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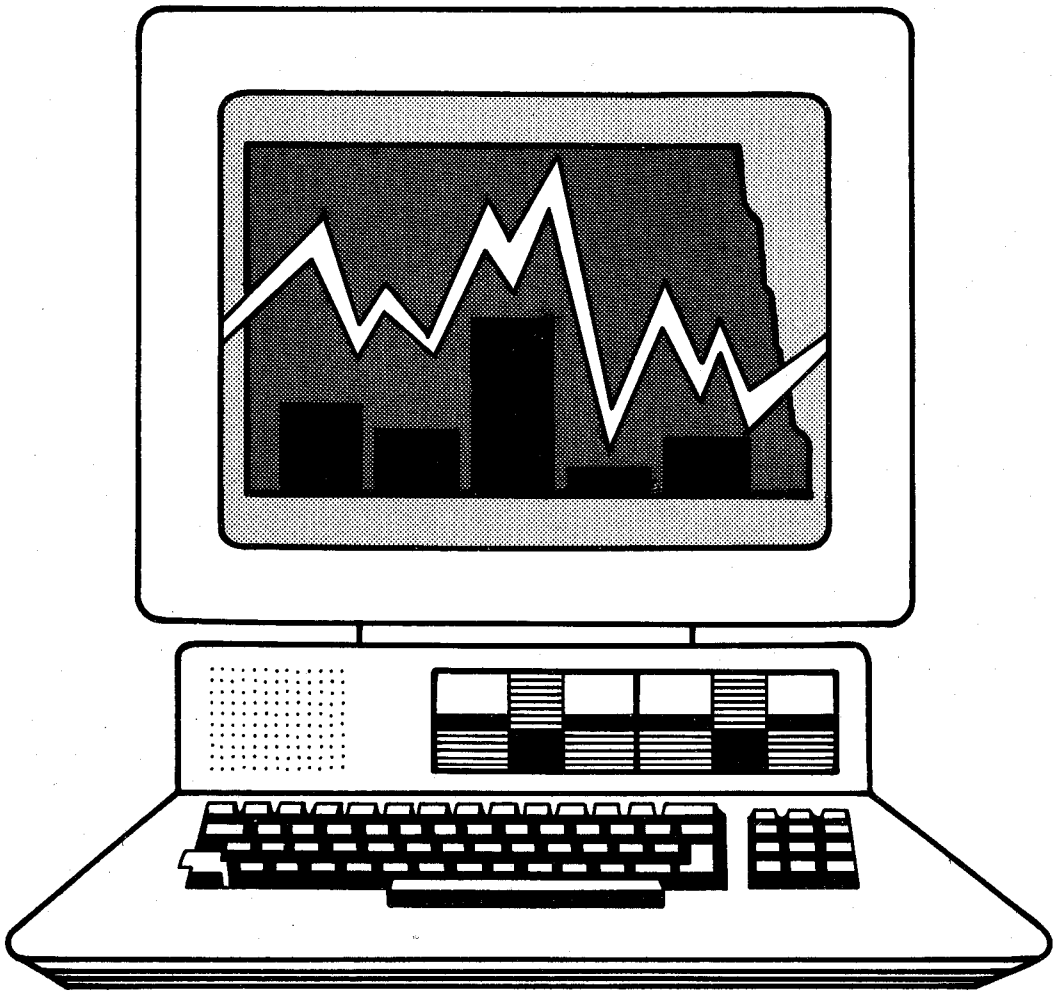

Composition of North Dakota's Economic Base: A Regional Analysis

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Preface

The economic base of North Dakota and its eight substate regions has changed over the past couple of decades. This report takes an in-depth look at the economic base for each of these areas over the 1958-1984 period. Each of the regions has a unique composition of basic activities that have been responsible for its growth. Natural resource related activities, either in the form of agricultural or energy production, have been the largest source of real economic growth within the state. The purpose of this report is to identify the components of the economic base at substate levels and to show the changes in relative composition for these activities. Price and production data are presented to support and explain the changes that have occurred.

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Highlights

Input-output techniques were used to analyze the composition of the economic base for North Dakota and its eight state regions for the period 1958 to 1984. Input-output analysis is a technique for tabulating and describing the linkages or interdependencies among the various sectors within an economy. Economic base activities are those producing a product that is paid for by nonresidents (i.e., products exported from the state). Included in these economic base activities are agriculture (livestock and crop production plus government payments for agricultural programs); mining; manufacturing; tourist expenditures for retail purchases and business and personal services; and federal government outlays for construction and to individuals. The economic base for North Dakota and each of the eight state regions was analyzed to determine the composition and changes that have occurred during the 1958 to 1984 period.

Sales for final demand were estimated for each basic sector and converted to constant dollar (1980 base) values. This adjustment results in measures that are intended to indicate the real value of sales for final demand (by removing economy-wide price effects). Sales for final demand measured in constant dollars are intended to show changes in physical volume rather than price changes. Because indexing the final demand vectors to a base year removed inflation and allowed for a comparison of real economic growth over time, it was used for this analysis.

Different activities dominated the economic bases of State Regions 1, 2, and 3. State Region 1 had the smallest total economic base ($159.9 million) of the state regions in 1958, but had the largest percent increase (368.6 percent) of total basic economic activity during the 27-year span of the analysis. Petroleum production increased more than twofold during the period and became the dominant force in the region's economy, constituting 69.1 percent of the total economic base in 1984. Economic base activity for State Region 2 grew by 156.4 percent from $330.7 to $848.0 million during the 1958 to 1984 span as the result of agriculture and oil production increases. The household sector made up the largest individual share of State Region 2's economic base in 1984 (39.8 percent) due in large part to the Air Force base located within the region. Crop production dominated the basic economic activity in State Region 3, accounting for 49.8 percent of the total in 1984. The household sector experienced the most real growth in this region, expanding its share of the total from 15.3 to 35.5 percent during the 27-year period.

State Regions 4 and 5 had very similar economic bases; their 1984 totals were $802.4 and $881.3 million, respectively. Crop production, the most important source of economic base activity, contributed 44.2 percent to State Region 4's and 46.7 percent to State Region 5's totals in 1984. Expenditures to operate an Air Force base located near Grand Forks (State Region 4) have resulted in the household sector's accounting for 38.4 percent of the 1984 economic base in that region. The large number of manufacturing and processing firms located in State Region 5 have caused that sector to constitute 14.9 percent of that region's economic base in 1984. State Region

6 was the most agriculturally oriented of the eight regions with livestock and crops contributing 16.3 and 52.0 percent, respectively, to the region's total in 1984. This region had the smallest percentage increase (78.8) in total economic activity of any of the state's regions during the 1958-1984 period.

The energy industry dominated the economies of State Regions 7 and 8. State Region 7 was the region with the largest total economic base ($1,289.7 million) of any region in 1984. Located within this region were extensive coal resources and the associated thermal-electric generating facilities, and a petroleum refinery, in addition to the basic economic activities that existed in most other regions. State Region 8 was another region whose economic base was dominated by oil production; this sector accounted for 60.5 percent of the region's total in 1984. The percentage increase in total basic economic activity for this region was 294.7 percent from 1958 to 1984, second only in percentage increase to State Region 1, the other major oil-producing area in the state.

Summation of the regional sales for final demand essentially yields the economic base for North Dakota. At the state level the crop sector's share of the economic base has declined slightly, but in 1984 it still was the single largest source (32.7 percent) of economic base activity. The household sector finished a very close second to the crop sales as the second largest source of economic activity; its share of the state total was 29.5 percent in 1984.

COMPOSITION OF NORTH DAKOTA'S ECONOMIC BASE: A REGIONAL ANALYSIS

Randal C. Coon, F. Larry Leistritz, and Thor A. Hertsgaard*

North Dakota's economic base is comprised of those basic industries which bring income into the state. Basic economic activities in the state are primarily natural resource based involving either energy or agricultural production, although manufacturing, tourist expenditures, and federal government outlays also are included. Because North Dakota's economic base has relatively few components, it is easier to analyze than that of more populous states having a broader spectrum of basic economic activities. Thus, each of the components of the state's economic base can be determined and their changes analyzed over time. During the past 25-year period the state's economy has diversified, relying less on crop and livestock sales for economic growth (Coon, Vocke, and Leistritz 1984). Energy development and agricultural processing and manufacturing provided much of the impetus for the state's economic expansion during that period.

Input-output (I-O) analysis techniques have led to a better understanding of the components of the state's economic base and the interdependence among these components. This type of analysis permits the state's economic base to be further divided into the basic activities of substate areas. Each of these substate areas actually functions as an economy very similar to the state's economy. These substate economies each have a major trade center (or centers) and produce products which are exported from the area (either to other substate areas or out of the state) in return for income. The sum of the substate area economies actually comprises the state economy.

The changes that have occurred in the substate (i.e., state planning region) basic economic activities provide a good indication of which industries are expanding, declining, or remaining stable. Figure 1 shows the eight State Planning Regions (State Regions) used for this analysis. Changes in the composition of the economic base will be analyzed for each of the state regions. Input-output techniques facilitate translation of the economic base into such key economic measures as personal income, employment, and total business activity. Population also is affected by changes in an area's economy (i.e., as a region's economy expands, more jobs are available, which usually leads to inmigration and population growth). However, a substantial decline in a principal industry such as agriculture may result in a shift from rural employment to trade center jobs. Regional population decreased for state regions 1, 2, 3, 6, and 8 during the 1960 to 1980 period (Table 1). Examining the economic base of each state region over time provides an indication of what has happened within these area economies in terms of absolute and compositional changes.

Remaining sections of this report consist of a description of the methodology used for the analysis, an analysis of the changing composition of

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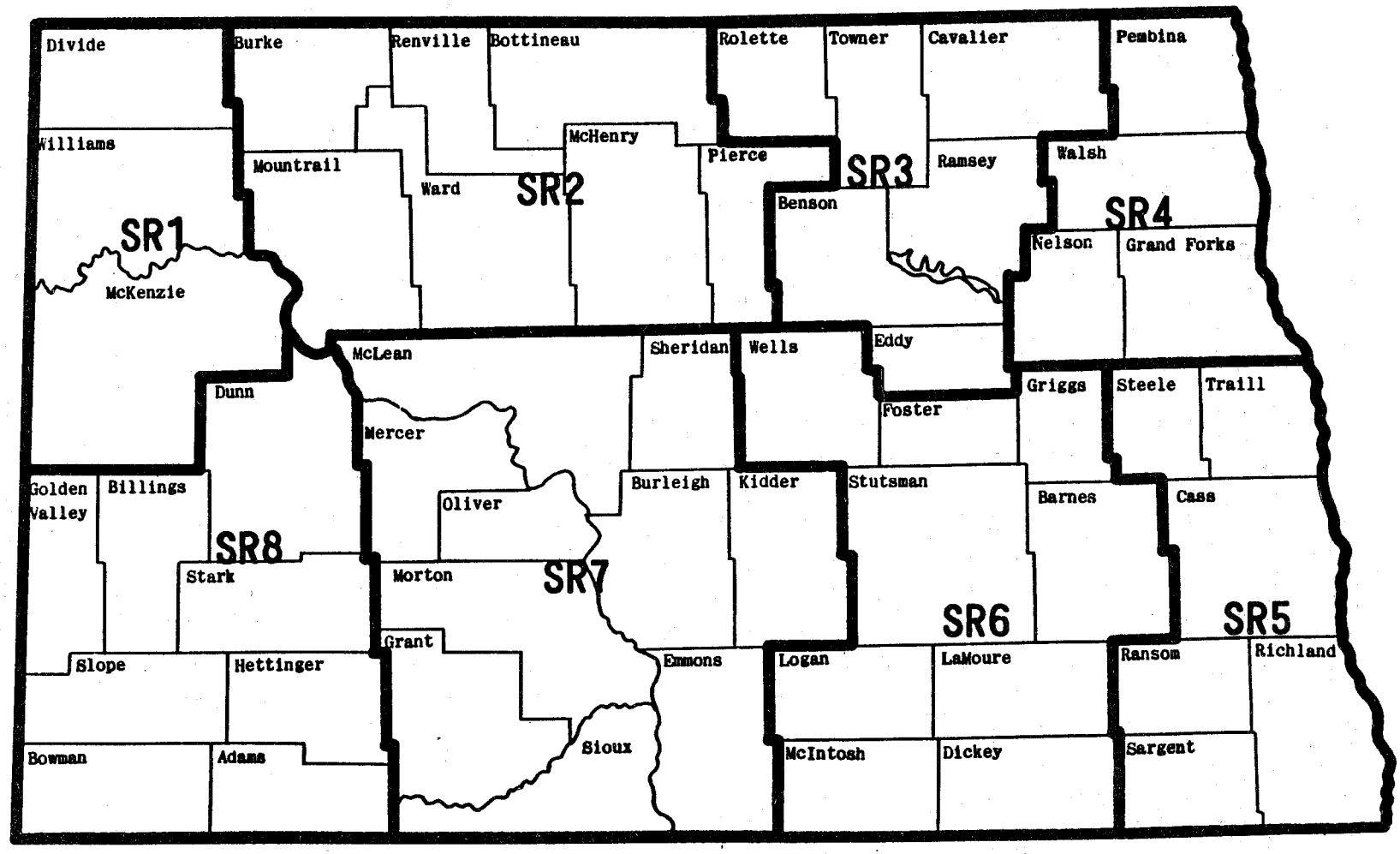

Figure 1. The Eight State Planning Regions in North Dakota

the economic base for each of the eight state regions for the 1958-1984 period, and a state overview. Many of the changes and trends that have occurred at the substate level are more easily depicted in graphical form. Thus, much of the information will be presented in graphic form in the text of this report and the corresponding information given in tabular form in the Appendix.

