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THE MINNESOTA ECONOMY: A REGIONAL
PERSPECTIVE FOR 1967-83*

by
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THE MINNESOTA ECONOMY: A REGIONAL PERSPECTIVE FOR 1967-1983

Citizens and policymakers are concerned with economic disparities among regions in Minnesota, and especially by lagging growth in regions outside the metropolitan economy centered on Minneapolis-St. Paul. Private foundations have increased their commitment to ameliorate these disparities by supporting local initiatives and funding studies which guide decisionmakers. State government has initiated major programs, especially the Greater Minnesota Corporation and the Rural Development Board, to address economic problems within the state.

This report provides a historical perspective on regional disparities within Minnesota. The report emphasizes long-term trends rather than the current situation. The information is a useful precursor to more detailed discussion of the current situation and needed policies.

This report is the initial result of a major study of regional patterns within the Minnesota economy. The study was initially funded by the Minnesota Department of Finance and the Minnesota Agricultural Experiment Station and continues with major support from the Northwest Area Foundation. The information in this report is a brief summary of a more detailed data base developed for the larger study. Subsequent reports will present further analysis of the sources of regional disparities and the consequences of alternative governmental policies.

Organization of the Report

This report includes the following topics:

- (a) Discussion of the data base.
- (b) The relative size of regions with respect to gross product, income, employment, and population.
- (c) A comparison of United States and Minnesota gross products in total and for selected sectors.
- (d) Per capita income for each region with comparisons to state and national levels.
- (e) Sources of personal income with regional and historical comparisons.
- (f) Farm sector income with and without government payments.
- (g) Transfer payments.
- (h) The ratio of jobs to population for each region with comparisons to state and national levels.

- (i) Population growth rates.
- (j) Regional output and labor productivity.

Data Base

Most of the data cover the period from 1967 to 1983, with occasional extensions on either end of the series. The data include the most common measures of economic performance and well-being: output, employment, income, and population. Each of these major categories contains more detailed components, for example, output and employment by industrial sector and income by source.

The original source of the data is the Regional Economic Information System of the Bureau of Economic Analysis, U.S. Department of Commerce, which draws upon a wide variety of primary sources.¹

This research project estimated output, as measured by gross product, based upon national output, benchmark estimates of Minnesota output, and national, state, and regional estimates of earnings. A forthcoming publication from the State and Regional Research Center will discuss the data base in greater detail.²

The regional designations used for this study result from two successive aggregations. The Bureau of Economic Analysis makes its data base available by counties. The data were originally grouped by 18 regions as shown in Figure 1. These regions begin with the boundaries of the Regional Development Commissions which in some cases are further subdivided to provide more detail on major urban concentrations.

The 18 regions were grouped into five categories based on aggregating similar economic and demographic characteristics. The resulting five regional groupings, shown in Figure 2, are as follows:

- (1) Metropolitan Minnesota (includes two noncontiguous subregions)--characterized by steadily increasing regional output and a high percentage of the population employed; includes Minneapolis,

¹ For a more complete description of the sources, definitions, and methodology, refer to: U.S. Department of Commerce, Bureau of Economic Analysis, Local Area and Personal Income: Volume 5 - Plains Region, 1978-83, Washington, U.S. Government Printing Office, June 1985, pp. v-xxvi.

² For more information, contact Glenn Nelson, Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, Minnesota 55108.

MINNESOTA REGIONS

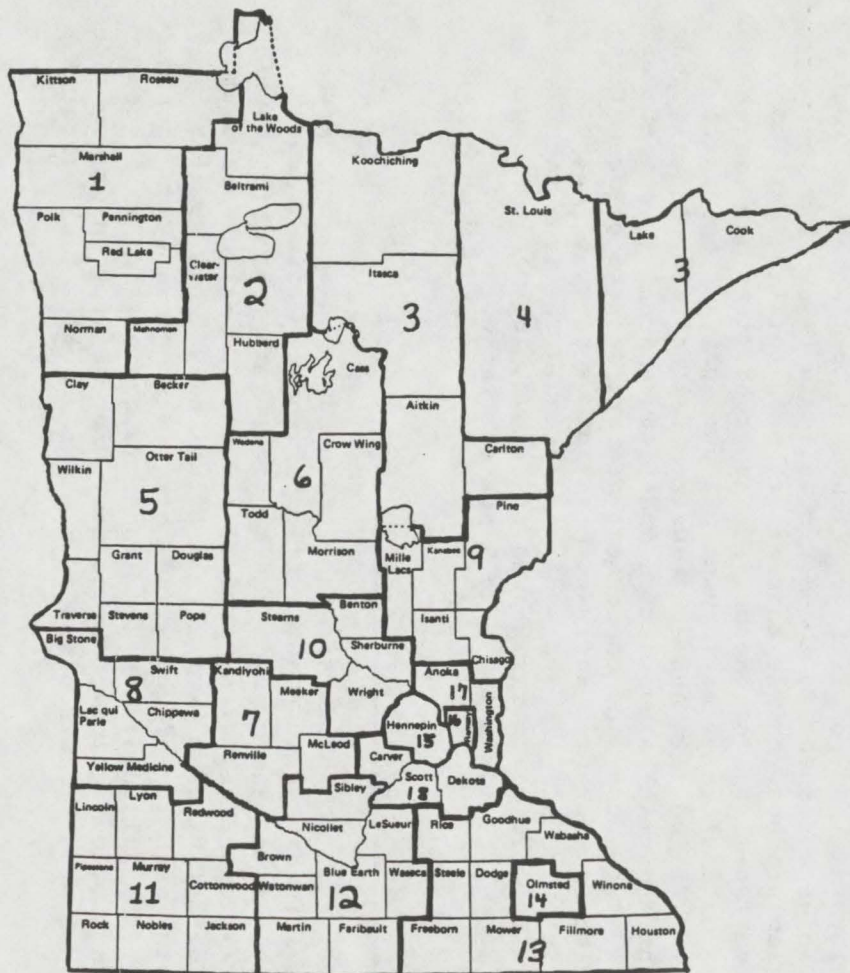


FIGURE 1



FIGURE 2

St. Paul, Twin City suburbs, St. Cloud, and Rochester (includes regions 10, 14, 15, 16, 17, 18 as shown in Figure 1).

- (2) Southeastern Minnesota (includes two noncontiguous subregions)--exhibited stability relative to state totals in total output and in sectors such as farming and manufacturing; farming comprises a significant portion of the region's industry (includes regions 9, 12, 13).
- (3) Western Minnesota--showed highly variable output due to heavy dependence on a volatile farming sector (includes regions 1, 5, 7, 8 11).
- (4) Northern Minnesota--showed lower growth in total output when compared to the state and depended heavily on transfers for income and on the governmental and service sectors for output and employment; includes some mining (includes regions 2, 3, 6).
- (5) Iron Range (includes Duluth)--exhibited a heavy dependence on mining (includes region 4).

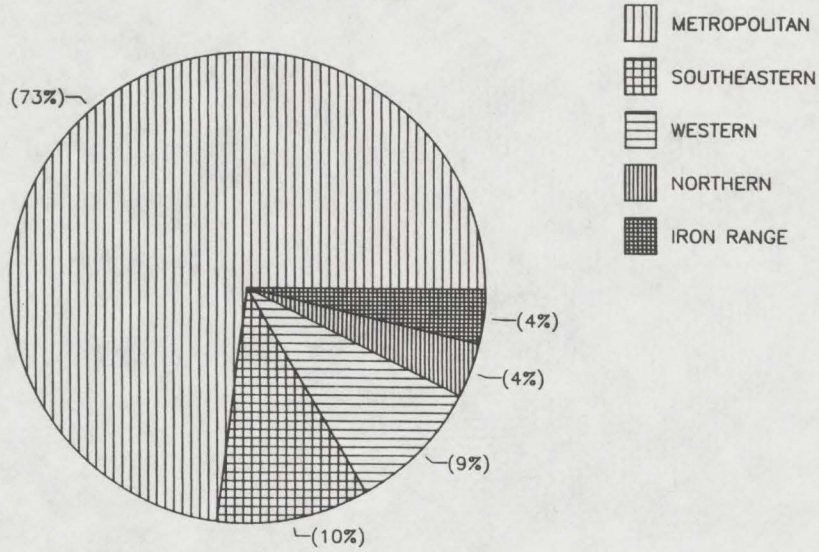
Relative Size of the Regions

These five regions do not equally represent Minnesota's gross product, income, employment, and population. Figures 3 to 6 show each region's relative size with respect to these variables in 1983. The metropolitan region produced nearly three-fourths of total output and accounted for two-thirds of income. These proportions are larger than the region's share of employment (63 percent) and population (57 percent). The western and southeastern regions each contain about 15 percent of the state's population and produce about 10 percent of total output; the income and employment proportions are between those for population and output. Northern Minnesota's share of output, 4 percent, is only half its share of population. The iron range shows the greatest uniformity in its shares of output, income, employment, and population--all within the 4 to 5 percent range.

United States and Minnesota Gross Products

The total value of goods and services produced by an economy, gross product, is a fundamental measure of performance. Nominal gross product values each year's goods and services at current prices which include inflation. Real gross product has the inflation component removed by deflating each year with a price index; what remains is a measure of the quantity of goods and services produced by an economy. In Figure 7, the United States and Minnesota nominal and real gross products are plotted against one another. For scaling purposes, each of these gross products was divided by the respective 1965 value; the

