rate of banks and the environment in which they compete may also affect profits. Although economies of size exist in banking, it is far from clear that banks in the *process* of growing rapidly earn higher profits than slower growth banks. In fact, Gramley, in a study of Tenth Federal Reserve District banks, found that banks that achieved the most rapid rate of growth in total assets were not the most profitable group of banks.[3]

Finally, many economists have asserted that bank location can influence bank profits.[4] For example, many states impose branching or usury restrictions on banks. Wage rates can vary considerably among different regions. Demand for loans can be strong in a rapidly growing area, but weaker in other areas. Volatility of deposits is much different between rural and metropolitan

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[2]John A. Haslem and William A. Longbrake, "A Discriminant Analysis of Commercial Bank Profitability, *Quarterly Review of Economics and Business,* Volume 11, 1972 and D. R. Cawthorne, "Selected Factors Affecting Bank Earnings," *Essays on Commercial Banking,* Federal Reserve Bank of Kansas City, August 1962.

[3]Lyle Gramley, "Growth and Earnings at Individual Commercial Banks," *Essays on Commercial Banking,* Federal Reserve Bank of Kansas City, August 1962.

[4]Susan Schmidt Bies, "Determinants of Commercial Bank Growth," *Review,* Federal Reserve Bank of St. Louis, December 1971; Cawthorne, *op. cit.;* Gramley, *op. cit.;* and Robert F. Ware, *op. cit.*

areas. These factors may have an impact on allocative decisions of bank management and, at least potentially, on bank profits.

TECHNIQUES AND APPROACH

This study is based on a sample of 100 banks with assets ranging between $23 and $50 million[5] and located in the Fourth Federal Reserve District. The sample of banks is homogeneous in size to eliminate the effects of differences in bank size as a factor that affects costs and revenues per unit of output. Furthermore, this size group is characteristic of larger county-seat banks in non-metropolitan areas and smaller metropolitan banks.

The three years included in this study—1966, 1968, and 1970—cover a wide range of monetary policy actions and economic conditions. For example, during most of 1966, monetary policy was restrictive, interest rates were generally rising, and the banking system found it difficult to attract funds to satisfy loan demands. The economy was strong during most of the year, although it weakened during the final quarter. In 1968, monetary actions were expansionary; economic activity and the demand for bank loans were strong during most of the year, but the banking system was able to accommodate most of the loan demand. In 1970, monetary policy was expansionary, interest rates were falling during much of the year, and a reintermediation of funds into the banking system was evident. Both the economy and the demand for loans were relatively weak. Thus, the banking system experienced an excess supply of funds and directed most of the inflow into securities holdings.

In this study, a regression equation was developed to identify those variables—in the form of financial ratios, growth rates, and location—that are the most closely related to bank profitability (see Table I).[6] The same variables were used for each year studied to show the consistency of their effect on profitability under different monetary and economic conditions. The equation for each year is shown in Table II. (The Appendix contains four variations of an abbreviated form of the basic model utilizing the independent variables that could not be included in the equation in Table II.)

The rate of return was measured by the ratio of net income after taxes to total capital accounts.[7] The median ratio for all 100 banks ranged from 8.9 percent in 1966 to 12.4 percent in 1970 (see Chart). On average, the banks attained the highest rate of return during a year of relative monetary ease and falling interest rates and the lowest rate during a year of restrictive monetary policy and rising interest rates. Rates of return for the majority of banks clustered closely around the median profitability level in all three years. In 1966, 50 percent of the banks earned between a

[5] A sample of banks as homogeneous in size as possible was selected for this study. Furthermore, the banks in the sample are of sufficient size to have already realized most of the benefit from economies of scale. Sources of data include the Consolidated Report of Income, filed yearly with regulatory agencies, and the two Consolidated Reports of Conditions, filed twice yearly on June 30 and December 31.

[6] Variables were excluded from the basic model primarily as a result of a lack of relationship with the dependent variable or multicollinearity with other independent variables. For example, no variable with a correlation coefficient greater than 0.6 with any other independent variable is included in the basic model. Furthermore, a single equation is limited to 20 variables as a result of limited computer capacity.

[7] This is only one of several methods of measuring bank profitability. See Haslem and Longbrake, *op. cit.*, for a discussion of this particular measure.

TABLE I

Variables Used to Determine Bank Profitability

$X_1 = \frac{\text{interest received from loans}}{\text{total loans}}$

$X_2 = \frac{\text{interest received from investments}}{\text{total operating revenue}}$

$X_3 = \frac{\text{trust income}}{\text{total operating revenue}}$

$X_4 = \frac{\text{service charges on deposits}}{\text{total operating revenue}}$

$X_5 = \frac{\text{salary expense}}{\text{total operating revenue}}$

$X_6 = \frac{\text{interest paid on deposits}}{\text{total time and savings deposits}}$

$X_7 = \frac{\text{occupancy expenses}}{\text{total operating revenue}}$

$X_8 = \frac{\text{furniture and equipment expense}}{\text{total operating revenue}}$

$X_9 = \frac{\text{other operating expense}}{\text{total operating revenue}}$

$X_{10} = \frac{\text{net loan losses}}{\text{total loans}}$

$X_{11} = \frac{\text{net gains and losses on securities}}{\text{total securities}}$

$X_{12} = \frac{\text{total gains and losses (including extraordinary losses)}}{\text{total revenue}}$

$X_{13} = \frac{\text{total assets}}{\text{number of branches}}$

Asset and Liability Composition Ratios

$X_{14} = \frac{\text{other securities}}{\text{total assets}}$

$X_{15} = \frac{\text{Treasury securities}}{\text{total assets}}$

$X_{16} = \frac{\text{deposits of commercial banks}}{\text{total assets}}$

$X_{17} = \frac{\text{balances with other banks}}{\text{total assets}}$

$X_{18} = \frac{\text{cash and due from banks}}{\text{total assets}}$

$X_{19} = \frac{\text{total loans}}{\text{total assets}}$

$X_{20} = \frac{\text{instalment loans}}{\text{total loans}}$

$X_{21} = \frac{\text{commercial and industrial loans}}{\text{total loans}}$

$X_{22} = \frac{\text{real estate loans}}{\text{total loans}}$

$X_{23} = \frac{\text{total farm loans}}{\text{total loans}}$

$X_{24} = \frac{\text{time and savings deposits}}{\text{total assets}}$

$X_{25} = \frac{\text{total liabilities and long-term debt}}{\text{owner's equity}}$