TABLE 1. NORTH DAKOTA POPULATION, BY REGION, 1960, 1970, AND 1980

Region	1960	1970	1980
1	34,913	29,992	32,863
2	97,541	100,360	96,764
3	54,143	49,670	48,411
4	86,654	93,888	97,103
5	116,007	118,101	132,294
6	90,400	78,965	75,391
7	106,561	104,207	124,693
8	46,227	42,609	45,098
State	632,446	617,792	652,717

SOURCE: Bureau of the Census 1972; Bureau of the Census 1981.

Methodology

Input-output analysis was used to analyze the annual composition of each state region's economic base. Economic base revenues, or sales for final demand, were determined and categorized to match defined industrial sectors. Sales for final demand were applied to the input-output interdependence coefficients to obtain estimates of total business activity. Although the analysis centered on the absolute amount and relative composition of the sales for final demand, the estimates of business activity provide information useful for model validation. Each final demand vector will be identified at the regional level, and salient observations concerning the composition of the economic base will be addressed.

Sector Delineation

The North Dakota I-O model groups the state's economic activities into 17 industrial classifications, or sectors. Sector delineations and corresponding Standard Industrial Classification (SIC) codes are presented in Table 2. State economic base activities (i.e., agriculture, mining, manufacturing, tourist expenditures for retail purchases and business and personal services, and federal government outlays for construction and to individuals) can be categorized by sector as follows: agriculture, livestock; agriculture, crops; construction; agricultural processing and miscellaneous manufacturing; retail trade; business and personal services; households; coal mining; thermal-electric generation; petroleum exploration and extraction; and petroleum refining. The business activity of the state's natural resource-based industries (agriculture and energy) essentially has been composed of basic economic activity only while the construction, retail trade, and business and personal services sectors have only a small basic component. Remaining sectors of the economy, in actuality, exist to serve and support these basic sectors.

State region sector delineation was the same as that used for North Dakota. Although state-level sales for final demand indicate economic activity in all the basic sectors, not all state regions had sales for final demand in the energy sectors. As would be expected, only those state regions possessing energy natural resources had economic activity in those sectors.

Input-Output Model

The North Dakota I-O model was developed in the late 1960s (Sand 1966; Bartch 1967) and expanded in the late 1970s (Hertsgaard et al. 1977) to include energy-related sectors as they became an increasingly important part of the state's economic base. Input-output analysis is a technique for describing the linkages or interdependencies among the various sectors of an economy. Computation of the coefficients of the North Dakota input-output model followed a three-step approach. First, a transactions table was constructed showing the purchases and sales by each sector of the economy to each of the other industrial sectors. Next, the technical input-output coefficients table (the transactions table expressed as decimal fractions of the column totals in the transactions table) was computed. Finally, the input-output interdependence coefficients (or multipliers) table was derived from the technical input-output coefficients table. For a complete discussion of the input-output theory and methodology involved in development of the input-output interdependence coefficients, as well as a review of the history of the North Dakota I-O model, see Coon et al. (1985).

Input-output interdependence coefficients indicate how a dollar injected into a respective sector is spent and respent within the local economy. The multiplier effect results when each producing sector buys some fraction of its inputs from other sectors of the economy and these sectors, in turn, use some fraction of that income to buy some of their inputs from still other sectors, and so on. In other words, the multiplier effect is due to the spending and respending within the economy of the part of each dollar that enters that economy through payment for products that are exported. Because of the spending and respending of an initial increase in an area's basic income results in a total increase in the level of economic activity which is

TABLE 2. ECONOMIC SECTORS AND ASSOCIATED STANDARD INDUSTRIAL CLASSIFICATION CODES FOR THE NORTH DAKOTA INPUT-OUTPUT MODEL

Economic Sector	SIC Code
1. Agriculture, Livestock	Major Group 02 - Agricultural Production, Livestock
2. Agriculture, Crops	Major Group 01 - Agricultural Production, Crops
3. Nonmetallic Mining	Major Group 14 - Mining and Quarrying of Nonmetallic Minerals, Except Fuels
4. Contract Construction	Major Groups 15, 16, 17 - Contract Construction
5. Transportation	Major Groups 40, 41, 42, 43, 44, 45, 46, and 47 - Transportation
6. Communications and Utilities	Major Group 48 - Communication, and Major Group 49 - Electric, Gas, and Sanitary Services, Except Industry No. 491
7. Agricultural Processing and Miscellaneous Manufacturing	Major Group 50 and 51 - Wholesale Trade, Major Group 20 - Food and Kindred Products Manufacturing
8. Retail Trade	Major Groups 52, 53, 54, 55, 56, 57, 58, and 59 - Retail Trade
9. Finance, Insurance, and Real Estate	Major Groups 60, 61, 62, 63, 64, 65, 66, and 67 - Finance, Insurance, and Real Estate
10. Business and Personal Services	Major Groups 70, 72, 73, 75, 76, 78, and 79 - Business and Personal Services
11. Professional and Social Services	Major Groups 80, 81, 82, 83, 84, 86, 88, and 89 - Professional and Social Services
12. Households	Not Applicable
13. Government	Major Groups 91, 92, 93, 94, 95, 96, and 97 - Government
14. Coal Mining	Major Group 12 - Bituminous Coal and Lignite Mining
15. Thermal-Electric Generation	Major Group 491 - Electric Companies and Systems
16. Petroleum and Natural Gas Exploration and Extraction	Major Group 13 - Crude Petroleum and Natural Gas
17. Petroleum Refining	Major Group 29 - Petroleum Refining and Related Industries

SOURCE: Office of Management and Budget 1972.

greater than (some multiple of) the initial increment, the input-output interdependence coefficients are commonly called *multipliers*. Application of economic base revenues to the multipliers results in a measure of total economic activity.

State and regional interdependence coefficients were identical for early versions of the I-O model. However, expansion of the model to include the energy sectors (Hertsgaard et al. 1977) resulted in an unusual occurrence; the petroleum refining sector had a large volume of purchases outside of the region where the major refinery was located to other regions within North Dakota. Separate technical coefficients tables were developed for the state and state regions resulting in slightly different multipliers for each. Input-output interdependence coefficients for the state and state regions are presented in Appendix A, Tables 1 and 2, respectively.

Sales for Final Demand

The input-output analysis used for the North Dakota model assumes that economic activity in an area is dependent upon the basic industries that exist in the area, referred to as its economic base. These sales of products exported from the area are commonly called sales for final demand. The economic base activities of North Dakota and its regions include agriculture (livestock and crop production plus government payments for agricultural programs), mining, manufacturing, tourist expenditures for retail purchases and for business services, and federal government outlays for construction and to individuals. These economic base activities are classified into economic sectors in accordance with the delineations as defined in Table 2. Data used in estimating the sales for final demand at the state and regional level were obtained from a wide variety of secondary sources. For a complete discussion of data sources and methodology used to estimate the final demand vectors, see Hertsgaard et al. (1977) and Coon, Anderson, and Leistritz (1986).

Final demand vectors were estimated for each year for the 1958 to 1984 period in terms of prices that existed in each respective year (i.e., current year dollars). However, for the purpose of this analysis, it was desirable to adjust the values for each year by an index of year-to-year price changes to remove the effects of economywide price changes. This was accomplished by inflating/deflating current year sales for final demand by the appropriate Gross National Product Implicit Price Deflator (Table 3).

Adjustments by such an index result in measures that are intended to indicate changes in physical volume (rather than price effects). These measures represent purchasing power of the dollar as reflected by the prices that existed in a given year and are frequently referred to as constant dollar measures. Indexing sales for final demand to a base year removes inflation and allows for a comparison of the real purchasing power of those sales over time. Throughout this analysis, growth, real growth, and growth in 1980 dollars all refer to dollar increases that occurred in a sector over time with each dollar having the same purchasing power as in 1980.

TABLE 3. GROSS NATIONAL PRODUCT IMPLICIT PRICE DEFLATORS FOR 1980 BASE YEAR

Year	GNP Implicit Price Deflators
1958	37.23
1959	38.12
1960	38.74
1961	39.10
1962	39.81
1963	40.44
1964	41.02
1965	41.95
1966	43.29
1967	44.58
1968	46.54
1969	48.95
1970	51.58
1971	54.12
1972	56.40
1973	59.61
1974	64.82
1975	70.80
1976	74.50
1977	78.87
1978	84.62
1979	91.80
1980	100.00
1981	110.23
1982	116.80
1983	121.41
1984	125.96

SOURCE: U.S. Department of Commerce 1972-1985.

Model Validation

Data were not available to check the accuracy of the estimates of the economic base. However, application of the input-output interdependence coefficients to the state and regional sales for final demand yields estimates of gross business volume for each sector of the economy. Gross business volume of the household sector is, by definition, personal income. Thus, the accuracy of the input-output model including estimates of sales for final demand has been tested by comparing personal income from the model with personal income reported by the U.S. Department of Commerce (Bureau of Economic Analysis 1965-1984). One point to remember is that Department of Commerce personal income estimates are reported in current year dollars, so final demand vectors used to make these comparisons also must be in similar terms.

Table 4 presents a summary analysis of the comparison of personal income estimates at the state and regional levels for the 1958-1984 period. (A year-by-year comparison of the personal income estimates for North Dakota and the eight state regions is given in Appendix B, Tables 1-9.) North Dakota personal income estimates from the input-output model had an average deviation from Department of Commerce estimates of 5.47 percent for the 1958-1984 period. State region personal income estimates showed more variability than those for the state during the 27-year period, but all regions except one had an absolute average difference less than 20 percent. The Thiel's coefficient for the state and each state region is close to 0.0, indicating the model is quite accurate for predictive purposes.[1]

Economic Base Composition

Composition of the economic base will be presented here for each of the eight state regions and North Dakota. Components of the economic base, measured in 1980 base dollars, were analyzed to determine the relative share each of the final demand vectors contributes to the area economy and the changes in these shares that have occurred during the 1958 to 1984 period. Also, real dollar growth of the economies of the state regions and North Dakota will be examined to show their growth over the 27-year period. Presentation of the analysis will be in graphic form in the text of this report to facilitate explanation of the results. Data from which the figures were prepared will be presented in tabular form in Appendix C. Additional tables will be presented in the text, when applicable, to further explain trends or changes in individual economic base components.

State Region 1

State Region 1 is a three-county area in northwest North Dakota (Figure 1). Williston is the major retail trade center for this area. The economic

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[1]The Theil U_1 coefficient is a summary measure, whose value is bounded by 0 and 1. A value of 0 for U_1 indicates perfect prediction, while a value of 1 corresponds to perfect inequality (i.e., between the actual and predicted values). (For further discussion on the Theil coefficient, see Leuthold [1975], and Pindyck and Rubinfeld [1981].)

TABLE 4. COMPARISON OF STATISTICAL TESTS FOR THE INPUT-OUTPUT MODEL PERSONAL INCOME ESTIMATION, NORTH DAKOTA REGIONS 1-8 AND STATE, 1958-1984

Region	Average Absolute Difference[a]	Mean Average Difference[b]	Standard Deviation[c]	Theil Coefficient[d]
1	12.64	- 5.26	15.43	0.14
2	8.91	3.86	10.90	0.08
3	20.55	19.91	11.81	0.16
4	9.77	7.45	11.15	0.08
5	18.64	-18.28	11.14	0.22
6	8.57	7.58	6.62	0.07
7	5.80	- 5.56	6.19	0.10
8	14.68	13.56	11.22	0.13
State	5.47	- 1.88	6.27	0.07

[a]Average absolute difference is the sum of the absolute values of the percent difference of I-O estimates and historic data divided by the number of observations.

[b]Mean average difference is the sum of the percent difference of the I-O estimate and historic data divided by the number of observations.

[c]Standard deviation is for the difference of the I-O estimate and historic data.

[d]Theil's coefficient is calculated using the formula:

$$U_1 = \frac{\sqrt{\frac{1}{T}\ \Sigma(Ys - Ya)^2}}{\sqrt{\frac{1}{T}\ \Sigma(Ys)^2} + \sqrt{\frac{1}{T}\ \Sigma(Ya)^2}}$$

where: T = time period
Ys = simulated value of Y
Ya = actual value of Y

base of this region is primarily natural resource based (agriculture and energy). Figure 2 shows the composition of the economic base for State Region 1 for the 1958-1984 period. For this diagram, livestock and crop production were combined into a single category (agriculture), as were the construction, agricultural processing and miscellaneous manufacturing, retail trade, and business and personal service sectors (construction, processing, trade, and services). The energy category consisted of sales for final demand from the coal mining, petroleum exploration and extraction, and petroleum refining sectors. Construction, processing, trade, and services were grouped together because each constituted such a small share of the region's economic base. Agriculture (crops and livestock) and energy (coal mining, petroleum exploration and extraction, and petroleum refining) were combined because of the inherent similarities of their components and to facilitate graphic representation. Sales for final demand for each sector in Region 1 are presented in Appendix C, Table 1.