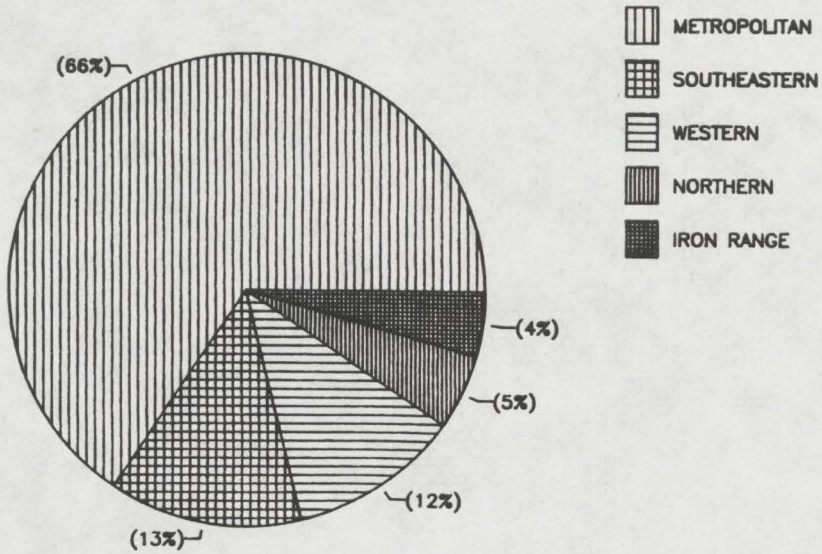
TOTAL GROSS PRODUCT MINNESOTA



1983

FIGURE 3

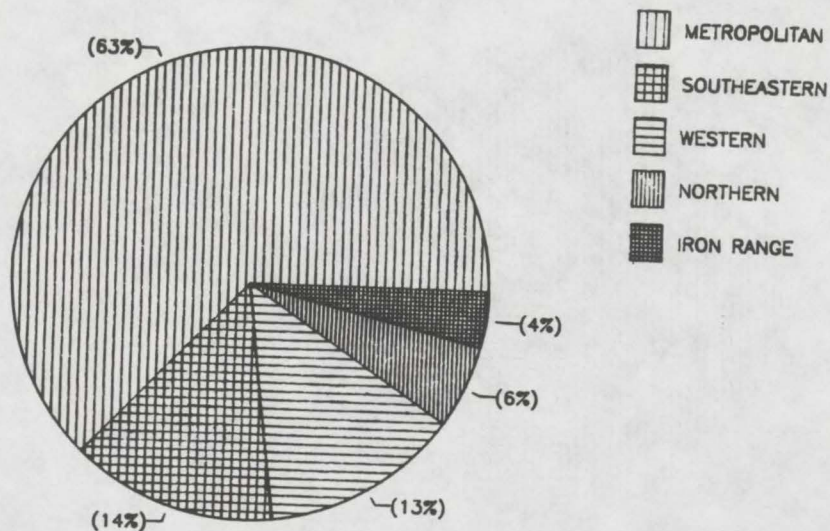
TOTAL INCOME MINNESOTA



1983

FIGURE 4

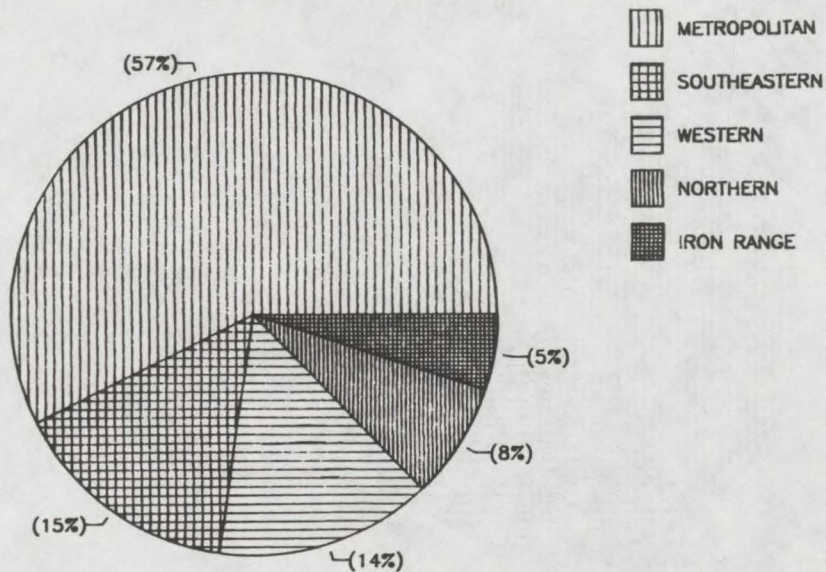
TOTAL EMPLOYMENT MINNESOTA



1983

FIGURE 5

TOTAL POPULATION



1983

FIGURE 6

TOTAL GROSS PRODUCTS UNITED STATES AND MINNESOTA

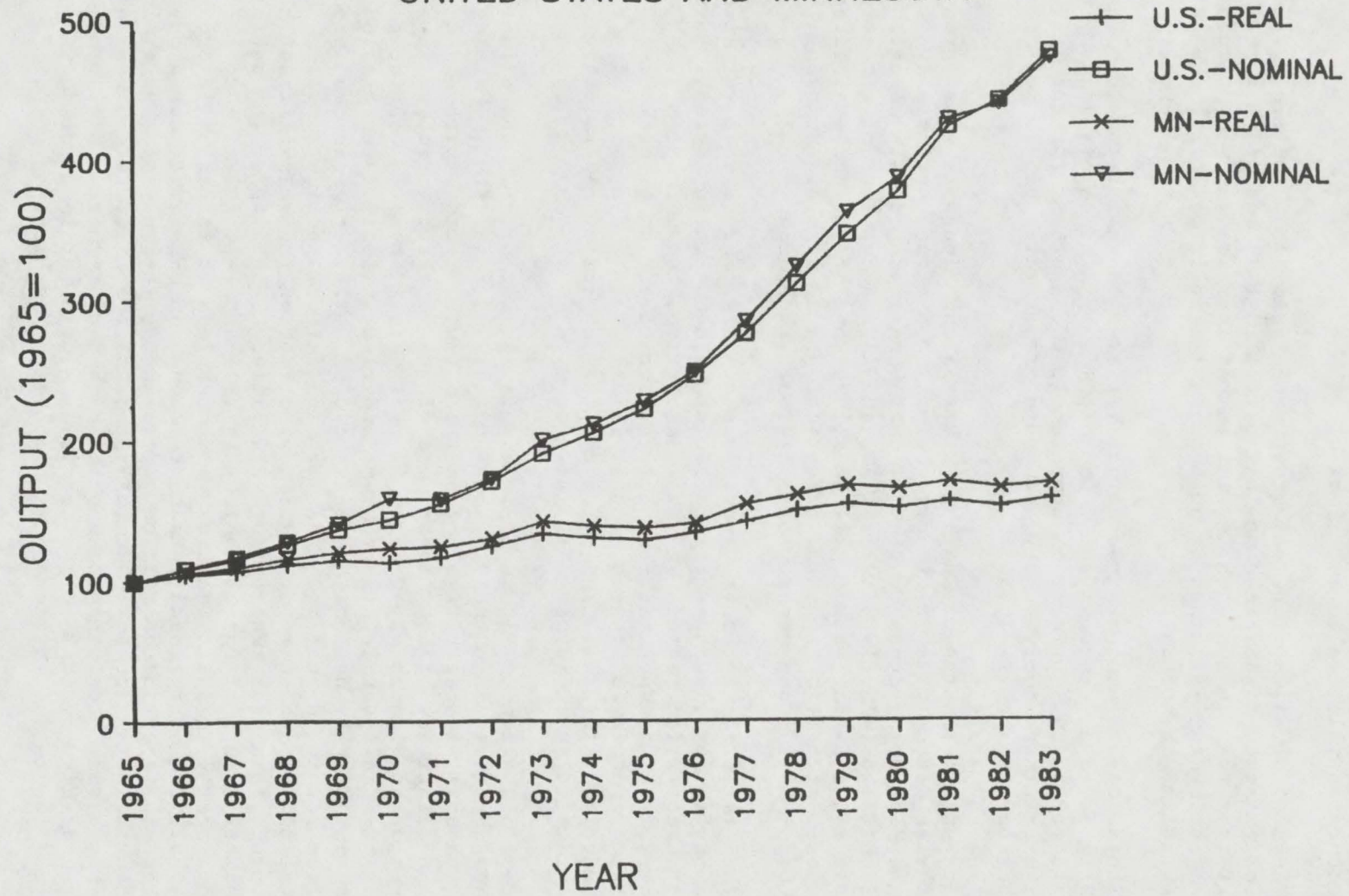


FIGURE 7

TOTAL GROSS PRODUCTS

UNITED STATES AND MINNESOTA

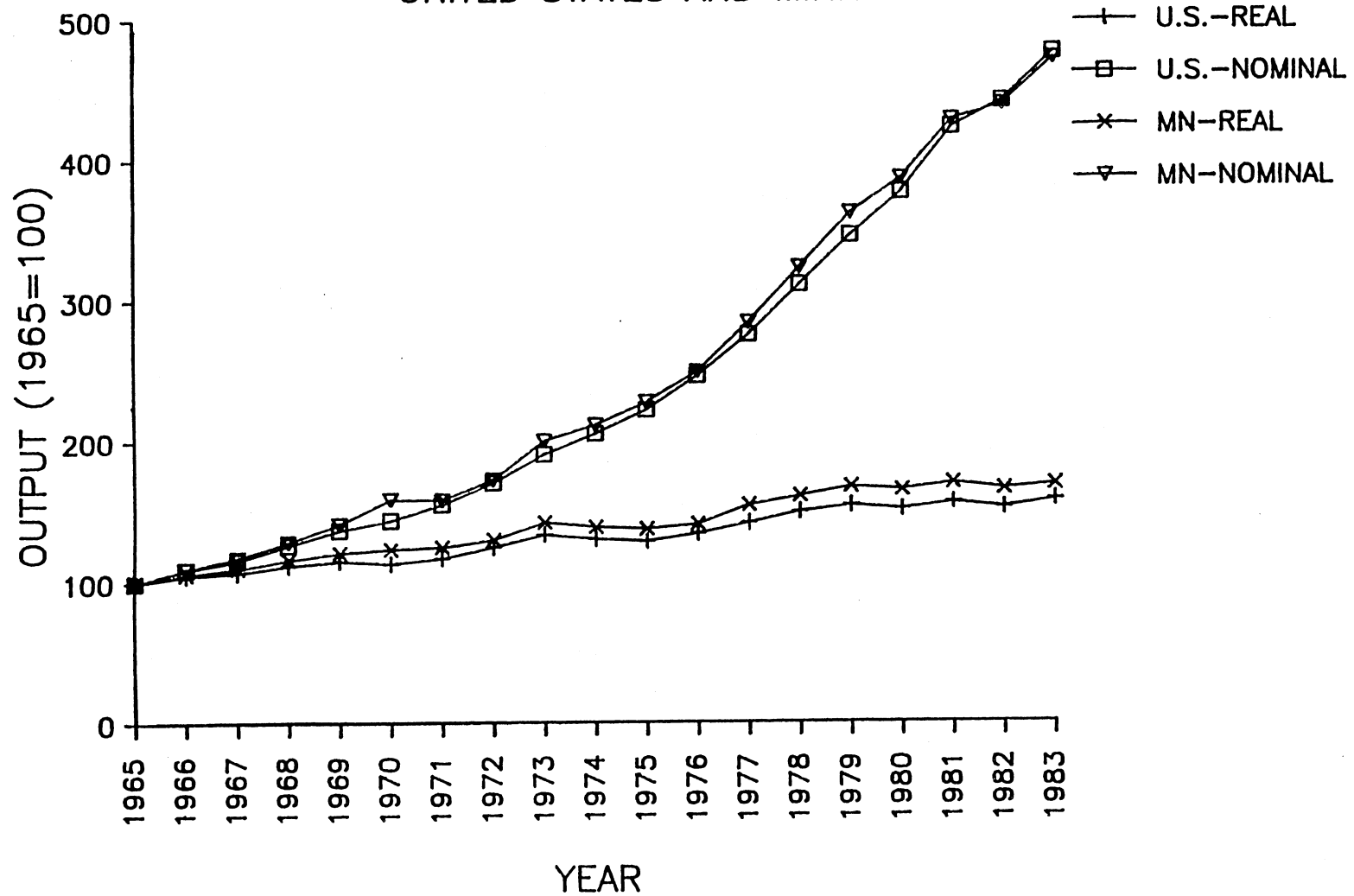


FIGURE 7

plots thus show the growth of the United States and Minnesota economies relative to a 1965 base.

The nominal value of output grows much faster than the real value. For example, Minnesota's nominal output in 1983 was 373 percent greater than in 1965, while real output increased only 69 percent. Adjusting for inflation is an important step in measuring the actual output of an economy.

The Minnesota economy grew slightly faster in real terms than the United States economy from 1965 to 1983. The Minnesota economy was greater by 69.3 percent as compared to 58.3 percent for the United States; these imply annual, compound growth rates of 3.0 and 2.6 percent, respectively.

The parallel paths of the United States and Minnesota gross product series demonstrate the importance of the national business cycle to the Minnesota economy. The National Bureau of Economic Research identified 1970, 1974-1975, 1980, and 1982 as periods of recession. Minnesota's real output fell in all but one of the national recessions, with 1970 being the exception. In no case did Minnesota's output fall independently of a national recession.

The statistics for total gross product mask considerable variation among sectors, such as farming, mining, construction, manufacturing, transportation, retail and wholesale trade, communication and utilities, finance and real estate, services, and government. The six sectors shown in Figures 8 to 13 illustrate the diversity of patterns underlying the total and point out the dangers of generalizing from totals to specific parts of the economy.

Farming, shown in Figure 8, is a volatile sector with sharp increases and decreases in output in both nominal and real terms. Farming in Minnesota is more variable than the national sector, probably due to the relatively greater importance of the volatile grain and livestock sector in Minnesota. Changes in real output are caused principally by changes in federal farm programs and fluctuations of weather and secondarily by national business cycles. The cycles in real product from farming do not coincide with the national business cycle. Price volatility accounts for a greater portion of the volatility of nominal output than does real output volatility. For example, the sharply higher values of nominal output in 1973 and 1974 relative to 1972 were due mostly to price increases and much less to increases in production. The differences between real and nominal farm gross product have an important bearing on understanding the role of the farming sector in the economy. Nominal product is a major determinant of income and, thus, the consumption demand of farmers. Real product represents physical volume and is a major determinant of demands for farm inputs and for commodity processing and handling.

U.S. AND MINNESOTA GROSS PRODUCTS

FARMING

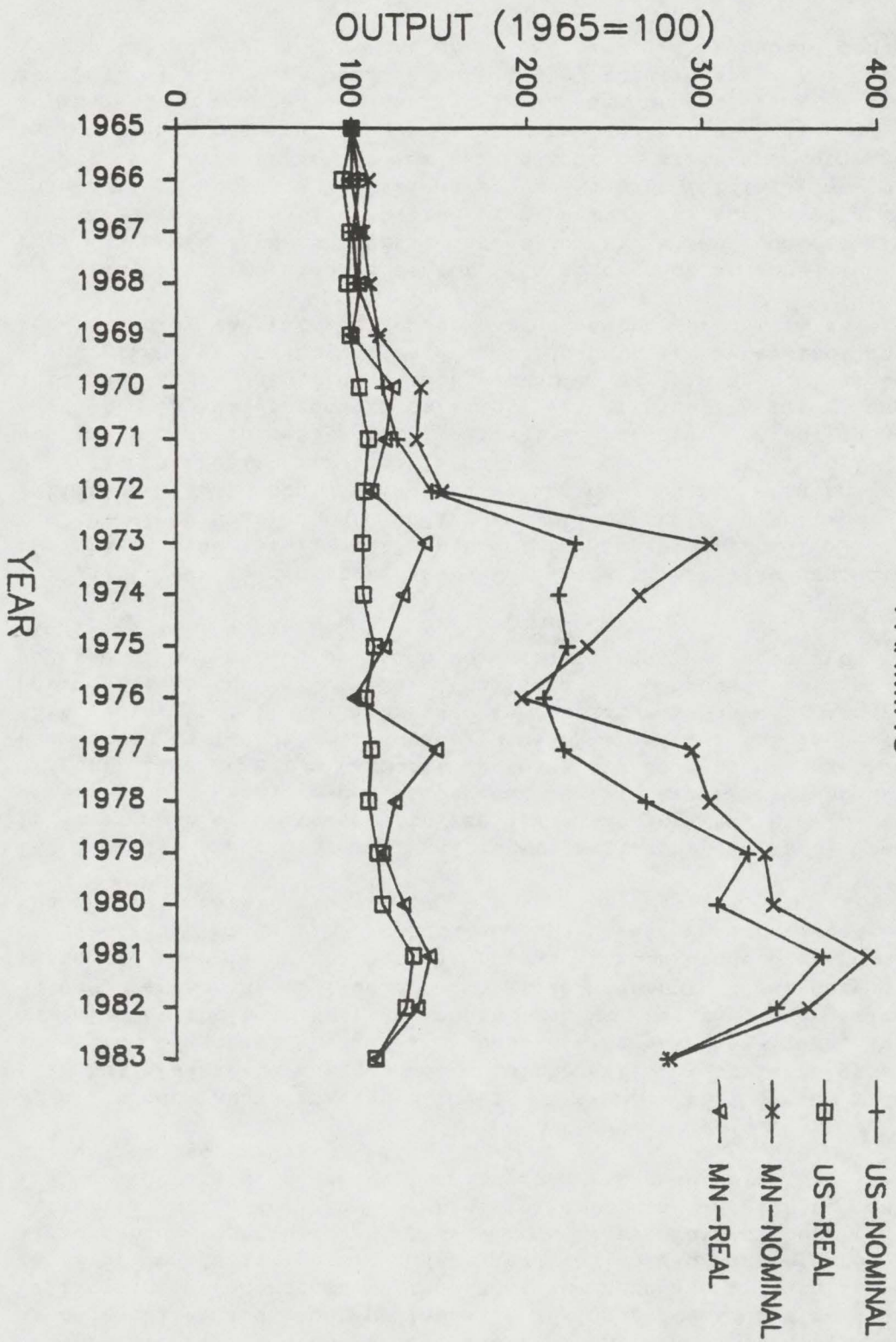


FIGURE 8

The manufacture of durables, such as automobiles and home appliances, follows a cyclical pattern with much less volatility than the farming sector (Figure 9). This sector includes the manufacture of items such as automobiles and home appliances. During periods of stable or falling income, consumers often delay the purchase of such items in favor of continuing to use older, less reliable products; when incomes rise, consumer purchases of these items rise. This pattern is reflected in the real series which follow the national business cycle. The manufacture of durables in Minnesota expanded more than that in the nation from 1965 to 1983.

Retail trade, shown in Figure 10, is an example of a sector with a mild business cycle corresponding to the national business cycle. The inflation component changes in a smooth, increasing pattern, as revealed by the uniformly increasing gap between real and nominal output, rather than following a volatile movement. Real output has increased much less than nominal output in both Minnesota and the nation from 1965 to 1983. The Minnesota retail sector follows closely the national retail sector.

The finance, insurance, and real estate sector, shown in Figure 11, is an example of a sector with rapidly expanding real growth. Real output in Minnesota is up 261 percent in 1983 over 1965, which is slightly less than the national increase of 286 percent. National recessions in the overall economy have often slowed the increase in this sector, but it has increased in recessionary as well as growth periods since the late 1960s. The inflation component is a smaller portion of nominal output than most sectors and was zero from the mid-1960s to the mid-1970s.

The health services sector, shown in Figure 12, is also expanding rapidly in real terms, up 138 percent in Minnesota from 1965 to 1983. Health services is an outstanding example of the need to take inflation into account in explaining nominal output. The index of inflation of health services is up 264 percent from 1965 to 1983 in contrast to an increase of 207 percent in the deflator for total gross product. The difference in deflators illustrates the importance of using deflators specific to each sector in explaining nominal output rather than relying on more aggregate deflators. Recessions appear to slow slightly the rate of growth of real output of health services.

The size of the government sector is a concern of some people. The real and nominal gross product series for state and local government, displayed in Figure 13, show that real output has increased much less than nominal output. Recessions appear to have little or no coincident, negative impact on the real output of state and local government. Recessions may, however, cause real output of state and local government to stagnate or decline in subsequent years. If later statistical analysis confirms this lagged relationship, a likely cause is the lagged response of the political system to economic conditions.