Growth Variables

X_{26} = growth in assets

X_{27} = growth in loans

X_{28} = growth in cash

X_{29} = growth in dividends

Location Variables

X_{30} = population growth

X_{31} = effective buying income per capita

X_{32} = volume of retail sales

X_{33} = dummy variable identifying Ohio banks

X_{34} = dummy variable identifying Pennsylvania banks

X_{35} = dummy variable identifying Kentucky banks

TABLE II

Estimated Relationships Between the Net Rate of Return to Capital and Bank Operations, Portfolio, Growth and Location Variables
1966, 1968, and 1970

$$Y_{66} = .19 + 1.77\,X_1^{**} + .29\,X_4 - .56\,X_5^{**} - 3.78\,X_6^{**} - .21\,X_7 - .63\,X_8^{**} - .21\,X_9 + .41\,X_{12}^{**} - .02^{-5}\,X_{13} + .14\,X_{14}^{**} +$$
$$(3.04)\ (3.46)\quad (1.41)\quad (-4.72)\quad (-4.25)\quad (-1.15)\quad (-2.44)\quad (-1.61)\quad (4.96)\quad (-0.37)\quad (2.94)$$
$$.79\,X_{16} + .13\,X_{19}^{**} + .00\,X_{20} + .02\,X_{23} - .15\,X_{24}^{**} + .004\,X_{25}^{**} - .08^{-3}\,X_{26} - .05^{-3}\,X_{31} + .03^{-6}\,X_{32}$$
$$(0.79)\quad (3.27)\quad (0.01)\quad (0.57)\quad (-4.11)\quad (2.93)\quad (0.53)\quad (0.19)\quad (1.43)$$
$$R^2 = .564$$
$$F = 5.44$$

$$Y_{68} = .12 + 1.33\,X_1^{**} + .09\,X_4 - .26\,X_5^{**} - 2.13\,X_6^{**} - .30\,X_7 - .64\,X_8^{**} - .19\,X_9^{*} + .46\,X_{12}^{**} + .06^{-5}\,X_{13} + .15\,X_{14}^{**} -$$
$$(1.96)\ (3.02)\quad (0.53)\quad (-2.72)\quad (-2.91)\quad (-1.51)\quad (-2.92)\quad (-1.95)\quad (2.34)\quad (1.56)\quad (3.57)$$
$$2.34\,X_{16}^{*} + .09\,X_{19}^{**} + .03\,X_{20} + .07\,X_{23}^{**} - .16\,X_{24}^{**} + .005\,X_{25}^{**} - .003\,X_{26}^{**} + .02^{-3}\,X_{31} + .02^{-6}\,X_{32}$$
$$(-1.95)\quad (2.34)\quad (1.18)\quad (2.00)\quad (-4.72)\quad (3.54)\quad (-2.36)\quad (1.38)\quad (1.04)$$
$$R^2 = .615$$
$$F = 6.73$$

$$Y_{70} = .38 + .65\,X_1^{*} - .19\,X_4 - .52\,X_5^{**} - 1.99\,X_6^{**} - .83\,X_7^{**} - .27\,X_8 - .25\,X_9^{*} + .19\,X_{12} + .06^{-8}\,X_{13} + .10\,X_{14}^{*} -$$
$$(6.08)(1.67)\quad (-0.74)\quad (-4.04)\quad (-2.37)\quad (-3.75)\quad (-1.17)\quad (-1.77)\quad (1.18)\quad (0.01)\quad (1.78)$$
$$1.28\,X_{16} + .04\,X_{19} + .06\,X_{20}^{*} - .05\,X_{23} - .27\,X_{24}^{**} + .004\,X_{25}^{**} - .02^{-2}\,X_{26} - .01^{-2}\,X_{31} + .06^{-7}\,X_{32}$$
$$(-1.37)\quad (0.63)\quad (1.89)\quad (-0.98)\quad (-5.05)\quad (2.25)\quad (-1.43)\quad (-0.38)\quad (0.43)$$
$$R^2 = .608$$
$$F = 6.53$$

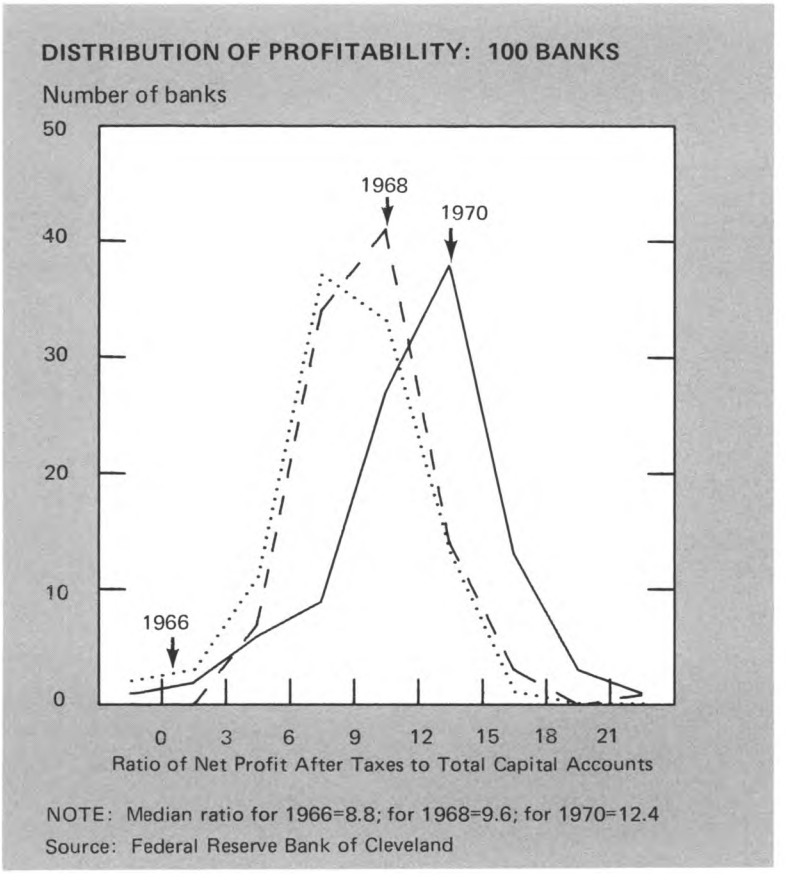
NOTE: Standard errors of the coefficients are in parentheses.
* Coefficient is significant at the .10 percent critical level.
** Coefficient is signicifant at the .05 percent critical level.

Source: Federal Reserve Bank of Cleveland

7.5 percent and a 10.5 percent rate of return on capital; in 1970, this range was slightly greater, 10.1 percent to 14.1 percent.

