

**RESEARCH MEMORANDUM 437**

**PATTERNS of GROWTH and DECLINE**  
**IN THE KENTUCKY ECONOMY**  
**1969—1988**

**Prepared by**  
**Virginia Wilson**

**Legislative Research Commission**  
**Frankfort, Kentucky**  
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**MEMORANDUM**

To: Peggy Hyland  
From: Ginny Wilson   
Date: December 21, 1989  
Subject: Errata

The following corrections should be noted in the publication "Patterns of Growth and Decline in the Kentucky Economy":

1. Page 8
  - A. On Chart 4A the title of the vertical axis should read "Billion \$" instead of "Percent".
  - B. The vertical scales of Charts 4B and 4C are reversed. The vertical scale on Chart 4B should range from 45 to 70 Percent and the vertical scale on Chart 4C should range from zero to 25 Percent. The second lowest value on this scale should be "5" rather than "9".
2. Page 15
  - A. On Chart 9A the vertical axis should be titled "Billion \$" rather than "Percent".
3. Page 20
  - A. On Chart 12A the vertical axis should be titled "Millions" rather than "Million \$ 1988".
  - B. On Charts 12B and 12C the vertical axes should be titled "Thousands" rather than "Percent".

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## MEMORANDUM

TO: Vic Hellard, Jr., Director

FROM: Virginia Wilson

SUBJECT: Patterns of Growth and Decline  
in the Kentucky Economy

DATE: November 16, 1989

This publication was prepared for the conference on "Kentucky Trends" sponsored by the Legislative Research Commission on December 6-8, 1989. Many times government looks at problems at a particular point in time. However, by looking at trends over a long period a different perception of how the state is doing and where current policies are leading can be derived. This publication is part of the ongoing effort by the LRC to look at issues from a long term perspective. This publication describes changes in the Kentucky economy over time and analyzes the potential implications of some of these trends. It is meant to be informative and to encourage discussion on what lies ahead for the Kentucky economy, and how the state can best prepare for it. This report was prepared by Virginia Wilson and edited by Charles Bush.



## INTRODUCTION

The purpose of this report is to present a graphical picture of major trends which have emerged in the Kentucky economy over the last twenty years. This is believed to be a worthwhile project because an understanding of the economic patterns which have characterized the Kentucky economy in the past can help in making policy decisions that are intended to shape the economic patterns which will characterize its future.

Trends in four principal components of the Kentucky economy are analyzed to determine the underlying structure of major changes. The four components are:

1. Personal Income
2. Earnings
3. Employment
4. Output

As indicated by the title, the focus of the report is on those sectors of the economy which have shown the greatest increase or greatest decrease over the period from 1969 to 1988.

Data for this report are drawn from two sources. Personal income, earnings and employment data were obtained from the Kentucky Economic Information System, an on-line database maintained by the Center for Business and Economic Research at the University of Kentucky. Gross state product data were obtained from a data tape supplied by the Bureau of Economic Analysis in the U.S. Department of Commerce.

### REFERENCE POINTS FOR THE KENTUCKY ECONOMY

When assessing changes in the Kentucky economy there are several pertinent questions which may be addressed. The first concerns changes in the absolute size of the economy over time. Here, the comparison is between the Kentucky economy and its own history. Since most economic variables are given in dollars and since inflation causes the value of a dollar to vary over time, all dollar figures are presented in constant 1988 dollars. This allows analysis of real changes over time by controlling for the effects of inflation.

The second question concerns the nature of the Kentucky economy. Here, the analysis centers on changes in the relative share contributed by various segments of the economy. A third question concerns the relative performance of the Kentucky economy when compared to some other economy, such as that of the United States or the Southeast Region.

All three of these questions are addressed in this report, but the greatest attention is given to changes in the absolute size and nature of the state's economy. While consideration of the economy's relative performance is of interest, one problem is that such an analysis often provides more information about what is going on in places like California and even the Pacific Rim countries (through their effect on the economies of West Coast states) than it does about what is happening in Kentucky.

Finally, a note about the scales that are used in the following graphs. In plotting line graphs, the size of the vertical scale has a significant effect on the slope of the data line. A five percent decline will look drastic if the vertical scale covers a range from zero to 10 percent but will look negligible on a scale covering a range from zero to 100 percent. A scale wide enough to cover all data series would tend to make most lines look flat. Therefore, the chosen approach was to maintain, where possible, a scale of the same width on each comparable graph, even though the end points of the scales may be different. For example, one scale may range from 50 to 70 percent while another may range from 0 to 20 percent. Thus, the slopes of the data lines are still comparable, even though the absolute ranges may differ. It is important to remember that the vertical scales change from graph to graph.

## **CHANGES IN PERSONAL INCOME**

Personal income is a measure of all of the money received by individuals in an area from any legal source. Personal income data is published on a regular basis by the Bureau of Economic Analysis (BEA) for most major geographic regions, including states, counties and major cities.

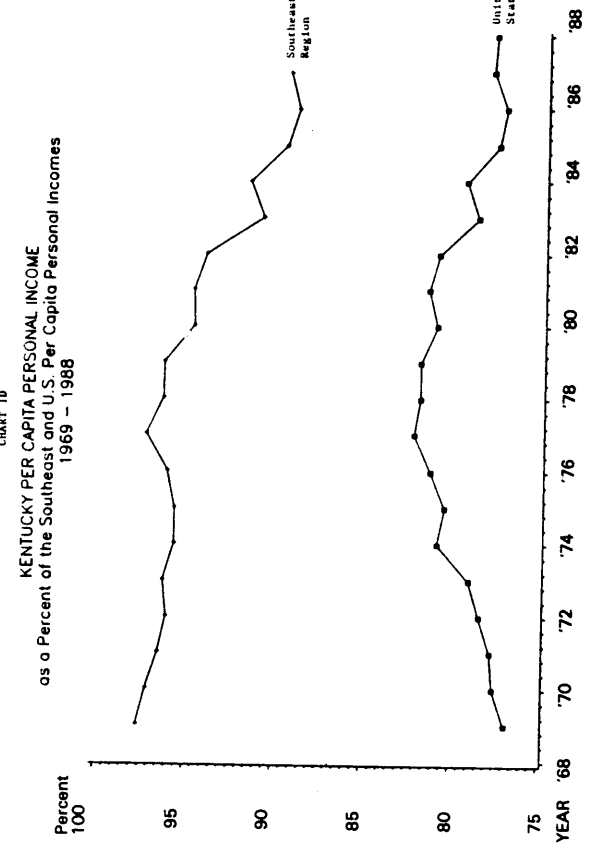
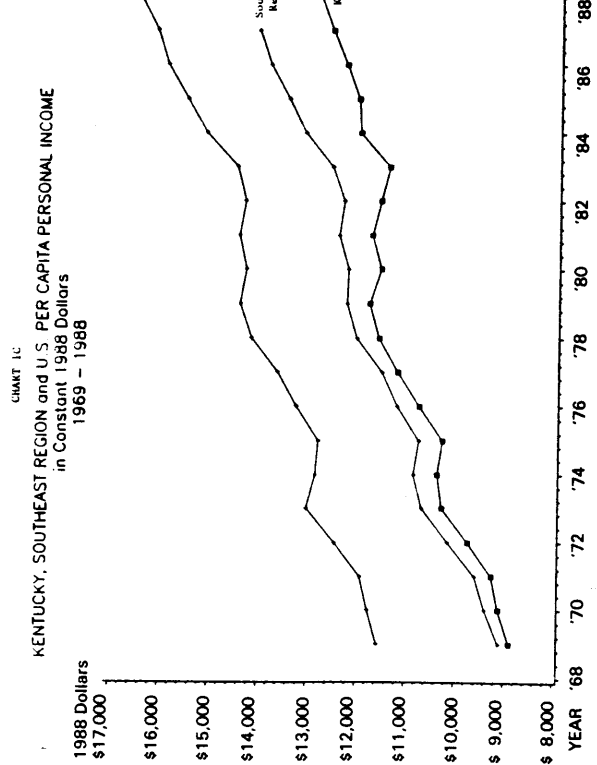
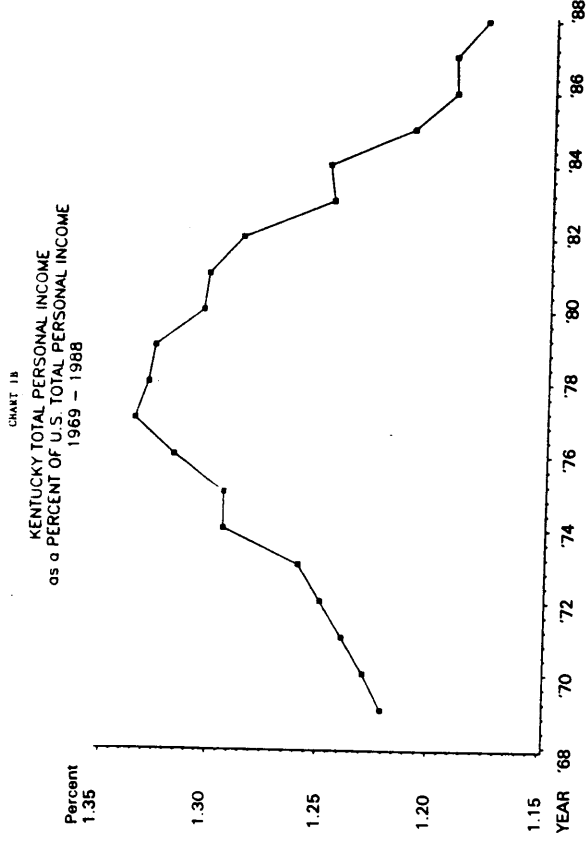
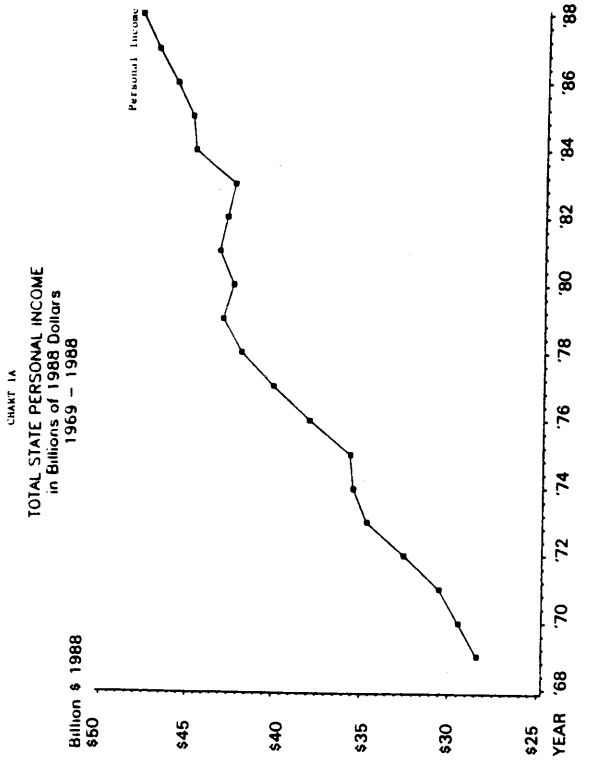
In general, income can be obtained in three ways. First, it can be earned by the work of an individual. This type of income makes up the earnings component of personal income, which includes wage and salary income and proprietors' earnings. Second, income can be earned by property. This type of income makes up the property component of personal income, which includes earnings from sources such as rents, dividends and interest. Finally, income can be received as a gift or an entitlement. This type of income constitutes the component of personal income called transfer payments. Included in this component is income from sources such as retirement benefits, unemployment benefits, food stamps, and medical programs such as Medicare and Medicaid.

### **Change in Absolute and Relative Personal Income**

As can be seen in Figure One, Chart 1A, the absolute size of the Kentucky economy, as measured by total personal income, increased from \$28 billion in 1969 to \$48 billion in 1988 (in constant 1988 dollars). Except for a period of flat, or even slightly negative, growth between 1979 and 1984, growth in real Kentucky total personal income has been steady over the period.



# FIGURE ONE



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

A very different picture emerges when the relative performance of Kentucky personal income is examined. Figure One, Chart 1B shows Kentucky total personal income as a percent of U.S. total personal income. Here, the graph shows Kentucky with an increasing trend until 1977 but then shows a decline from 1.34 percent in 1977 to 1.18 percent in 1988. While Chart A shows that real Kentucky total personal income has been increasing, it is clear from Chart 1B that since 1977 it has not been increasing as fast as that of the U.S. as a whole. As noted above, one problem with Chart 1B is that it gives only limited information about the Kentucky economy. It gives much more information about the strong economic and population growth that has occurred in coastal states, such as California and Florida, fueled by domestic sun seekers, immigrant job seekers and foreign U.S. market seekers. Thus, although Kentucky's share of the pie has gotten smaller, because the overall size of the pie has expanded, Kentucky's piece of the the pie has gotten bigger.