U.S. AND MINNESOTA GROSS PRODUCTS

DURABLES MANUFACTURING

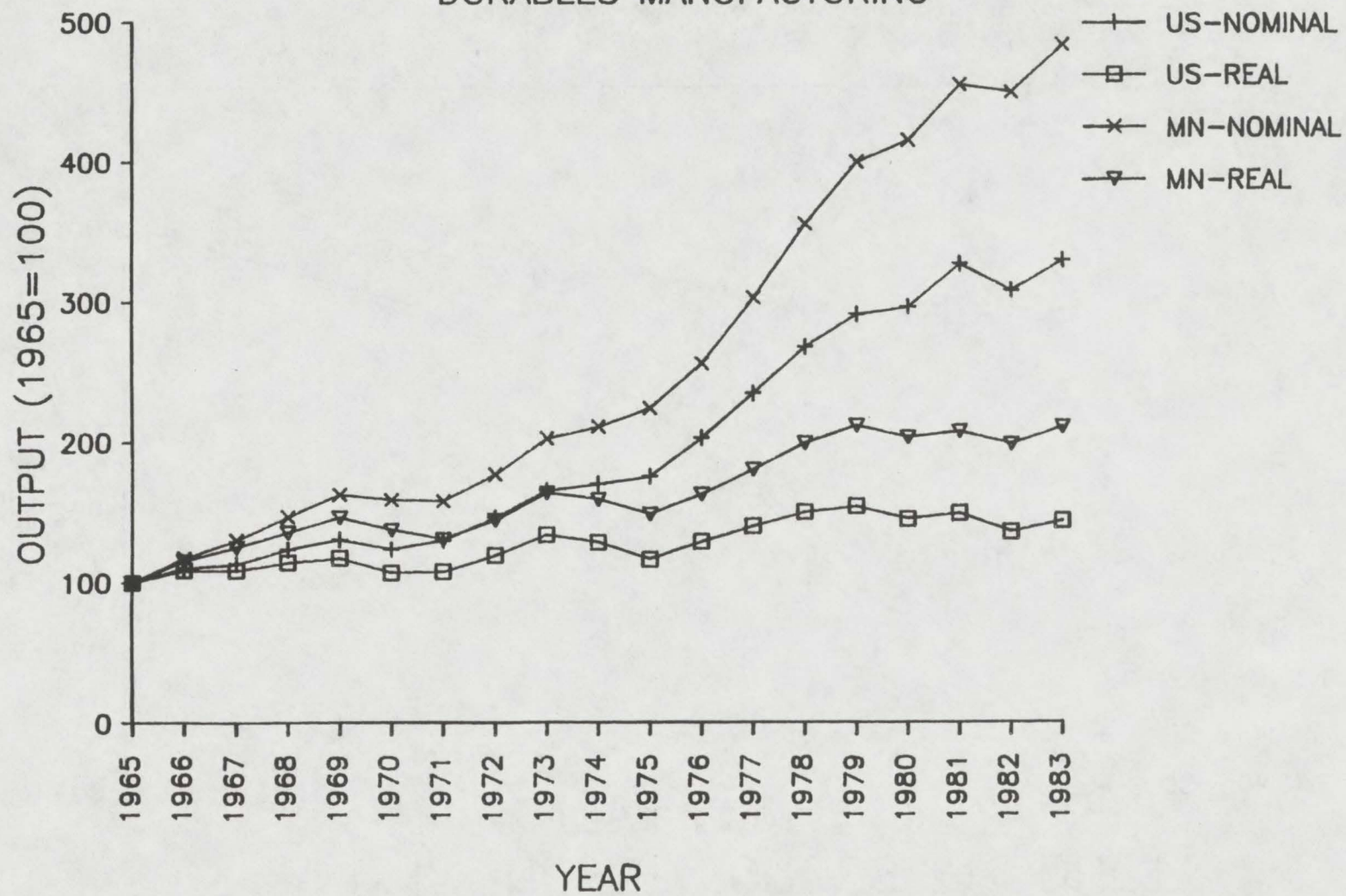


FIGURE 9

U.S. AND MINNESOTA GROSS PRODUCTS

RETAIL TRADE

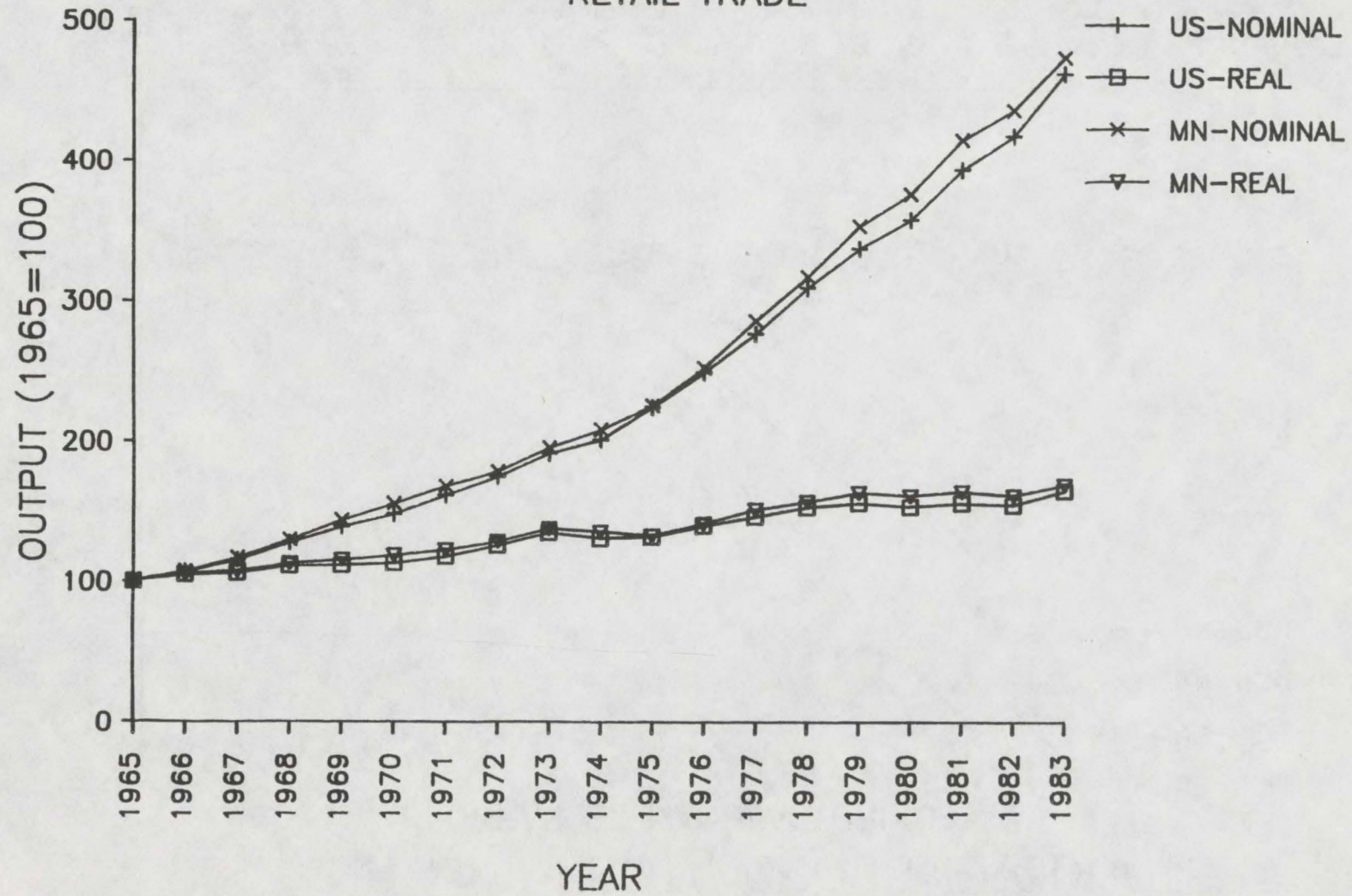


FIGURE 10

U.S. AND MINNESOTA GROSS PRODUCTS

FINANCE AND REAL ESTATE

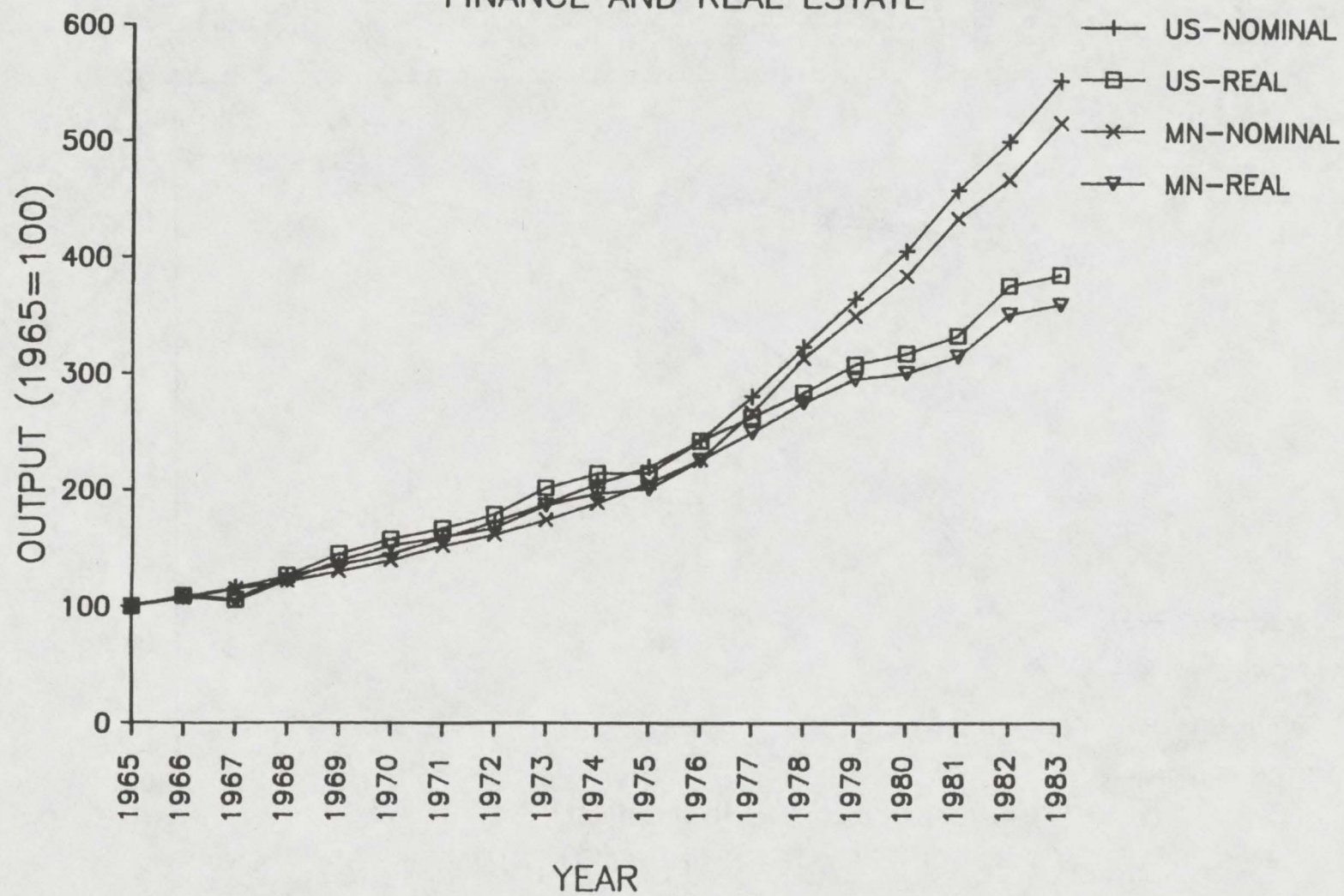


FIGURE 11

U.S. AND MINNESOTA GROSS PRODUCTS

HEALTH SERVICES

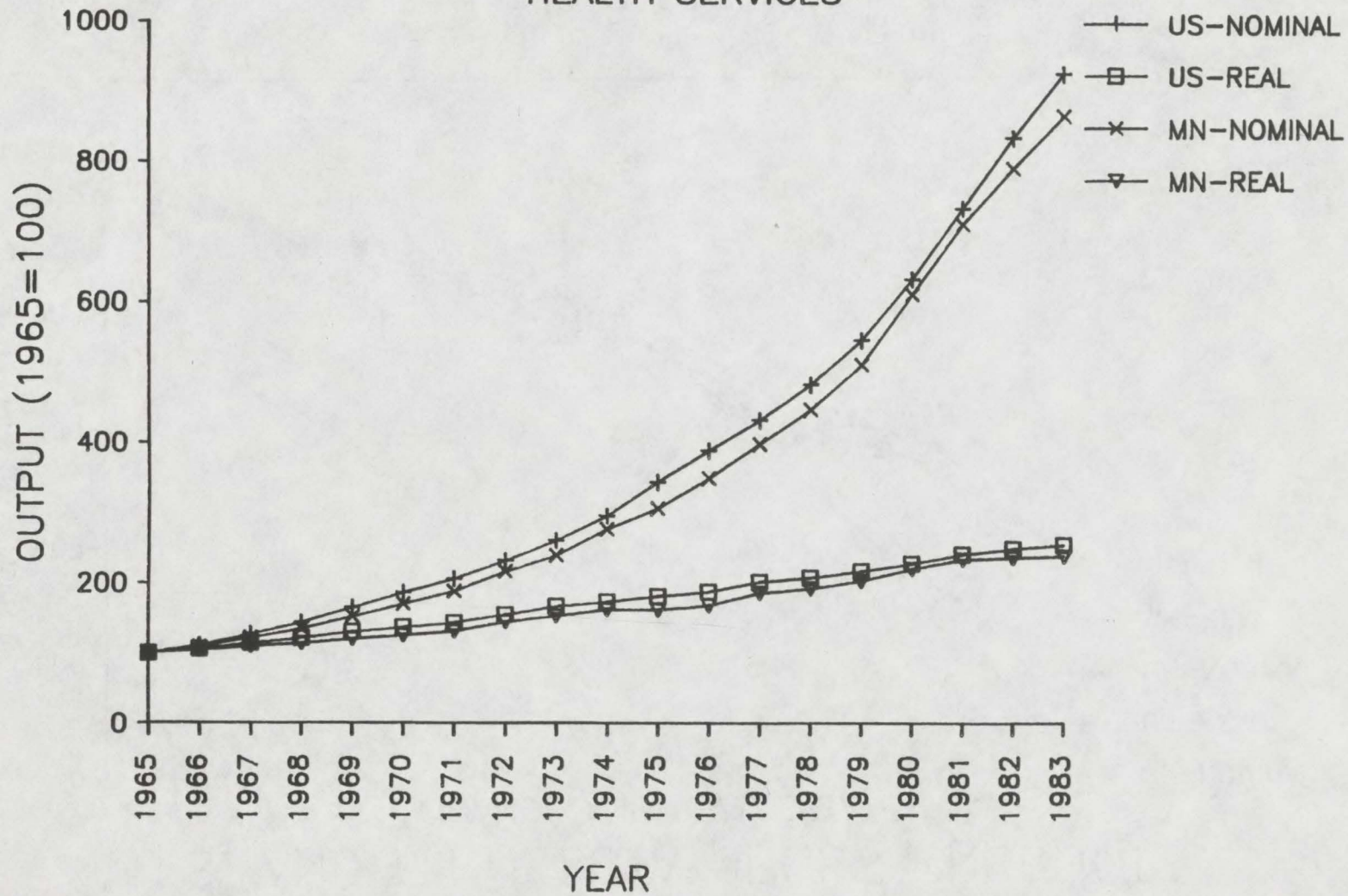


FIGURE 12

U.S. AND MINNESOTA GROSS PRODUCTS

STATE AND LOCAL GOVERNMENT

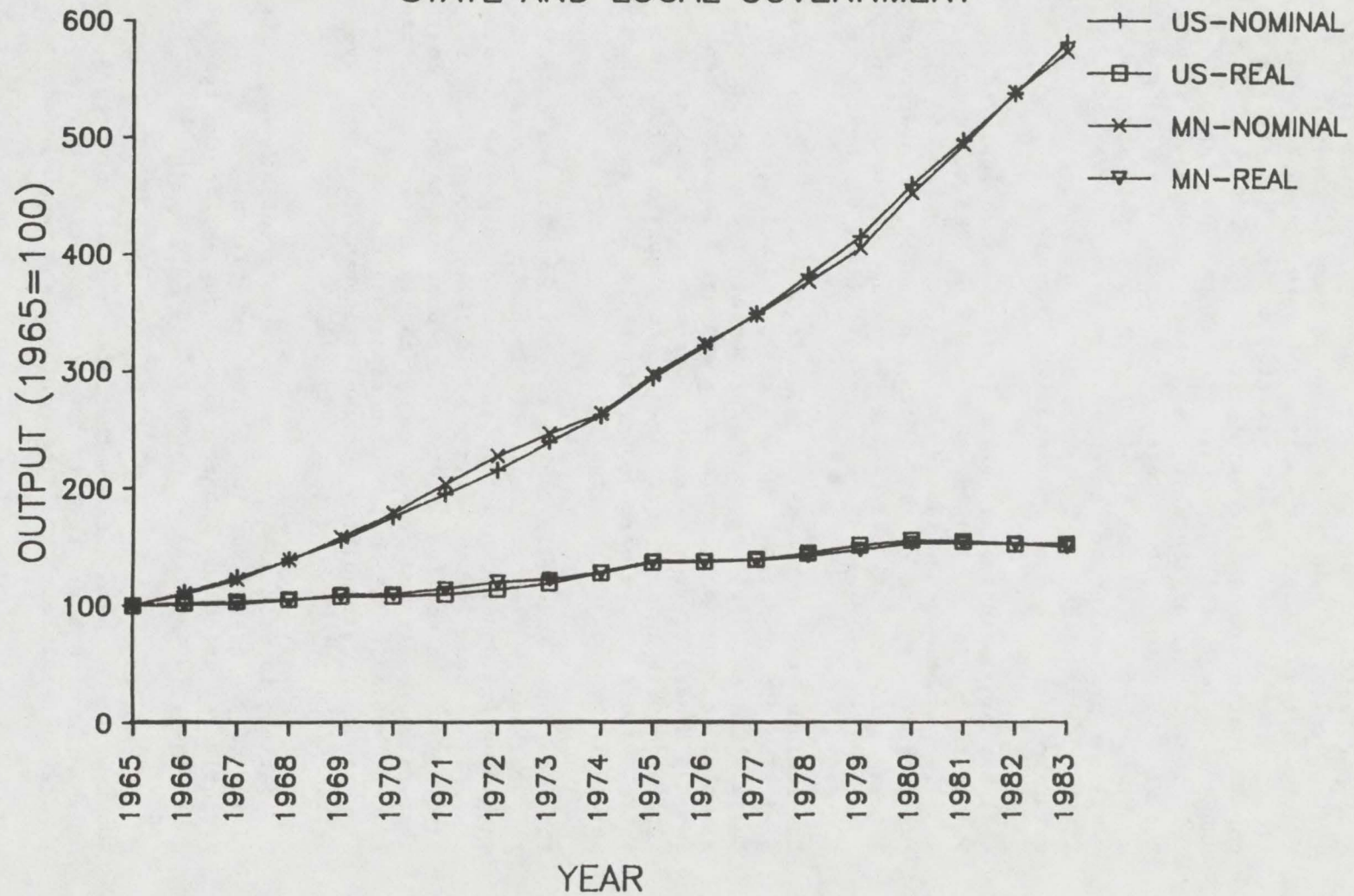


FIGURE 13

Per Capita Income

Real per capita income, shown in Figure 14 for Minnesota and the United States, is a widely accepted measure of the well-being of the average person. Real per capita income in Minnesota has improved from 1965 to 1985 in absolute and relative terms. Minnesota's real per capita income was 60 percent higher in 1986 than 1965, an average annual increase of 2.3 percent. Minnesota's per capita income relative to that of the U.S. has increased from about 95 percent in the mid-1960s to approximate equality in the mid-1970s and finally to about 101 percent in the mid-1980s. A more rapid increase in employment as a proportion of the population in Minnesota relative to the nation, shown in detail later, is partly responsible for Minnesota's gain; this trend cannot continue indefinitely.

Real per capita income by region in Minnesota, displayed in Figure 15, varies in trends and levels. From 1965 to 1983 the northern region was always the lowest, and the metropolitan region the highest, with the single exception of 1973; both had smooth, uninterrupted increasing trends. The real per capita income of the northern region was about 55 to 60 percent of the metropolitan region over this period.

The regional real per capita income figures are not adjusted for cost of living differentials. No one has calculated an adequate measure of these differentials, but they are commonly recognized to exist; for example, housing is generally more expensive in more urbanized places and the transportation necessary for household purchases is generally more expensive in more rural areas. An adjustment for these differentials would likely narrow, but not eliminate, the gap between the metropolitan and other regions.

The iron range generally ranked second in per capita income among the five regions in 1965 to 1983. Its income path, however, shows two marked deviations from the typical relationship with the other regions. A boom in mining in the mid-1970s brought unusual prosperity, and the decline in demand for domestic taconite in the 1980s forestalled continued growth in per capita income in 1982 and 1983. If per capita income on the iron range had continued to be about 82 percent of metropolitan per capita income, it would have been \$1,100 higher (in 1986 dollars) in 1983.

The pattern in western Minnesota is heavily influenced by the volatility of the grains portion of the agricultural sector and by the agricultural price and income support programs of the federal government. These will be discussed in more detail later in this report.

Southeastern Minnesota shows the influence of agriculture, but the pattern is more muted than in the western region because of the greater diversification of the southeastern region's economy.

REAL PER CAPITA INCOME (1986 \$) UNITED STATES AND MINNESOTA

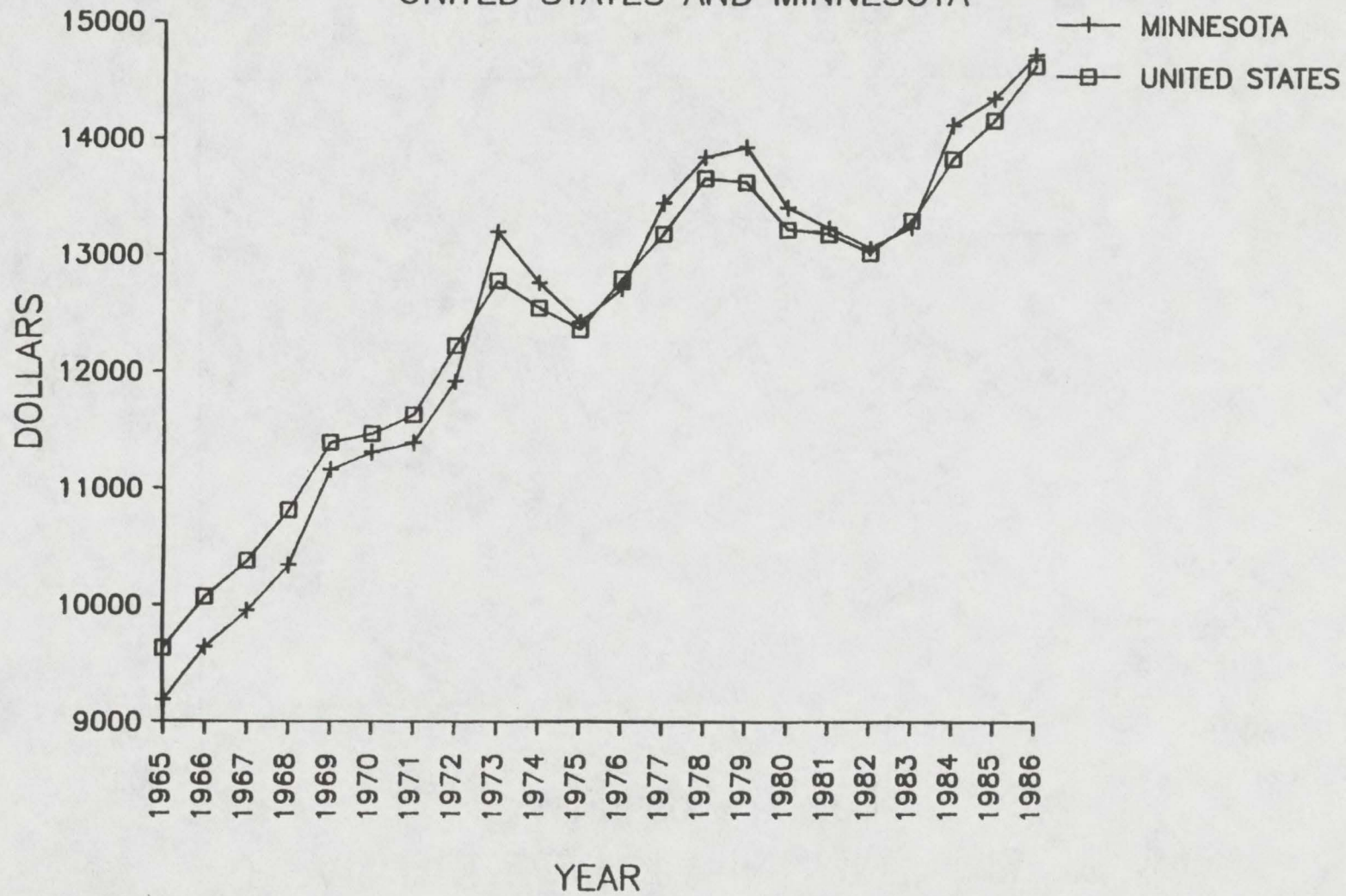


FIGURE 14

REAL PER CAPITA INCOME (1986 \$)