EFFECT OF EXPENSE AND REVENUE VARIABLES

Control of expenses was a consistent factor contributing to the profitability of the 100 banks in this study. The finding substantiates results obtained by Haslem and Longbrake in their 1963 study of bank profitability. In general, banks that economized on expenses obtained higher rates of return on capital, as indicated by the negative association of all five expense variables to net return, and the high level of significance of two of the five expense variables (see Table II). An additional conclusion of this study is that the rate of interest the banks received from loans outstanding was the only source of revenue examined that was significantly associated with a higher rate of return.



Expenses and Profitability. Two of the primary costs of bank operations are wage and salary payments and interest paid on time and savings deposits. Banks that were able to economize on salaries and to attract time and savings deposits at low rates earned high rates of return. This is indicated by the fact that the coefficients of the ratio of salary expense to total revenue (X_5) and the ratio of interest paid on time and savings deposits to total time and savings deposits (X_6) were significantly (0.05 level) and negatively correlated with the rate of return during each of the three years examined. Three other types of bank expenses—occupancy expense (X_7), furniture and equipment expense (X_8), and other expenses (X_9)—were less important factors in earnings. These expenses, however, were all negatively associated with the rate of return in all three years and significant at the 0.1 level in at least one of the three years.

Revenues and Profitability. Bank earnings should depend in large part on the rate of return earned on assets held. Results of this study tend to verify the importance of loans, as indicated by the fact that the rate of return earned on outstanding loans (X_1) was positively and significantly associated with profitability in each of the three years examined. Higher interest received from loans can occur as a result of some banks charging higher rates for equivalent loans or from the

TABLE III

Mean Values of Selected Variables Related to Bank Profits*

	Profitability Groups of Banks			
	25 Most Profitable Banks	25 Second Profitable Banks	25 Third Profitable Banks	25 Least Profitable Banks
Interest and fees on loans/total loans (X_1)	6.53%	6.47%	6.43%	6.41%
Instalment loans/total loans (X_{20})	22.7	24.9	23.0	18.5
Cash and due from other banks/total assets (X_{18})	10.3	10.8	10.8	11.0
Population growth (X_{30})	5.1	7.8	8.4	6.2
Growth in effective buying income (X_{31})	7.1	6.7	6.5	6.7

* Three-year average of banks.

Source: Federal Reserve Bank of Cleveland

allocation of a large share of the loan portfolio to high yielding loans. Both situations probably occurred. For example, an analysis of loan portfolios of the 100 banks (which will be discussed in more detail later) revealed that only the consumer instalment loan component of the loan portfolio (X_{20}) was consistently associated with high overall profitability, but even this relationship was significant in only one of the three years. However, there is some question as to whether the impact of consumer loans has been accurately measured, given the presence of the rate of return on total loans in the same equation. That is, some of the effect on profits of holding more instalment loans may have been accounted for by a higher rate of return on total loans. To investigate this matter, the mean values for these two variables (the rate of return on total loans and the proportion of consumer loans to total loans) were determined according to profitability groupings of the sample banks in Table III. It can be observed that the gross rate of return on loans is highest for the most profitable group of banks and declines successively as profits decline. The ratio of instalment loans to total loans, however, is highest for the second most profitable group of banks and is nearly the same for the first and third profitability groups. This evidence suggests that the ratio of instalment loans to total loans does not account for all of the variation in rates of return received from loans and that other factors, such as variations in rates charged on similar loans, are also important.

Bank profitability was less dependent upon some other types of income, particularly investments and trust income (X_2 and X_3 in Appendix Table). The only significant coefficient associated with these variables was interest on investments in 1968. Service charges for demand deposits as a percent of total revenue (X_4) also had no apparent effect on relative differences in profitability among banks. This lack of relationship could reflect a trade-off between additional income received from check servicing

charges by some banks and an increased inflow of funds or revenue to banks that offer free checking accounts as a form of competition.

Miscellaneous. Some observers have hypothesized that banks competing in states that allow branch banking tend to overinvest in branch offices, thereby increasing costs and perhaps reducing net return.[8] To test this hypothesis, the ratio of assets per banking office was included as one of the independent variables (X_{13}). The extent to which medium-size banks in the Fourth District enter a market with branches had little net effect on profits as indicated by the fact that no significant relationship was found to exist between this ratio and bank profitability for the banks in the sample. However, it should be noted that, with respect to any comparison between unit and branch banking states, West Virginia is the only unit banking state in the Fourth District and the sample contains only four West Virginia banks.

Other types of bank costs and revenues that were examined include losses from loans, securities, and other extraordinary charge-offs. Although these costs are not charged directly against operating revenue in the income statement, they are netted out of revenue before net profit is determined. Higher net losses appeared to have a significant effect on profits in both 1966 and 1968–periods of generally declining securities prices–but not in 1970 when securities prices increased and loan losses were minimal. In other words, total net losses as a percent of total revenue (X_{12}) were significantly and positively[9] related to profits in the earlier years, but were not significant in 1970. The distribution of losses between loan losses and securities losses, however, had little impact on relative profitability, as indicated by the insignificance of X_{10}[10] and X_{11} in Appendix equation I.

ASSET–LIABILITY COMPOSITION MEASURES

The composition of bank assets and liabilities was somewhat more important in explaining differences in profitability among the sample banks in this study than in some previous studies. For example, Haslem and Longbrake found that the only difference in asset composition that significantly explained variations in profitability among banks was in the volume of "other" securities (primarily tax-exempt state and local securities) held in relation to total assets.[11] The more profitable banks tended to hold a higher proportion of tax-exempt securities in their asset portfolios. Cawthorne found that banks with high earnings maintained a smaller percentage of their assets in cash than did other banks.[12] These findings are somewhat different from the results of this study, which tend to indicate that other balance sheet composition variables are important too. For example, the ratios of loans to assets, of

[8] See Frederick W. Bell and Neil B. Murphy, *Costs in Commercial Banking: A Quantitative Analysis of Bank Behavior and its Relation to Bank Regulation,* Federal Reserve Bank of Boston, April 1968, and P. M. Horvitz, "Economies of Scale in Banking" in *Private Financial Institutions* (Englewood Cliffs: Prentice-Hall, Inc., 1963).

[9] Loan losses, extraordinary losses, and securities losses were entered as negative values in the equation; therefore a positive sign on this ratio means that a lower level of losses–a smaller negative number–is associated with higher profits.

[10] This ratio measures gains or losses that actually were incurred by an individual bank, and not provisions for loan losses, which are often used for tax purposes.