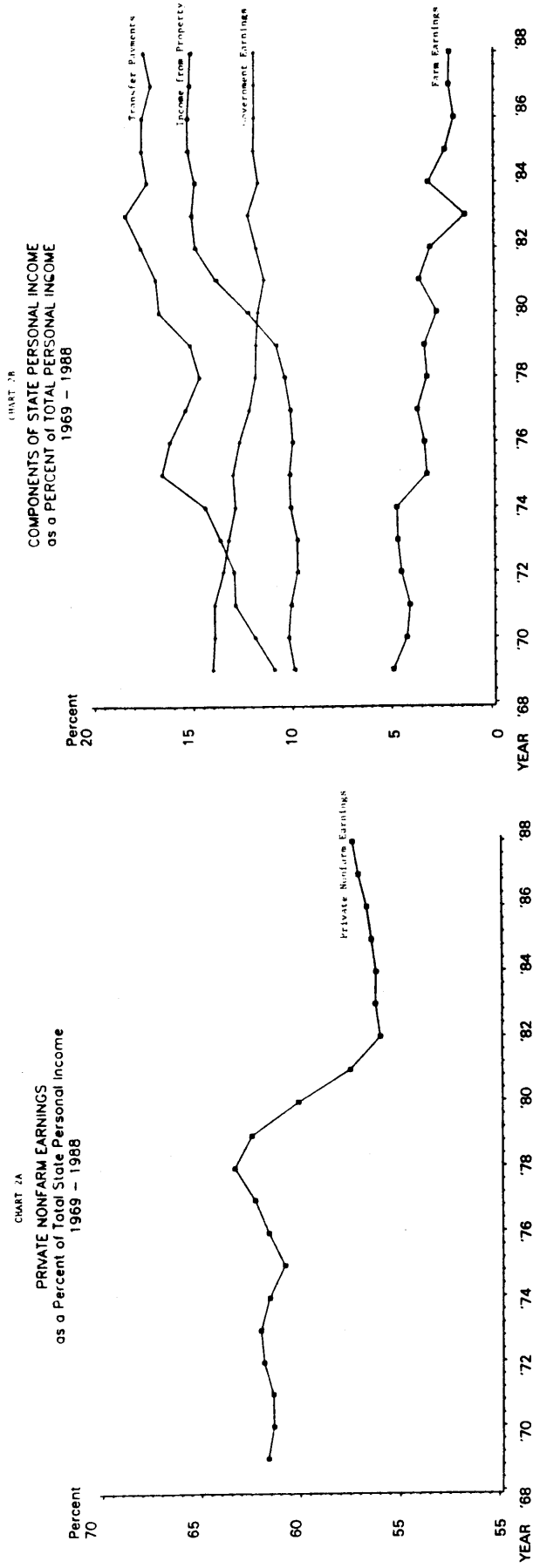
A similar pattern emerges from an examination of changes in per capita personal income. Per capita personal income is simply the total personal income of an area divided by its population. Per capita personal income is often used as a measure of the economic well being of the residents of an area. Charts 1C and 1D in Figure One indicate that, while per capita personal income has increased over the period in Kentucky, the Southeast Region and the U. S., Kentucky per capita personal income is considerably below that of the U.S. and is falling relative to that of the Southeast. Kentucky per capita personal income as a percent of that in the Southeast has generally declined over the entire period. Relative to the U.S., Kentucky per capita personal income increased between 1968 and 1976, mostly declined till 1986, then experienced a small upturn in 1987.

### **Changes in the Nature of Personal Income**

Another question of interest is whether there has been a change in the nature of Kentucky personal income over the period. Personal income is growing in absolute terms. The question is—what components are driving that growth? This information can be found in Figure Two, Charts 2A and 2B. While earnings from private nonfarm industries account for well over half of total personal income, their share decreased significantly between 1978 and 1982 and has only gradually increased since that time. Earnings from the government and farming sectors have generally declined as a percent of total personal income over the entire period.

The two components of personal income which have increased their share are transfer payments and income from property. Virtually all of the increase in income from property occurred between 1977 and 1983. This increase was primarily the result of extremely strong increases in the price of housing and land, which has since stabilized at the higher levels. Relatively high interest rates during the period also contributed to the change.

FIGURE TWO



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

Growth in transfer payments as a percent of personal income represents the major change in the nature of personal income over the period. In 1969, transfer payments accounted for 11 percent of total personal income. In 1988, that share had increased to 17.5 percent.

The charts in Figure Three show that, while changes in the Kentucky economy may differ in magnitude, they tend to follow the predominate pattern of turning points evidenced in the U.S. economy. Overall, the U.S. gets a greater share of personal income from earnings (Chart 3A) and income from property (Chart 3B), while Kentucky gets a greater share of personal income from transfer payments (Chart 3C) and farming (Chart 3D). In general, changes in the nature of personal income in Kentucky have occurred in a pattern similar to that for the U.S. as a whole.

### **Changes in Transfer Payments**

Since transfer payments represent the fastest growing component of personal income, another task is to determine what types of transfer payments are driving that growth. Chart 4A in Figure Four indicates that retirement & disability payments (e.g., Social Security and other retirement programs) and medical payments (e.g., Medicare, Medicaid and other medical insurance payments) have steadily increased in absolute size over the period. Income maintenance benefits (e.g., Aid to Families With Dependent Children, food stamps and SSI) and unemployment benefits have been relatively stable.

As a percent of total transfer payments, retirement payments have remained fairly constant since 1980 (Chart 4B). Chart 4C shows that veterans benefits have declined over the period. Income maintenance payments have declined since 1974 and unemployment benefits have declined since 1984. The major trend in transfer payments has been the large shift to medical payments, which have increased from 12 percent of total transfer payments in 1973 to 25 percent in 1988.

### **Changes in Kentucky Regions**

A final question about trends in personal income in Kentucky concerns changes in how income has been distributed among regions in the state.\* In 1969 the KIPDA Area Development District (see Figure Five) accounted for 30.5 percent of total personal income received in the state (Chart 6A). By 1984 that percentage had reached a low of 26.2 percent and by 1987 it had increased only slightly, to 26.8 percent. This loss in percentage does not mean that the KIPDA ADD was losing personal income but means that other ADDs in the state were gaining it at a faster rate. An examination of each

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\*Only a brief analysis of regional trends will be given here. The Legislative Research Commission is preparing a similar economic profile of each Kentucky county and area development district. The anticipated publication date is January 1990.

# FIGURE THREE

CHART 3A  
PRIVATE NONFARM EARNINGS as a PERCENT of PERSONAL INCOME  
KENTUCKY and the UNITED STATES  
1969 - 1988

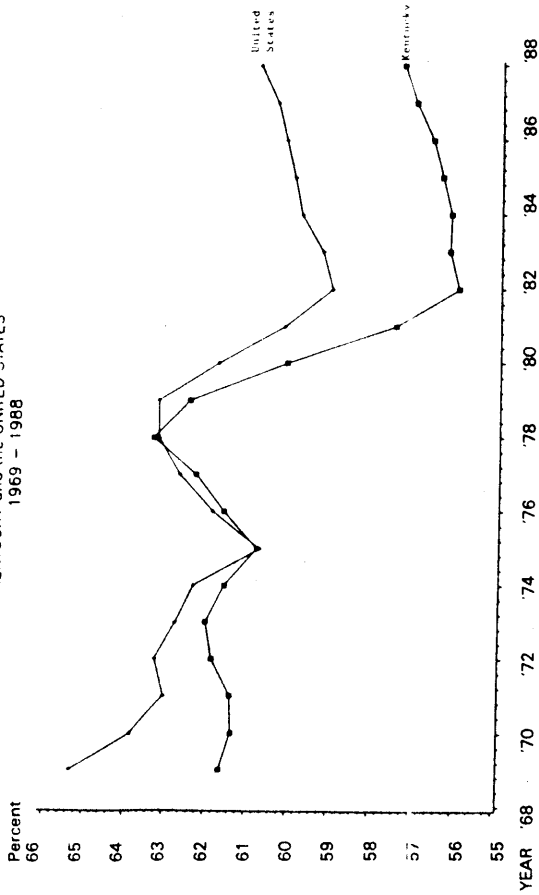


CHART 3B  
EARNINGS from PROPERTY as a PERCENT of PERSONAL INCOME  
KENTUCKY and the UNITED STATES  
1969 - 1988

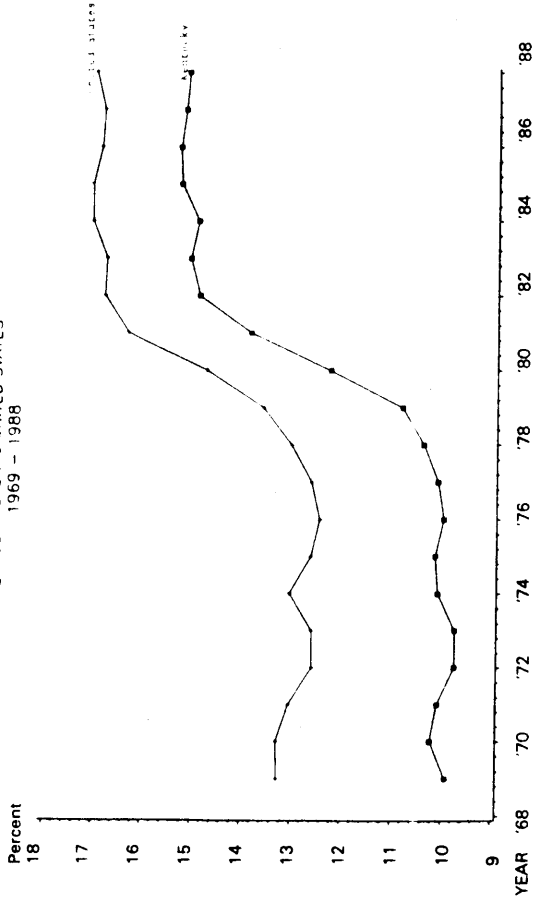


CHART 3C  
TRANSFER PAYMENTS as a PERCENT of PERSONAL INCOME  
KENTUCKY and the UNITED STATES  
1969 - 1988

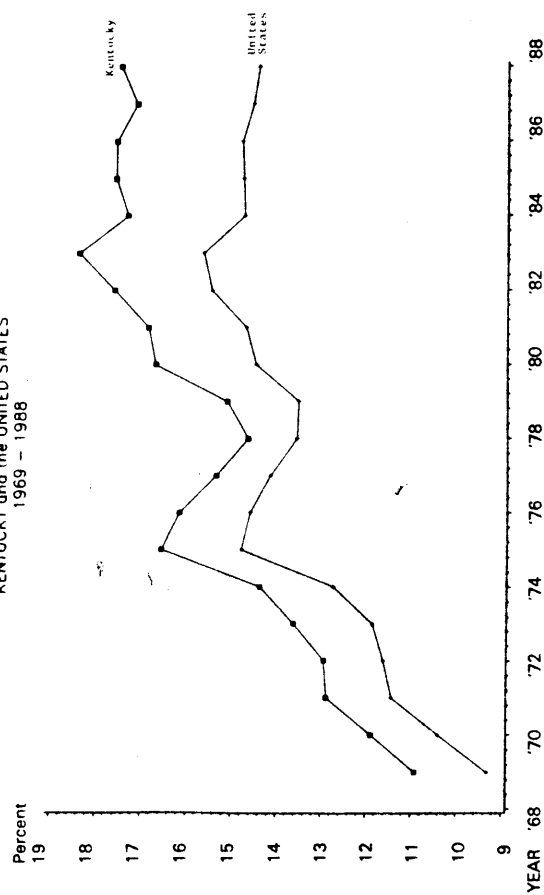
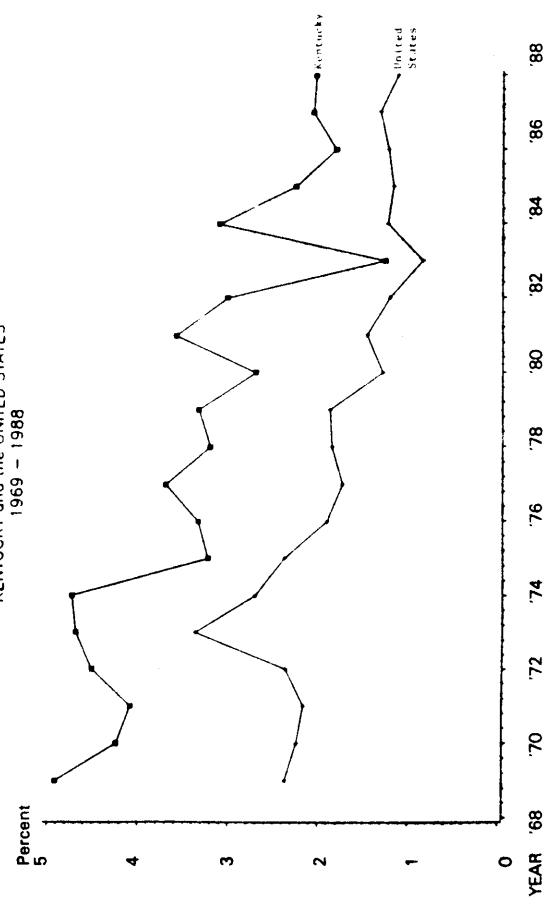