MINNESOTA REGIONS

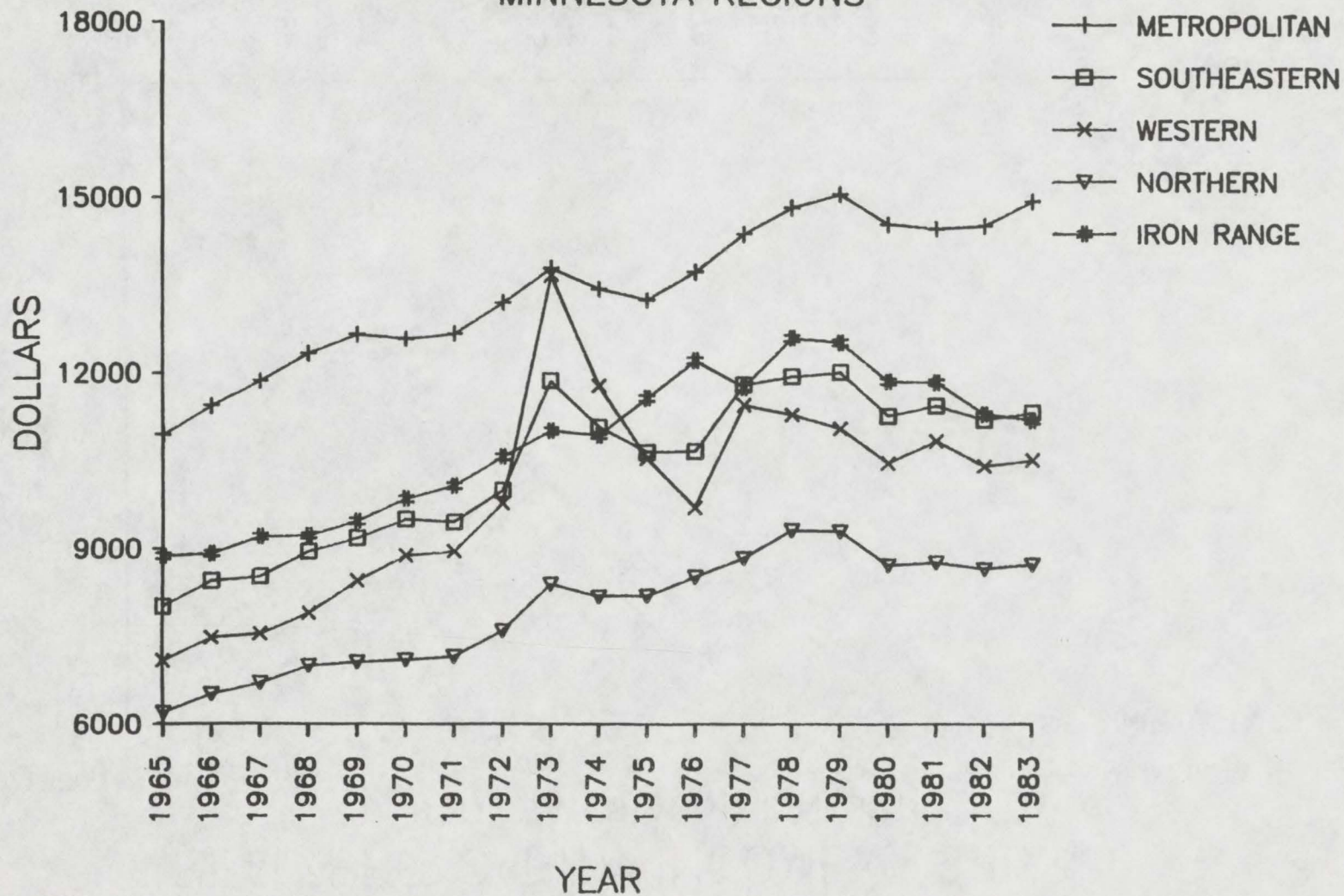


FIGURE 15

Sources of Personal Income

The sources of personal income for the residents of Minnesota and its regions are shown in Figures 16 to 21 at five-year intervals from 1968 to 1983. Earnings are compensation for people's labor and are recorded by place of work; for example, the earnings of a person who lives in southeastern Minnesota and works in the metropolitan region are credited to the metropolitan region. Dividends, interest, and rent are payments to individuals for the use of their capital.

Transfer payments include payments to persons for which they do not render current services. These include payments by business but are dominated by governmental programs such as social security, government employee retirement benefits, medicare, medicaid, veterans benefits, and food stamps. In this study we include direct federal payments to farmers as transfer payments, which differs from the standard federal treatment. The consequences for our study relative to federal publications are that our farm income figures are lower and our transfer payments are higher by exactly offsetting amounts, leaving personal income unchanged.

The final category is a residual containing two different components, residence adjustment (Res. Adj.) and personal contributions for social insurance (Soc. Tax). The principal items in contributions for social insurance are social security taxes and contributions to public employee retirement systems; these are a subtraction from personal income. The residence adjustment is needed to reconcile the difference between earnings by place of work and personal income by place of residence. The residence adjustment is the net result of adding the earnings of people living in the region and working elsewhere and subtracting the earnings of those working in the region and living elsewhere.

For Minnesota as a whole, earnings as a proportion of personal income fell from 80 percent in 1968 to 72 percent in 1983. Earnings account for the highest proportion of income in the metropolitan region, which is also the region with the least decline from 1968 to 1983 in the relative importance of earnings. By 1983 earnings had fallen to only 49 percent of personal income in agricultural, western Minnesota. In 1983 the three remaining regions showed earnings accounting for 55 to 63 percent of personal income.

Income from dividends, interest, and rent increased in relative importance from 1968 to 1983. This is especially true in southeastern and western Minnesota where these sources accounted for 23 and 27 percent, respectively, of personal income in 1983. People's accumulated wealth is becoming more important relative to their labor as the source of their income.

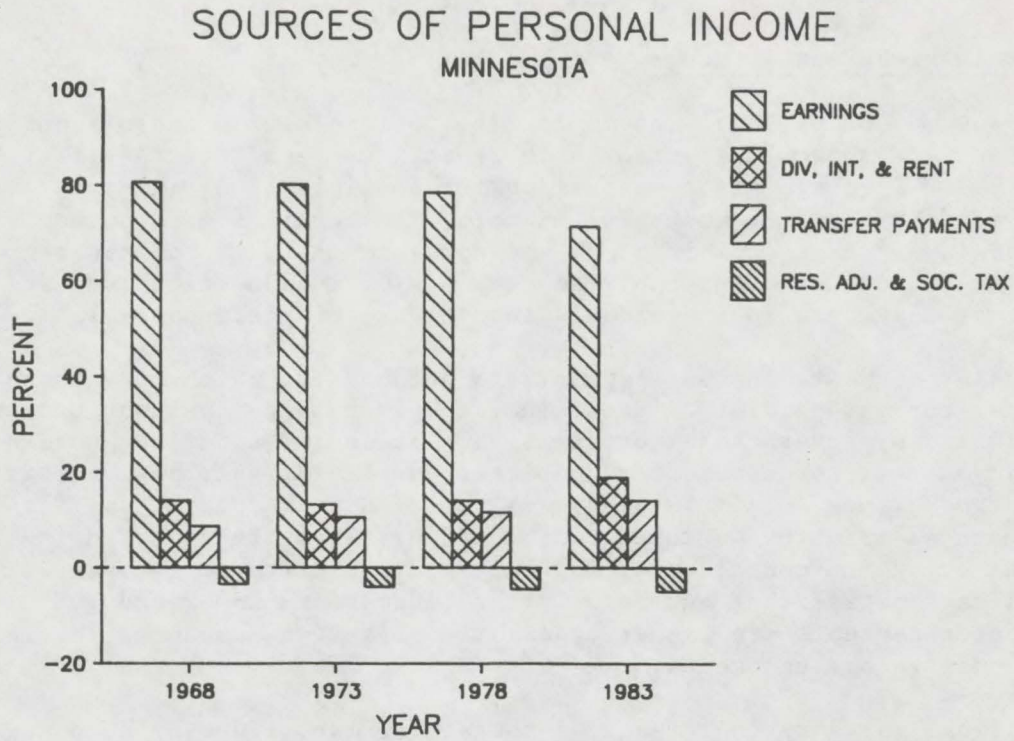


FIGURE 16

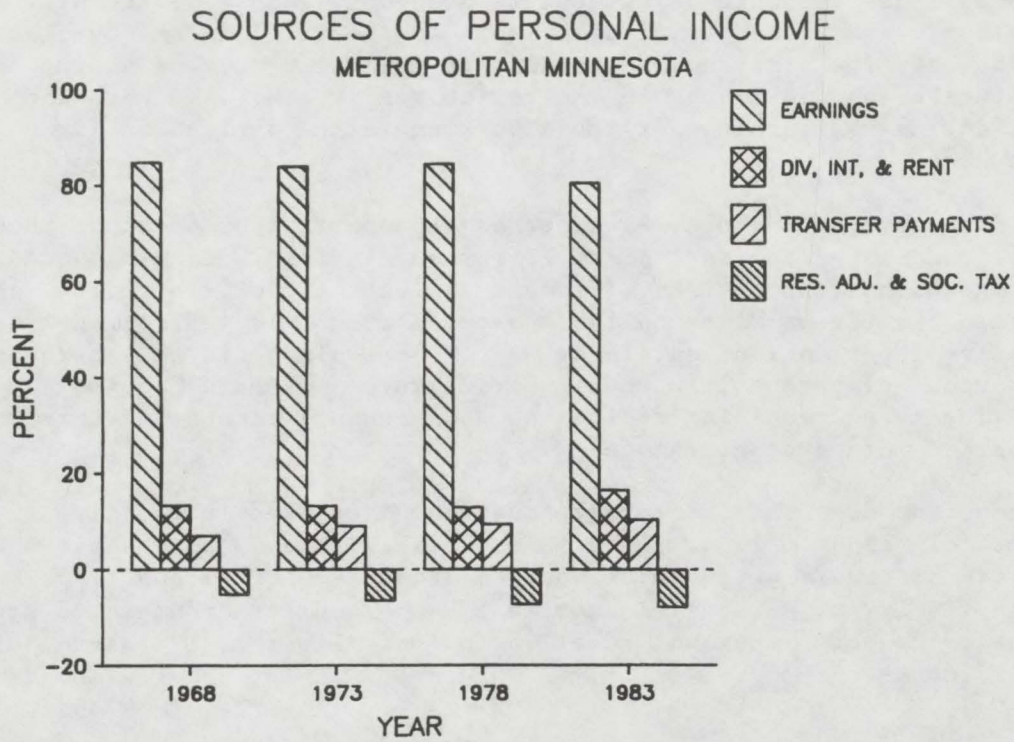


FIGURE 17

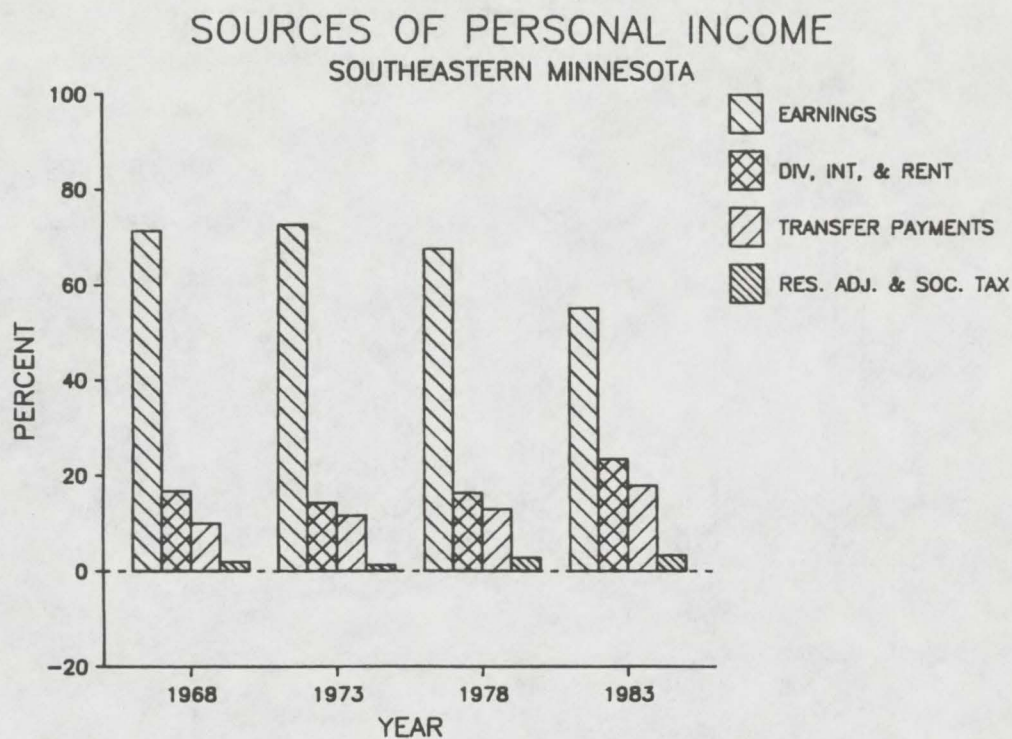


FIGURE 18

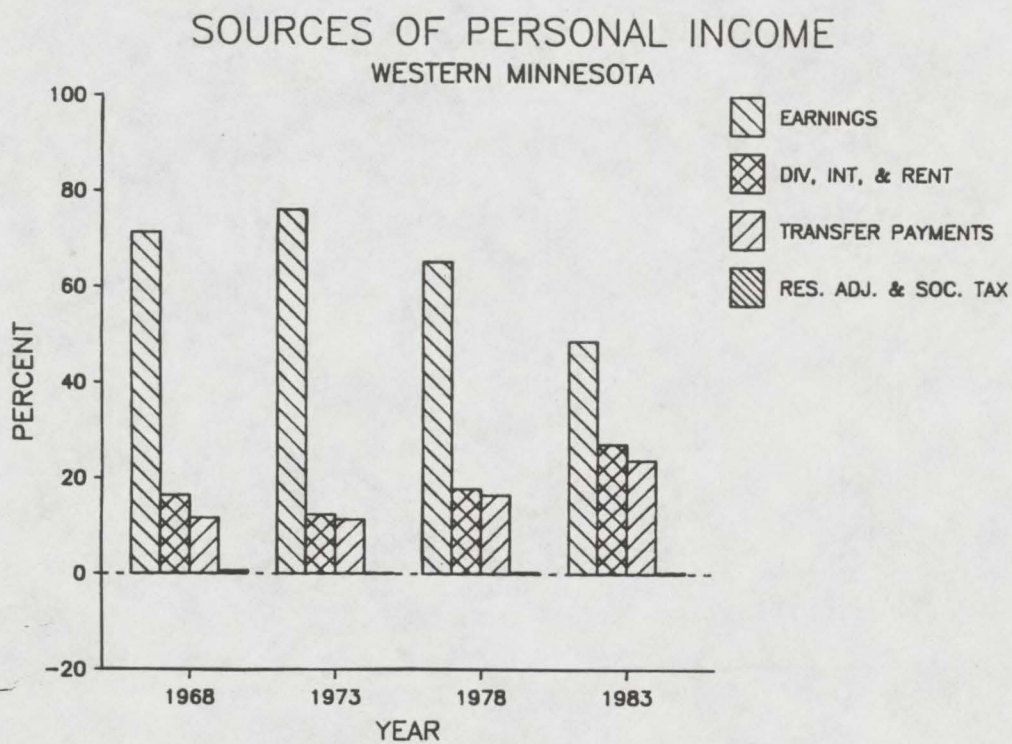


FIGURE 19

SOURCES OF PERSONAL INCOME NORTHERN MINNESOTA

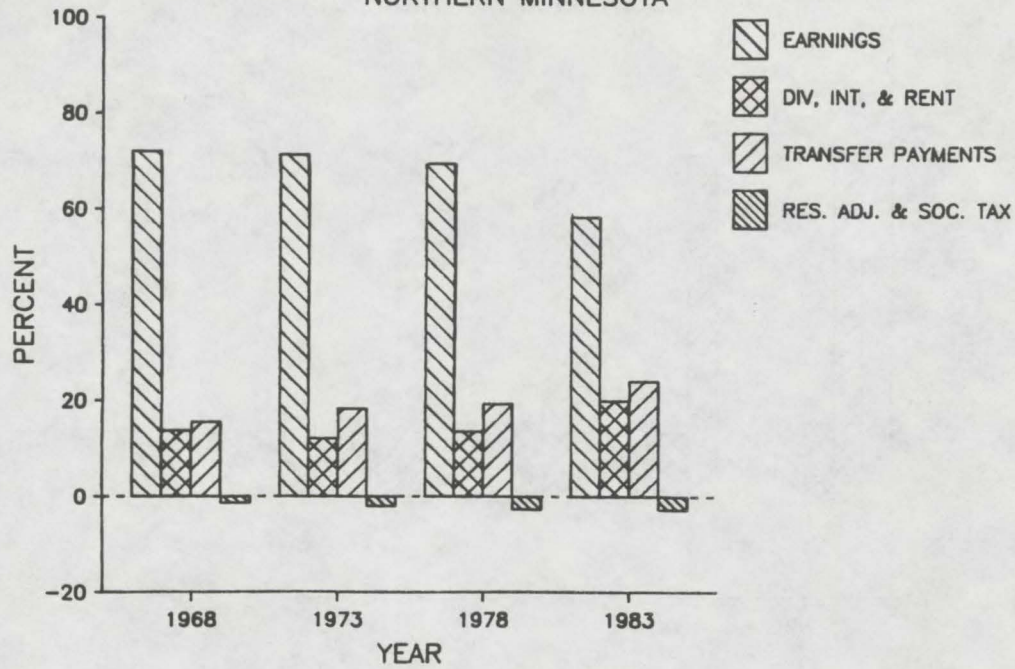


FIGURE 20

SOURCES OF PERSONAL INCOME IRON RANGE

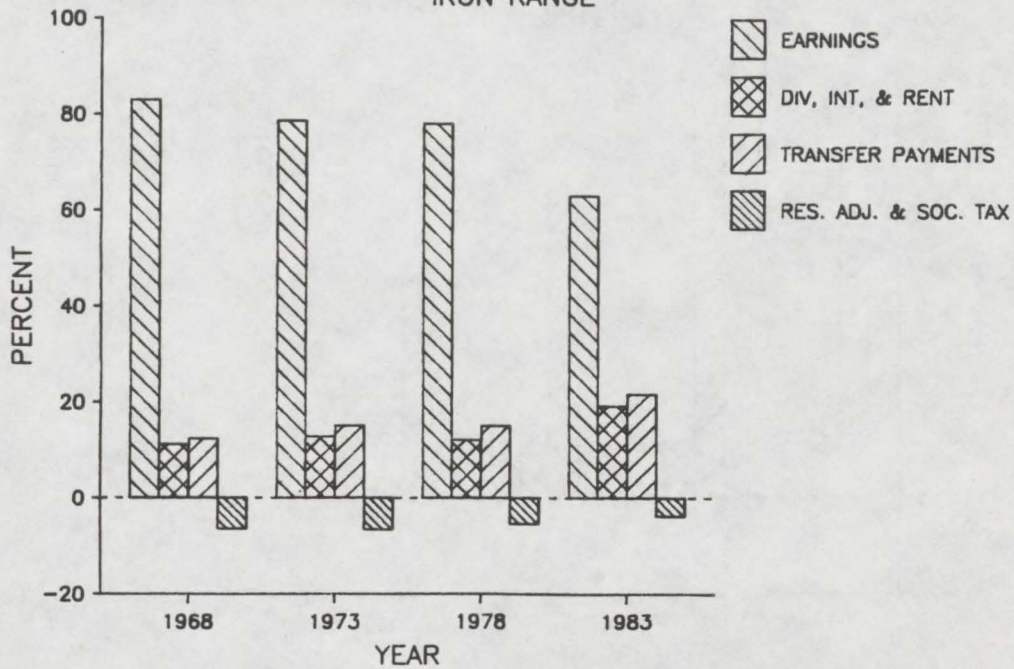


FIGURE 21

Income from transfers also increased in relative importance over this period. By 1983 transfers accounted for almost 25 percent of income in western and northern Minnesota and on the iron range, in contrast to a state average of 14 percent. Growing transfers reflect society's willingness to provide for the needs of the elderly and other special groups; transfers also reflect the condition of the economy in specific regions, such as the iron range and western Minnesota where incomes are falling because of problems in mining and agriculture.