[11] Haslem and Longbrake, *op. cit.*

[12] Cawthorne, *op. cit.*

time and savings deposits to total assets, and of total liabilities to equity (a measure of financial leverage) were all significantly associated with variations on bank profitability.

More specifically, the banks that earned the highest rates of return tended to maintain a smaller proportion of time and savings deposits, or a higher proportion of demand deposits, than did the less profitable banks. The ratio of time and savings deposits to total assets (X_{24}) was significantly inversely related to the rate of return earned by banks in each of the three years observed. Results presented earlier in this article indicated that the more profitable banks reached this position by paying lower rates to attract time and savings deposits. Differences in the volume of other deposit forms, such as maintaining deposits with other banks (X_{17} in Appendix Table) or holding deposits of other banks (X_{16}), for the particular size group of banks examined had little consistent effect on profits.

Composition of assets were also related to bank profitability, although general economic conditions appeared to affect the significance of some of the variables. A high loan-asset ratio (X_{19}) was significantly associated with a high rate of return in two of the three years observed; and its sign was positive, although not significant, in the third year. During 1966 and 1968, credit was relatively scarce, interest rates associated with loans were high, and the value of many securities fell as yields increased, making loans a desirable source of income for banks. Loans were somewhat less profitable during 1970, when many corporations turned to the long-term bond market for funds;[13] this may explain why the coefficient for the loan-asset ratio was not significant for that year.

Although the more profitable banks maintained generally higher levels of loans, no one type of loan had a highly significant impact on the relative profitability of banks; consumer instalment loans, as indicated earlier, were positively related to profitability, but significant in only one year. This is not really surprising when one considers that the banks in this sample compete in relatively small areas and tend to adapt to the nature of loan demand in their respective area. Therefore, the composition of loan portfolios of banks would be expected to vary somewhat according to region, regardless of the profitability levels of the banks.[14] More specifically, a high ratio of consumer instalment loans to total loans (X_{20}) was associated with high rates of return in all three years, but significant only during 1970. The coefficients associated with the ratios of the three other types of loans considered—real estate loans, business loans, and farm loans (X_{22}, X_{21}, and X_{23})—were positive in 1966 and 1968 and significant in one of these two years. However, the coefficients on all three ratios had the opposite signs (although not significant) in 1970. It is perhaps worth noting that 1970 was also the only year that the ratio of total loans to total assets was not significant, possibly because of the effect of economic conditions on these three categories of loans.

Profitability of medium-size banks was also found to be significantly affected by certain other types of assets, particularly tax-exempt securities. The ratio of "other" securities to total assets (X_{14}) was significantly associated with the rate of

[13] See "Recent Patterns in Corporate Financing," *Economic Commentary,* June 14, 1971, for a discussion of this occurrence.

[14] This statement is further substantiated by the fact that none of the locational variables in the model had a significant effect on relative bank profitability.

return earned by sample banks in all three years. Although the before-tax yield on these securities is generally less than nontax-exempt securities, the after-tax yield apparently made tax-exempt securities very profitable to hold. This finding coincides with results obtained by Haslem and Longbrake and Cawthorne. The ratio of Treasury securities to total assets (X_{15} in the Appendix Table) was significant in two years and the ratio of cash and due from other banks to total assets (X_{18} in the Appendix Table) was significant in one year. However, these two variables were highly correlated with other variables and therefore not included in the basic model. When holdings of these two assets are considered independently of other variables (as in Table III), it can be observed that the more profitable groups of banks tended to hold less Treasury securities and cash. Thus, the results concerning the impact of these two assets are somewhat inconclusive. However, the results do provide some support for other studies, which have shown that U. S. Government securities have been less attractive to commercial banks than tax-exempt securities.[15]

Banks that are more highly leveraged (measured by the ratio of total liabilities and capital notes and debentures to total equity capital and surplus–X_{25}) generally earned a higher rate of return than the other banks in the sample, as indicated by the high significance of the leverage variable in each of the three years examined. This result was expected, because it is logical to assume that with a smaller capital base per dollar of liability, the return to capital would increase. Furthermore, banks must maintain a minimum level of capital in accordance with the requirements of the various regulatory agencies; and consequently, the probability of insolvency or loss of income resulting from an inadequate capital base is greatly reduced.

GROWTH VARIABLES

Growth is often assumed to be a major means of profit expansion and hence is a prime goal of a business firm. However, it is not clear that banks in the *process* of expanding in size achieve higher profits. Although expansion of deposits of the banking system as a whole is primarily determined by the bank reserves supplied by the Federal Reserve System, individual bank growth is more dependent on the economic growth of the area in which it is located and, perhaps more importantly, on the bank's ability to attract deposits and loans away from competing financial institutions. The latter strategy involves additional outlays in the form of advertising, personnel, and interest payments for time and savings deposits. If the marginal cost of these outlays exceeds the marginal return of the additional business, the bank sacrifices a certain amount of net return in order to achieve more rapid growth.

The results in this study imply that banks must often forego higher rates of return in order to pursue a policy of rapid internal growth, at least in the short-run. A more rapid rate of asset growth was associated with lower profitability. For example, the rate of internal bank growth (X_{26}), measured as the percentage change in assets for the five years prior to each observation, is inversely related to the rate of return earned by banks. The regression coefficient was highly significant in 1968, nearly significant in 1970, and still negative although not significant in 1966. These results may also help explain why many banks and bank holding companies give consideration to expansion

[15] See for example, Thomas E. Davis, "Bank Holdings of U. S. Government Securities," *Monthly Review,* Federal Reserve Bank of Kansas City, July-August 1971.

through the purchase of other banks as an alternative to internal expansion.

In addition to growth in total assets, the impact of loan, cash, and dividend growth (X_{27}, X_{28}, and X_{29} in Appendix Table) on the profitability of banks in the sample was determined. None of these three growth variables bore a consistent relationship with bank profitability during the three observation years, implying that given a growth rate of total assets, the growth of individual components of total assets are not of major importance.