Agricultural sales for final demand have constituted a relatively stable portion of Region 1's economic base over the 27-year period with the exception of those years affected by the Russian wheat sales.[2] During this time livestock sales have remained in the $25 to $45 million range, while crop sales varied from about $35 million to almost $200 million. As reflected in Figure 2, 1973 and 1974 crop sales were abnormally high. Recent downturns in the farm sector have reduced real income from agriculture in 1984 to levels similar to those of the late 1950s and early 1960s. Construction, processing, trade, and services, although constituting a rather small portion of the region's economic base, have steadily increased their share of the region's economic activity. Growth in these sectors principally has come from the agricultural processing and miscellaneous manufacturing sector.

Household sector sales for final demand experienced a rather steady real growth during the 1958 to 1978 period, increasing from over $15 million to just under $45 million. A rather significant increase in the household sector occurred in 1964 when a substantial number of Minuteman missile sites were constructed. Government reporting procedures at this time include these expenditures in the household sector, although they actually were construction contracts. This trend changed in 1979 when the household sector expanded rapidly until 1981 and then declined through 1984. The rise and fall of household sector personal income was primarily attributable to the oil industry. With rapidly escalating oil prices, oil lease bonus payments reached unprecedented levels; these revenues were included in the household sector for the 1979-1984 period because they were essentially cash payments to individuals (Coon, Anderson, and Leistritz 1986).

The largest share of the energy category was petroleum exploration and extraction sales for final demand. Growth in the energy sector has been the primary source of real economic growth in State Region 1. Value of oil production increased steadily from 1958 to 1966, showed slight declines until 1973, increased significantly in 1974 (in conjunction with the oil embargo and associated increase in oil prices) and remained at this level through 1978. The oil exploration and extraction sector then experienced tremendous growth from 1979 to 1984 as sales for final demand expanded from $161.3 million to $517.9 million. State Region 1 oil production has expanded from under 10 million barrels of production in 1958 to almost 23 million barrels in 1984 (Table 5).

As previously mentioned, sales for final demand is the value of products exported from the producing region (i.e., exported production times price). When analyzing the real growth in the petroleum exploration and

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[2]It should be mentioned that the Russian wheat sales were the first in a series of events that resulted in sharp increases in the prices for wheat and feed grains over a very short time period. Following these sales were increased farm exports, a decrease in world grain stocks, and a resulting food shortage scare. These events led to market reaction (or overreaction) with extremely rapid price increases for grains. The Russian wheat sales triggered this series of events and were not solely responsible for the rapid price increases. Throughout this report, the Russian wheat sales refer to the actual sales and the subsequent series of events that were responsible for extreme price fluctuations.

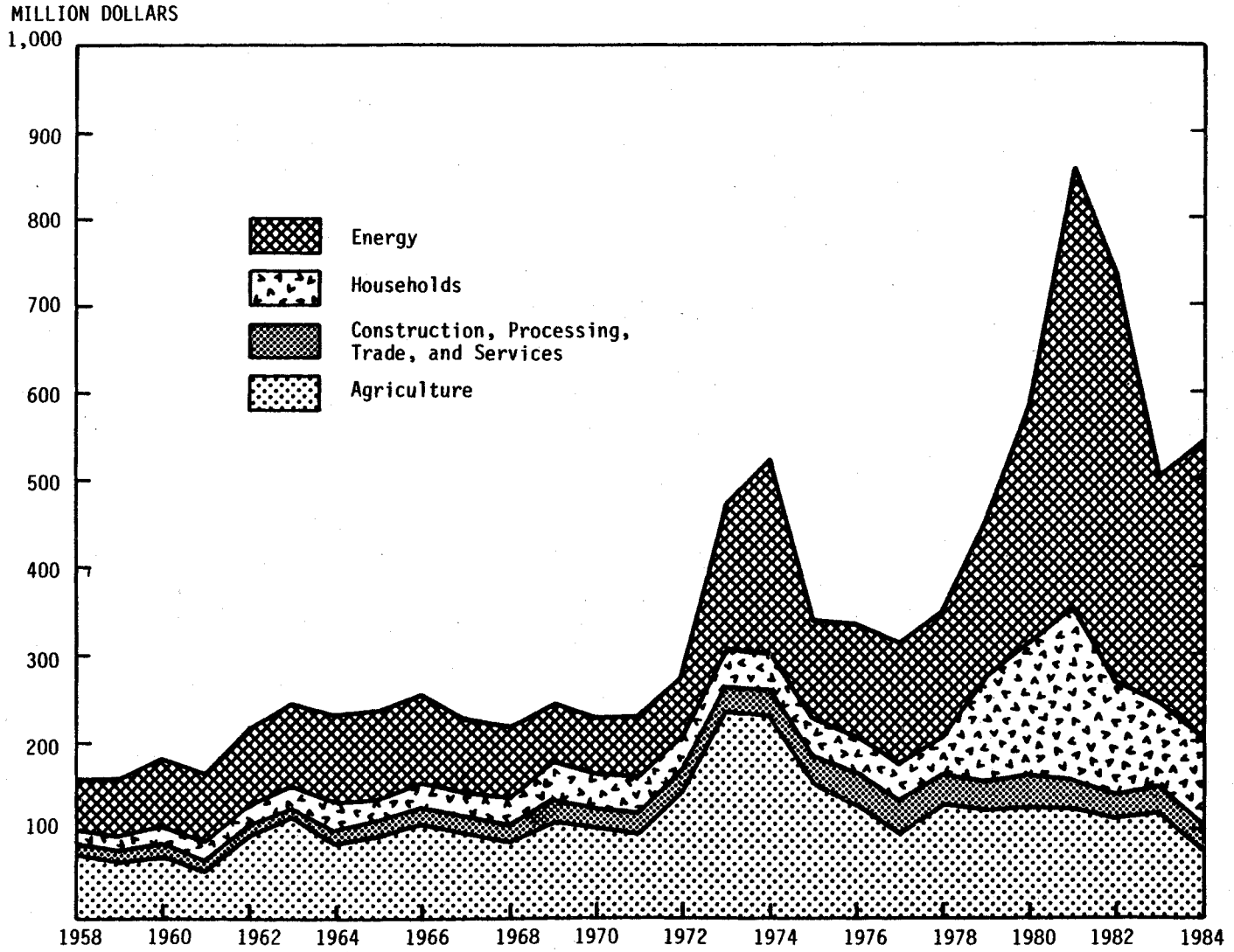


Figure 2. State Region 1 Economic Base Components in 1980 Dollars, 1958-1984

TABLE 5. OIL PRODUCTION IN STATE REGION 1, BY COUNTY, 1958-1984

Year	Divide	McKenzie	Williams	Total
		barrels		
1958	131,155	4,192,276	5,462,596	9,786,027
1959	287,407	5,022,179	5,609,147	10,918,733
1960	459,115	6,084,982	6,209,749	12,753,846
1961	444,118	6,055,588	6,121,448	12,621,154
1962	357,529	6,504,503	6,860,926	13,722,958
1963	129,157	6,692,702	7,097,412	13,919,271
1964	318,088	7,061,722	7,148,941	14,528,751
1965	293,482	7,537,692	6,642,290	14,473,464
1966	351,432	7,490,374	7,063,425	14,905,231
1967	327,956	6,297,157	6,214,610	12,893,723
1968	293,440	5,928,739	6,304,403	12,526,582
1969	271,958	4,658,041	5,927,440	10,857,439
1970	290,493	4,035,796	5,636,826	9,963,115
1971	255,643	4,287,350	5,082,110	9,625,103
1972	208,363	3,980,787	4,754,593	8,943,743
1973	187,796	4,056,917	4,487,526	8,732,239
1974	169,284	4,441,058	4,394,387	9,004,729
1975	234,182	4,257,177	4,516,452	9,007,811
1976	259,813	4,659,329	4,721,822	9,640,964
1977	229,723	5,466,176	4,892,176	10,588,075
1978	194,563	6,668,692	4,469,036	11,332,291
1979	221,023	7,537,169	4,579,775	12,337,967
1980	271,999	8,988,573	4,688,054	13,948,626
1981	433,490	9,632,751	4,656,316	14,722,557
1982	512,111	10,593,887	4,822,792	15,928,790
1983	764,732	13,388,385	5,271,663	19,424,780
1984	1,018,061	16,130,713	5,738,771	22,887,545

SOURCE: North Dakota Industrial Commission 1958-1984.

extraction sector, not only must the increase in oil production be examined but also the price. Estimated price per barrel in 1980 dollars for North Dakota crude petroleum is presented in Table 6. (Corresponding current year dollar prices are given in Appendix D, Table 2.) Largest price increases occurred in the 1973-1974 and 1980-1981 periods; during each span, the price nearly doubled in real terms within approximately a one-year period. These rapid price increases stimulated oil exploration, which is reflected in State Region 1's oil production, especially since 1981. The number of oil rigs drilling in North Dakota peaked in 1981 (Table 7), the same year as the real price of oil. The number of rigs drilling in the state, which followed a trend very similar to oil price, provides a good indication of the extent to which oil resources were being developed as prices were rising.

Real growth in the economic base of State Region 1 was almost exclusively the result of the oil industry and the associated lease bonus payments. Remaining components of the region's economic activity, although having a rather small portion of the total, either grew slightly or declined during the 27-year period. Figure 2 provides a good indication of the relative importance of the oil industry to the region's economy, particularly given the decline of farm crop and livestock sales since the mid-1970s.

Substantial real economic growth in State Region 1 has occurred between 1958 and 1984. Figure 3 portrays absolute growth in the economic base for the region from a 1958-1962 average to 1984 and also shows the composition of the total economic activity by sector. Total sales for final demand increased from a 1958-1962 average of $176.2 million to $749.3 million in 1984. This represents a more than fourfold expansion during the period. However, during this time all sectors' shares of the total economic base declined, with the exception of petroleum exploration and extraction, which increased its share from 35.3 to 69.1 percent, and households, which had an expansion from 10.7 to 13.7 percent. Real growth in State Region 1 during the period has been significant, despite the increasing dependence on a single sector to enlarge the economic base. What caused this situation, in effect, was that most sectors remained relatively stable (i.e., sales for final demand remained at a relatively constant level when measured in terms of 1980 dollar values) while basic income of households doubled and that of the oil industry increased more than tenfold. It should be noted, again, that the analysis measures the sectors' sales for final demand in terms of 1980 base dollars, which indicates changes occurring after inflation has been removed.

State Region 2

State Region 2 is located in the northwestern to north central part of the state (Figure 1) and is composed of seven counties. The major retail trade center for this region is Minot, the state's fourth largest city. Agriculture and household sectors dominate the economic base of this region. Components of State Region 2's economic base are presented for 1958 to 1984 in Figure 4. (Sales for final demand for this period for each sector are presented in Appendix C, Table 2.)

Agriculture (livestock and crops) has experienced real growth during the 1958 to 1984 period; however, this growth has principally occurred in the crops sector. Because wheat is the primary cash grain in North Dakota (and

TABLE 6. ESTIMATED PRICES FOR NORTH DAKOTA CRUDE PETROLEUM, REAL (1980=BASE) DOLLARS, 1958-1984

Year	Price
	- -$/barrel- -
1958	4.83
1959	4.98
1960	5.16
1961	5.37
1962	5.53
1963	5.81
1964	6.09
1965	6.20
1966	6.01
1967	5.83
1968	5.74
1969	5.31
1970	5.62
1971	6.01
1972	6.21
1973	6.37
1974	12.34
1975	11.30
1976	12.08
1977	11.73
1978	11.34
1979	13.07
1980	18.00
1981	31.75
1982	27.40
1983	24.30
1984	22.63