The scale of the adjustment for residence and social insurance contributions differs among regions, as expected, but is not a major determinant of shifts in income trends over this time period.

Farm Sector

The farm sector has an important influence on Minnesota's economy. Farming is especially important in western and southeastern Minnesota, where an understanding of income patterns depends critically on a knowledge of farm income. For this reason, we discuss this sector in more detail than others.

Figure 22 shows real and nominal net farm income, including government price and income support payments, for Minnesota from 1969 to 1983. Some observers interpret the pattern of real income as a general downward trend from 1973 to 1983. Others, including us, view the observations for real income as falling into a "normal" band except for two major exceptions, 1973-1974 and 1982-1983. Farmers profited enormously in 1973 and 1974 as grain exports to the rest of the world exploded; the reverse occurred in the early 1980s. In 1983 real net farm income was less than half of what might be considered a normal level.

Most farm income in Minnesota accrues to the western and southeastern regions, shown in Figure 23. The volatility in both regions is noteworthy but truly astounding in western Minnesota.

The plight of farmers would be even worse were it not for government payments, which have been large in recent years. Figure 24 shows net farm income less direct government payments per person employed in farming in western and southeastern Minnesota. Direct government payments include income support payments provided directly to farmers but do not include the price support activities that enhance the value of the commodities sold by farmers; net farm income from nongovernmental sources would have been even lower if adjustments were made for these less direct government benefits to farmers. Real net income from nongovernmental sources per person employed in farming was only \$2,700 (1986 dollars) in western Minnesota in 1983 and only slightly better at \$16,700 in southeastern Minnesota. The enormous purchasing power injected into the farm sector in 1973 is a dramatic feature of this chart, just as for the preceding two figures.

MINNESOTA FARM INCOME

NOMINAL AND REAL (1986 \$)

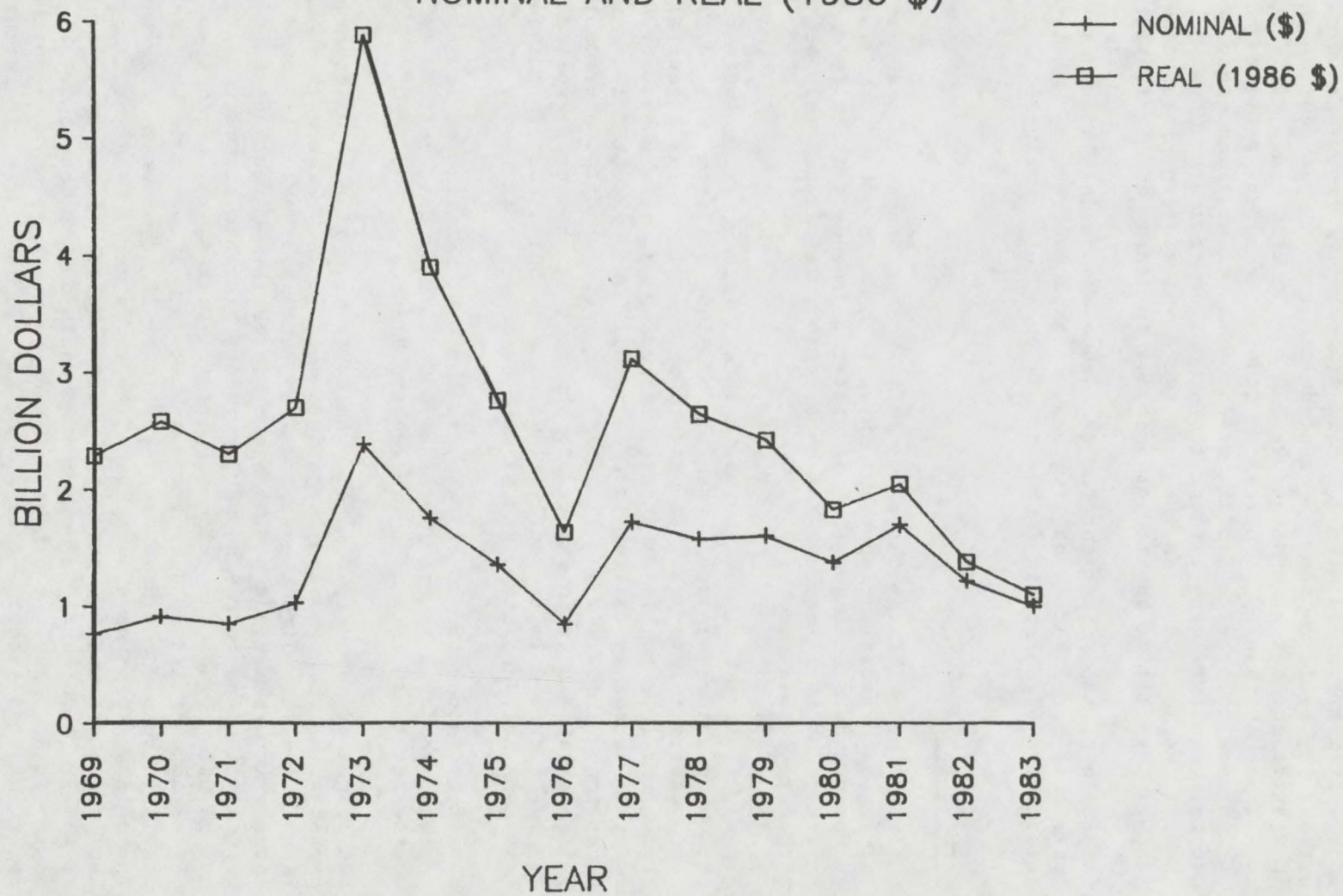


FIGURE 22

REGIONAL MINNESOTA FARM INCOME

NOMINAL AND REAL (1986 \$)

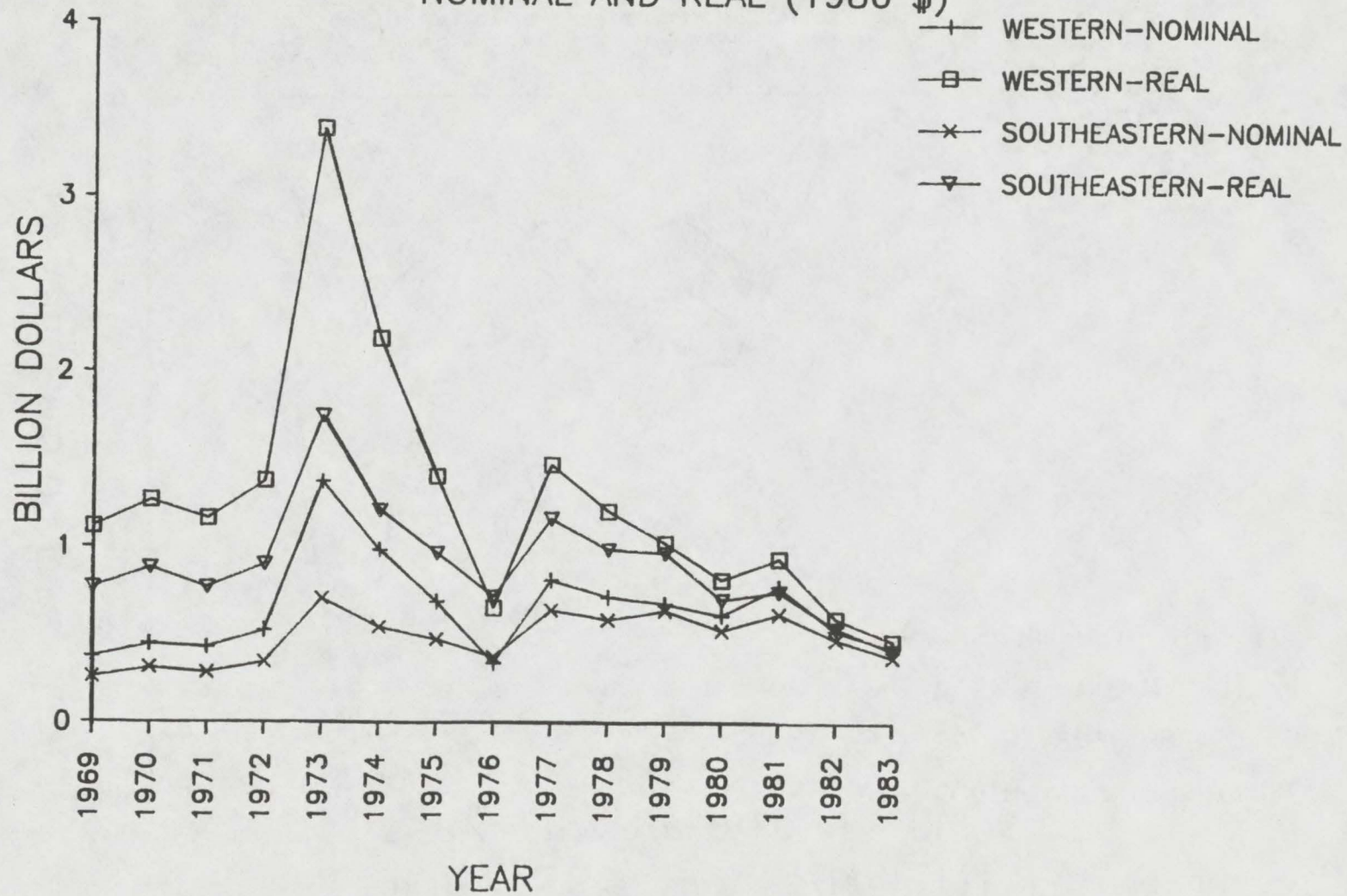


FIGURE 23

FARM INCOME LESS GOVERNMENT PAYMENTS PER CAPITA EMPLOYED IN FARMING

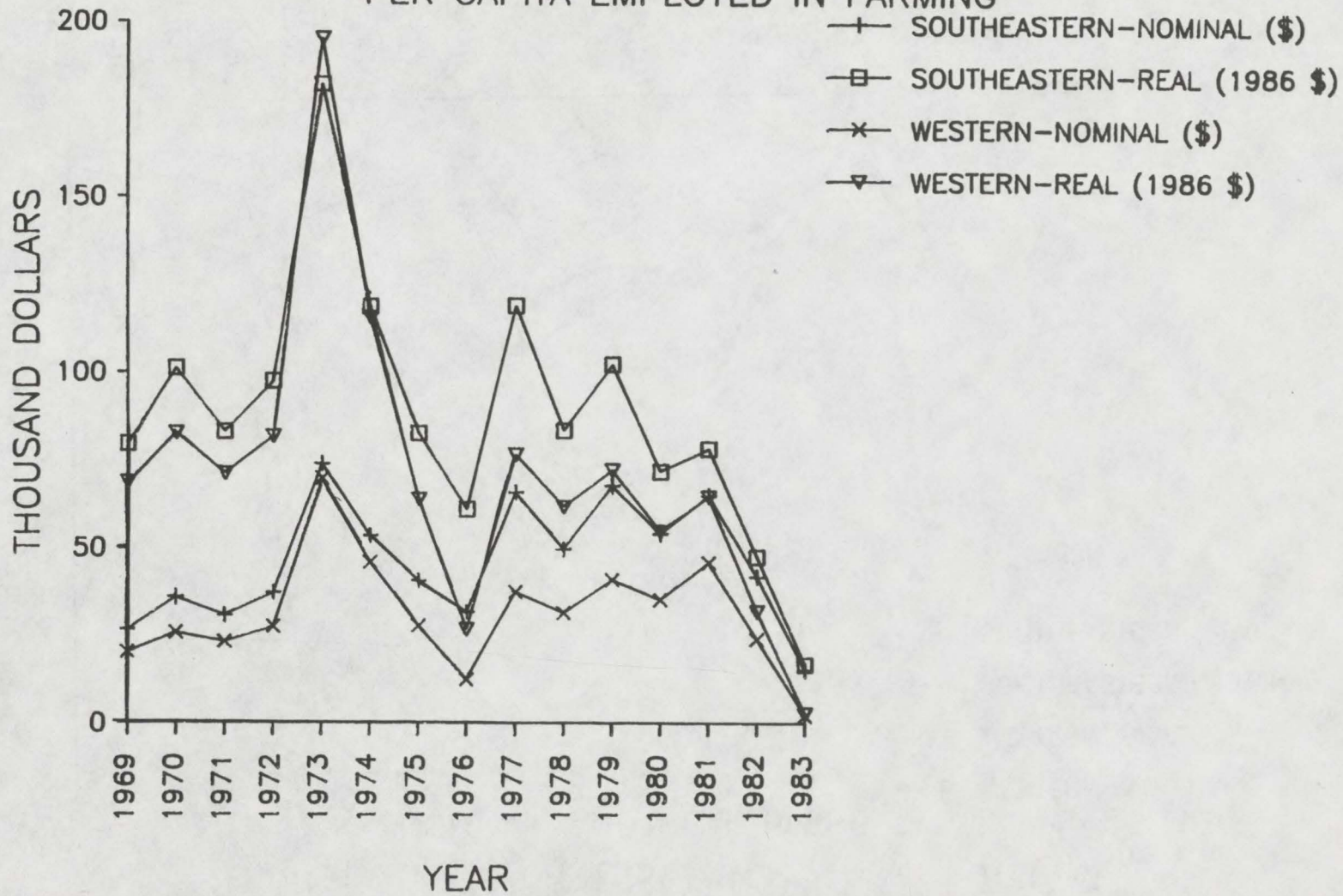


FIGURE 24

Transfer Payments

Minnesota's regions differ in the role of transfer payments (Figure 25) which, as noted earlier, are increasingly important relative to other sources of personal income.

In the metropolitan region, per capita transfers were lower than in other regions during 1969 to 1983. The periods of sharpest increases tended to coincide with recessionary periods in the national economy. Transfers per capita in real terms in 1983 were below the peak values of the mid-1970s.

Northern Minnesota and the iron range had the highest transfers per capita in 1973 to 1983. Their high ranking is due in part to the high proportion of elderly in their population. As noted earlier in Figure 15, northern Minnesota has the lowest per capita income of any region; the low incomes probably lead to higher transfers. While the national business cycle appears to be affecting the level of transfers, factors peculiar to these regions are also having an effect; in particular, the conditions in the mining and wood products sectors are not always correlated with the national business cycle. The problems originating in mining show clearly in transfers on the iron range in 1982 and 1983, which are far above the previous peak in 1977 even in real terms.

Transfers in the southeastern and western regions follow paths unlike those of the other regions. Their level was above that of the metropolitan region and below the iron range and northern Minnesota in 1973 to 1983. Federal direct payments to farmers are the major factor underlying the unique pattern of these two regions. These payments fell after the high farm incomes of the early 1970s and have risen to record levels in the early and mid-1980s.

Jobs Relative to Population

Employment is interrelated with incomes and output. The lines of causation are complex and run in both directions between these variables. Figures 26 to 31 compare the number of jobs to population for the U.S., Minnesota, and regions within Minnesota. Two important characteristics of the data affect the interpretation of these charts. First, the number of jobs is not equal to the number of employed people because one person may hold more than one job. Similarly, a new job may be a part-time job and, thus, not supply full-time employment for one person, but yet the job is included on exactly the same basis as a full-time job. Thus, the ratio of the number of jobs to population is often greater than the ratio of the number of employed people to the population.