LOCATION VARIABLES

The final aspect of this study is concerned with the determination of whether or not bank profitability is affected by location. It might be thought that location, because of such factors as level of economic activity and population, would have an effect on the costs and income of banks. This study, however, failed to detect any consistent relationship between location and bank profitability. The level of retail sales and per capita buying income and the rate of population growth in the counties where the banks are located were not significantly associated with profitability in any of the three observation years, and the signs of the coefficients were inconsistent among years. However, this lack of relationship should be interpreted with caution. Variables, such as cost and interest rates, which are included in the basic equation, do have some relationship to a bank's location. As a result, these cost variables might actually account for much of the variation in profits due to locational differences. Furthermore, it is difficult to measure locational characteristics with precision, and these variables might not have been adequately described in the equation. In an attempt to determine the specific influence of location on profits and eliminate the effect of other variables, the mean rates of growth of population and effective buying income were determined for the four bank profitability groups (Table III). The number of banks in each profitability group were also stratified according to the level of county retail sales (Table IV). Although these data indicate that bank earnings do tend to vary positively with growth in income and inversely with the level of retail sales and population growth, the relationships are not consistent over all profitability groups.

Variables were also used to designate the state in which each bank was located. These variables should indicate the impact, if any, of variations in state banking regulations and branching restrictions on bank profitability. Again, no consistent relationship was found between location and bank profits, as none of the coefficients were significant. Additional data in Table IV, which arranges banks according to profitability and state location, also show little relationship between bank location by state and the net rate of bank earnings (independent of the effect of other variables).

SUMMARY AND CONCLUSIONS

This study was undertaken to identify characteristics of the most profitable banks within a given size range in the Fourth District. The results indicate that the most effective strategy employed by the sample banks to achieve high profits involved the control of expenses. The most profitable banks in the sample during any particular year maintained significantly lower ratios of salary expense and interest paid on time and savings deposits to total revenue than other banks in the sample. Economizing on all other types of expenses also appeared to enhance the

TABLE IV

Distribution of Sample Banks Within Profitability Groups*
By County Retail Sales and By Location
(Number of Banks)

	Profitability Groups of Banks			
	25 Most Profitable Banks	25 Second Profitable Banks	25 Third Profitable Banks	25 Least Profitable Banks
County				
Retail sales				
Over $100 million	14	14	15	16
Under $100 million	11	11	10	9
Total	25	25	25	25
Location by state				
Kentucky	3	3	2	5
Ohio	16	17	19	15
Pennsylvania	4	3	4	5
West Virginia	2	2	0	0
Total	25	25	25	25

* Three-year average of banks.

Source: Federal Reserve Bank of Cleveland

rate of return earned by sample banks, but to a lesser extent. Banks with higher loan-asset ratios, banks earning higher rates of return on loans, and banks with a higher percentage of state and local tax-exempt securities also earned higher net returns during most years. Finally, banks that minimized loan and securities losses were generally more profitable.

Other factors not included in this study, such as quality of management, undoubtedly have an impact on bank profits. Nearly 40 percent of the variation in profits was unaccounted for in each of the three years examined. Thus, the results presented here do not represent a guaranteed prescription for high profits. Rather they give an indication of some factors that were consistently characteristic of the more profitable, medium-size banks in the Fourth Federal Reserve District.

APPENDIX TABLE

Supplementary Estimated Relationships Between the Net Rate of Return to Capital and Bank Operations, Portfolio, Growth, and Locational Variables
1966, 1968, and 1970

I. Operational Variables

$$Y_{66} = \text{basic model} + \underset{(0.15)}{.01\ X_2} + \underset{(1.08)}{.24\ X_3} - \underset{(-0.41)}{1.17\ X_{10}} - \underset{(-0.76)}{1.08\ X_{11}}$$

$$Y_{68} = \text{basic model} + \underset{(2.23)}{.21\ X_2^{**}} + \underset{(0.55)}{.13\ X_3} - \underset{(-0.35)}{1.57\ X_{10}} - \underset{(-1.26)}{1.42\ X_{11}}$$

$$Y_{70} = \text{basic model} + \underset{(1.67)}{.15\ X_2} + \underset{(1.41)}{.49\ X_3} - \underset{(-0.66)}{5.79\ X_{10}} - \underset{(1.29)}{2.43\ X_{11}}$$

II. Portfolio-Composition Variables

$$Y_{66} = \text{basic model} + \underset{(3.52)}{.45\ X_{15}^{**}} - \underset{(-0.30)}{.04\ X_{17}} + \underset{(2.12)}{.35\ X_{18}^{**}} + \underset{(1.09)}{.04\ X_{21}} + \underset{(1.87)}{.07\ X_{22}^{**}}$$

$$Y_{68} = \text{basic model} + \underset{(1.97)}{.18\ X_{15}^{*}} - \underset{(1.01)}{.12\ X_{17}} + \underset{(0.01)}{.00\ X_{18}} + \underset{(1.96)}{.67\ X_{21}^{*}} + \underset{(1.31)}{.42\ X_{22}}$$

$$Y_{70} = \text{basic model} + \underset{(0.03)}{.00\ X_{15}} - \underset{(-1.26)}{.22\ X_{17}} + \underset{(1.15)}{.19\ X_{18}} - \underset{(-0.23)}{.01\ X_{21}} - \underset{(-0.21)}{.01\ X_{22}}$$

III. Growth Variables

$$Y_{66} = \text{basic model} + \underset{(0.74)}{.00\ X_{27}} - \underset{(-0.64)}{.00\ X_{28}} - \underset{(-0.26)}{.00\ X_{29}}$$

$$Y_{68} = \text{basic model} + \underset{(0.58)}{.00\ X_{27}} + \underset{(0.40)}{.00\ X_{28}} - \underset{(-1.50)}{.00\ X_{29}}$$

$$Y_{70} = \text{basic model} + \underset{(-1.14)}{.00\ X_{27}} + \underset{(0.86)}{.00\ X_{28}} + \underset{(1.93)}{.00\ X_{29}^{*}}$$

IV. Location Variables

$$Y_{66} = \text{basic model} + \underset{(0.67)}{.00\ X_{30}} - \underset{(-0.57)}{.01\ X_{33}} + \underset{(0.91)}{.16\ X_{34}} + \underset{(0.09)}{.16\ X_{35}}$$

$$Y_{68} = \text{basic model} - \underset{(-0.75)}{.00\ X_{30}} + \underset{(1.63)}{.03\ X_{33}} + \underset{(1.33)}{.02\ X_{34}} + \underset{(0.11)}{.00\ X_{35}}$$

$$Y_{70} = \text{basic model} + \underset{(1.11)}{.00\ X_{30}} - \underset{(-0.60)}{.01\ X_{33}} + \underset{(0.36)}{.01\ X_{34}} + \underset{(0.14)}{.00\ X_{35}}$$

NOTE: Standard errors of the coefficients are shown in parenthesis.

* Coefficient is significant at the .10 percent critical level.
** Coefficient is significant at the .05 percent critical level.