1958-1962 Average = $176.2 Million

1984 = $749.3 Million

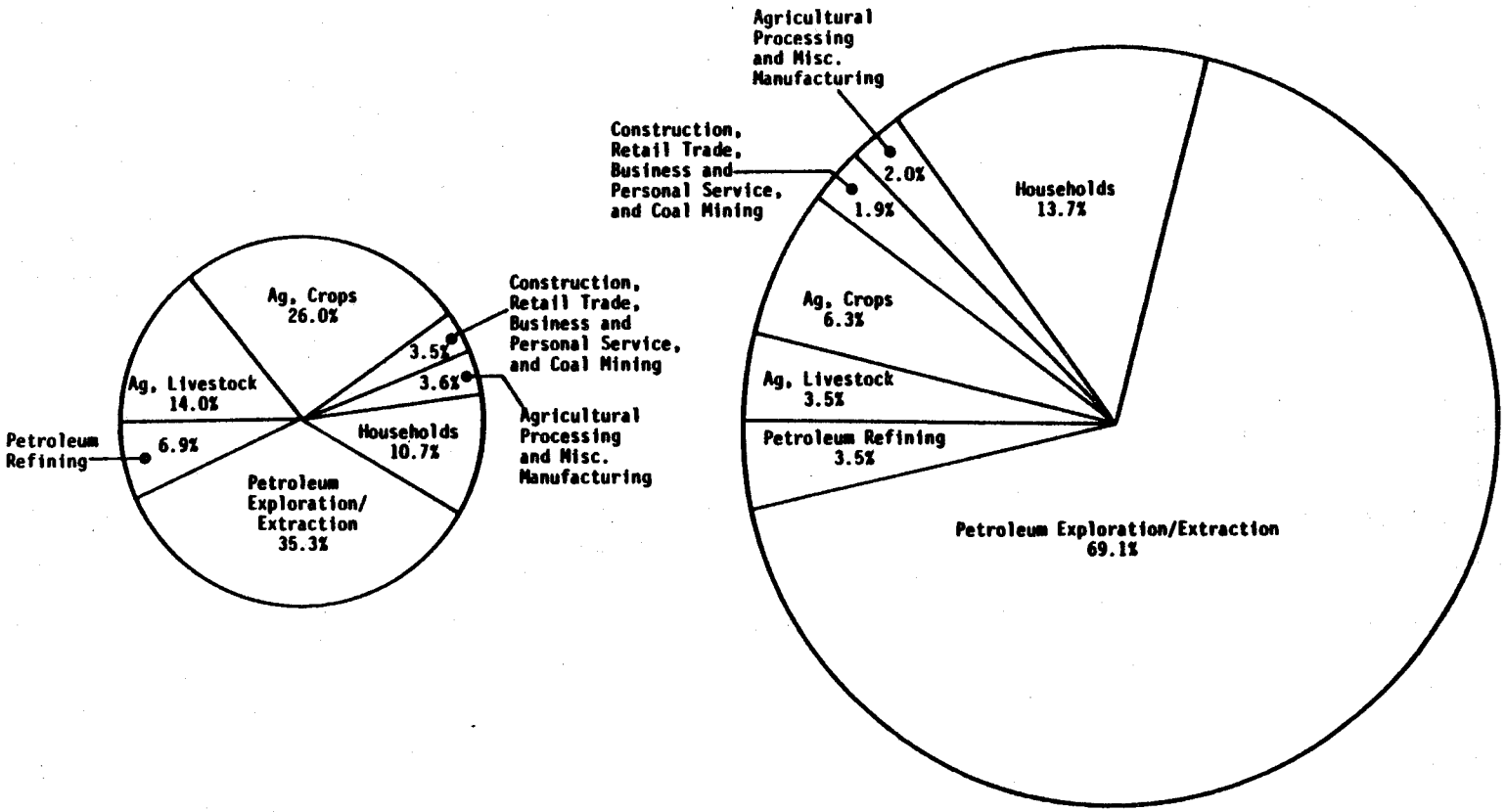


Figure 3. Real Growth in State Region 1 Economic Base, 1958-1962 Average to 1984

TABLE 7. NUMBER OF OIL RIGS DRILLING IN NORTH DAKOTA, BY MONTH, 1978-1984

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
1978	34	34	40	40	42	44	50	55	55	50	52	49
1979	48	52	55	55	61	65	80	87	74	75	75	84
1980	80	80	83	88	85	90	90	90	96	98	100	105
1981	115	125	125	125	125	138	135	145	145	156	122	120
1982	122	114	95	65	64	63	63	53	60	56	51	46
1983	42	30	17	24	35	53	41	41	39	57	70	72
1984	59	42	45	45	53	58	62	57	41	52	49	38

SOURCE: North Dakota Industrial Commission, 1984.

Region 2), wheat production will be used to illustrate growth in the crops sector. State Region 2 production of spring wheat has remained in a similar range for the 1958 to 1984 period; however, durum wheat production has increased manyfold during this time (Table 8). This increased production of durum has been responsible, in large part, for the increased sales for final demand by the crop sector over time. Figure 4 shows the dramatic effect of the rise in crop prices following the Russian wheat sales during the early 1970s, although State Region 2 agriculture sales have shown some real growth during the postsale period. Expressing commodity prices received by farmers in terms of constant dollars gives an indication of the necessity of production increases in order to have real growth. Table 9 presents prices for selected farm commodities in 1980 base dollars for the 1958 to 1984 period. (The corresponding table showing commodity prices in current year dollars is presented in Appendix D, Table 1.) Crop prices (expressed in real terms) have declined rather steadily since the late 1950s with the exception of the 1973 to 1975 period. These real price declines emphasize the production increases that have occurred in the region in order to have real growth in the agriculture sector.

The household sector also is an important component of State Region 2's economic base. This sector has comprised a significant portion of the region's economic base over the 27-year period and has experienced considerable real growth during that time. The principal reason for the importance of this sector is a single government installation, the United States Air Force Base located near Minot. In recent years, the injection of oil lease bonus payments into the household sector has contributed to its growth and importance.

Petroleum exploration and extraction also contributes a significant amount of revenue to State Region 2's economic base. Total production of oil in State Region 2 (Table 10) was considerably less than that of State Region 1 for each year during the 1958 to 1984 period. In addition, petroleum exploration and extraction constituted a smaller share of the more diverse State Region 2 economy; as a result, real growth in that sector did not dominate the area's economic growth as it did in State Region 1. Agriculture and household sectors were the major sources of real growth in State Region 2 during the 27-year period.

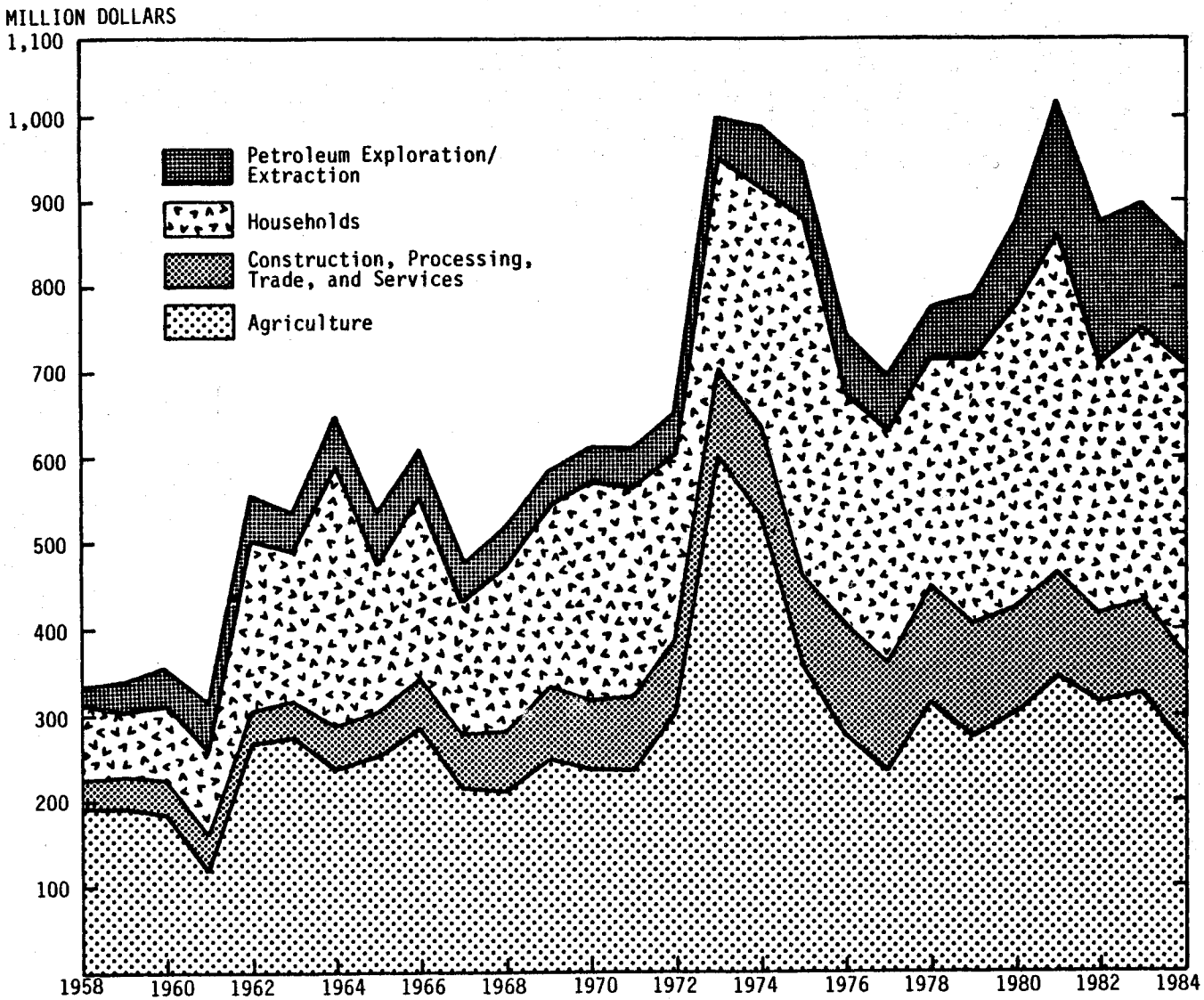


Figure 4. State Region 2 Economic Base Components in 1980 Dollars, 1958-1984

TABLE 8. PRODUCTION OF SPRING WHEAT AND DURUM IN STATE REGION 2, 1958-1984

Year	Spring Wheat	Durum
	bushels	
1958	17,620,000	2,234,000
1959	14,122,500	2,954,000
1960	16,221,000	5,840,500
1961	4,491,000	2,470,500
1962	16,502,000	15,357,500
1963	13,866,500	11,598,000
1964	15,997,000	14,212,500
1965	19,788,000	15,018,500
1966	15,947,000	15,311,000
1967	13,561,500	13,391,000
1968	15,303,500	20,108,000
1969	16,179,000	25,702,000
1970	16,752,800	12,615,700
1971	28,619,500	23,659,300
1972	19,455,500	19,897,600
1973	23,721,500	26,827,000
1974	15,214,500	21,605,800
1975	14,725,900	26,499,900
1976	22,168,400	25,054,500
1977	19,549,500	17,581,500
1978	19,890,500	32,481,000
1979	14,366,000	20,707,000
1980	11,912,000	20,386,000
1981	20,965,000	34,867,000
1982	24,765,000	30,836,000
1983	15,477,000	18,365,000
1984*	15,931,000	22,175,000

*Preliminary

SOURCE: North Dakota Crop and Livestock Reporting Service, 1959-1985.

TABLE 9. SEASON AVERAGE PRICES RECEIVED BY NORTH DAKOTA FARMERS FOR SELECTED COMMODITIES, REAL (1980=BASE) DOLLARS, 1958-1984

Year	Spring Wheat	Durum	Barley	Rye	Oats	Flax	Soybeans	Sugarbeets	Potatoes	Sunflower
				$/bu				$/ton	$/cwt	
1958	4.97	5.45	2.26	2.34	1.18	6.90	4.89	27.40	2.42	--
1959	4.88	5.40	2.15	2.31	1.26	7.32	4.85	26.76	3.10	--
1960	4.80	5.21	1.94	2.01	1.26	7.00	4.75	29.17	4.39	--
1961	4.94	6.24	2.15	2.15	1.28	7.49	6.01	25.83	3.02	--
1962	5.33	6.58	2.21	2.26	1.33	7.39	5.45	31.15	2.44	--
1963	5.50	5.22	1.93	2.40	1.24	6.68	5.76	31.40	2.40	--
1964	4.02	3.95	1.95	2.36	1.19	6.75	5.70	25.84	4.24	--
1965	3.48	3.10	2.24	2.00	1.22	6.67	5.91	26.94	7.82	--
1966	3.72	3.51	2.33	2.06	1.22	6.54	6.35	30.72	3.21	--
1967	3.50	3.77	2.18	1.987	1.23	6.44	5.59	32.30	3.41	--
1968	3.30	3.42	1.80	1.83	1.14	6.10	5.11	28.36	3.03	--
1969	2.86	2.92	1.55	1.74	.98	5.52	4.72	28.40	2.74	9.70
1970	2.91	2.66	1.55	1.57	.97	4.81	4.75	28.31	2.87	9.89
1971	2.55	2.46	1.53	1.37	.91	4.25	5.16	28.46	2.27	9.33
1972	2.71	2.75	1.52	1.31	.96	4.56	5.48	24.11	2.66	8.74
1973	5.00	6.59	2.53	2.37	1.38	9.88	10.70	43.28	5.47	14.23
1974	7.22	9.77	4.20	3.89	2.05	15.06	9.61	59.70	7.41	23.93
1975	5.72	7.32	3.98	3.21	1.91	9.77	7.05	40.25	3.67	15.25
1976	4.63	4.44	3.14	3.22	1.77	8.75	7.22	26.44	4.63	14.90
1977	3.04	3.11	2.24	2.28	1.46	7.43	8.48	27.13	3.42	13.44
1978	3.14	3.39	2.09	2.00	1.21	5.92	6.98	27.06	3.07	12.29
1979	3.54	4.04	2.23	1.85	1.19	6.82	6.32	37.15	3.54	9.68
1980	3.82	4.98	2.29	2.64	1.42	6.34	7.02	46.30	6.85	11.00
1981	3.56	3.68	2.29	2.51	1.61	6.40	5.13	18.60	3.67	9.89
1982	3.01	2.86	1.65	1.72	1.22	5.15	4.63	30.57	3.72	8.98
1983	2.97	3.12	1.64	1.57	1.05	4.59	6.05	26.84	4.04	8.53
1984*	2.86	3.00	1.70	1.31	1.17	5.13	4.49	29.32	3.57	8.20

*Preliminary

SOURCE: North Dakota Crop and Livestock Reporting Service 1959-1985.