TRANSFERS INCLUDING FARM PAYMENTS

REAL PER CAPITA, 1986 \$

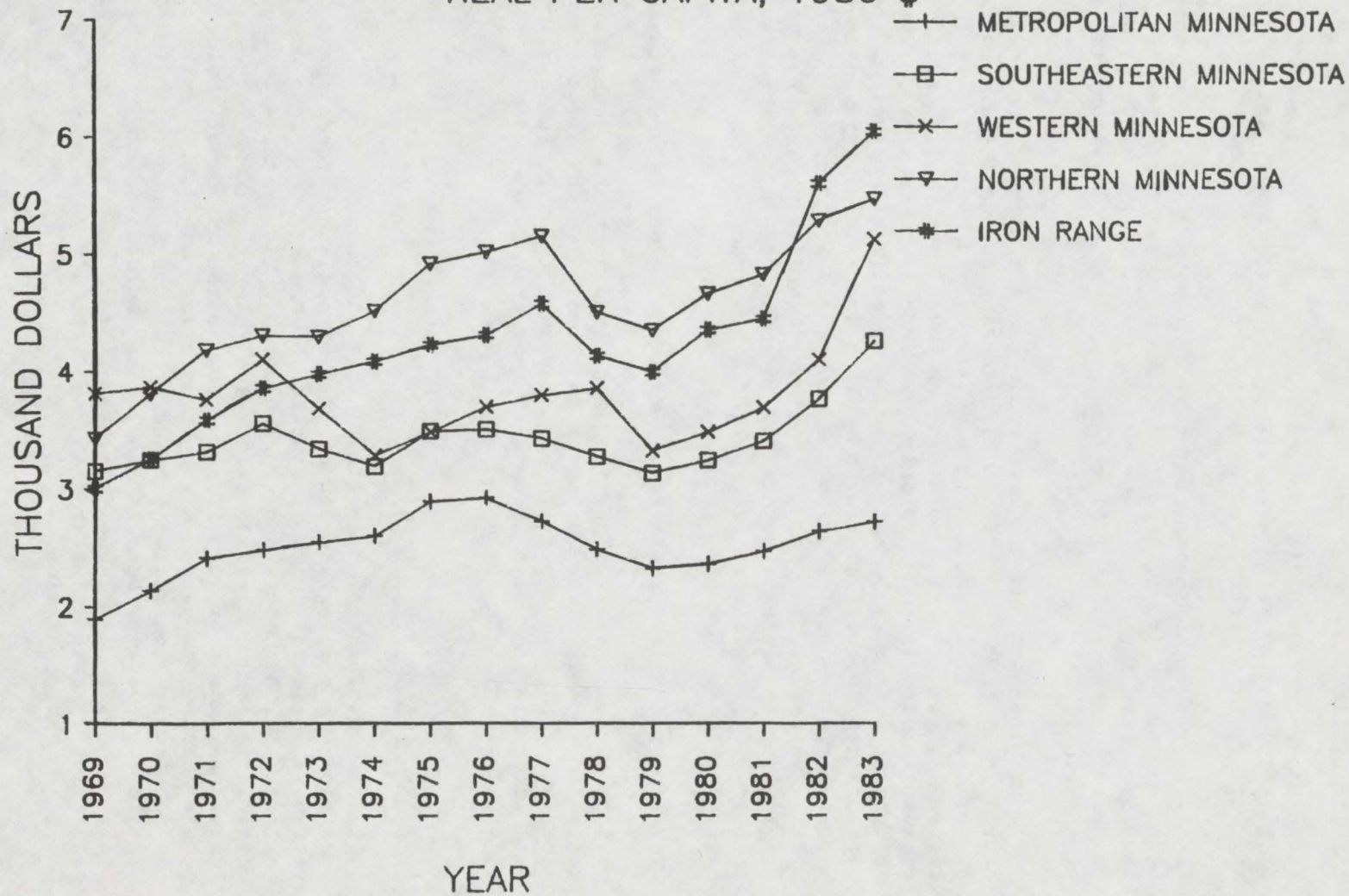


FIGURE 25

Second, the count of the number of jobs is based on the place of work, and population figures are based on place of residence. Regions with higher concentrations of firms are likely to have higher ratios of jobs to people, even though the residents of these regions may be no more likely to be employed--and vice-versa for regions such as suburbs with few firms and many household residences. The relevance of commuting across regional boundaries is likely more important as the region under study is smaller. This phenomenon is exactly analogous to that of the "residence adjustment" noted earlier in the discussion of personal income.

Since 1971, the ratio of jobs to population has tended to grow faster in Minnesota than the nation (Figure 26). In 1983 the ratio in Minnesota was 52 percent, which compares with the national figure of 48 percent. The higher growth rate of jobs for Minnesota is one of the factors underlying the more rapid growth in per capita personal income noted earlier (see Figure 14 and associated text). In both Minnesota and the U.S., in 1969 to 1983 the ratio of jobs to population is closely related to the national business cycle--falling in periods associated with national economic slowdowns and rising otherwise.

The ratio of jobs to population in 1967 to 1983 for each of the regions in this study is shown in Figure 27. The metropolitan region consistently has the highest ratio and the northern region the lowest. The remaining three regions clustered closely in 1967 to 1979; from 1980 to 1983 the ratio for the iron range moved from a level consistent with southeastern and western Minnesota to a level consistent with the northern region. The ratios for all five regions, including the more agricultural western and southeastern regions, move in accord with the national business cycle--with the slowdown in the early 1980s having a particularly marked effect on the iron range due to the domestic taconite mining and steel producing sectors suffering from international competition as well as a sluggish domestic economy.

In the case of the ratio of jobs to population, the 18 regions were not entirely homogeneous within the five regional groupings used in this study (see Figures 1 and 2 for illustrations of the 18 and five regions, respectively). The more detailed results are shown in Figures 28 to 31 for the four regions other than the iron range; no aggregation of smaller regions occurred in defining the iron range region. Central cities have higher ratios of jobs to population than their suburbs (Figure 28); as noted above, this result is not surprising because of the nature of the data. The portion of the southeastern region between the Twin Cities and Duluth has a lower ratio of jobs to population than its two counterparts south of the Twin Cities (Figure 29). The increasing dispersion within the western region is primarily due to west central Minnesota lagging the other portions of the region in the growth of jobs relative to population (Figure 30). Similarly, the increasing dispersion within the northern