CHART 3D  
EARNINGS from FARMING as a PERCENT of PERSONAL INCOME  
KENTUCKY and the UNITED STATES  
1969 - 1988



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

# FIGURE FOUR

CHART 4A  
SELECTED CATEGORIES OF TRANSFER PAYMENTS  
in Billions of 1988 Dollars  
1969 - 1988

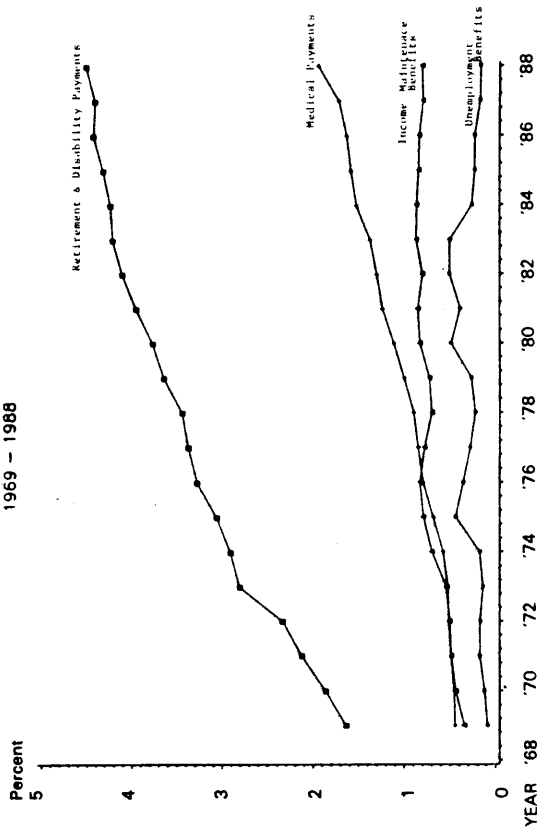


CHART 4B  
RETIREMENT & DISABILITY INSURANCE BENEFIT PAYMENTS  
as a Percent of Total Government Payments to Individuals  
1969 - 1988

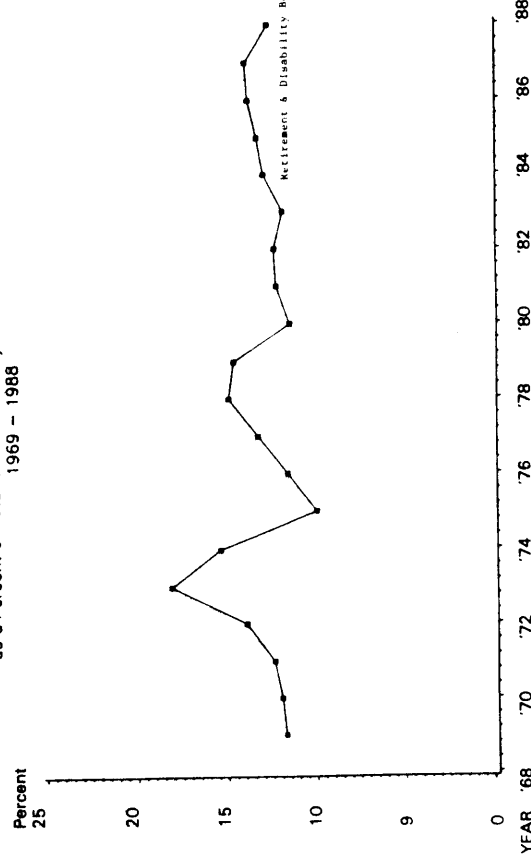
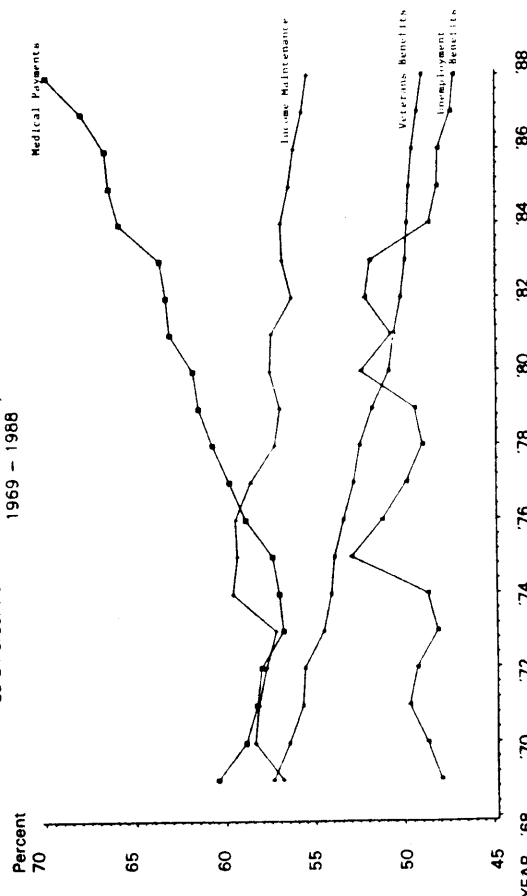


CHART 4C  
SELECTED CATEGORIES OF TRANSFER PAYMENTS  
as a Percent of Total Government Payments to Individuals  
1969 - 1988



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.



# FIGURE SIX

CHART 6A  
KIPDA AREA DEVELOPMENT DISTRICT  
TOTAL PERSONAL INCOME as a PERCENT of KENTUCKY TOTAL PERSONAL INCOME  
1969 - 1987

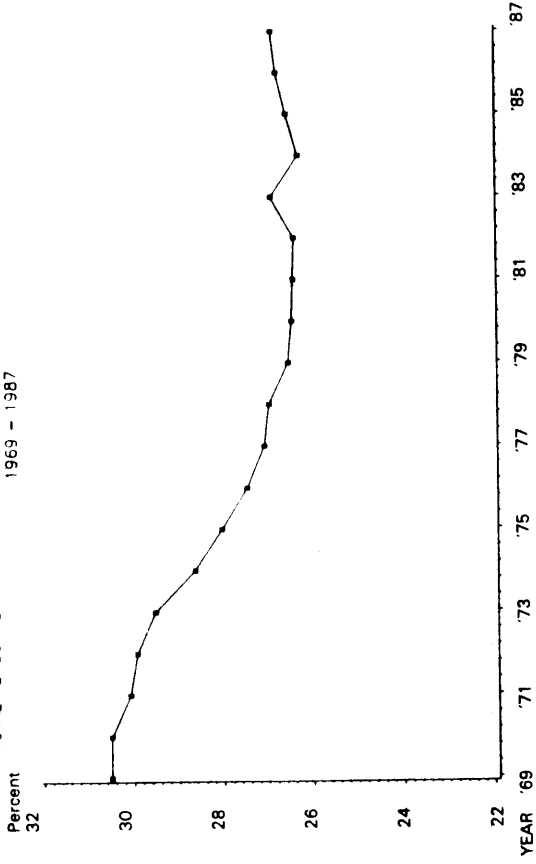


CHART 6B  
BLUEGRASS AREA DEVELOPMENT DISTRICT  
TOTAL PERSONAL INCOME as a PERCENT of KENTUCKY TOTAL PERSONAL INCOME  
1969 - 1987

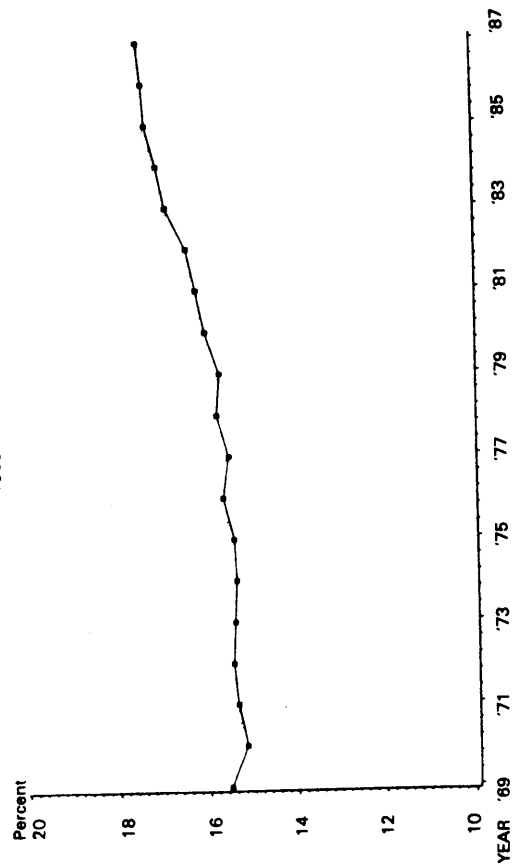
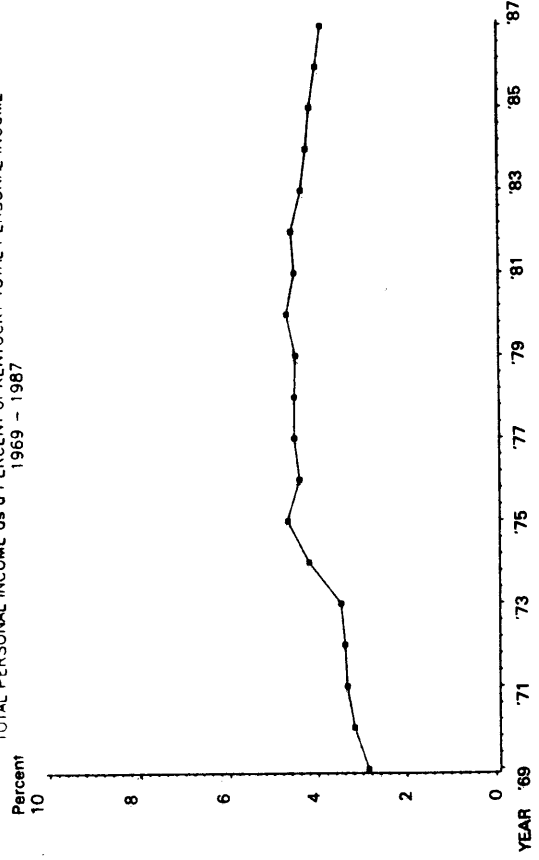


CHART 6C  
BIG SANDY AREA DEVELOPMENT DISTRICT  
TOTAL PERSONAL INCOME as a PERCENT of KENTUCKY TOTAL PERSONAL INCOME  
1969 - 1987



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.



ADD revealed that the two big gainers were the Bluegrass ADD and the Big Sandy ADD. Since 1970 the Bluegrass ADD's share of total state personal income has increased from 15.1 percent to 17.4 percent (Chart 6B). The increase has been fairly steady over the period. Between 1973 and 1975 personal income in the Big Sandy ADD increased from 3.4 percent of the state total to 4.6 percent (Chart 6C). After remaining relatively unchanged until 1982, its share began to gradually decline and in 1987 it accounted for 3.9 percent of state personal income.

The pattern exhibited by the Big Sandy ADD was similar, though smaller in magnitude, among all the coal producing regions which received the same infusion of income after the 1973 Arab oil embargo. Other ADDs in the state have shown only minor changes in their relative share of state personal income.

As was stated above, per capita personal income is often used as a measure of the economic well-being of the residents of an area.\* A map of 1987 per capita personal income by county (Figure Seven) gives a good indication of why the area comprised by the Bluegrass, KIPDA, and Northern Kentucky ADDs has become known as the "Golden Triangle". This area contains just over half of the counties which fall in the top 25 percent when the counties are ranked by per capita personal income.

In absolute terms this characterization may be accurate. When patterns of growth are considered it appears to be less accurate. Figure Eight displays changes in per capita personal income as a percent of Kentucky per capita personal income for selected ADDs. Chart 8A indicates that, although the per capita personal income in the KIPDA ADD has been consistently above the state's, that advantage declined until 1979, when it began a period of moderate growth. In contrast, the Bluegrass ADD experienced a fairly significant increase between 1979 and 1985 compared to the state (Chart 8B). That trend reversed itself between 1985 and 1987.