TABLE 10. OIL PRODUCTION IN STATE REGION 2, BY COUNTY, 1958-1984

Year	Bottineau	Burke	McHenry	Mountrail	Renville	Ward	Total
				barrels			
1958	1,145,785	1,278,644	--	1,598,450	31,773	--	4,054,652
1959	1,962,276	2,929,984	--	1,477,127	199,145	--	6,568,532
1960	2,293,743	3,693,098	7,643	1,613,564	781,427	--	8,389,475
1961	3,131,914	3,960,116	10,506	1,459,600	1,459,600	--	9,944,718
1962	2,964,962	3,761,609	10,937	1,470,244	1,677,609	--	9,885,361
1963	2,682,291	3,505,849	47,863	1,359,057	1,573,668	10,774	9,179,502
1964	2,577,924	3,452,200	56,078	1,416,065	2,058,579	25,547	9,586,413
1965	2,679,714	3,393,368	54,712	1,129,120	2,521,807	7,246	9,785,967
1966	2,642,917	2,996,387	42,706	1,138,010	2,251,407	4,951	9,076,378
1967	2,400,288	2,670,033	41,492	959,264	2,144,322	37,044	8,252,443
1968	2,304,490	2,426,505	31,826	1,004,077	2,088,052	215,046	8,069,996
1969	2,645,125	1,988,305	25,148	848,401	1,804,686	371,281	7,682,946
1970	2,802,373	1,866,775	21,443	677,716	1,678,887	359,487	7,406,681
1971	2,843,809	1,799,859	17,171	502,721	1,665,434	662,122	7,491,116
1972	2,940,971	1,749,022	19,788	446,520	1,766,660	458,427	7,381,388
1973	2,841,908	1,436,219	19,898	380,714	1,755,821	297,717	6,732,277
1974	2,634,399	1,185,673	14,842	341,774	1,581,198	231,084	5,988,970
1975	2,485,724	1,024,181	19,307	303,754	1,801,356	174,944	5,809,266
1976	2,448,742	1,200,410	19,477	250,874	2,038,301	142,348	6,100,152
1977	2,241,466	919,819	20,486	226,118	1,799,187	121,329	5,508,405
1978	2,448,378	780,829	14,176	167,626	1,619,133	103,356	5,133,498
1979	2,606,865	708,439	12,785	359,950	1,398,319	85,769	5,172,127
1980	2,662,066	718,143	13,650	604,944	1,394,243	166,398	5,559,444
1981	2,631,171	758,046	21,562	484,844	1,512,156	134,491	5,542,270
1982	2,551,497	1,380,411	17,944	394,224	1,462,925	93,945	5,900,946
1983	2,476,774	1,502,559	18,359	543,978	1,366,834	81,274	5,989,778
1984	2,375,230	1,456,030	26,561	571,271	1,688,689	85,082	6,202,863

SOURCE: North Dakota Industrial Commission 1958-1984.

Real growth in terms of size of State Region 2's economic base and contribution of its component parts from a 1958-1962 average until 1984 is depicted in Figure 5. The household sector was the largest gainer; its share of the economic base increased by over 11 percent during the period. Also, the household sector replaced crop sales as the largest single component of the region's economic base. Livestock and crop sectors both experienced a decline in their share of the region's economic base during the period; however, the crops sector demonstrated real growth during the 27-year period. Total real growth in the State Region 2 economy was not as great as in State Region 1 because of a smaller oil resource base and also because the remaining sectors of its more diversified economic base increased at steady but slower rates.

State Region 3

Devils Lake serves as the major trade center for the six-county State Region 3. This region is located in the north central to northeastern part of the state (Figure 1). Crop sales comprised the major share of this region's economic base for the 1958-1984 period. Figure 6 presents the components of the economic base for State Region 3 for that 27-year period. (Sales for final demand for this period for each sector are given in Appendix C, Table 3.)

Agriculture has experienced real growth during the 1958-1984 period; this growth has occurred as a result of increased sales in the crops sector while livestock sector sales actually declined during this time. State Region 3's crop production has shifted more to durum wheat during the 27-year period, but this area of the state has always been known for growing this crop. Table 11 shows the shift from spring wheat to durum wheat in State Region 3 between 1958 and 1984.

The household sector was the second largest contributor to the region's economic base; however, it lagged far behind the sales of agricultural products. The construction, processing, trade, and services sectors did not amount to a significant share of the region's economic base. The real growth that these sectors have experienced during the 27-year span indicates the area economy has diversified somewhat during the period. Agricultural processing and miscellaneous manufacturing has realized real growth as more agricultural products from the area are being processed before they are exported from the region (e.g., pasta products are being made from durum). State Region 3 has fewer sectors contributing to its economic base because no energy resources exist in the area. Lack of energy resources, coupled with State Region 3's having a somewhat smaller geographic area than other regions and one of the smallest regional population totals, resulted in the total economic base for State Region 3 being the smallest of the eight state regions. The high degree of dependence on crop production (and declining real crop prices as previously discussed and presented in Table 9) has limited real growth of the region's economy to somewhat less than that of other regions having broader resource bases and larger populations.

State Region 3's real growth and contribution of its components from a 1958-1962 average to 1984 are presented in Figure 7. The economic base of this region grew by $208.2 million, which was less than a twofold real growth

1958-1962 Average = $379.0 Million

1984 = $848.0 Million

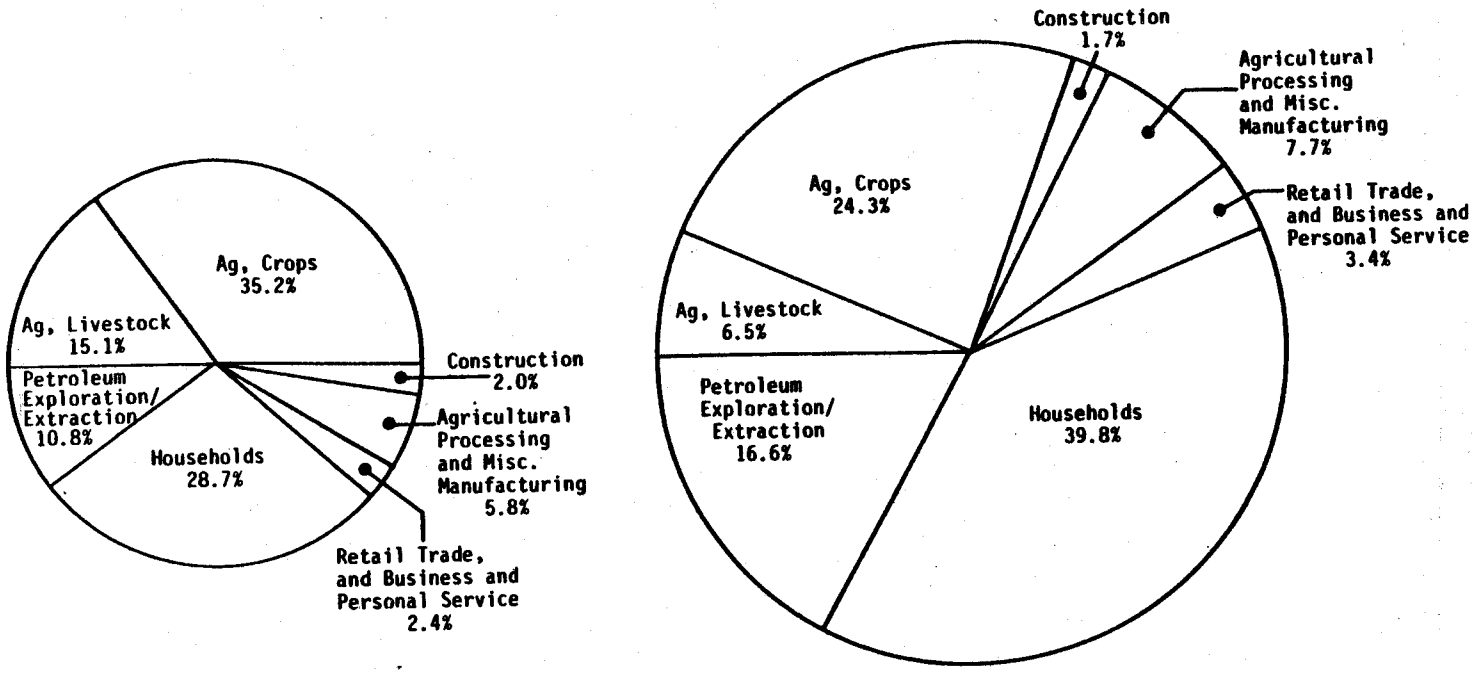


Figure 5. Real Growth in State Region 2 Economic Base, 1958-1962 Average to 1984

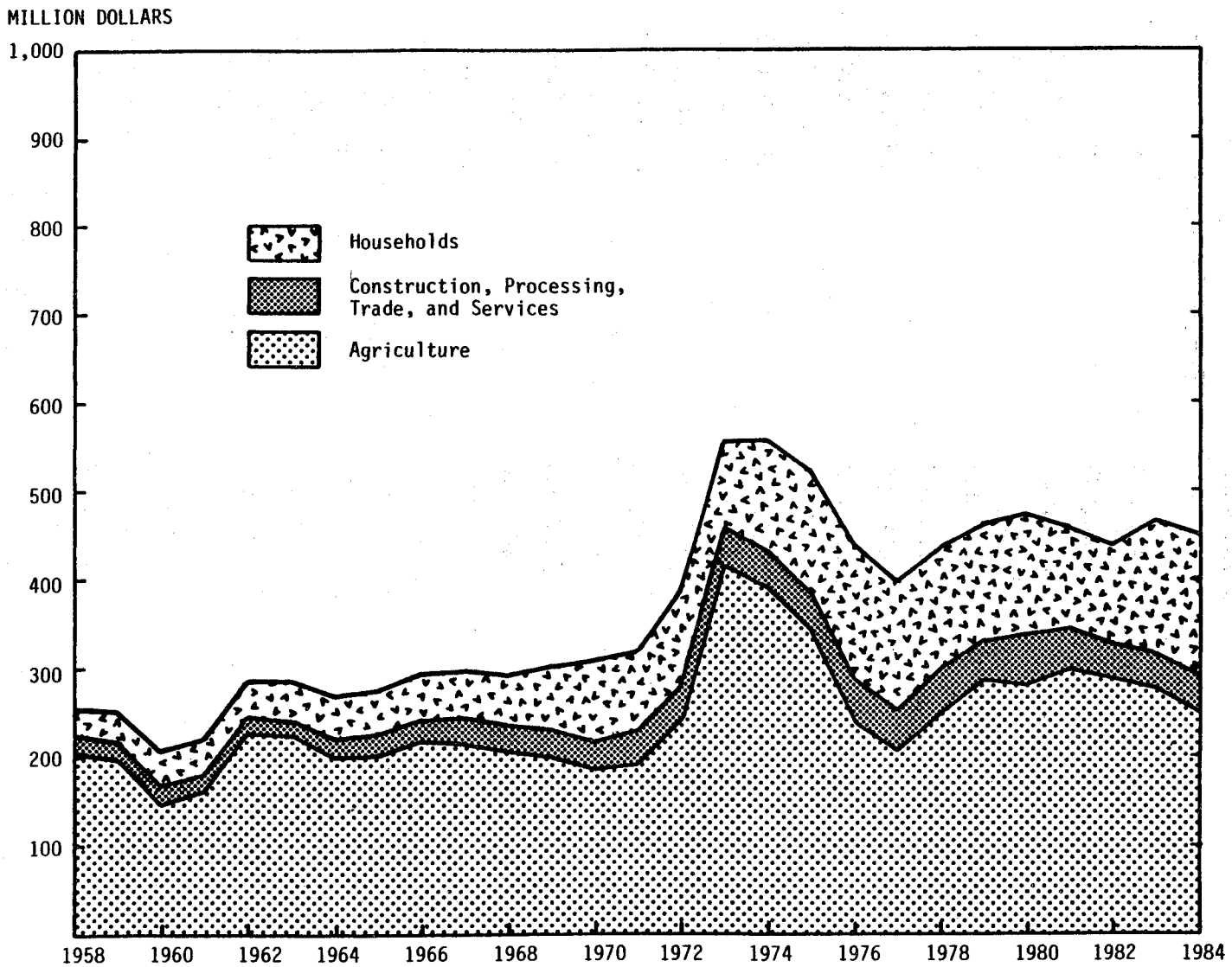


Figure 6. State Region 3 Economic Base Components in 1980 Dollars, 1958-1984

TABLE 11. PRODUCTION OF SPRING WHEAT AND DURUM IN STATE REGION 3, 1958-1984

Year	Spring Wheat	Durum
	bushels	
1958	12,821,000	8,537,000
1959	8,022,500	8,733,000
1960	6,335,000	8,674,500
1961	3,394,000	7,590,000
1962	4,159,000	21,933,000
1963	3,161,000	16,701,500
1964	3,608,500	20,569,000
1965	5,223,000	21,280,000
1966	4,823,000	17,636,500
1967	7,487,500	19,778,000
1968	6,497,500	25,883,000
1969	5,387,500	25,999,700
1970	7,939,500	14,101,100
1971	16,468,000	26,661,800
1972	9,527,000	19,505,200
1973	11,548,500	18,786,000
1974	7,134,000	17,584,500
1975	8,796,100	28,151,000
1976	12,058,400	26,845,600
1977	13,237,000	18,353,300
1978	10,501,900	25,955,900
1979	11,273,000	27,212,000
1980	8,995,000	21,394,000
1981	11,740,000	35,333,000
1982	17,076,000	32,213,000
1983	11,490,000	11,451,000
1984*	13,859,000	23,242,000

*Preliminary

SOURCE: North Dakota Crop and Livestock Reporting Service, 1959-1985.