JOBS RELATIVE TO POPULATION UNITED STATES AND MINNESOTA

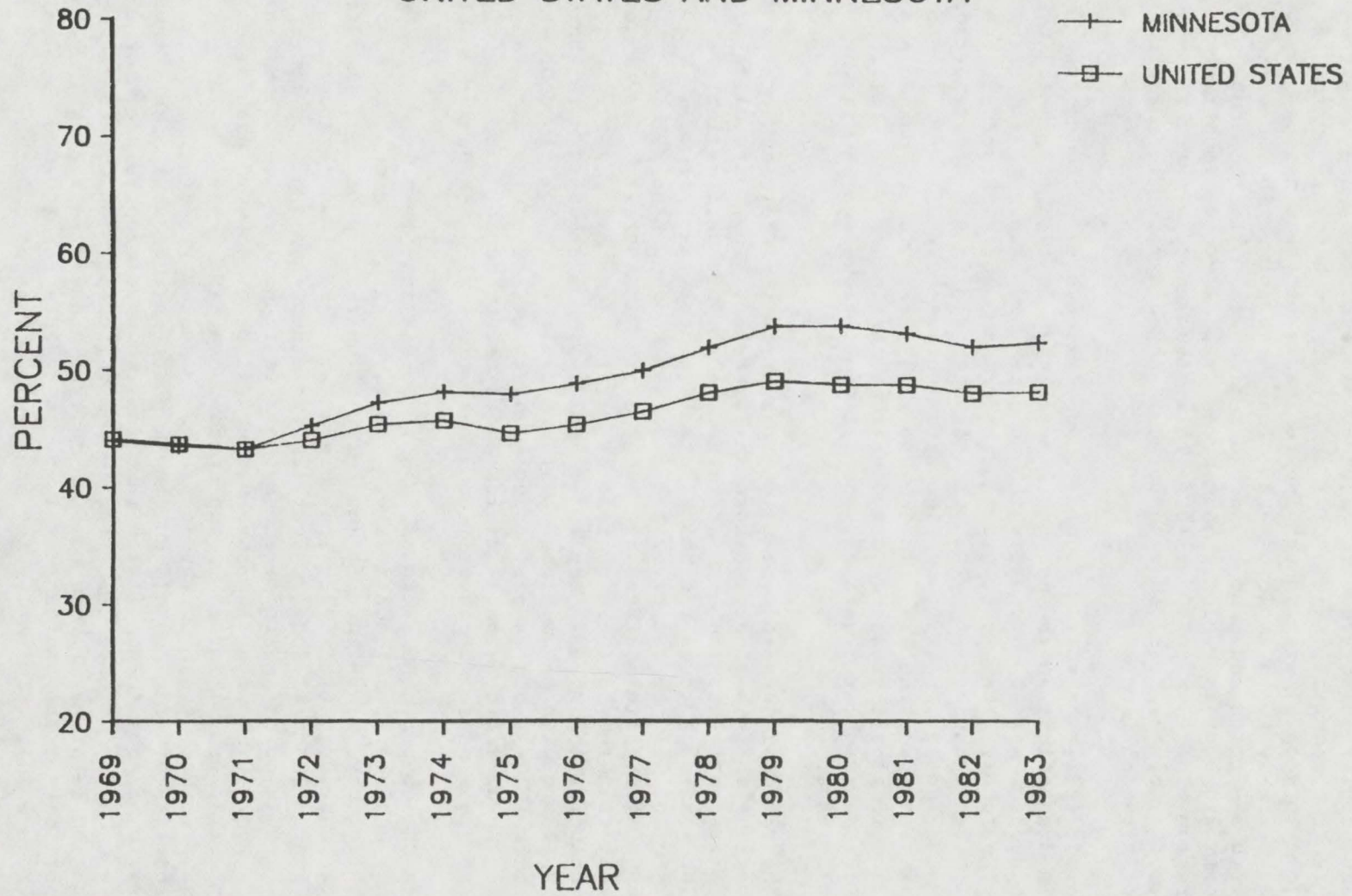


FIGURE 26

JOBS RELATIVE TO POPULATION

MINNESOTA REGIONS

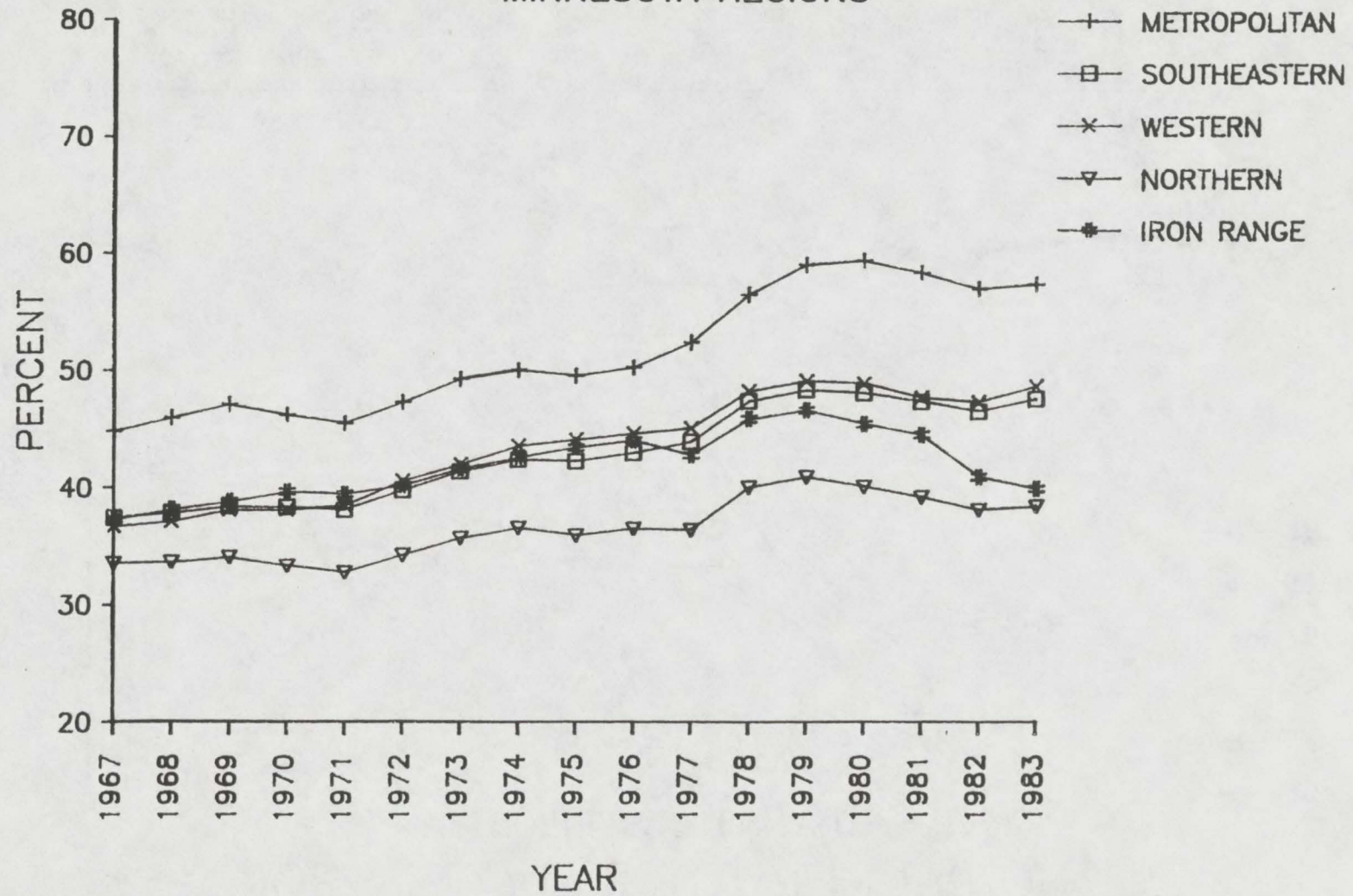


FIGURE 27

JOBS RELATIVE TO POPULATION METROPOLITAN MINNESOTA

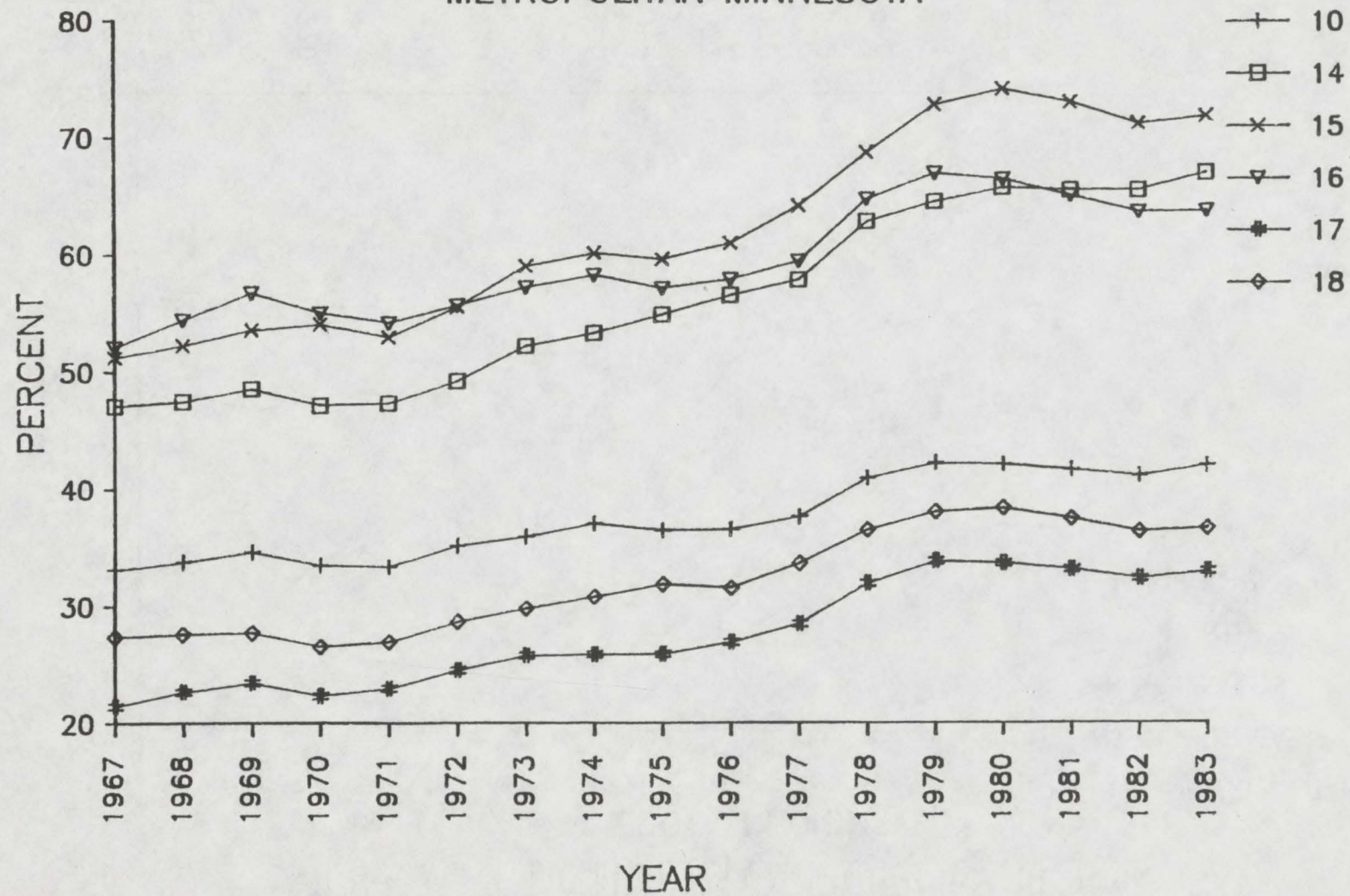


FIGURE 28

JOBS RELATIVE TO POPULATION SOUTHEASTERN MINNESOTA

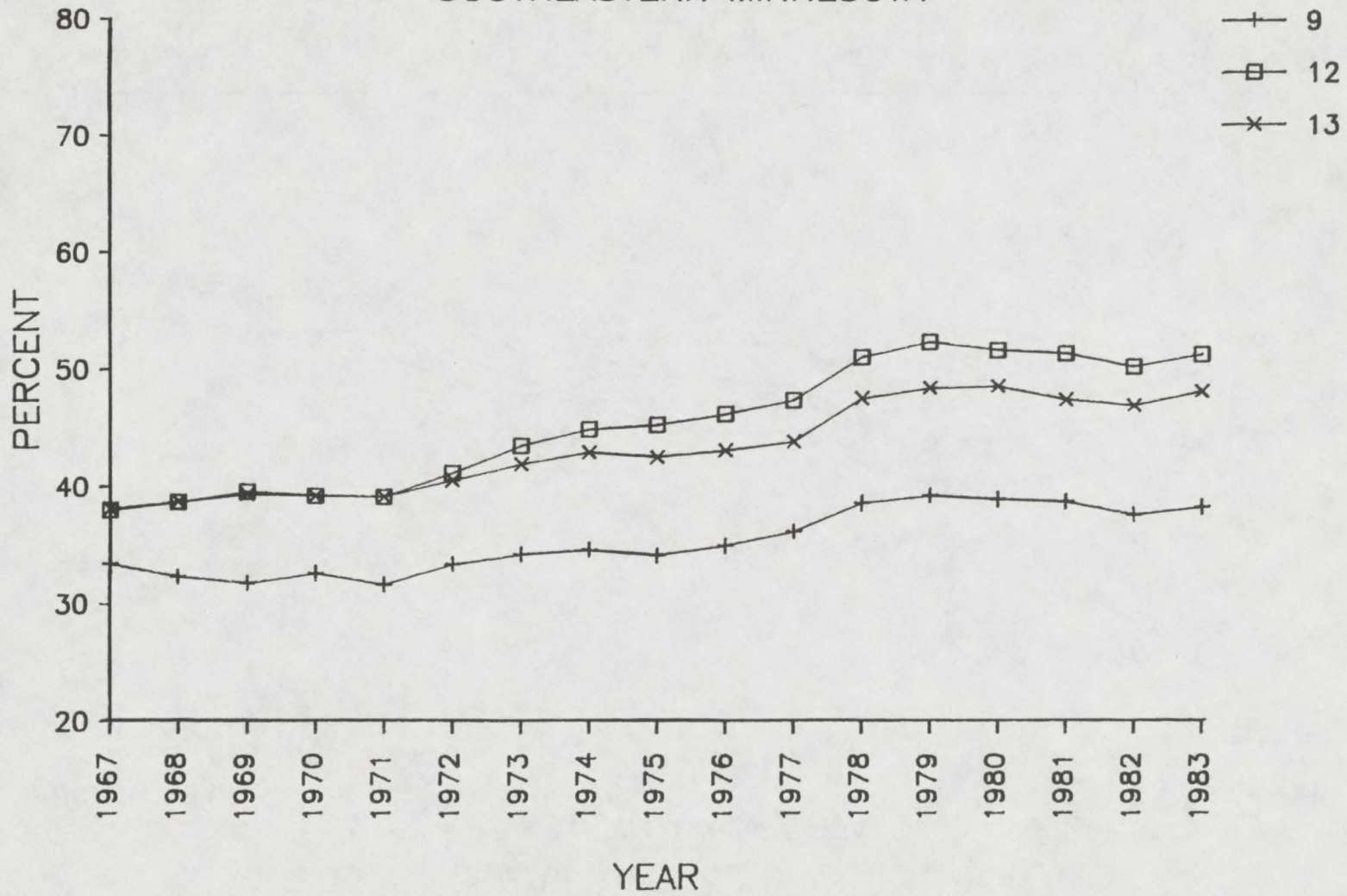


FIGURE 29

JOBS RELATIVE TO POPULATION WESTERN MINNESOTA

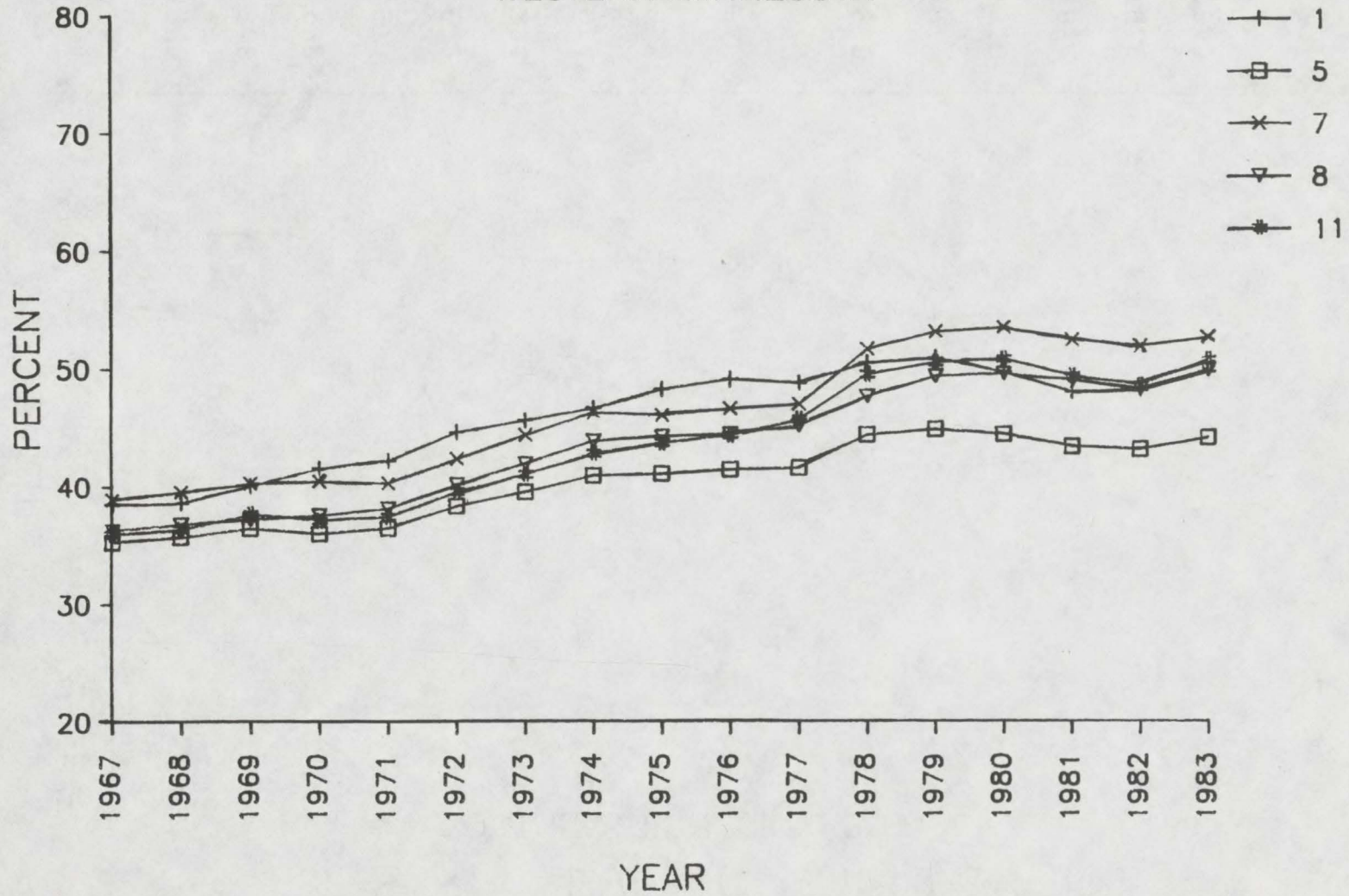


FIGURE 30

region is due to the Arrowhead Region which is heavily influenced by mining as is the iron range (Figure 31).

Population

The rate of population change is another common measure of regional growth. The degree to which jobs follow people or people follow jobs is not known in each specific circumstance, but both are important. Figure 32 shows the growth rates for the population of Minnesota and its regions in 1966 to 1983.

The state's population grew at a modest, uniform rate over this period. The reasons for the small fluctuations in the growth rate are not apparent from the graphical analysis in this report. Specifically, the fluctuations in the state total do not appear correlated with the national business cycle or with Minnesota's per capita income or ratio of jobs to population.

The regional changes in population encompass a broader range than the state total, and they follow diverse patterns. The metropolitan and northern regions have the highest growth rates, probably for different reasons. The high per capita income and the high ratio of jobs to population in the metropolitan region probably attracted in-migrants. Because the northern region has a low per capita income and a low ratio of jobs to population, people are probably not moving in because of an attractive job climate. Other studies suggest the northern region is attracting retirees, which is consistent with the large transfers per capita in this region (see Figure 25).

The iron range had the smallest rate of population increase in 1966 to 1983, losing population in many years. This was occurring even in the late 1960s and early 1970s when per capita income and the ratio of jobs to population were competitive with other rural areas of the state, although not as high as in the metropolitan region. The loss of population in 1981 to 1983 is more easily explained because of declining real per capita income and a falling job to population ratio.

The southeastern and western regions resemble each other in their patterns of population growth. The reasons for this pattern are not obvious to us from our graphical analysis.

Real Output and Labor Productivity

The final stage in our analysis is the examination of real output and labor productivity on a regional basis. Labor productivity is a fundamental determinant of the standard of living and is thought by

JOBS RELATIVE TO POPULATION NORTHERN MINNESOTA

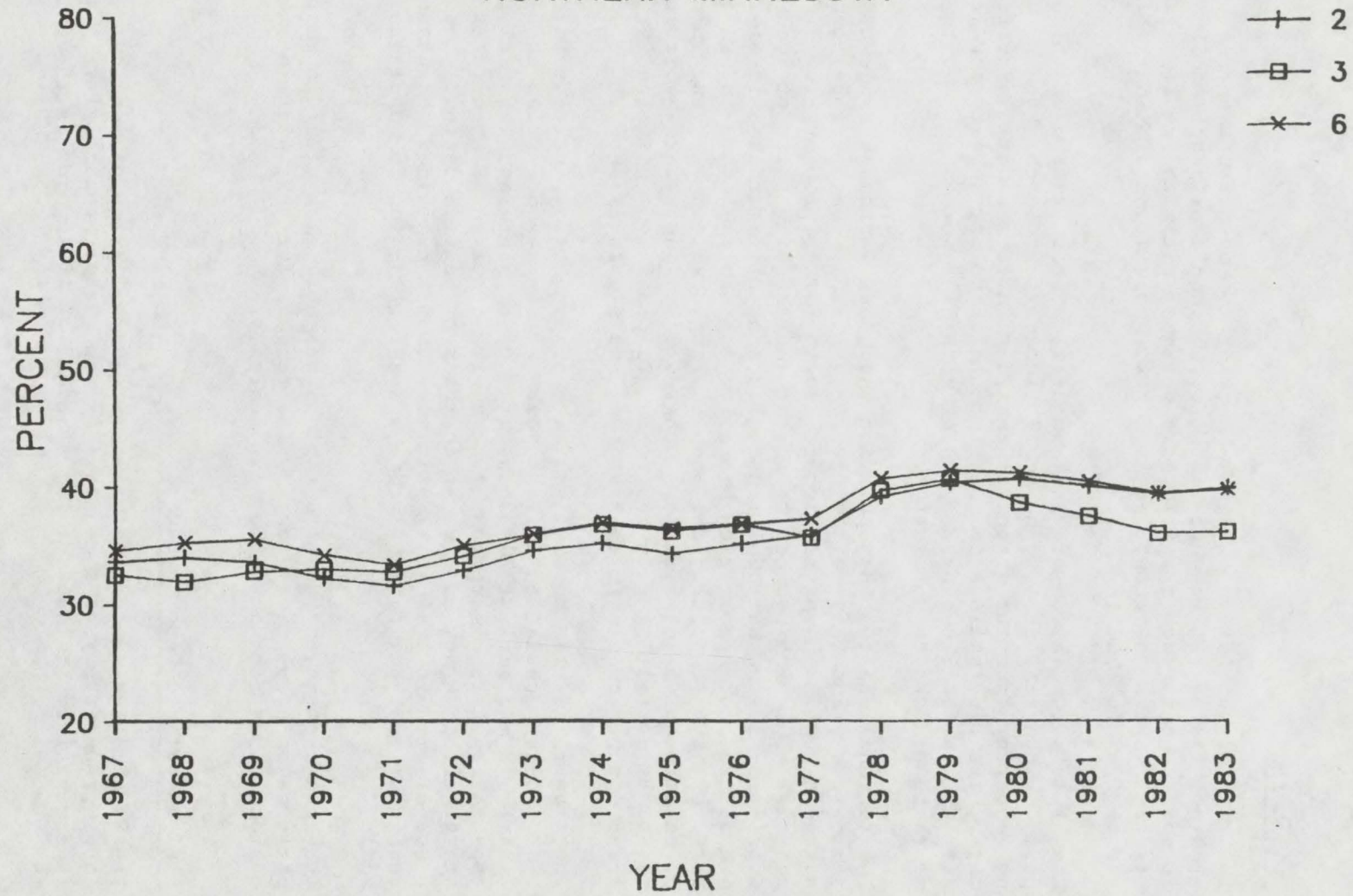


FIGURE 31

PERCENT CHANGE IN POPULATION MINNESOTA & REGIONS

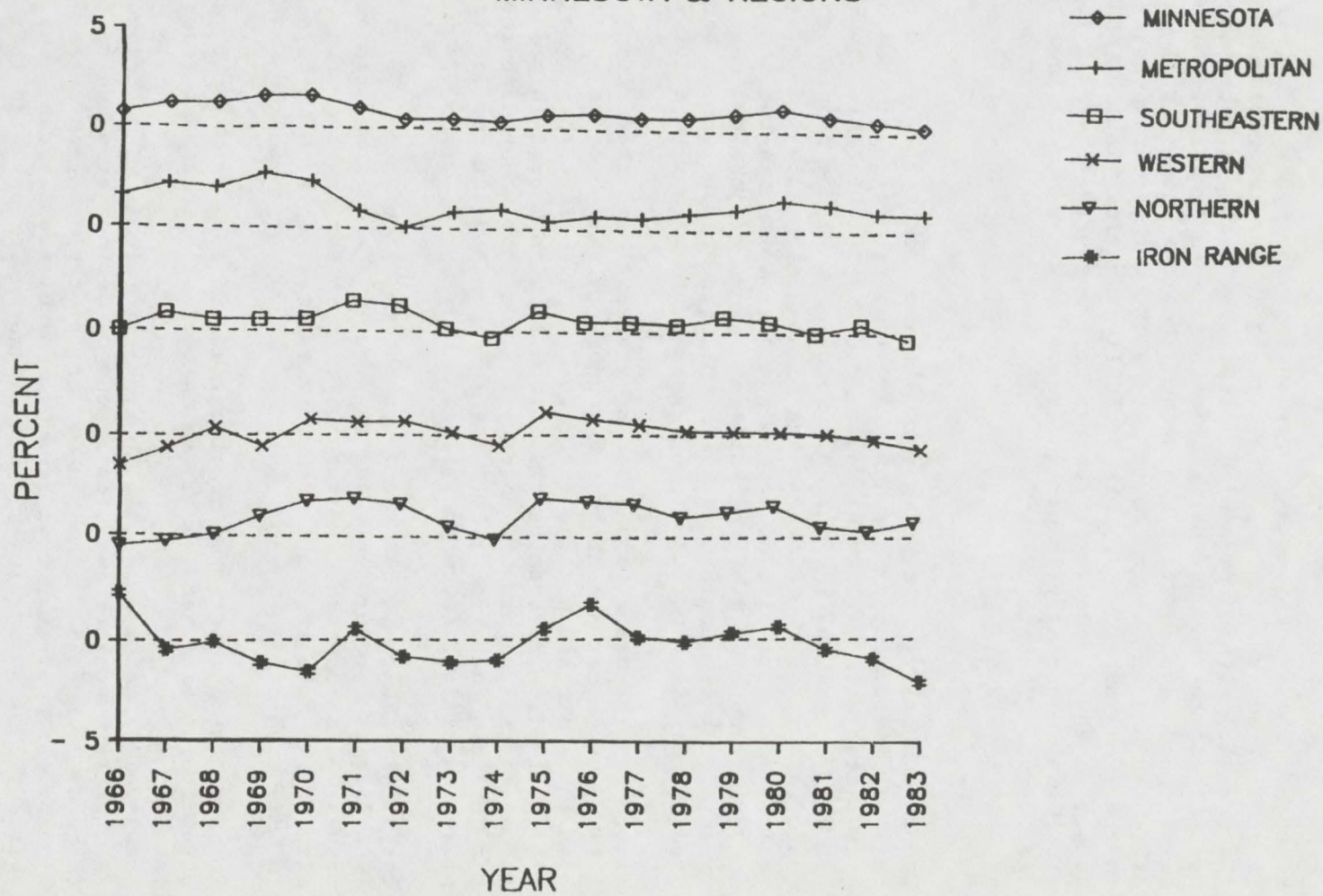


FIGURE 32

many analysts to be a key factor linked with regional disparities in employment and population growth.

Figure 33 shows the growth in regional gross products in 1965 to 1983 in nominal and real value. The pattern is not surprising in light of the material already presented. Inflation accounts for most of nominal growth and must be removed to gain insight into changes in the actual goods and services produced. The iron range has lagged the other regions in output growth over much of this period; real output in the iron range in 1983 was virtually identical to the 1965 level. Output in the agricultural western region spurted ahead in the mid-1970s, especially in nominal terms, but has since stagnated in real terms. The steady performer is the metropolitan region whose average growth rate over 1965 to 1983 exceeded those of the other regions.

Labor productivity can be measured in two principal ways at the regional level: output per job and output per person in the population (the latter will be labeled "output per capita" in this study). Output per job has the advantage of focusing on those people who are employed but has the disadvantage of not being adjusted for the shift towards more part-time jobs. Output per capita has the advantage of not being confounded by the shifting nature of jobs but has the disadvantage of being confounded by the changing proportion of people who produced measured outputs. We present both measures in this study.

Figure 34 presents a comparison of Minnesota and the nation in 1969 to 1983. Output per job has trended upward slowly over this period in both the state and nation, although it shows signs of stagnating in 1977 to 1983. The seeming stagnation is almost certainly due in part to the increasing proportion of part-time jobs which have lower output per job than full-time jobs. The levels of output per job in the state and nation are very similar.

Output per capita in Minnesota was above that of the U.S. in 1969 to 1983 (Figure 34), probably due in part to the higher ratio of jobs to population in the state (Figure 26). Both series have trended upward, although in this case the productivity measures seem to have stagnated in 1979 to 1983.

The periods of stagnation in the growth of both output per job and output per capita tend to be during periods of national recession.

The level of labor productivity by region within Minnesota shows the same pattern whether measured by output per job or output per capita (Figures 35 and 36). The ranking of the regions from lowest to highest is: northern, iron range, western, southeastern, and metropolitan. Not surprisingly, this ranking coincides with that of per capita income, with the exception of the iron range which ranks higher on per capita income than labor productivity.