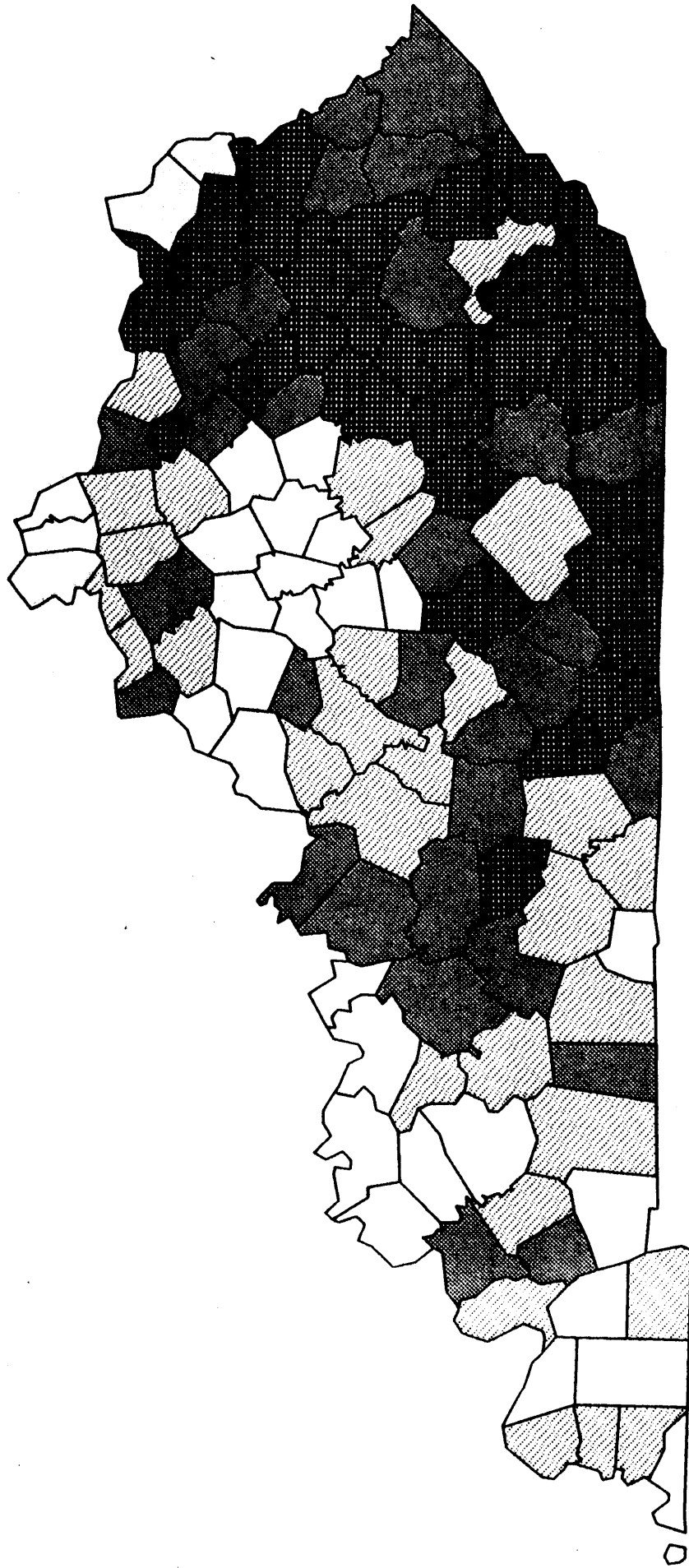
Chart 8C gives an excellent picture of the dramatic impact the energy crisis of the early 1970's had on the Big Sandy ADD and other coal producing regions. Unfortunately, it also gives an excellent picture of the steady loss of that advantage since 1975.

Two ADDs have shown a substantial decline in per capita personal income relative to the state as a whole (Chart 8D). Between 1969 and 1980 per capita personal income in the Lincoln Trail ADD, as a percent of that in the state, declined from 98 percent





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\*While per capita personal income and poverty rates are highly correlated, they can diverge greatly in areas where a large share of the area's personal income is received by a small percentage of its population. Thus, some Kentucky counties show simultaneously increasing per capita personal income and poverty rates.

**FIGURE SEVEN**  
**1987 PER CAPITA PERSONAL INCOME**  
**KENTUCKY COUNTIES**

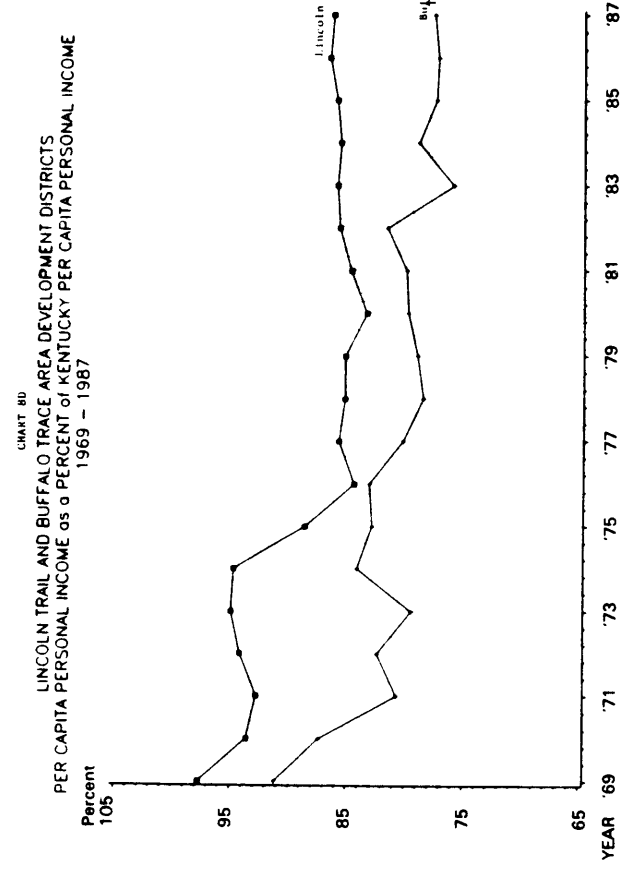
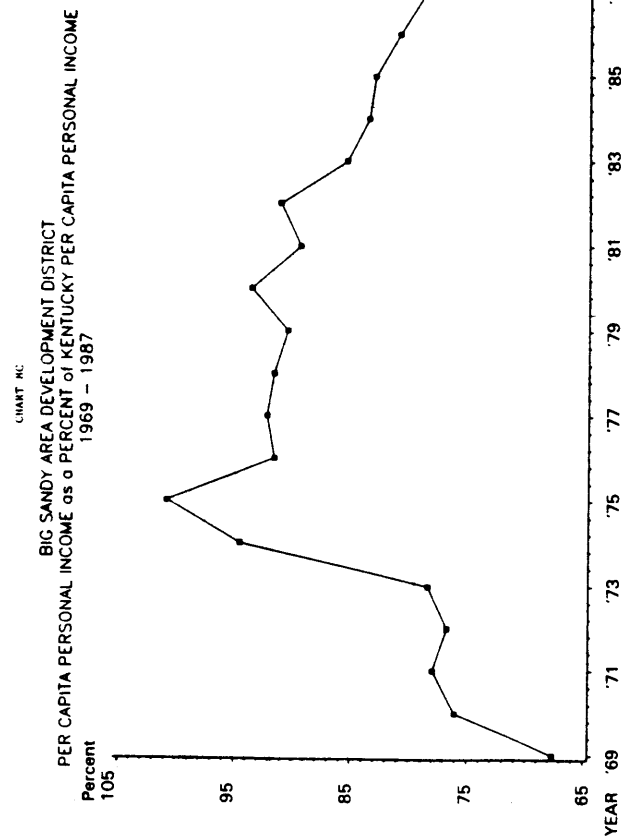
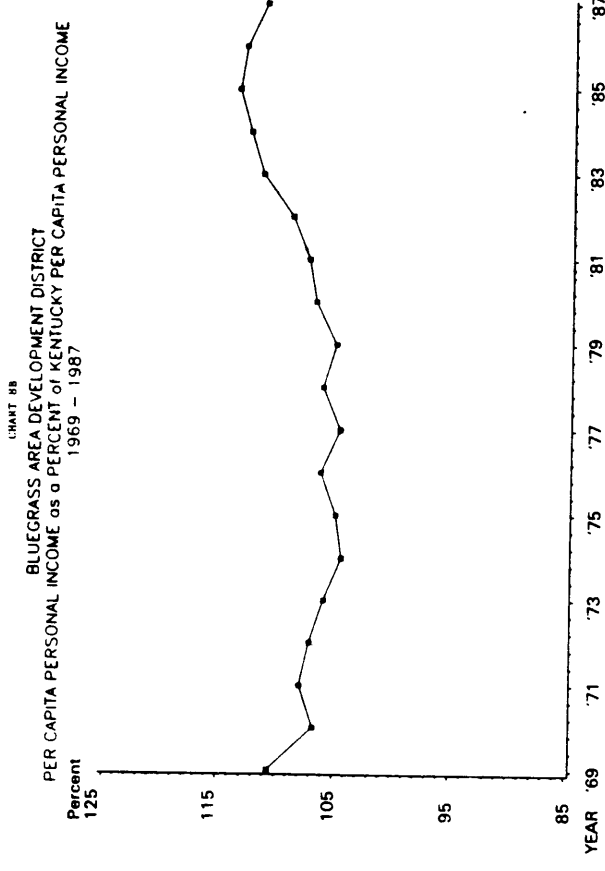
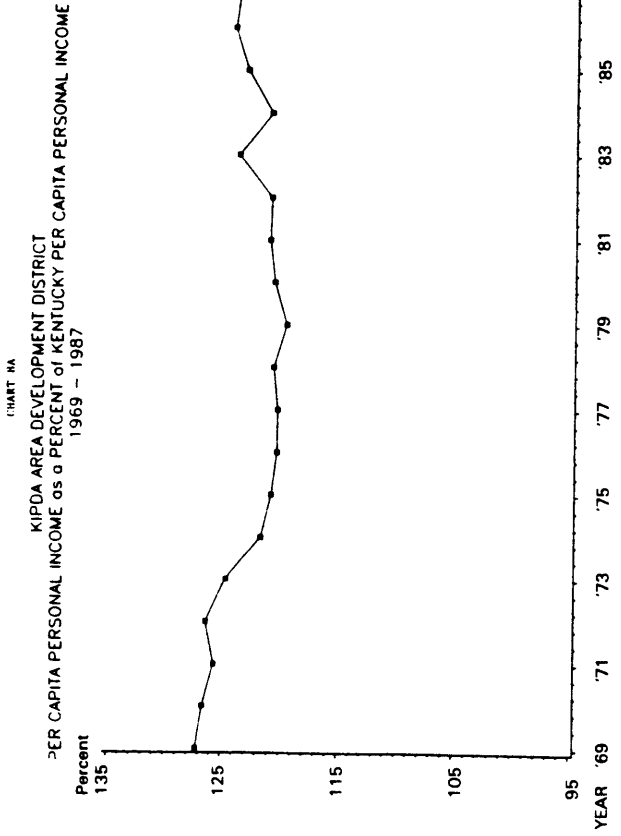


Per Capita Personal Income

	\$8,621 or Less		\$8,622-\$10,153
	\$10,154-\$11,162		\$11,163 or More

Source: University of Kentucky Center for Business and Economic Research, Kentucky Economic Information System.

FIGURE EIGHT



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

to 83 percent. Since then it has increased moderately to 86 percent. With only a few exceptions, the Buffalo Trace ADD has seen its per capita income, relative to the state's, fall from 91 percent in 1969 to 77 percent in 1987. The ten ADDs not shown in these graphs have experienced only minor changes in total and per capita personal income relative to the state as a whole.

One point which seems to be indicated from these data is that, in terms of income growth, "Golden Triangle" may be a misnomer. The Northern Kentucky ADD's share of Kentucky total and per capita personal income was virtually the same in 1987 as in 1969. Total and per capita personal income growth has generally been slower or about the same in the KIPDA ADD as in the state as a whole. Since 1979 growth in the Bluegrass ADD has mostly exceeded that in the state as a whole.

Thus, the significant pattern in the 1980's has been the shifting center of income growth within the "Golden Triangle" from the KIPDA to the Bluegrass ADD. Other ADDs have experienced very little change in their shares of Kentucky's total and per capita income.

## EARNINGS

Earnings are the component of personal income reflecting payments to individuals in return for work. Earnings figures incorporate both wage and salary income and proprietor's earnings. In constant 1988 dollars, total earnings in Kentucky have generally increased over the period, from \$24 billion in 1969 to \$36 billion in 1988 (Chart 9A). This is true even though earnings have declined as a percent of total personal income, as was shown above. Private nonfarm earnings account for over 75 percent of all earnings and their share is increasing (Chart 9B). As can be seen in Chart 9C, this increased share has come primarily from the decrease in the relative share of earnings in agriculture. The share of earnings from government has remained relatively constant.

Within the private nonfarm sector, Chart 9D shows that the most prominent pattern is the large growth since 1979 in the share of earnings that originate in the service sector. The shares of earnings from manufacturing and trade have remained stable since 1975, when the share from mining sharply increased. Since 1982 earnings in the mining sector have decreased as a percent of total private nonfarm earnings.