Source: Federal Reserve Bank of Cleveland

ECONOMIC GROWTH AND CHANGE IN KENTUCKY, 1960–1970

Richard D. Carter and Janet S. Dinkel

The State of Kentucky, long considered rural and agrarian, has been experiencing a trend toward urbanization and increasing industrialization. More than half the State's population is now classified as urban; and, in the last decade, employment in manufacturing grew faster in Kentucky than in the United States. The changes in Kentucky's industrial composition have been broadly based and the State's dependence on industries such as mining and agriculture has decreased. Kentucky's agricultural base has also been changing, with increasing emphasis on the production of cattle.

Although growth in employment and income in the last decade was rapid, the major regions of the State were marked by widely different rates of growth. Levels of economic activity also differed widely by region. For example, per capita income in the two major metropolitan centers of Louisville and Lexington was double the average in the eastern region of the State. This article compares changes in selected economic measures in Kentucky with the United States, as well as changes that occured within the State.

By various standards of measurement—nonagricultural employment, personal income, and per capita income, the State of Kentucky experienced faster growth from 1960 to 1970 than the United States as a whole. This growth, however, was unevenly distributed within the State. In addition, the faster growth in per capita income, partly reflects a gain in population that was below the national average. Even though all of the major regions of the State experienced a marked increase in per capita income, the level varied widely among the regions.

Kentucky contains centers of industry as well as less developed areas. Most of the economic growth in the last decade took place in the north-central region of the State (see map). This area includes Kentucky's two largest cities—Louisville and Lexington, three counties that are a part of Metropolitan Cincinnati, and the famed Bluegrass area. The eastern region of the State, which includes the Appalachian coal fields, has been traditionally dependent upon mining. The development of both agriculture and industry in this area has been quite limited. Western

1 LOUISVILLE metropolitan area **(Kentucky portion)**
2 LEXINGTON metropolitan area
3 CINCINNATI metropolitan area **(Kentucky portion)**

Kentucky has been greatly influenced by agriculture, although it also contains sizable deposits of limestone and coal. In the last decade, this part of the State experienced considerable growth in manufacturing. This article compares various measures of economic development in Kentucky with the United States and examines changes in these measures within the State.[1]

EMPLOYMENT

In recent years, the diversification of Kentucky's economy has had a major effect on employment within the State. Changes have taken place both in the composition of employment and in its geographic pattern.

Compositional Changes in Employment. Total nonagricultural wage and salary employment in Kentucky rose at an average annual rate of 3.4 percent from 1960 to 1970, compared to an annual increase of about 2.7 percent in the United States (see Table I). Manufacturing, the single largest source of employment, has been accounting for a steadily increasing share of employment in the State. In 1970, the 251,000 workers in manufacturing represented about 27 percent of the total nonagricultural payroll employment. Other major sources of employment include wholesale and retail trade (20 percent), government (19 percent), and services (15 percent). Although the State is known for its bituminous coal and other mineral deposits, mining accounted for only 3 percent of its nonagricultural employment in 1970 (see Table II).

The rapid expansion of jobs in manufacturing is one of the distinctive characteristics of

[1] For purposes of this article, the State of Kentucky is divided into three major regions. These regions in turn, are based on U. S. Census classification of State economic areas that have similar economic and social characteristics. See 1970 Census of Population, Subject Reports, State Economic Areas, U. S. Bureau of Census.

TABLE I

Nonagricultural Payroll Employment in Kentucky and the United States
1960-1970
Thousands of Persons

Source of Employment	Kentucky 1960	Kentucky 1970	Kentucky Annual Rates of Change	United States 1960	United States 1970	United States Annual Rates of Change
Total nonagricultural employment	653.6	914.1	3.4%	54,234	70,664	2.7%
Mining	34.0	28.1	–1.9	712	622	–1.4
Bituminous coal and lignite mining	26.5	22.8	–1.5	169	139	–2.0
Contract construction	35.9	49.1	3.2	2,885	3,347	1.5
Manufacturing	171.6	251.0	3.9	16,796	19,393	1.5
Durable goods	85.0	134.5	4.7	9,459	11,203	1.7
Lumber and wood products	9.9	9.3	–0.6	627	580	–0.8
Furniture and fixtures	5.4	6.7	2.2	383	460	1.9
Stone, clay and glass products	6.0	7.1	1.7	604	638	0.5
Primary metal industries	9.4	14.2	4.2	1,231	1,306	0.6
Blast furnace and basic steel products	7.4	8.5	1.6	651	629	–0.4
Fabricated metal products	12.5	18.7	4.1	1,135	1,386	2.0
Machinery, except electrical	13.5	26.7	7.0	1,479	1,964	2.9
Electrical equipment & supplies	20.7	35.4	5.5	1,467	1,913	2.7
Transportation equipment	5.1	10.1	7.1	1,569	1,824	1.5
Nondurable goods	86.6	116.5	3.0	7,336	8,190	1.1
Food and kindred products	26.1	25.0	–0.4	1,790	1,796	0.1
Distilled liquor, except brandy	7.7	7.1	–0.8	n.a.	n.a.	n.a.
Tobacco manufacture	11.3	13.1	1.5	94	79	–1.8
Textile mill products	2.8	5.9	7.7	924	965	0.4
Apparel and other textile products	20.3	27.2	3.0	1,233	1,385	1.2
Paper and paper products	2.2	4.7	7.9	601	710	1.7
Printing and publishing	8.1	13.5	5.2	911	1,106	2.0
Chemicals and allied products	11.3	14.2	2.3	828	1,057	2.5
Petroleum, rubber, and plastic products	2.1	8.1	11.1	591	763	2.6
Leather and leather products	2.4	4.8	7.2	363	329	–1.0
Transportation and public utilities	52.5	58.8	1.1	4,004	4,498	1.2
Wholesale and retail trade	139.8	180.9	2.6	11,391	14,950	2.8
Wholesale trade	29.6	40.0	3.1	3,004	3,849	2.5
Retail trade	110.2	140.9	2.5	8,388	11,102	2.8
Finance, insurance, and real estate	25.0	35.0	3.4	2,669	3,679	3.3
Services	84.8	137.0	4.9	7,423	11,577	4.5
Government	110.1	174.2	4.7	8,353	12,597	4.2
Federal	30.1	42.0	3.4	2,270	2,705	1.8
State and local government	79.9	132.2	5.2	6,083	9,819	5.0
State and local education	41.8	76.2	6.2	2,816	5,156	6.2

n.a. Not available.