1958-1962 Average = $241.2 Million

1984 = $449.4 Million

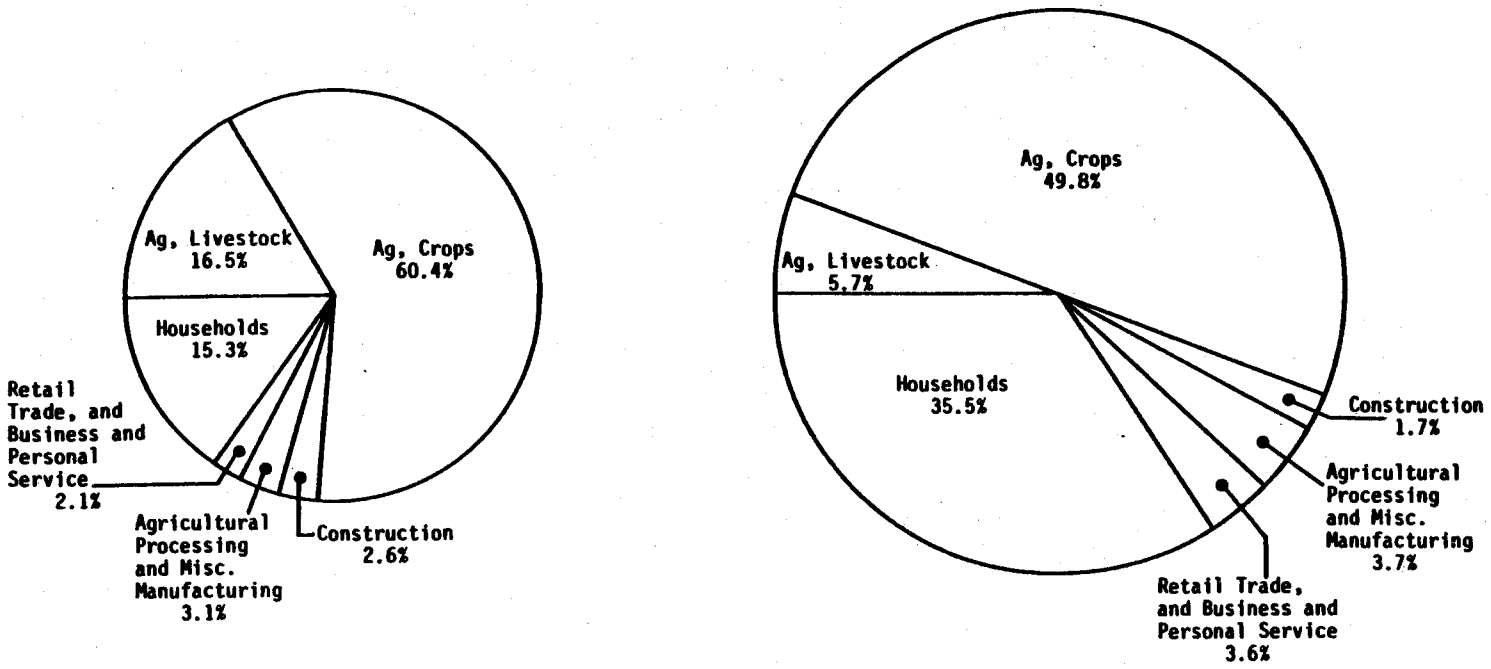


Figure 7. Real Growth in State Region 3 Economic Base, 1958-1962 Average to 1984

during the 27-year period. Livestock sales lost the greatest share of the economic base during this time, declining from 16.5 to 5.7 percent. Although crop sales decreased in their percentage of the economic base, they remained the largest single source of the region's sales for final demand. Crop sales accounted for almost one-half of the State Region 3 economic base in 1984. The household sector showed the largest growth in its share of the region's economic base, increasing from 15.3 percent for the 1958-1962 average to 35.5 percent in 1984. The remaining sectors of the region's economic base experienced only minor percentage increases or declines in their share of total economic activity during the period.

State Region 4

State Region 4 is the four-county area located in the northeastern corner of the state. Grand Forks, the state's third largest city in 1980, serves as the trade center for this region. Despite the small geographic area, this region was the third most populated of the state's eight regions. The economic base of this region was comprised predominately of three sectors: crop production, households, and agricultural processing and miscellaneous manufacturing. Energy resources were not present in this state region, so only seven sectors contributed to the region's basic economic activity.

Figure 8 shows the real growth of the region's economic base components from 1958 to 1984. (Corresponding sales for final demand for each sector and year are presented in Appendix C, Table 4.) Agriculture experienced considerable real growth during this period. This growth was dependent upon increased crop sales as livestock sales steadily declined throughout the period. Crop production in this region is very diverse; small grain, sunflower, potatoes, and sugarbeets are all raised in this area. Wheat production has increased from under 15 million bushels in 1958 to over 34 million bushels by 1984 (Table 12). This increase in crop production in the region, as represented by wheat, is primarily responsible for the real growth in agriculture; as previously discussed, prices have declined in real terms (Table 9) from 1958 to 1984.

The household sector also showed considerable real growth during the 1958-1984 period. Military spending has been largely responsible for the growth in this sector because the Grand Forks Strategic Air Command Base is located within the region. A large increase in the household sector in 1964 reflects the installation of Minuteman missiles, also located in State Region 4. Closely related to these expenditures was the construction of the Safeguard Antiballistic Missile System. As Figure 8 shows, the construction sector in State Region 4 experienced unprecedented growth in 1970. Although much of the system installation was in Cavalier County of State Region 3, federal government budget reporting procedures showed the construction all in State Region 4, primarily because bids were awarded and management of the project took place there. It should be noted that reporting procedures listed the total cost of the project as occurring in a single year (1970) even though actual construction took place over a longer period. (For a complete discussion of the impacts of the antiballistic missile system construction, see Coon et al. [1976].)

Agricultural processing and miscellaneous manufacturing contribute a significant share of the region's economic activity. Located in the area are

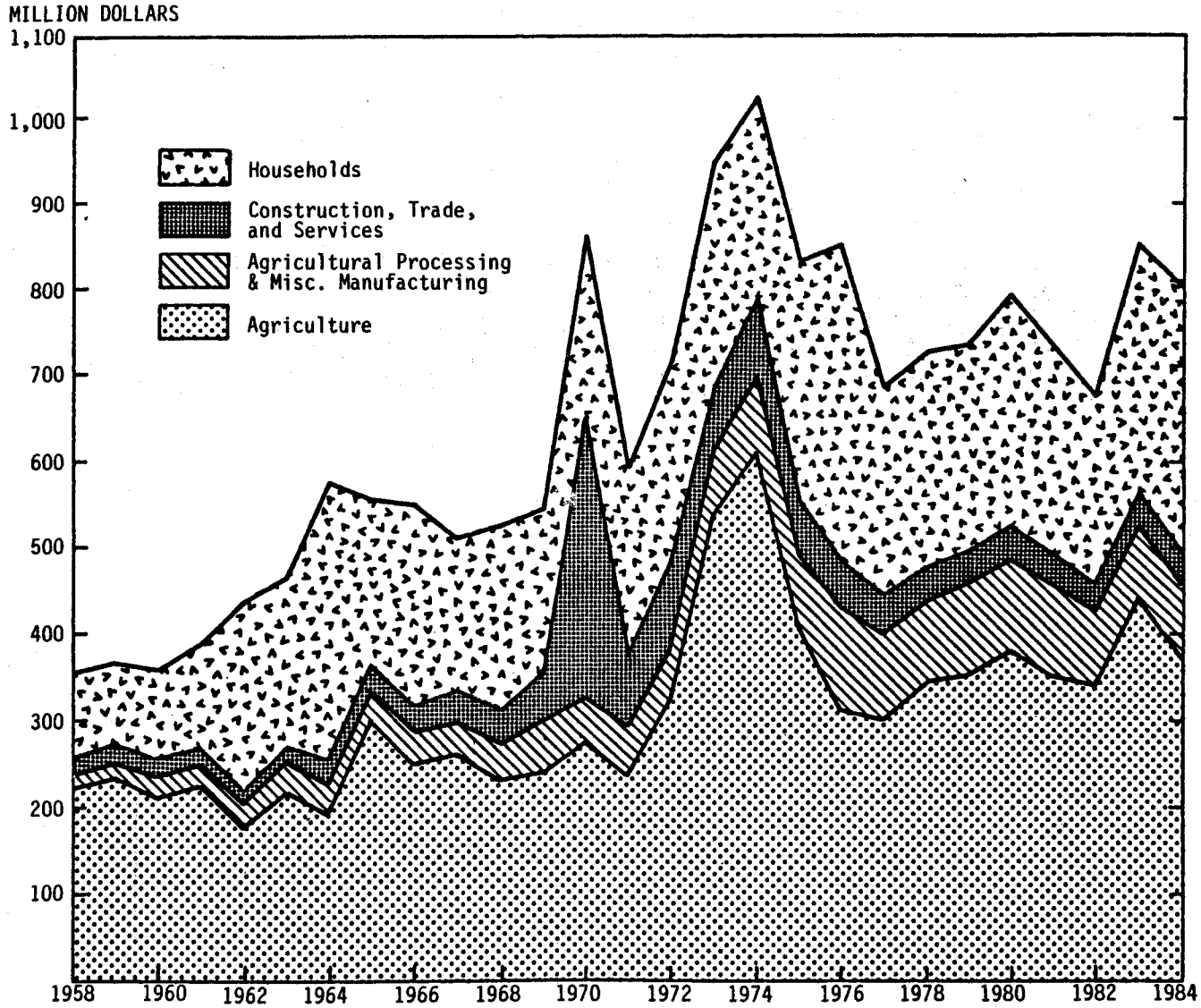


Figure 8. State Region 4 Economic Base Components in 1980 Dollars, 1958-1984

TABLE 12. PRODUCTION OF SPRING WHEAT IN STATE REGION 4, 1958-1984

Year	Spring Wheat
	- - bushels - -
1958	14,774,000
1959	12,017,000
1960	11,731,000
1961	8,905,500
1962	8,383,000
1963	8,645,500
1964	10,466,000
1965	14,018,500
1966	10,978,500
1967	17,674,000
1968	16,572,500
1969	14,903,000
1970	15,479,500
1971	29,016,500
1972	21,570,000
1973	24,669,000
1974	19,375,400
1975	27,504,800
1976	30,377,900
1977	24,649,900
1978	24,048,000
1979	26,234,000
1980	16,390,000
1981	32,267,000
1982	35,183,000
1983	21,435,000
1984*	34,401,000

*Preliminary

SOURCE: North Dakota Crop and Livestock Reporting Service, 1959-1985.

two potato processing facilities, numerous potato wash plants, a sugarbeet processing plant, the state-owned mill and elevator, and a bus body manufacturing facility, along with varied manufacturing industries. This sector has grown from an output of just over $16 million in 1958 to an annual production of over $84 million by 1984.

State Region 4 has had a diverse and relatively stable economic base from 1958 to 1984 (Figure 9). Real growth in the region's total economic base has been more than twofold for the 27-year period. This has resulted in the area's economic base growing to $802.4 million by 1984, one of the larger regional economic bases despite the absence of energy resources.

Livestock sales' share of the region's economic base declined from the 1958-1962 average to 1984, as did the construction sector, although neither was a major force in the region's economy in either time period. Crop sales for final demand contributed the largest individual share to the regional economy in both periods (48.8 and 44.2 percent). During this same time the household sector increased its share of the economic base from 33.3 to 38.4 percent. An increase from 5.6 percent for the 1958-1962 average to 10.5 percent in 1984 for the agricultural processing and miscellaneous manufacturing sector represented the largest individual sector's percentage increase in its share of the economic base. State Region 4's real growth in its economic base has been steady, but the key factor has been the stability of the composition of its economic base for the 27-year period.

State Region 5

The six-county area located in southeastern North Dakota comprises State Region 5. This region had the most population of the eight state regions in 1980 (Table 1) and also had the state's largest city, Fargo, which served as the retail trade center for the area. Agriculture was the predominant source of the region's economic base, followed by the household and the agricultural processing and miscellaneous manufacturing sectors.

Figure 10 shows the real growth in State Region 5's economic base and its composition from 1958 to 1984. (Sales for final demand for each sector and year for State Region 5 are given in Appendix C, Table 5.) The major source of real growth in this sector has been increased agricultural sales. Crop sales increased enough through the 27-year period to compensate for a steady decline in livestock sales and still result in real growth. Annual sales of crops from this region more than doubled from 1958 to 1984, increasing from $199.6 million to $412.1 million. In 1984, the crop sector sales for final demand in State Region 5 were the greatest of any state region, followed by those of State Region 4. This gives a good indication of the importance of crop production to the economies of eastern North Dakota (State Regions 4 and 5). State Region 5 production of wheat increased from 14,836,000 bushels in 1958 to 33,130,000 bushels in 1984, almost a 125 percent increase during this period (Table 13).