### Manufacturing Earnings

Figure Ten displays a set of charts depicting major trends in manufacturing earnings. In absolute terms, total earnings in both durable and nondurable manufacturing have followed an increasing trend, although there is obviously a great deal of volatility in earnings in durable manufacturing. Along with the construction sector, durable manufacturing tends to be affected earlier and more severely than other sectors in a recessionary period. Since durable manufacturing accounts for the largest single source

# FIGURE NINE

CHART 9A  
TOTAL EARNINGS  
Billions of Constant 1988 Dollars  
1969 - 1988

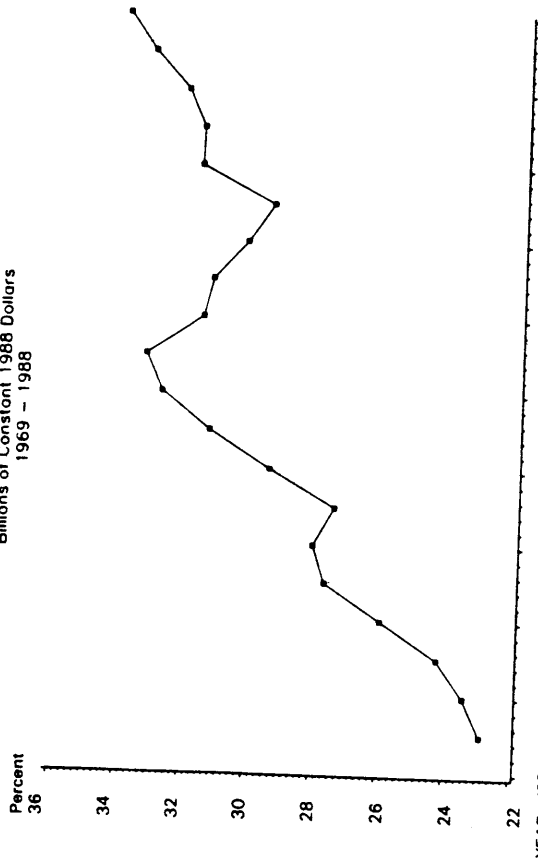


CHART 9B  
PRIVATE NONFARM EARNINGS  
as a Percent of Total Earnings  
1969 - 1988

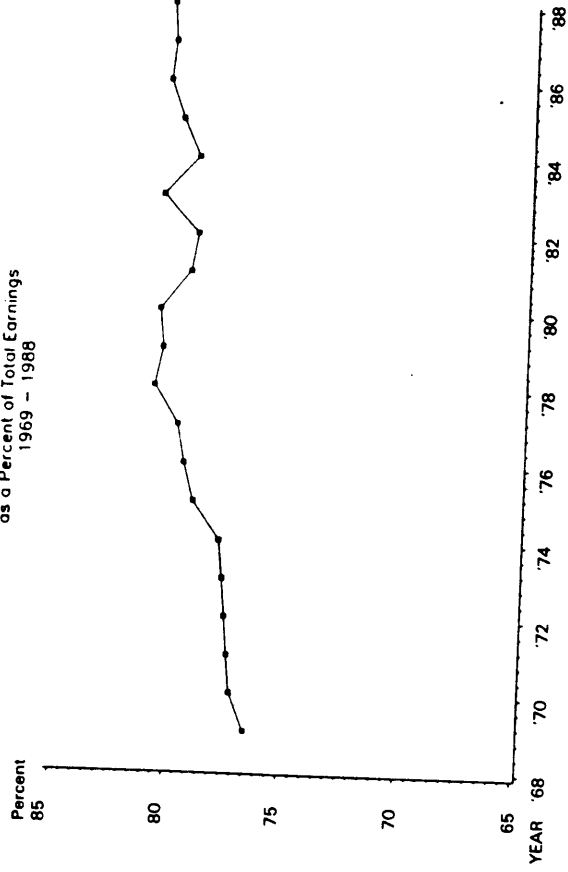


CHART 9C  
AGRICULTURE and GOVERNMENT EARNINGS  
as a Percent of Total Earnings  
1969 - 1988

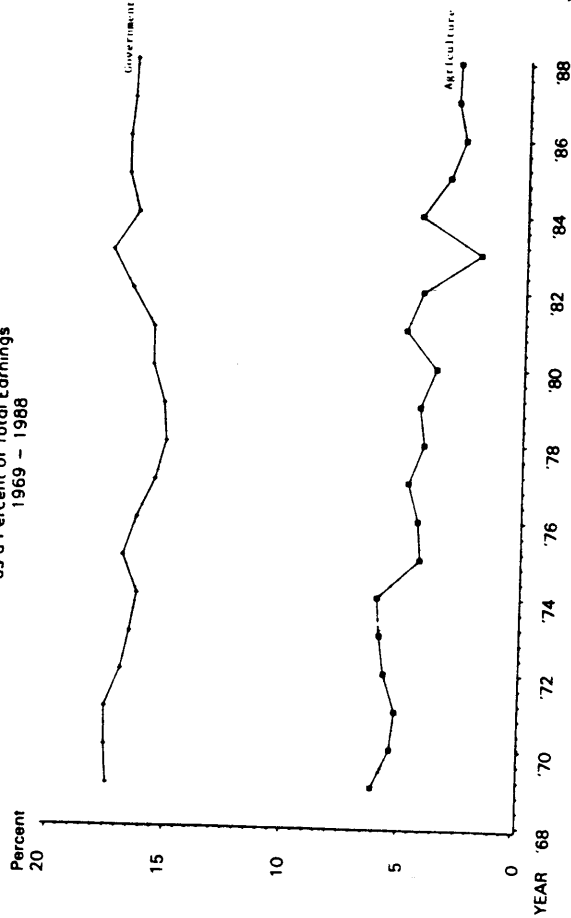
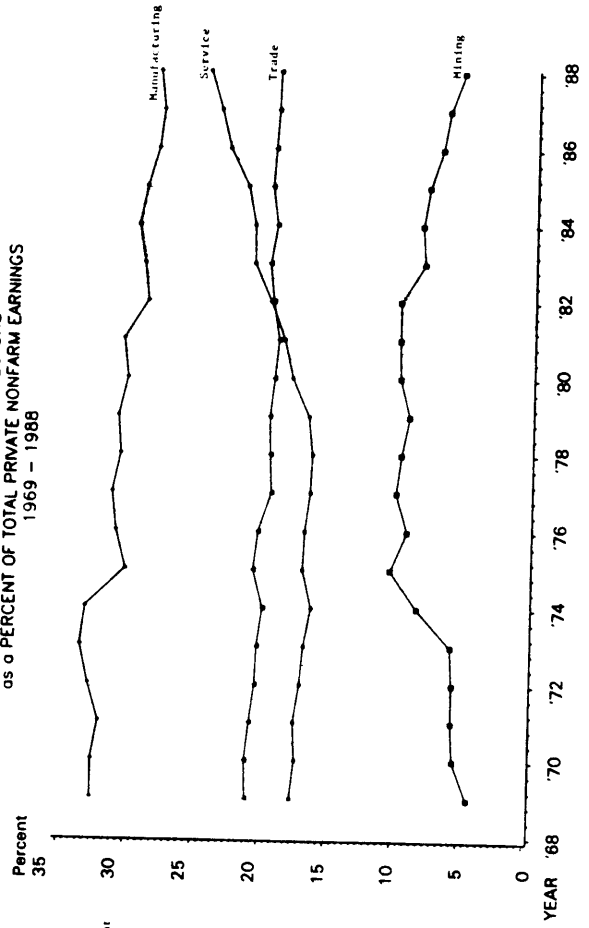
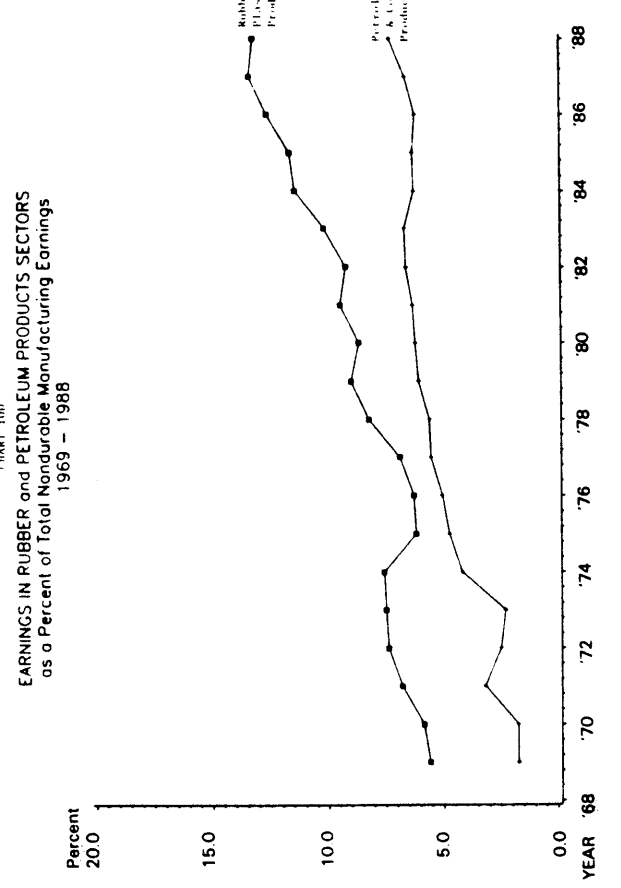
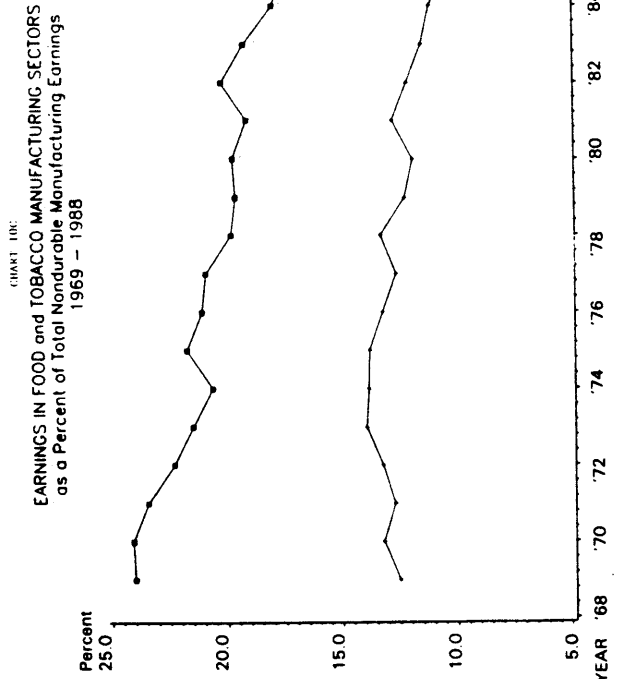
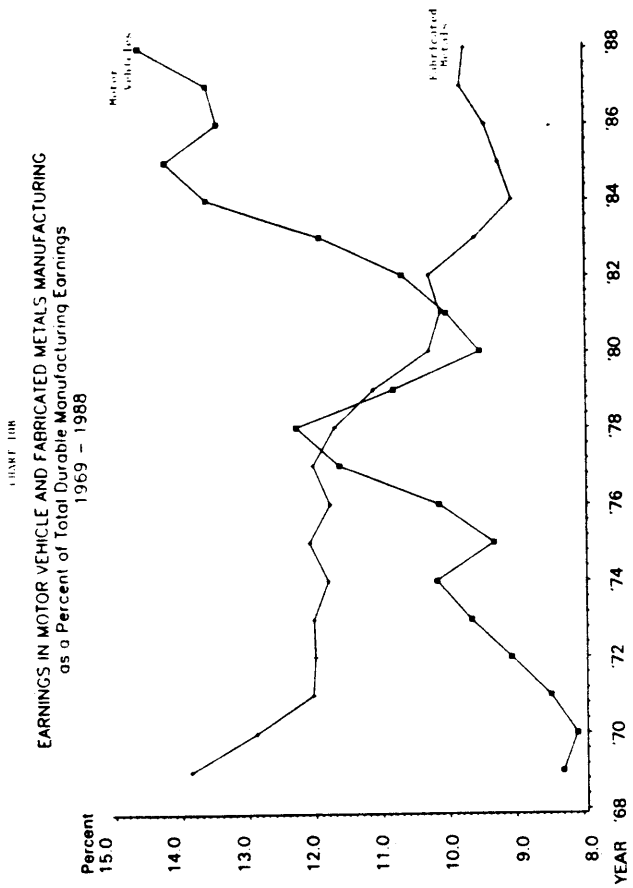
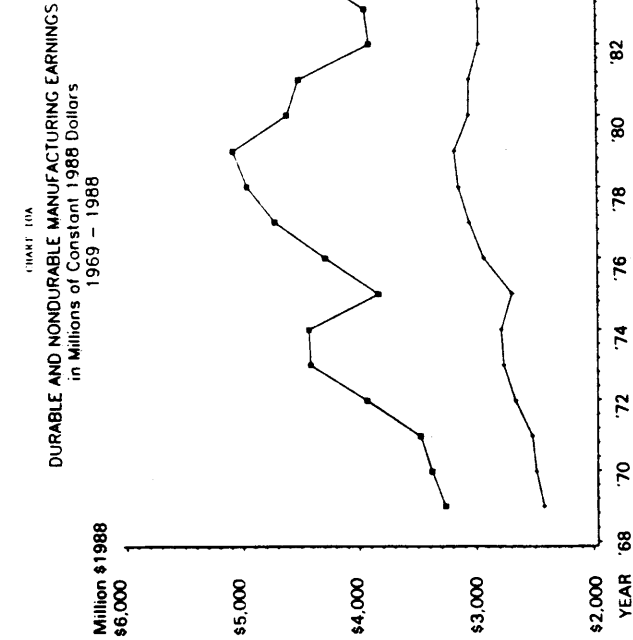


CHART 9D  
EARNINGS FROM SELECTED SECTORS  
as a Percent of Total Private Nonfarm Earnings  
1969 - 1988



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

# FIGURE TEN



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

of earnings in Kentucky, it is easy to see why the state has a history of leading national recessions and lagging national recoveries.