Source: U. S. Department of Labor

TABLE II

Percent Distribution of Nonagricultural Payroll Employment
Kentucky and the United States
1960-1970

Employment Categories	Kentucky		United States	
	1960	1970	1960	1970
Mining	5.2%	3.1%	1.3%	0.9%
Construction	5.5	5.4	5.3	4.7
Manufacturing	26.3	27.4	31.0	27.4
Transportation and public utilities	8.0	6.4	7.4	6.4
Wholesale and retail trade	21.4	19.8	21.0	21.2
Finance, insurance, and real estate	3.8	3.8	4.9	5.2
Services	13.0	15.0	13.7	16.4
Government	16.8	19.1	15.4	17.8
Total	100.0%	100.0%	100.0%	100.0%

Source: U. S. Department of Labor

employment growth in Kentucky during the last decade. The growth rate of manufacturing employment exceeded that of the State's total nonagricultural payroll employment and was considerably higher than the growth of manufacturing employment in the United States—for both durable and nondurable goods.

Within the manufacturing sector, gains in employment were relatively widespread and were most prominent in the durable goods industries—particularly those associated with household appliances, office business equipment, transportation equipment (mainly trucks), primary metals, and fabricated metal products. Rapid increases in employment also took place in several nondurable goods industries during 1960-1970, including: textile mill products; paper and paper products; petroleum, rubber, and plastics; and leather and leather goods. On balance, however, employment in nondurable goods industries did not expand as rapidly as in durable goods industries. With some exceptions, there appears to have been a shift in employment patterns in Kentucky from industries processing raw materials to industries producing intermediate goods and finished products. It is especially noteworthy that industries for which Kentucky is known—such as mining, tobacco, and distilled liquor—either declined or showed a gain well below the rate of growth for all manufacturing.

Employment in services[2] and government in Kentucky also demonstrated above average growth during the 1960's when compared with Kentucky's total nonagricultural employment and with national averages in these sectors (see Table I). Services, government and manufacturing have also commanded an increasing *proportion* of total nonagricultural employment in Kentucky since 1960 (see Table II). In contrast, mining, construction, transportation, trade and finance experienced a decreasing share of total employment.

As a source of employment, agriculture has greater importance in Kentucky than in the United States as a whole. According to the 1960 Census, agriculture accounted for over 14 percent of Kentucky's total employment—more than double the national average. Over the last decade, however, gains in farm productivity and increased mechanization on farms have sharply reduced the demand for agricultural workers. In fact, agricultural employment in Kentucky dropped from 133,100 in 1960 to 73,700 in 1970. This decline, combined with rapid growth in other

[2]The service sector includes employment in such areas as business services, medical and legal professions, personal services (barbers, photography, etc.), hotels, auto and other repairs, amusements, non-teaching, non-government education, and non-profit organizations.

TABLE III

Selected Measures of Growth
Kentucky and United States
1960-1970

	Total Employment (Thousands of Persons)			Personal Income (Millions of Dollars)			Population (Thousands of Persons)			Per Capita Income		
	1960	1970	Annual Rates of Change	1960	1970	Annual Rates of Change	1960	1970	Annual Rates of Change	1960	1970	Annual Rates of Change
Kentucky												
Eastern region	144	152	0.5%	$ 658	$1,252	6.6%	667	612	−0.8%	$ 987	$2,048	7.6%
North-central region	496	606	2.0	2,742	5,600	7.4	1,395	1,575	1.2	1,965	3,555	6.1
Jefferson County (Louisville SMSA)	216	269	2.2	1,434	3,027	7.8	611	695	1.3	2,348	4,354	6.4
Fayette County (Lexington SMSA)	50	71	3.6	286	701	9.4	132	174	2.8	2,167	4,022	6.4
Campbell and Kenton Counties*	75	81	0.8	390	587	4.2	208	218	0.5	1,881	2,693	3.7
Remainder of region	153	185	1.9	631	1,286	7.4	445	488	0.9	1,420	2,635	6.4
Western region	296	339	1.4	1,380	2,866	7.6	976	1,032	0.6	1,413	2,778	7.0
TOTAL	936	1,097	1.6	4,780	9,720	7.4	3,038	3,219	0.6	1,573	3,020	6.7
United States	64,639	76,554	1.7	398,726	801,493	7.2	179,326	203,212	1.3	2,216	3,933	5.9

NOTE: Details may not add to totals because of rounding. Source of personal income data on this table is the Kentucky Department of Commerce; data differ slightly from that shown on Table IV, which is based on U. S. Department of Commerce reports.

* The Bureau of the Census definition of state economic areas used in this Table includes Campbell and Kenton Counties as a separate region. However, the Cincinnati Standard Metropolitan Statistical Area, as defined by the Office of Management and Budget, includes Campbell, Kenton, and Boone Counties, Kentucky.

Sources: U. S. Department of Commerce and Kentucky Department of Commerce

industries, reduced the proportion of the State's total employment claimed by agriculture to less than 7 percent in 1970. Moreover, an important shift in the type of farm output has been occurring within the State's agriculture industry. For example, tobacco accounted for nearly 40 percent of cash receipts from farm markets in 1959, but its share was down to one-third in 1969. Output of cattle and calves, however, has been increasing and accounted for nearly 25 percent of farm receipts in 1969 compared to 20 percent in 1959.[3]

Geographic Patterns of Employment. Total employment growth in Kentucky during the 1960-1970 period was unevenly distributed among the three major regions of the State. The north-central region experienced the most rapid growth in total employment (2.0 percent average annual rate), with most of it concentrated in

[3] Kentucky Agricultural Statistics, U. S. Department of Agriculture.

Louisville and Lexington (Jefferson and Fayette counties, respectively; see Table III).[4] These centers were major beneficiaries of the rapid expansion of manufacturing employment in the State. As a result, the north-central region had the highest labor force participation rate and the lowest unemployment rate of the three regions, even though it did experience a decline in agricultural employment.

In the eastern region of Kentucky, employment grew slowly between 1960-1970 (0.5 percent average annual rate); this presented a sharp contrast to growth in the other regions of the State. The eastern portion has been highly dependent upon mining, an industry which has experienced a long-term decline in employment. In addition, this area had the slowest growth in manufacturing of any of the three major regions in Kentucky. As a result, the unemployment rate has been much higher than in the other areas, and the labor force participation rate has been much lower.

Despite a loss of over 30,000 agricultural jobs from 1960 to 1970, the western portion of Kentucky maintained a growth rate in total employment (1.4 percent annual rate) that was close to the average for the State (1.6 percent). The decline in the agricultural sector was more than offset by an expansion in manufacturing and rapid growth in services, trade, and government. In fact, growth in manufacturing in this area has been nearly twice as fast as in the rapidly growing north-central region of the State.