The household sector sales for final demand experienced real growth during the 27-year period and was the second largest source of economic activity throughout this time. Agricultural processing and miscellaneous manufacturing also realized real growth during the 1958 to 1984 period. Most of this growth was in the form of farm machinery and equipment manufacturing

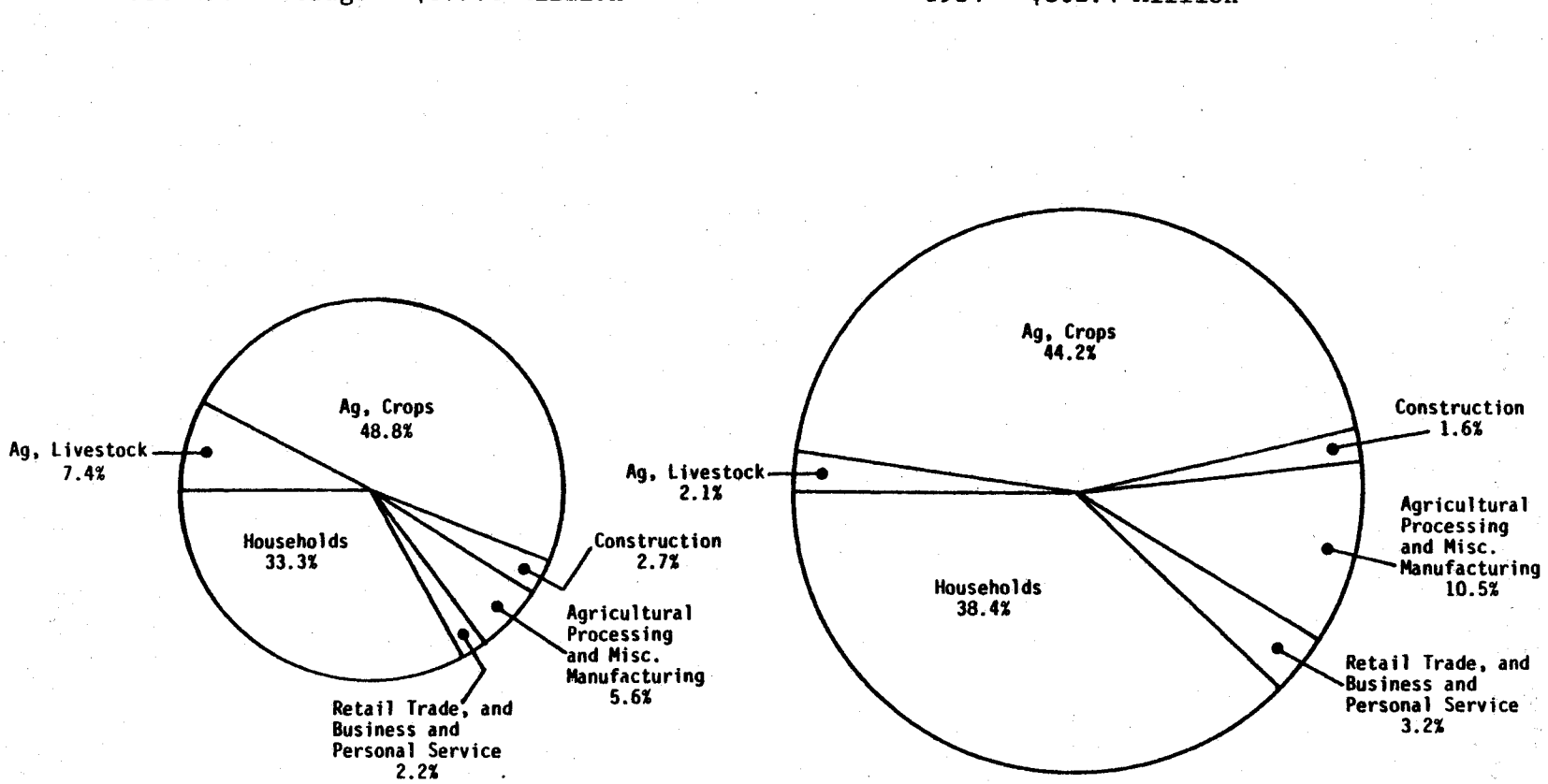


Figure 9. Real Growth in State Region 4 Economic Base, 1958-1962 Average to 1984

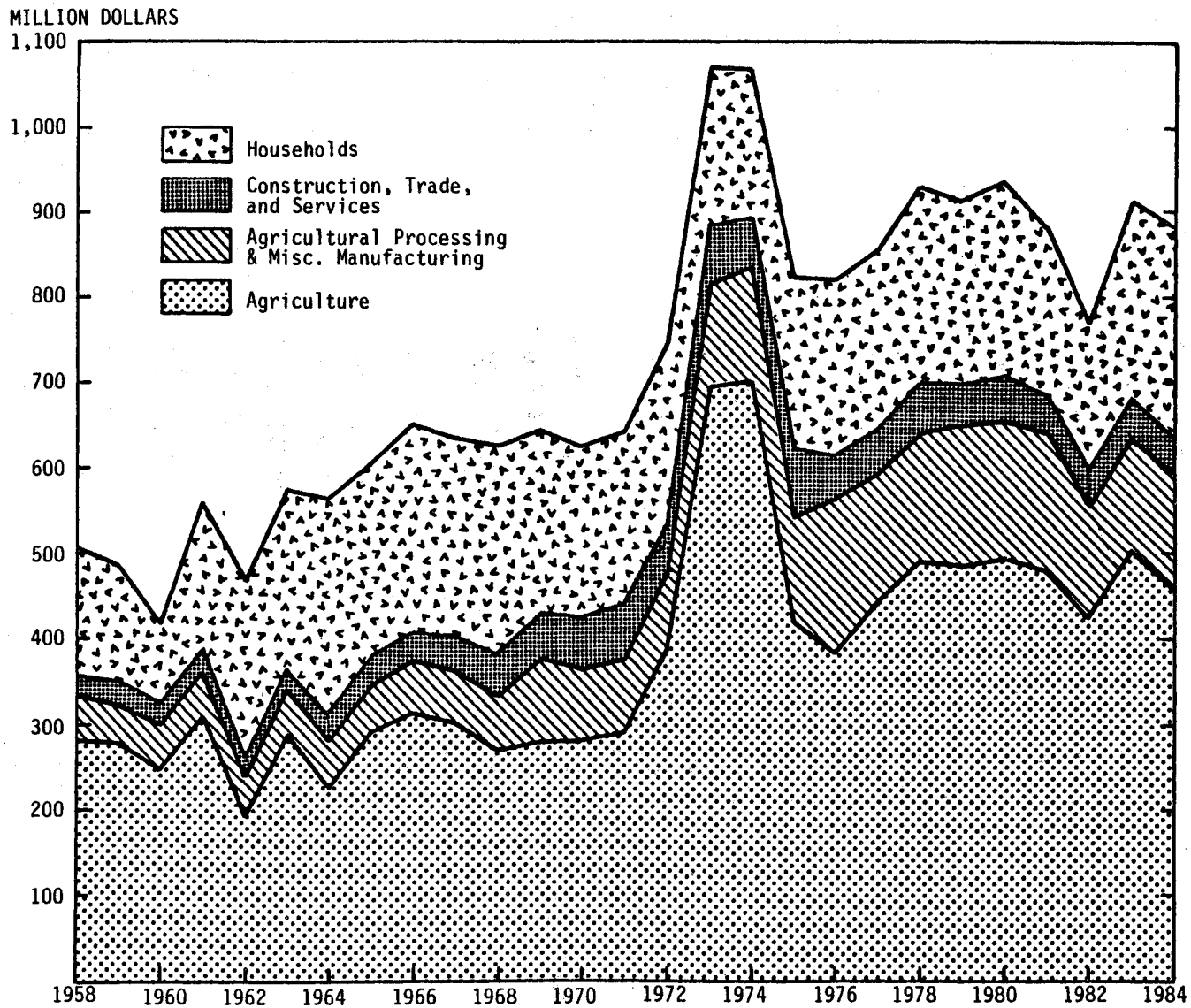


Figure 10. State Region 5 Economic Base Components in 1980 Dollars, 1958-1984

TABLE 13. PRODUCTION OF SPRING WHEAT IN STATE REGION 5, 1958-1984

Year	Spring Wheat
	- - bushels - -
1958	14,836,000
1959	9,922,000
1960	12,005,500
1961	11,833,000
1962	7,506,000
1963	8,271,500
1964	9,433,500
1965	11,248,000
1966	9,427,500
1967	16,774,500
1968	16,673,750
1969	12,994,500
1970	13,706,000
1971	29,961,500
1972	21,664,000
1973	32,803,500
1974	27,694,400
1975	24,257,700
1976	36,861,500
1977	30,933,200
1978	28,412,900
1979	28,657,000
1980	27,183,000
1981	36,571,000
1982	36,079,000
1983	23,158,000
1984*	33,130,000

*Preliminary

SOURCE: North Dakota Crop and Livestock Reporting Service, 1959-1985.

industries located in Fargo and Wahpeton. A wide range of agricultural-related manufacturing has located in this region and includes such items as four-wheel drive tractors and tillage, seeding, chemical application, and grain-handling machinery. State Region 5 had the largest agricultural processing and miscellaneous manufacturing sector sales for final demand of the eight state regions.

Total sales for final demand in the State Region 5 economy have increased from $486.3 million for the 1958-1962 average to $881.3 million in 1984, an 81.2 percent increase during this period (Figure 11). In 1984 the economic base activities in State Region 5 were the second largest of any state region. The livestock, household, and construction sectors each experienced a decline in their share of the region's economic base during this span. Crop sales were the largest gainer, increasing their share of the economic base from 38.0 percent for the 1958-1962 average to 46.7 percent in 1984 (8.7 percent increase). During this same period, the agricultural processing and miscellaneous manufacturing sector expanded its share of the economic base from 10.4 percent to 14.9 percent, primarily because of expanded production of agricultural machinery and equipment. Retail trade and business and personal services sectors also experienced a slight real growth during the 27-year period.

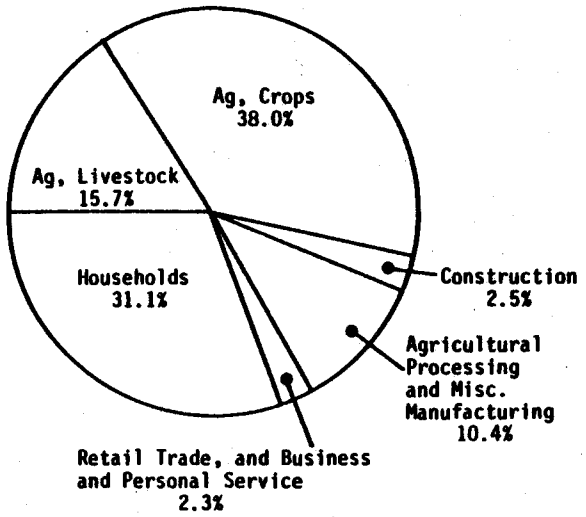
State Region 6

The nine-county area in south central to southeastern North Dakota comprises State Region 6. Two trade centers, Jamestown and Valley City, serve the area. The region's economic base is agriculturally oriented; crop sector sales for final demand alone contribute over one-half of the region's economic base activities. No energy resources are located within this region.

Figure 12 presents the real growth and composition of this region's economic base for the period 1958 to 1984. The sales for final demand for each sector for the corresponding years are presented in tabular form in Appendix C, Table 6. In Figure 12, the livestock and crops sales for final demand were separated because State Region 6 was one of the few regions where livestock contributed a significant share of the region's economic base and where the sector had not declined drastically over the 27-year period of the analysis. Table 14 shows the importance of agriculture to the economic growth of the region; both wheat production and the inventory of all cattle on farms have increased for State Region 6. Wheat production increased by 78.2 percent from 1958 to 1984, whereas inventory of all cattle had an increase of 12.4 percent during the same period. Together, crop and livestock sales dominated the region's economic base throughout the 27-year period.