Within durable manufacturing, the industry showing the largest increase in earnings share has been the motor vehicle industry (Chart 10B). While the graph shows the volatility typical of durable manufacturing, the overall trend has been increasing, particularly since 1980. In 1988, the motor vehicle industry accounted for 14.6 percent of durable earnings, or \$659 million.

The durable manufacturing industry showing the biggest decline in earnings share over the period was fabricated metals, which saw a drop from 13.9 percent in 1969 to a low of 9 percent in 1984. The downward trend has reversed since then and the earnings share has climbed back to 9.7 percent in 1988.

In nondurable manufacturing, both the food and kindred products industry and the tobacco manufactures industry have shown the largest declines in earnings share (Chart 10C). Earnings in the food and kindred products industry declined from 24 percent of total nondurable earnings in 1969 to 16 percent in 1988. Earnings share in the tobacco manufactures industry dropped from a high of 13.9 percent in 1973 to a low of 7.7 percent in 1988.

Two nondurable manufacturing industries showed a significantly increasing trend in earnings share over the period, as can be seen in Chart 10D. Starting with the Arab oil embargo in 1973, earnings in the petroleum and coal products industry accounted for a steadily increasing share of the total. A similar trend was even stronger in the rubber and plastic products industry.

### **Service Sector Earnings**

As shown in Chart 9D, the service sector represents the second largest (and fastest growing) source of earnings in the state. The two fastest growing segments of this sector are medical services and business services (Figure Eleven). In constant 1988 dollars, earnings in medical services increased from \$982 million to \$2,775 million between 1969 and 1988 (Chart 11A). The corresponding increase in business service earnings was \$221 million to \$914 million (Chart 11B). This change reflects an increasing willingness of firms to contract for certain kinds of tasks, such as computer, accounting and janitorial services, on an as-needed basis, rather than maintaining such capabilities in-house.

As a percent of total service sector earnings, medical service earnings showed a dramatic increase until reaching a high of 44.2 percent in 1982. Since that time a faster rate of earnings growth in other service sectors has caused the medical share to fall to 41.4 percent in 1988 (Chart 11C). In particular, the business service share of earnings has shown a marked increase, from 9.7 percent in 1980 to 13.6 percent in 1988 (Chart 11D).

# FIGURE ELEVEN

CHART 11A  
MEDICAL SERVICE SECTOR EARNINGS  
in Millions of Constant 1988 Dollars  
1969 - 1988

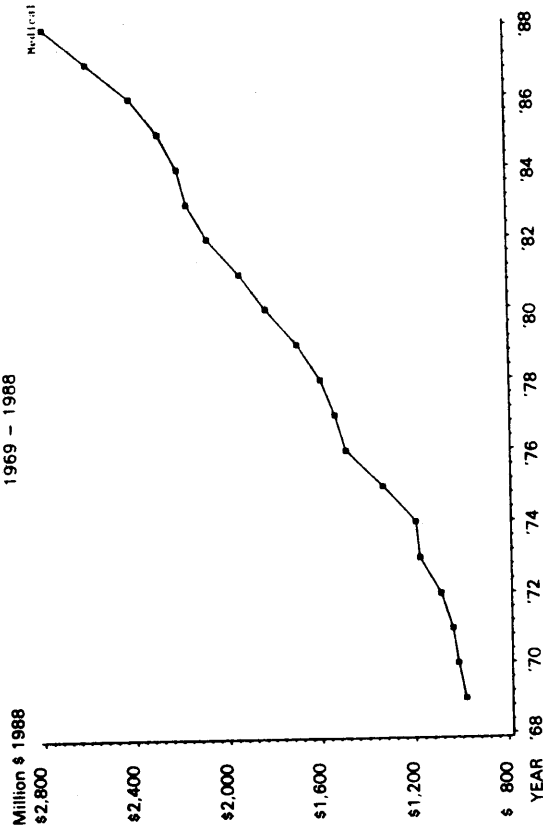


CHART 11B  
BUSINESS and PERSONAL SERVICE SECTOR EARNINGS  
in Millions of Constant 1988 Dollars  
1969 - 1988

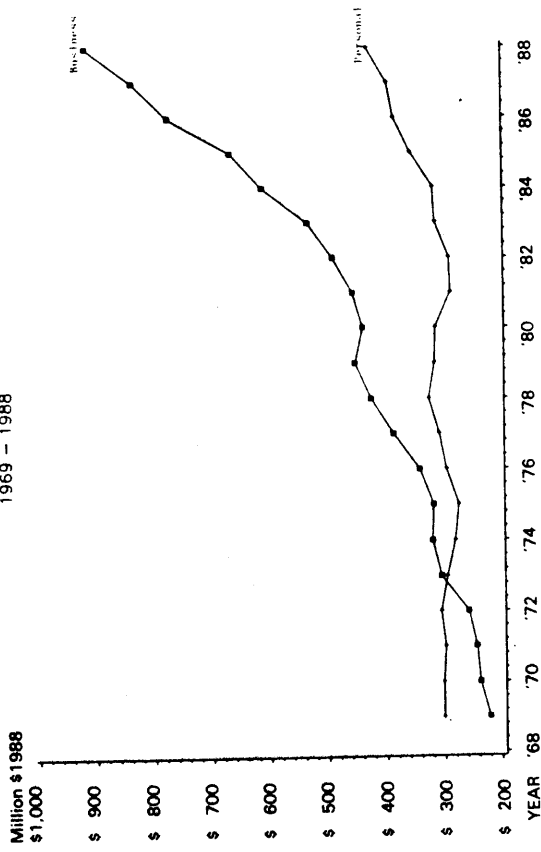


CHART 11C  
MEDICAL SECTOR EARNINGS  
as a PERCENT OF TOTAL SERVICE SECTOR EARNINGS  
1969 - 1988

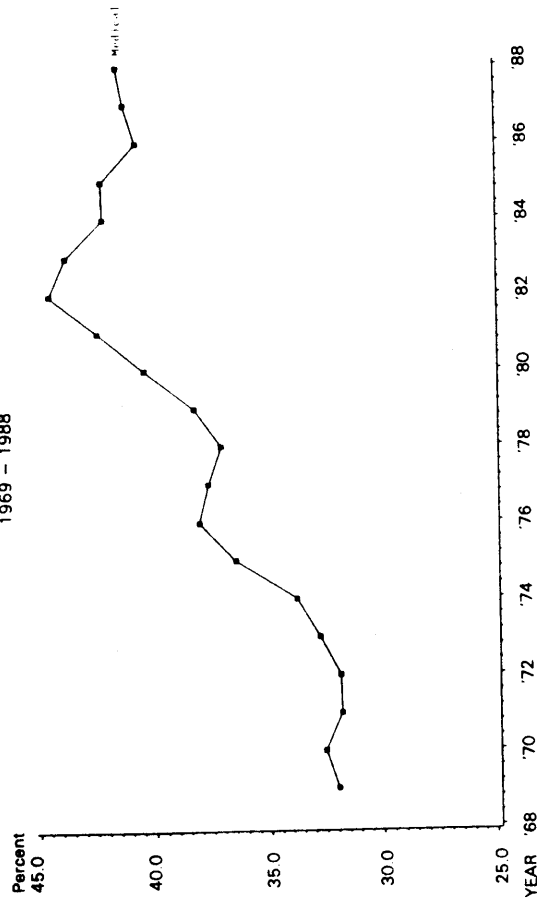
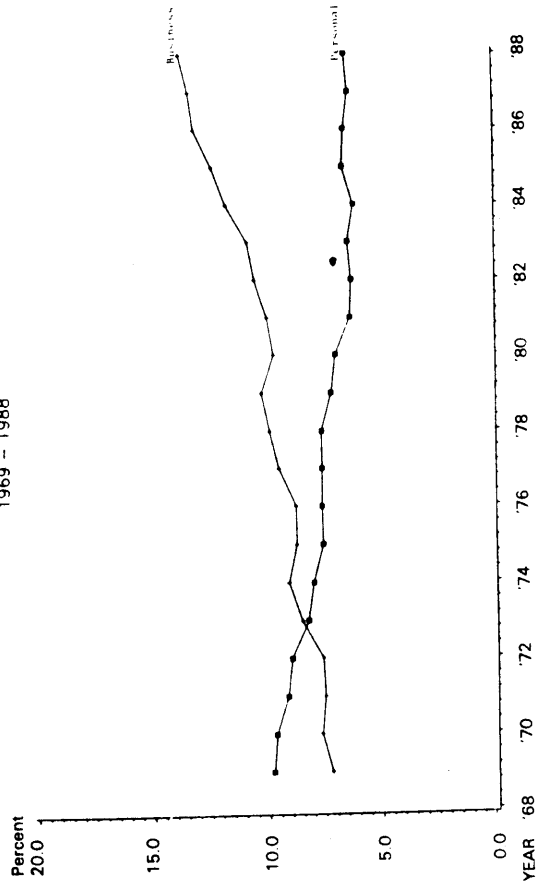


CHART 11D  
PERSONAL and BUSINESS SERVICE SECTOR EARNINGS  
as a PERCENT OF TOTAL SERVICE SECTOR EARNINGS  
1969 - 1988



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.



Although earnings from personal services have increased in absolute terms, their share of service sector earnings from personal services has shown the most notable pattern of decline over the period, dropping from 9.8 percent to 6.4 percent. Hair care shops, dry cleaning stores, portrait studios and funeral parlors are examples of the businesses classified in the personal services sector.

## EMPLOYMENT

Notwithstanding several cyclical recessionary drops, Kentucky nonfarm employment has increased overall during the period covered by the data. In 1970, total nonfarm employment stood at 1.1 million. By 1988 that figure has climbed to 1.5 million (Chart 12A).

As evidenced in Chart 12B, employment in the trade and service sectors accounted for the increasing trend, while manufacturing employment accounted for the cyclical declines. These patterns have been so strong that, in the 1980's, both the trade and service sectors provided a greater percentage of total private nonfarm employment than the manufacturing sector (Chart 12C). This is a significant change from the pattern of relative shares during the 1970's.

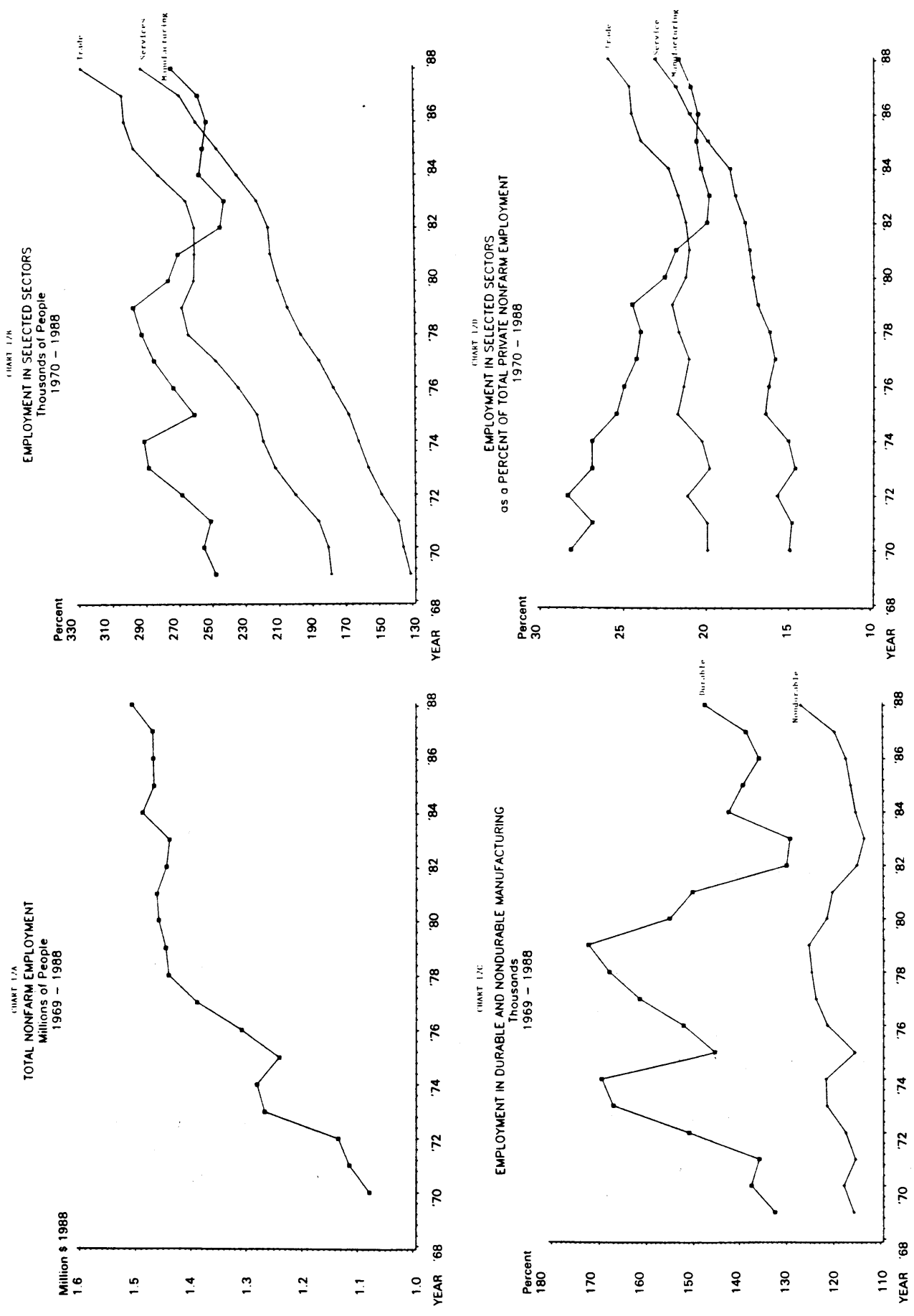
It is interesting to compare differences in the trends in earnings share and employment share in these three sectors. Chart 13A indicates that manufacturing's share of both employment and earnings has steadily declined. However, the sector still accounts for a far greater share of total earnings than of total employment. In contrast, Chart 13B shows a very different pattern in the trade sector. Here, employment share has significantly increased, growing to 26 percent in 1988, while earnings share has gradually declined to 19 percent.