INCOME

The pattern of growth and distribution of income in Kentucky generally corresponded with the employment trends. For example, total personal income increased at a somewhat faster annual rate in Kentucky than in the United States between 1960 and 1970 (7.4 percent compared to 7.2 percent).

Wages and salaries constitute the major source of personal income in Kentucky and in the United States as a whole (see Table IV). With the exception of manufacturing, the sources of wage and salary income in Kentucky exhibited behavior similar to the national averages. Wage and salary income from manufacturing in Kentucky, however, *increased* as a percent of total personal income between 1960 and 1970, while the proportion *decreased* in the United States. This dichotomy reflects the strong growth in manufacturing employment in Kentucky relative to the nation. Income from wages and salaries in agriculture showed little growth during the period under discussion, and actually decreased as a proportion of total personal income.

Proprietors income—income of owners of businesses and farms—is the second most important source of personal income in Kentucky. It also accounts for a larger share of total personal income in Kentucky than in the nation. Primarily because of a decline in the relative importance of agriculture, proprietors income decreased slightly as a proportion of the State's total personal income from 1960 to 1970, although it rose in absolute terms.

[4] Employment data in this section are based on Census of Population reports—the only available data source on geographic distribution. In addition to wage and salary employment in nonagricultural establishments, total employment includes proprietors, self-employed persons, and domestic servants. It should also be noted that, from 1960 to 1970, total employment grew more slowly than nonagricultural employment both in the United States and in Kentucky, in large part because of the decline in agricultural employment. In addition, agriculture represents a larger share of employment in Kentucky than in the United States, and the effect of the decline on total employment in Kentucky was proportionately larger than in the United States.

TABLE IV

Personal Income in Kentucky and the United States
1960-1970

Source of Income	Kentucky				United States			
	1960		1970		1960		1970	
	Millions of Dollars	Percent of Total	Millions of Dollars	Percent of Total	Billions of Dollars	Percent of Total	Billions of Dollars	Percent of Total
Total	$4,702	100.0%	$9,990	100.0%	$400.0	100.0%	$789.9	100.0%
Wages and salaries	2,997	63.7	6,463	64.7	269.1	67.3	536.7	67.2
Farms	40	0.9	47	0.5	3.0	0.8	3.2	0.4
Mining	149	3.2	240	2.4	3.8	1.0	5.8	0.7
Construction	171	3.6	423	4.2	15.6	3.9	32.3	4.0
Manufacturing	884	18.8	1,939	19.4	87.4	21.9	158.3	19.8
Trade	498	10.6	996	10.0	49.1	12.3	89.0	11.1
Finance, insurance, and real estate	99	2.1	234	2.3	12.6	3.2	27.0	3.4
Transportation, communications, and utilities	279	5.9	497	5.0	22.7	5.7	40.2	5.1
Services	270	5.7	671	6.7	28.2	7.1	69.7	8.7
Government	608	12.9	1,406	14.1	46.1	11.5	110.0	13.8
Other labor income	137	2.9	419	4.2	10.9	2.7	30.8	3.9
Proprietors income	723	15.4	1,134	11.4	48.2	12.1	66.9	8.4
Farm	305	6.5	424	4.2	12.0	3.0	15.9	2.0
Nonfarm	418	8.9	710	7.1	36.2	9.1	51.0	6.4
Property income	524	11.1	1,182	11.8	52.0	13.0	113.0	14.1
Transfer payments	436	9.3	1,132	11.3	29.0	7.3	79.6	10.0

Source: U. S. Department of Commerce

Each of the three major economic regions in the State of Kentucky shared in the growth of personal income, although the western and north-central regions showed considerably stronger gains than in the east. Growth in income was most marked in the Lexington area.

POPULATION

One reflection of the changes taking place in Kentucky has been the steady migration of population from rural to urban areas. In 1970, 52 percent of the State's population was classified as urban. This shift toward urbanization is illustrated by the fact that nearly one-half of the State's population increase during the 1960's occurred in the two largest metropolitan areas—Louisville and Lexington.

Between 1960 and 1970, Kentucky's population increased 0.6 percent annually—from 3.0 million persons to 3.2 million—compared with a 1.3 percent annual gain for the United States. The principal reason for the slower growth rate of Kentucky's population is the migration of people to areas outside the State. During the last decade, the state experienced a net out-migration of more than 5 percent. The bulk of this occurred in eastern Kentucky—particularly around the Appalachian coal mines—where population declined by 8 percent, with many of the region's counties marked by an out-migration of 10

percent or more. Much of this out-migration can be traced to the lack of adequate economic opportunities in eastern Kentucky. For example, in 1970, the unemployment rate in this region was the highest in the State and almost twice that of the north-central region.

PER CAPITA INCOME

A commonly used measure of economic well-being—per capita income—improved markedly in Kentucky during the last decade. Kentucky's growth in per capita income exceeded that of the United States, primarily because of the State's slower growth in population. Per capita income nearly doubled between 1960 and 1970 (from $1,523 to $3,019) compared to a 75 percent increase nationally. Despite the rapid increase, however, per capita income in Kentucky was still well below the level of $3,933 for the United States in 1970 (see Table III).

As was the case with employment, changes in per capita income varied considerably among the three major economic regions of the State. The eastern region experienced the fastest growth, but this growth was based more on a decline in population because of lessening job opportunities than on growth in personal income. Western Kentucky, which experienced rapid growth in personal income but only average growth in population, had the second fastest rate of growth in per capita income of the three regions.

Although per capita income in the north-central region grew somewhat less rapidly than in the other two regions, its population growth was the strongest in the State, and the level of per capita income in 1970 was the highest. Moreover, in dollar amounts, the differential in per capita income between the north-central and the other two regions actually increased. For example, the level of per capita income in the north-central region was about $2,000 in 1960, compared to about $1,000 in the eastern region. By 1970, per capita income reached $3,500 in the north-central region, compared to $2,000 in the eastern portion of the State. It should also be noted that per capita income in the Louisville and Lexington metropolitan areas has been considerably higher than the regional average and was about $4,000 (approximately the national average) in 1970.

SUMMARY

The State of Kentucky experienced more rapid economic growth in nonagricultural employment, personal income, and per capita income between 1960 and 1970 than the United States. However, economic growth within the State varied widely, and the disparity in per capita income between large metropolitan centers—notably Louisville and Lexington—and the eastern region of the State widened.