MINNESOTA REGIONAL GROSS PRODUCTS

REAL AND NOMINAL

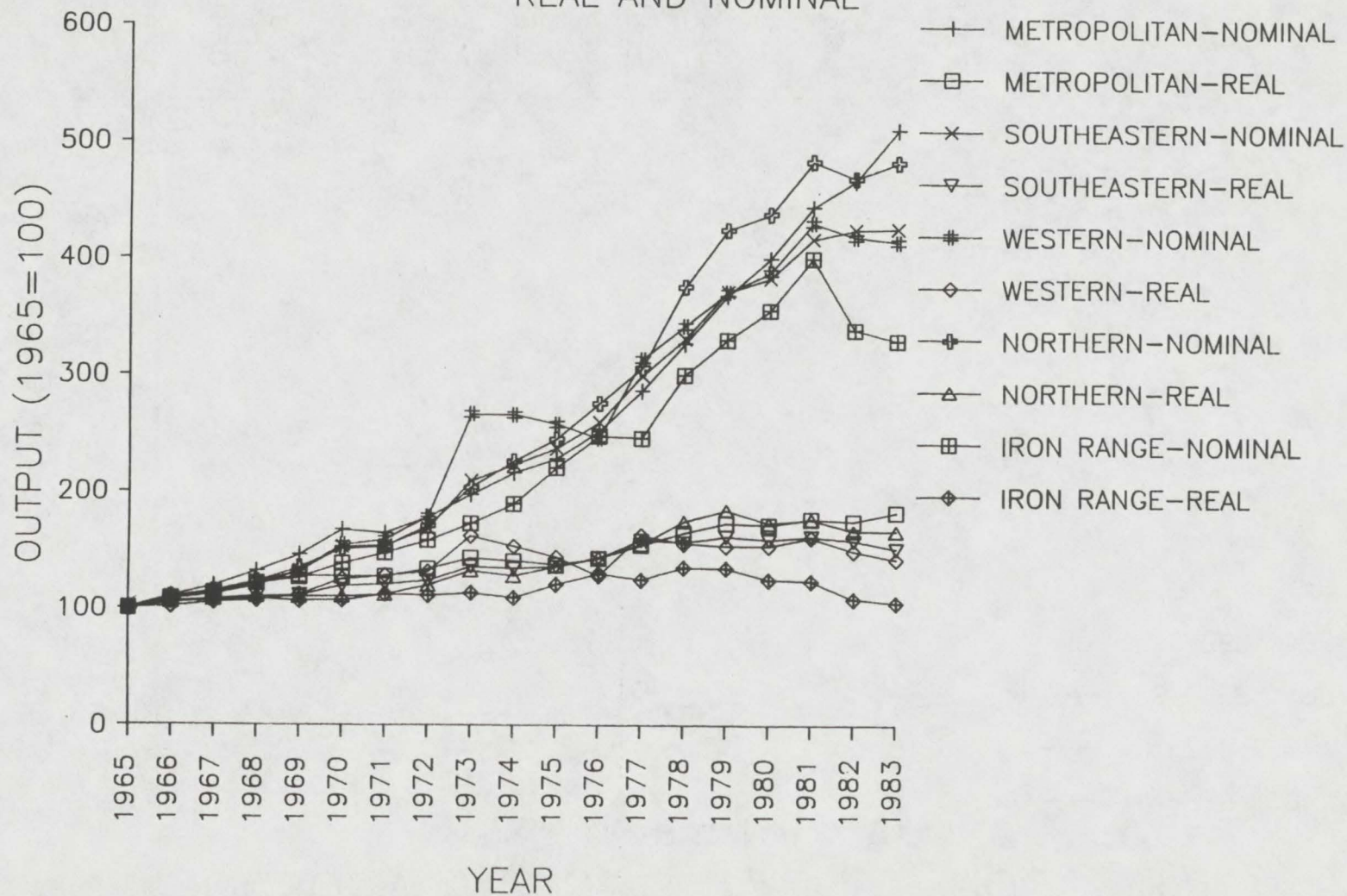


FIGURE 33

MINNESOTA AND U. S. LABOR PRODUCTIVITY

REAL OUTPUT (1972 \$)

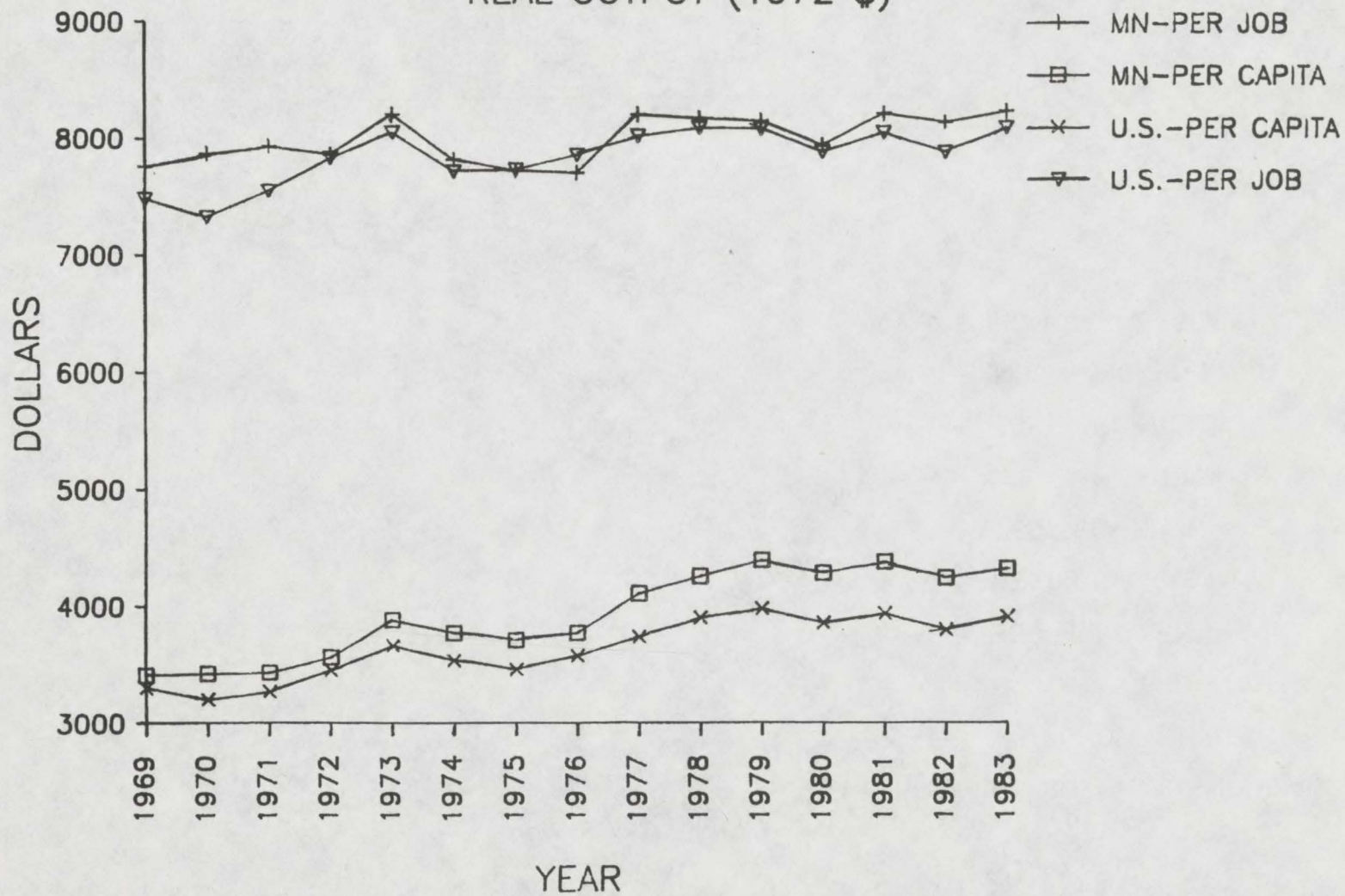


FIGURE 34

The conclusions drawn from a comparison of regional trends in labor productivity are more dependent on what measure of productivity is used. On the basis of real output per job, the northern and metropolitan regions have had the largest increases (Figure 35). The iron range, southeastern, and western regions have about the same level of real output per job in 1983 as in 1967. The volatility of the productivity series for the southeastern and western regions cause the choice of comparison years to be critical; 1967 and 1983 seem reasonable.

Using real output per capita (Figure 36), four regions--metropolitan, southeastern, western, and northern--show substantial increases in labor productivity from 1967 to 1983. Only the iron range shows little difference between 1967 and 1983, although intervening years did have higher labor productivity.

Conclusion

This study of the regions of Minnesota has found great diversity. We now address the question of the origins of this diversity and its likely persistence. Our answers are tentative in view of the need for a more thorough statistical study, which is now beginning.

The dominant framework used by economists, usually labeled "neoclassical economics", hypothesizes that labor and capital move between regions in directions which make incomes and the return to capital more equal. A high income area with expensive labor will attract people and repel capital, thus lowering wages and incomes because of a greater supply of labor and less capital per worker. A low income area with inexpensive labor will attract capital but not people, thus raising wages and incomes because of more capital per worker and a lower supply of labor. The amount of capital per worker is reflected in measures of labor productivity. Does this framework provide insights to regions in Minnesota?

Metropolitan Minnesota is a prosperous region with a high per capita income and a high ratio of jobs to population. The neoclassical framework predicts higher in-migration of people relative to the other regions, which was observed. The framework also predicts difficulty in attracting capital relative to other regions and, thus, a relative stagnation of growth in labor productivity; this was not observed. This result calls into question the framework's treatment of capital allocation.

Northern Minnesota is a relatively poor region with a low per capita income and a low ratio of jobs to population. The neoclassical framework predicts greater in-migration of capital and, thus, greater improvements in labor productivity relative to the other regions,

REGIONAL LABOR PRODUCTIVITY

REAL OUTPUT PER JOB

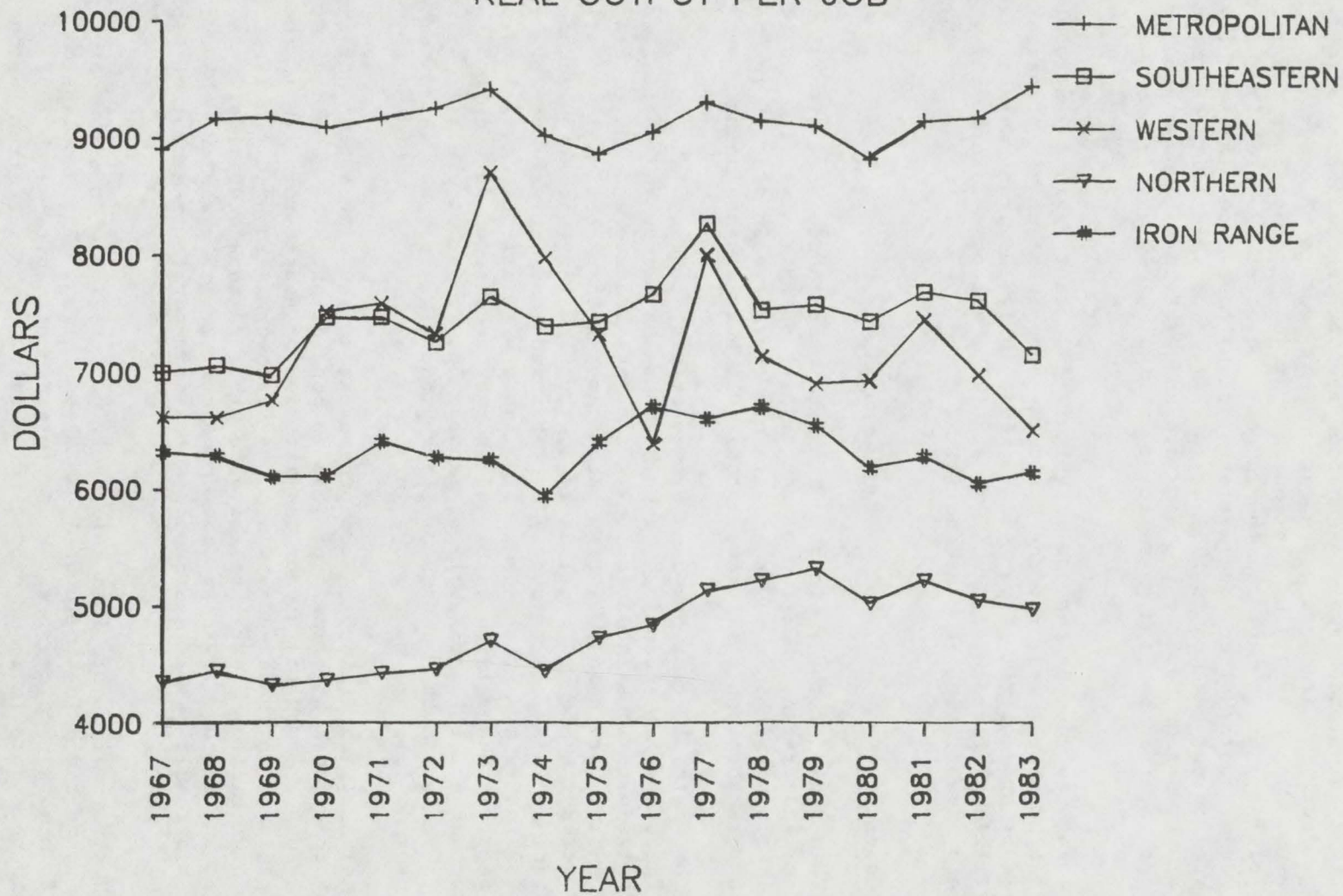


FIGURE 35

REGIONAL LABOR PRODUCTIVITY

REAL OUTPUT PER CAPITA

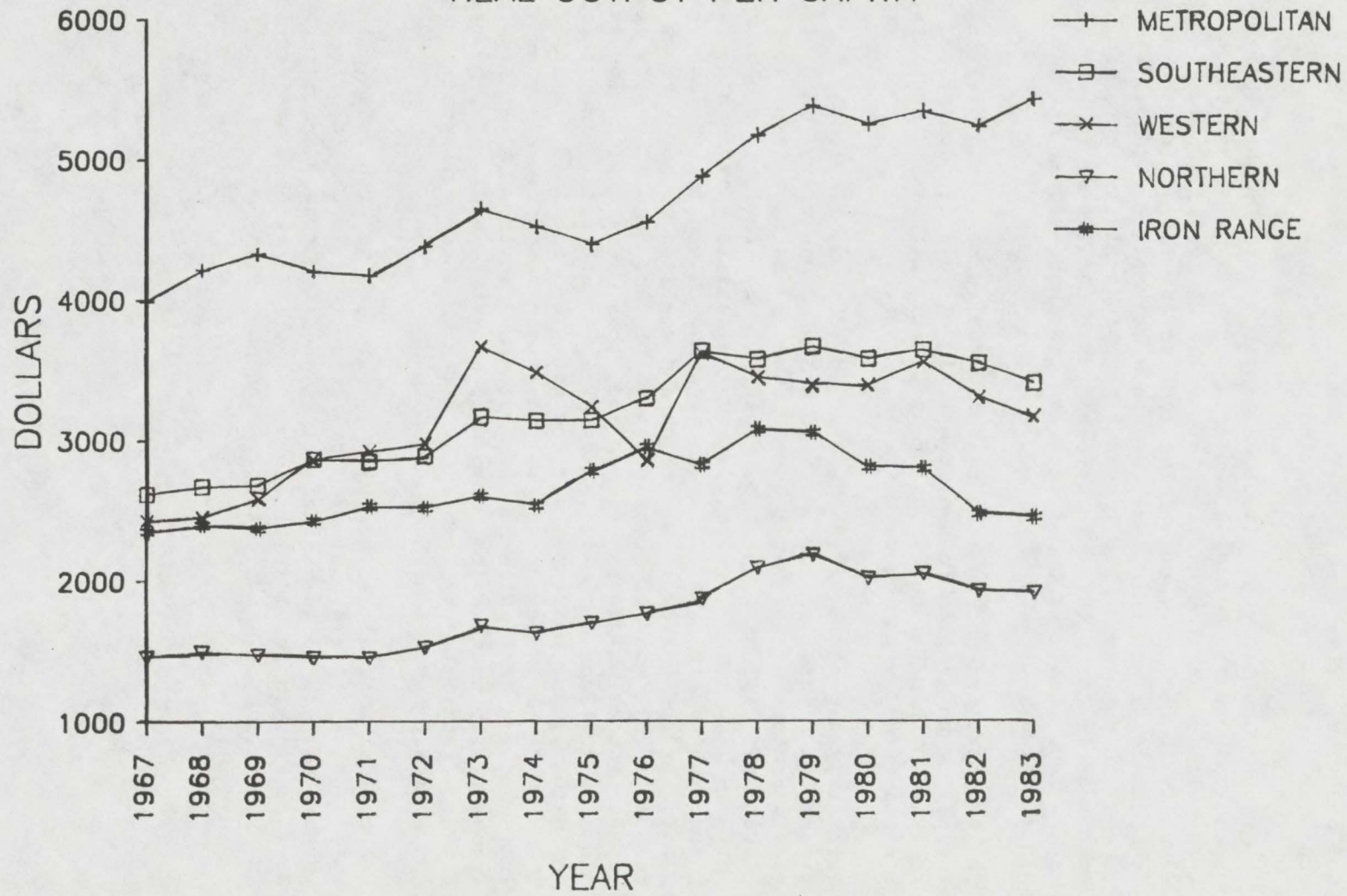


FIGURE 36

which was observed. The framework also predicts relatively little in-migration and, thus, relatively slow population growth, which was not observed. This result casts doubts on the framework's explanations of people's migration.

The iron range has generally been characterized by per capita incomes second only to the metropolitan area and by a mid-range ratio of jobs to population, although events since the early 1980s have caused both measures to decline from earlier typical levels. Using the neoclassical framework in this case, we would expect a mid-range result with respect to population growth and labor productivity increase. However, population grew at the slowest rate (declining in many years) of any region. Labor productivity also grew more slowly than in any other region.

The southeastern and western regions tend to be in the mid-range with respect to per capita income, the ratio of jobs to population, population growth rate, and labor productivity increase. These results are consistent with the neoclassical framework.

This study demonstrates the need to look beyond simplistic applications of neoclassical economics as explanations of regional disparities. Factors other than job and income prospects affect the migration decisions of people, especially retirees, as demonstrated by northern Minnesota. Capital does not necessarily avoid high wage and income regions in favor of lower wage and income regions, as demonstrated by the metropolitan region and the iron range. Perhaps one reason is that much of today's capital is embedded in people in the form of education and experience and, thus, some capital inevitably flows in the same direction as people. In addition, some regions are dominated by one industry, and the long-term economic trends of that industry with respect to capital investments and wages may heavily influence regional patterns of growth and decline. Alternative frameworks to neoclassical economics are available, and some predict growing disparities between regions rather than equilibrating tendencies (Richardson).

A graphical analysis of regional disparities in Minnesota in 1967 to 1983 provides little basis for believing that forces in private markets for labor and capital will gradually erode disparities. Further study using more rigorous statistical methods will explore whether this conclusion persists--and why or why not.

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