Since 1978, the service sector has shown a steady increase in its share of both earnings and employment (Chart 13C). Employment share grew at a faster rate until 1983, but this gap has since narrowed.

The specific industries within these sectors which have shown the greatest growth and decline in employment tend to be the same ones noted in the previous section on earnings. In services, the medical and business sectors have shown the greatest employment increase, and personal services the greatest decline. Motor vehicle manufacturing has shown the largest employment growth in durable manufacturing and the electric and electronic products industry has shown the greatest decline.

In nondurable manufacturing the major losers of employment share were the food and tobacco industries. The rubber and plastic products industry showed the largest increase. The only real anomaly in this pattern occurred in the petroleum and coal products industry (Chart 13D). While changes in the oil and coal industries which began in 1973

FIGURE TWELVE



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

# FIGURE THIRTEEN

CHART 11A  
EMPLOYMENT and EARNINGS IN MANUFACTURING  
as a Percent of Total Private Nonfarm Employment and Earnings  
1969 - 1988

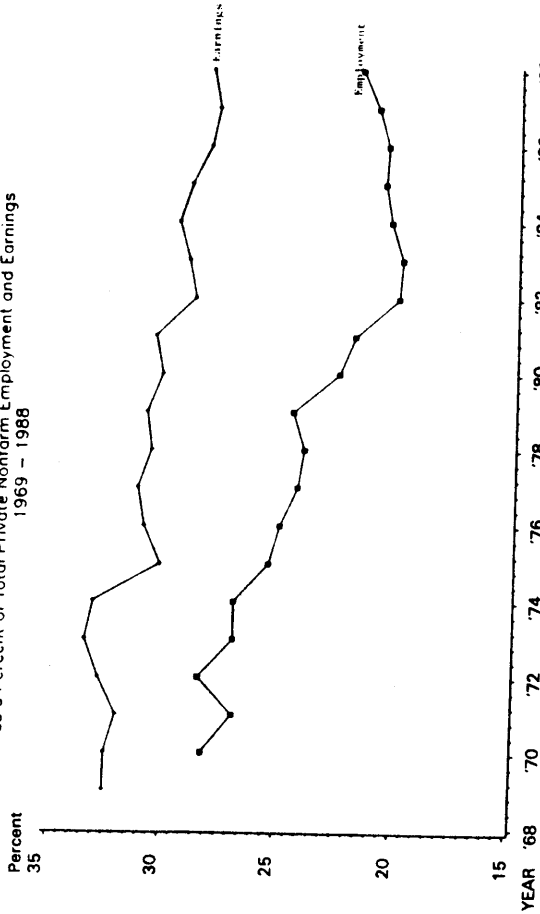


CHART 11B  
EMPLOYMENT and EARNINGS IN TRADE  
as a Percent of Total Private Nonfarm Employment and Earnings  
1969 - 1988

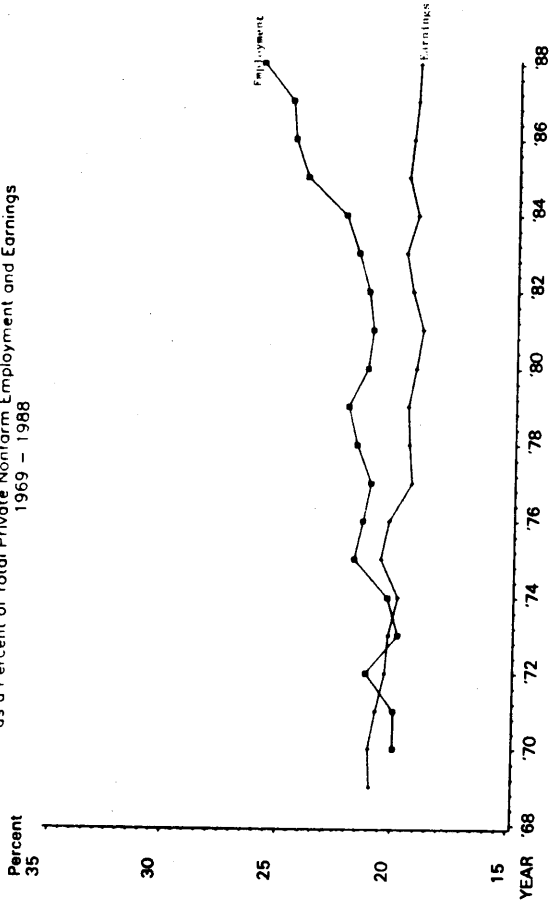


CHART 11C  
EMPLOYMENT and EARNINGS IN SERVICES  
as a Percent of Total Private Nonfarm Employment and Earnings  
1969 - 1988

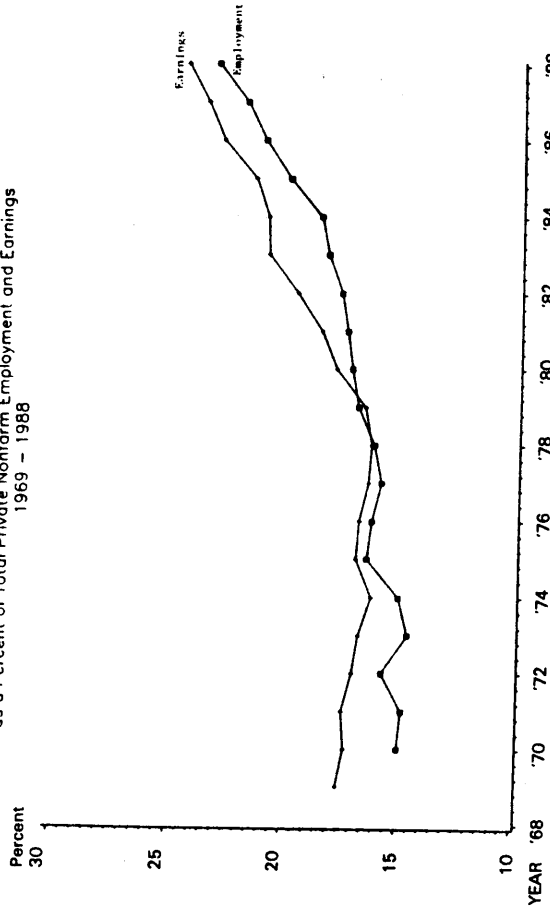
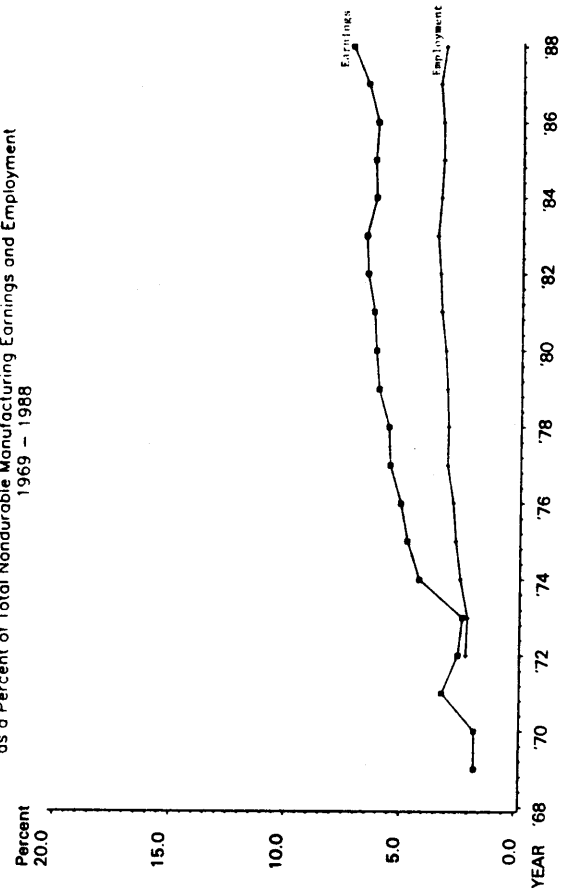


CHART 11D  
EARNINGS and EMPLOYMENT IN PETROLEUM and COAL PRODUCTS SECTORS  
as a Percent of Total Nonfarm Manufacturing Earnings and Employment  
1969 - 1988



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

had a substantial impact on earnings share, that impact was not accompanied by a similar impact on employment share.

## OUTPUT

This final section of the report presents a brief analysis of patterns of change in the output share of selected Kentucky industries relative to U.S. totals. This analysis is possible because the Bureau of Economic Analysis recently developed a uniform measure of industrial output called "gross state product". Gross state product (GSP) is a concept similar in nature to gross national product (GNP) and gross domestic product for the U.S. United States total gross state product is derived by totalling the gross product for all states. The resulting number is equal to U.S. gross domestic product, but is not equal to U.S. gross national product.

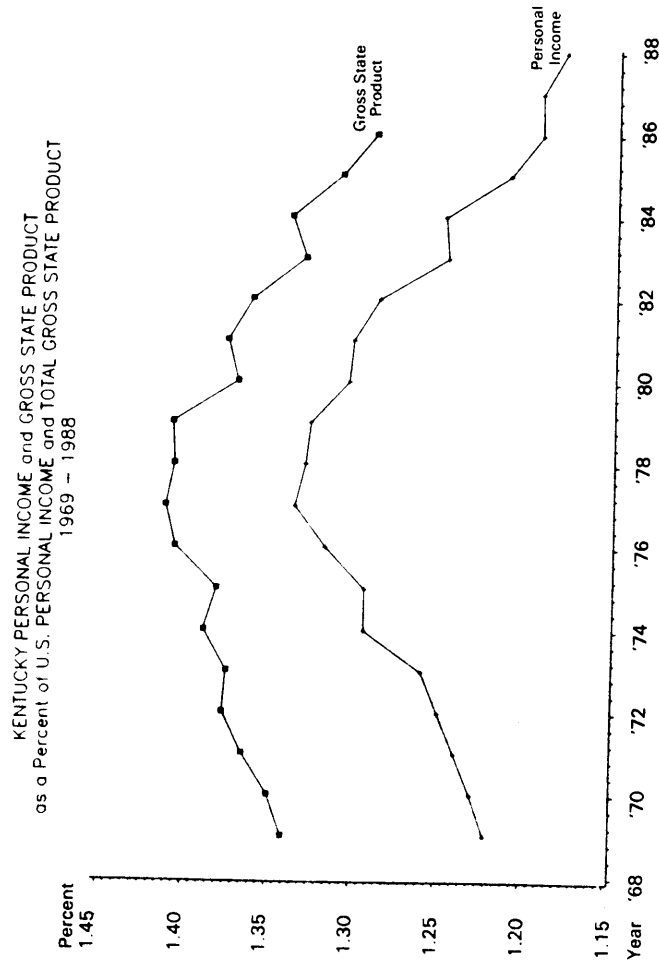
BEA published GSP data for 61 major industries in each state for the years 1963-1986. Figures for 1987 and 1988 are to be made available sometime in 1990.

Not surprisingly, the pattern of Kentucky GSP as a percent of total U.S. GSP is very similar to that exhibited by Kentucky personal income as a percent of U.S. personal income (Figure Fourteen). There are a couple of reasons that the GSP line is consistently above the personal income line. First, the personal income figure includes income received by U.S. residents from foreign sources, while GSP is only a measure of output produced domestically. It is likely that Kentucky residents receive a smaller share of income from foreign sources than do residents of states which are more closely integrated into foreign economies. This could cause Kentucky's share of income to be less than its share of GSP.

A second reason for this disparity may grow out of that fact that the value of output is more reflective of prices determined in national product markets, while the value of work is more reflective of earnings determined in regional labor markets. Thus, the relative value of Kentucky's industrial output may be comparatively greater than the relative cost of labor used to produce that output.

Changes in the market share of various Kentucky industries are depicted in the graphs shown in Figure Fifteen. First considered are two industries which have been the most closely associated with the Kentucky economy: coal mining and tobacco manufacturing (Chart 15A). Between 1969 and 1974 the Kentucky share of the domestic coal market (as measured by GSP) increased from 15 percent to 23.6 percent. That share declined to 19.3 percent in 1983, when it began a slow increase to 1986. However, recent preliminary information released by the Kentucky Office of Revenue Estimating suggests that the pattern may have started to decline again.

**FIGURE FOURTEEN**



Source: University of Kentucky, Center for Business and Economic Research, Kentucky Economic Information System.

# FIGURE FIFTEEN

CHART 15A  
 KENTUCKY GROSS STATE PRODUCT  
 as a PERCENT of TOTAL U.S. GROSS STATE PRODUCT  
 COAL MINING and TOBACCO MANUFACTURES  
 1969 - 1986

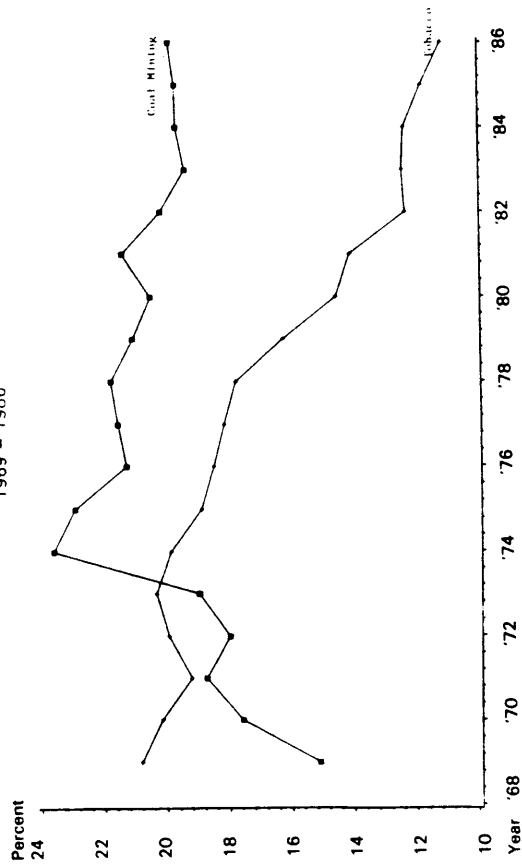


CHART 15B  
 KENTUCKY GROSS STATE PRODUCT  
 as a PERCENT of TOTAL U.S. GROSS STATE PRODUCT  
 ELECTRICAL MACHINERY and FOOD and KINDRED PRODUCTS INDUSTRIES  
 1969 - 1986

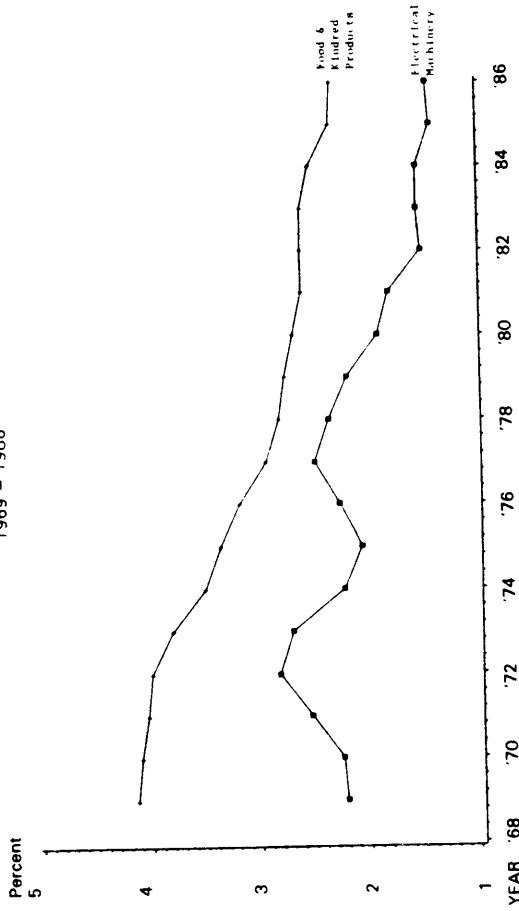


CHART 15C  
 KENTUCKY GROSS STATE PRODUCT  
 as a PERCENT of TOTAL U.S. GROSS STATE PRODUCT  
 MOTOR VEHICLE and STONE, CLAY and GLASS PRODUCTS  
 1969 - 1986

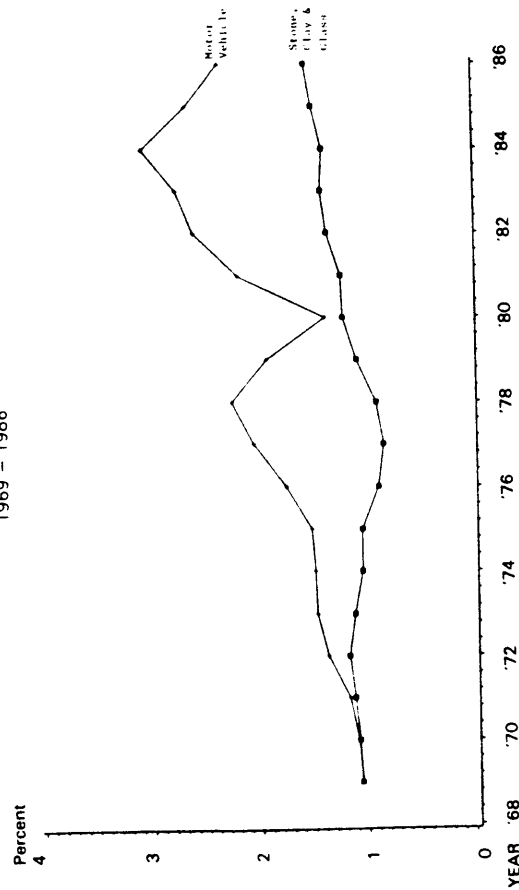
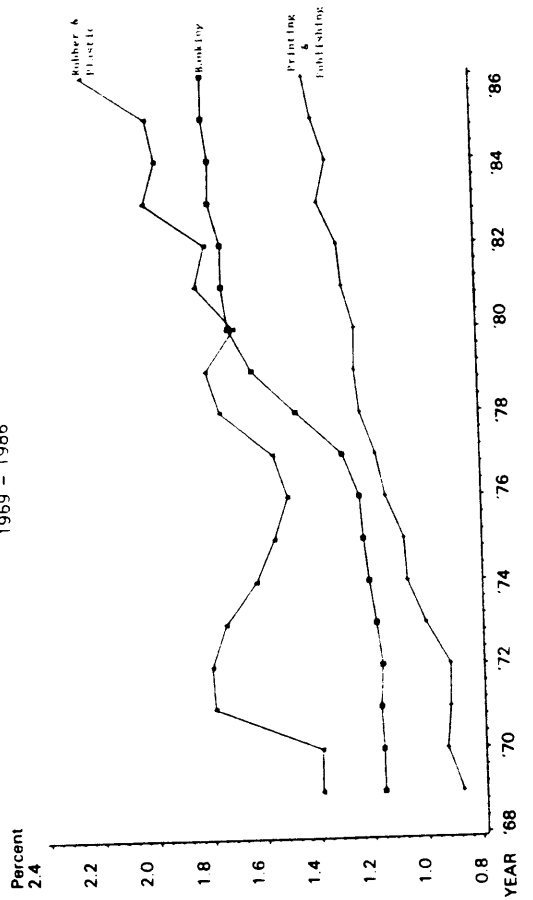


CHART 15D  
 KENTUCKY GROSS STATE PRODUCT  
 as a PERCENT of TOTAL U.S. GROSS STATE PRODUCT  
 PRINTING, RUBBER and BANKING INDUSTRIES  
 1969 - 1986



Previous analysis has shown that in both absolute terms and as a percent of the total, employment, earnings and output in tobacco manufacturing have generally declined over the period. This is true for Kentucky as well as the U.S. However, it is also true that Kentucky's share of this declining market has also shown a significant decrease, dropping from 20.8 percent of total U.S. tobacco manufactures output in 1969 to only 11 percent of total U.S. tobacco manufactures output in 1986. Other industrial sectors in which Kentucky has experienced a substantial loss in market share are the electric and electronic equipment industry and the food and kindred products industry (Chart 15B).

The five industries showing the greatest increase in Kentucky market share are shown in Charts 15C and 15D. Since 1977, output in the Kentucky stone, clay and glass products industry has been growing faster than that of the U.S. Kentucky's share of motor vehicle manufacturing increased to 2.2 percent in 1978, dropped to 1.3 percent in 1980, rose to 3.0 percent in 1984, and then declined to 2.3 percent in 1986. The overall trend has been increasing, although strongly cyclical.

Kentucky has also had steady increases in market share in rubber and plastic products manufacturing and printing and publishing (Chart 15D). The state's banking industry grew at a rate much faster than that of the U.S. from 1977 to 1980, but since that time it has shown only a moderate increase in market share.

Output of the service sector in general, and the medical and business service industries in particular, has accounted for a significantly increasing share of total Kentucky output. However, those sectors are growing moderately faster in the U.S. than in Kentucky so they were not among the sectors showing significant patterns of change in Kentucky market share.

## IMPLICATIONS

In the years from 1969 to 1988 the following patterns of growth and decline have emerged in the Kentucky economy. Total and per capita personal income have grown in absolute terms but have both declined relative to the U.S. The fastest growing components of personal income are transfer payments and income from property. Medical payments are, by far, the fastest growing type of transfer payment.

Earnings have increased in absolute terms. The share of earnings provided by manufacturing and agriculture has declined. The share from trade and the government has remained constant. The share from services has significantly increased. That increase has primarily been centered in medical and business services.

These patterns have been similar for employment share except that the share of employment in the trade sector has increased while the share of earnings has not. The

trade and service sectors have each accounted for more employment than manufacturing in the 1980's. This is significantly different from the pattern of the 1970's.

Finally, Kentucky has seen large declines in its market share in coal mining and tobacco manufactures. Losses have also occurred in the food industry and the manufacturing of electric and electronic equipment. Increases in market share have occurred in the motor vehicle, stone, clay and glass, rubber and plastic, printing and publishing, and banking industries.

The most significant changes in the Kentucky economy over the last 20 years include the growth of the service sector as a source of earnings and jobs, the growth of the trade sector as a source of jobs (but not earnings) and the decline of the manufacturing sector as a source of earnings and jobs. There are several probable effects of these structural shifts.

Perhaps the most important implication is that there is likely to be a divergence between indicators of the health of the Kentucky economy and indicators of the economic well-being of individual Kentuckians. For example, the Kentucky economy is likely to become less volatile in the future. The service and trade sectors exhibit far fewer cyclical swings in total employment and earnings than does the manufacturing sector. However, the shift to service and trade employment will probably indicate more, rather than less, volatility in the work patterns of individuals. Service and trade firms tend to be smaller and newer and are more likely to be owner-managed than are manufacturing firms. These firms will be more likely to go out of business, although new firms will quickly spring up in replacement. Individual Kentuckians will be more likely to find themselves involuntarily changing employers in the future than in the past. This may have serious effects on the ability of individuals to maintain stable health insurance and retirement coverage.

A second divergence in indicators relates to earnings. Total earnings in Kentucky are generally increasing. However, this growth in total earnings does not necessarily translate into higher average earnings. The increase in total earnings comes from the fact that more people are working, but they tend to be working at lower paying jobs. In fact, average earnings are steadily declining. Whether average family income in Kentucky increases or decreases will largely depend on the number of wage earners in the average household. Families with only one wage earner are likely to have less real purchasing power in the future than in the past.

There is also likely to be a divergence between patterns of growth in the economy and in state tax revenues. The service sector represents the fastest growing segment of the Kentucky economy. Because services are not taxed, state sales tax revenues will not directly benefit from this growth. Another factor of fiscal importance is the trend toward lower average earnings. To the extent that the state individual income tax is progressive,



lower average wages will result in lower average tax payments. On the other hand, to the extent that average family incomes are lower, the state is likely to see increased demand for government services in the social service areas, particularly for medical payments and childcare assistance.

Finally, a word about the two industries which have been growing fastest in the Kentucky economy: medical services and motor vehicle manufacturing. Substantial pressure by individual consumers, employers who provide medical coverage and government agencies is being brought to bear in an effort to contain medical costs. To the degree that such an effort is successful, rapid expansion in the medical service sector is not expected to continue.

Analysts of the motor vehicle sector predict a major industry shakeout in the 1990's. The building of several foreign-owned assembly plants in the U.S. is expected to result in significant overproduction as these foreign firms compete with each other and with U.S. firms for market share. By the mid—to late—1990's a major market realignment is expected to take place.

Kentucky currently has four major motor vehicle assembly plants. There are two Ford Motor Company plants in Louisville, which assemble Ford Broncos and large trucks. These plants currently employ approximately 5,800 workers. General Motors employs 1,350 workers in Bowling Green to assemble Corvettes. Toyota employs 3,000 (soon to be 3,500) in Georgetown in its Camry plant. Whether Kentucky's motor vehicle industry will continue to be a source of strength in the state economy will be determined by how well these models fare in an environment of serious competition and by how well parent companies survive a period of deep price cuts and declining profits.



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