Household sector sales for final demand experienced real growth during the period and by 1984 had surpassed livestock sales to become the second leading source of the region's economic base. Sales for final demand in the household sector included federal government payrolls and transfer payments. Included in this category are: defense expenditures (as previously mentioned), veterans' benefits, Old Age and Survivors' Insurance payments, workmen's compensation, and federal payrolls. Much of the federal expenditures in State Regions 2 and 4 were for defense, while transfer payments (especially Social Security) constituted a major share in the remaining regions. Growth in the household sector in State Region 6 can be

1958-1962 Average = $486.3 Million



1984 = $881.3 Million

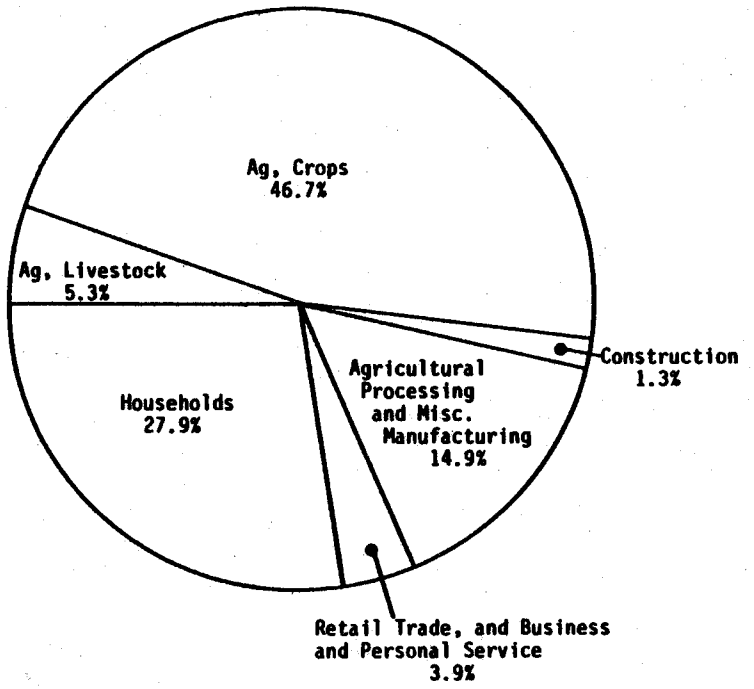


Figure 11. Real Growth in State Region 5 Economic Base, 1958-1962 Average to 1984

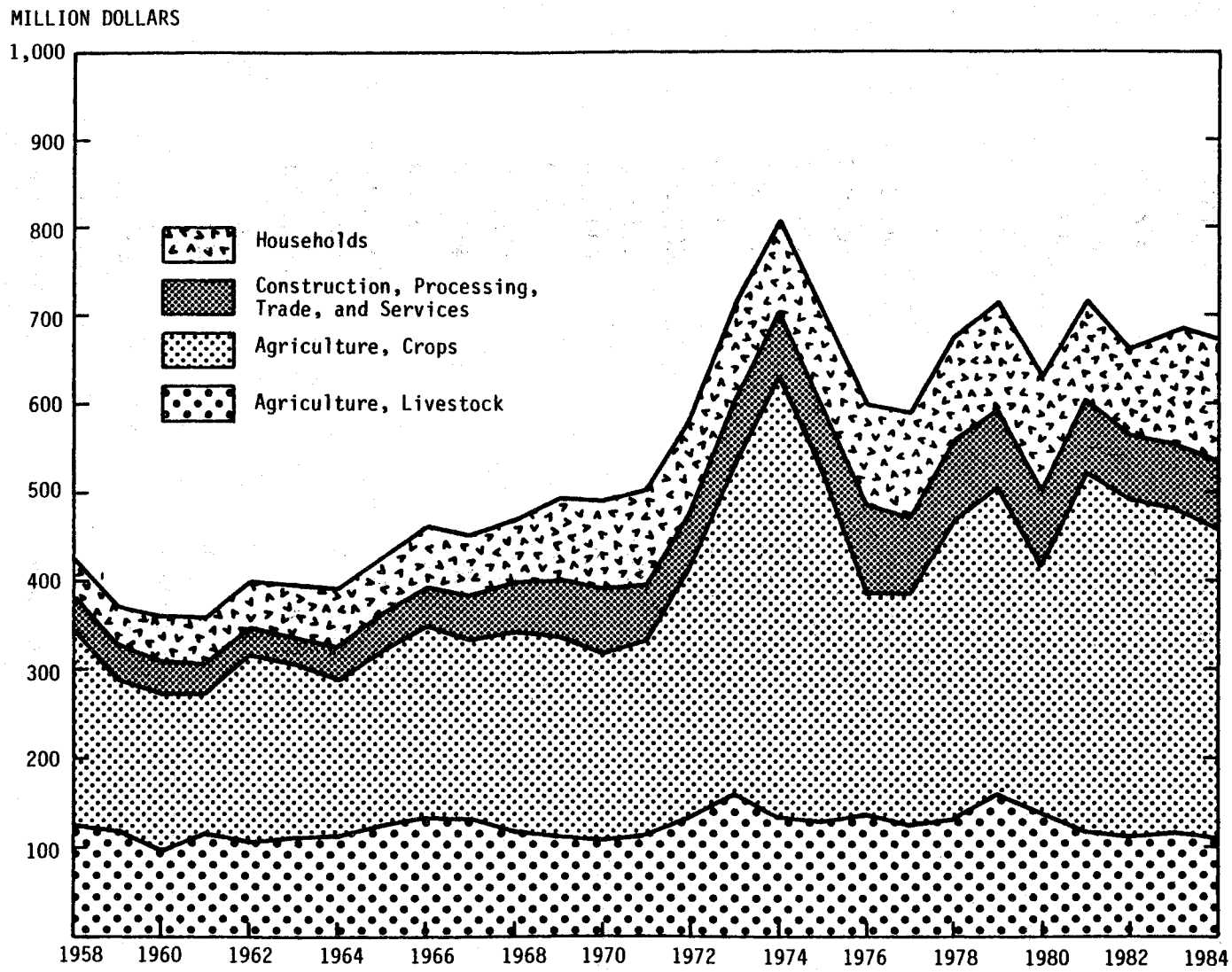


Figure 12. State Region 6 Economic Base Components in 1980 Dollars, 1958-1984

TABLE 14. PRODUCTION OF SPRING WHEAT AND INVENTORY OF ALL CATTLE IN STATE REGION 6, 1958-1984

Year	Wheat Production	All Cattle Inventory
	- bushels -	- head -
1958	21,264,000	362,000
1959	13,539,000	355,000
1960	18,123,000	355,000
1961	10,897,000	379,500
1962	16,471,000	387,000
1963	10,922,250	429,500
1964	14,265,500	484,000
1965	15,839,500	484,000
1966	13,885,000	470,000
1967	18,521,000	467,000
1968	20,555,250	429,000
1969	16,927,500	408,000
1970	17,848,500	415,000
1971	39,959,500	430,000
1972	27,129,000	457,000
1973	27,519,300	478,000
1974	25,691,300	497,000
1975	32,613,100	510,000
1976	34,394,500	475,000
1977	34,341,600	449,000
1978	36,984,000	411,000
1979	34,814,000	398,000
1980	22,109,000	407,000
1981	41,957,000	374,000
1982	42,541,000	410,000
1983	24,782,000	402,000
1984*	37,882,000	407,000

*Preliminary

SOURCE: North Dakota Crop and Livestock Reporting Service, 1959-1985.

explained by the relatively high proportion of persons 65 years and older (Table 15) and eligible for Social Security retirement benefits. The remaining basic economic sectors were small relative to the total economic activity in the region. The agricultural processing and miscellaneous manufacturing sector grew during the 1958 to 1984 period as a malt-processing plant, a farm equipment manufacturing plant, and several other manufacturing industries located in or near Jamestown.

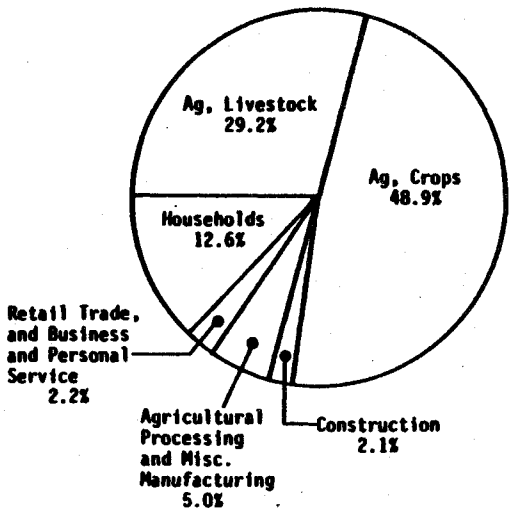
Figure 13 shows the real growth in the economic base of State Region 6 and the change in its component parts from the 1958-1962 average to 1984. The livestock and construction sectors' shares of the economic base declined during the period while crop and household sales for final demand increased the most. The crop sector's share of the economic base increased from 48.9 to 52.0 percent from the 1958-1962 average to 1984, and during the same period the household sector's share grew from 12.6 to 20.5 percent. Also during this time the retail trade and business and personal service sectors and the agricultural processing and miscellaneous manufacturing sectors only slightly increased their share of the region's economic base. Real growth in the region's total economic base for this period was $289.6 million, a 75.7 percent increase during this time.

TABLE 15. NORTH DAKOTA POPULATION OVER AND UNDER AGE SIXTY-FIVE, AND PERSONS OVER SIXTY-FIVE AS A PERCENT OF TOTAL, BY STATE REGION, 1980

State Region	Population			Persons 65+ years of age as percent of total
	0-64	65+	Total	
				- - - percent - - -
1	29,330	3,533	32,863	10.8
2	85,532	11,232	96,764	11.6
3	41,630	6,781	48,411	14.0
4	87,068	10,035	97,103	10.3
5	117,661	14,733	132,394	11.1
6	63,564	11,827	75,391	15.7
7	112,517	12,176	124,693	9.8
8	40,189	4,909	45,098	10.9
North Dakota	572,272	80,445	652,717	12.3

SOURCE: Rathge, Ransom-Nelson, and Leistritz 1985.

1958-1962 Average = $382.5 Million



1984 = $672.1 Million

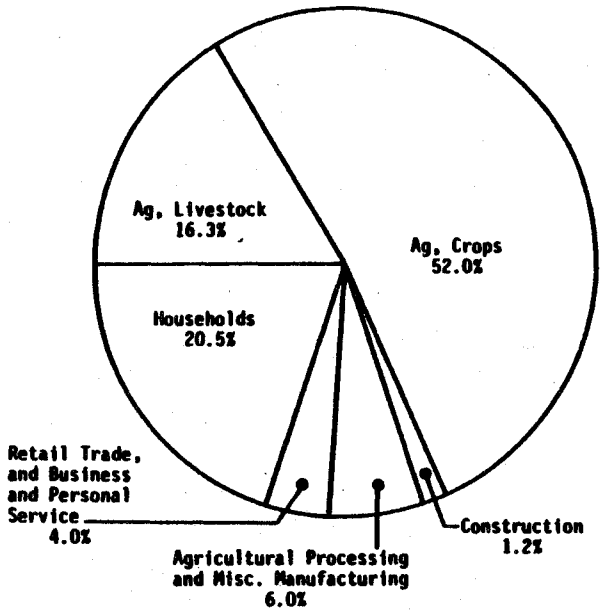


Figure 13. Real Growth in State Region 6 Economic Base, 1958-1962 Average to 1984

State Region 7

State Region 7 is located in the southwestern to south central part of the state and consists of 10 counties. The Bismarck-Mandan metropolitan area serves as the region's retail trade center. Bismarck, the state capital, had become the state's second largest city by 1980. This region has the most diverse economic base of any of the eight state regions with agriculture, agricultural processing and miscellaneous manufacturing, coal mining, thermal-electric generation, and petroleum refining contributing to the economic activity of the area. Also, many of the state's energy industries are headquartered in Bismarck.

Figure 14 graphically displays the growth in State Region 7's economic base and the growth of its components. Table 7, Appendix C, presents the corresponding sales for final demand for each individual sector and year for the 1958-1984 period. Agriculture realized real growth during the 1958 to 1984 period and has comprised a significant portion of the total economic base throughout the period. State Region 7 is the only state region where crop and livestock sales for final demand comprise almost equal amounts of the region's agriculture. Diversity of the region's agriculture has resulted in rather steady real growth since the "boom-bust" of the Russian wheat sales in the mid-1970s, and this region has not experienced as sharp a decline in agriculture as other regions have in the last several years.

Construction, processing, trade, and services sectors have all experienced real growth during the 27-year period. These sectors account for a rather small portion of the region's economic base, but they have increased their share over the 27-year period, especially since the mid-1970s. In addition, the household sector has accounted for a much larger portion of the region's economic base than the construction, processing, trade, and service sectors. Summation of the agriculture, construction, processing, trade, and services and household sectors would account for considerable real economic growth in the region; in fact, the growth resulting just from these sectors over the 27-year period would be as much or more than that of most of the other state regions.

Growth in the energy industries, in addition to that of the other sectors, has resulted in the region's economic base expanding at an unprecedented rate since the early 1970s. The resultant growth has placed State Region 7 as the leading area in terms of total economic base activity. In 1984, the economic base of State Region 7 was $408.4 million greater than that of State Region 5, which had the second largest economic base. In other words, State Region 7 had an economic base one and one-half times as large as that of the region with second largest level of basic economic activity. The energy industry is quite diverse in State Region 7 and includes coal mining, thermal-electric generation, and petroleum refining activities. Energy development in this region contrasts with that of State Regions 1, 2, and 8 where the energy growth has resulted primarily from petroleum exploration and extraction. Growth in energy development in State Region 7 has been relatively steady because of the nature of the demand for the energy products produced; i.e., demand for coal, electricity, and refined petroleum products has been more stable than that for crude petroleum, which fluctuates dramatically depending upon the world oil situation. Coal-fired thermal-electric generation has experienced tremendous real growth since the mid-1960s, with kilowatt hours of electricity generated increasing over

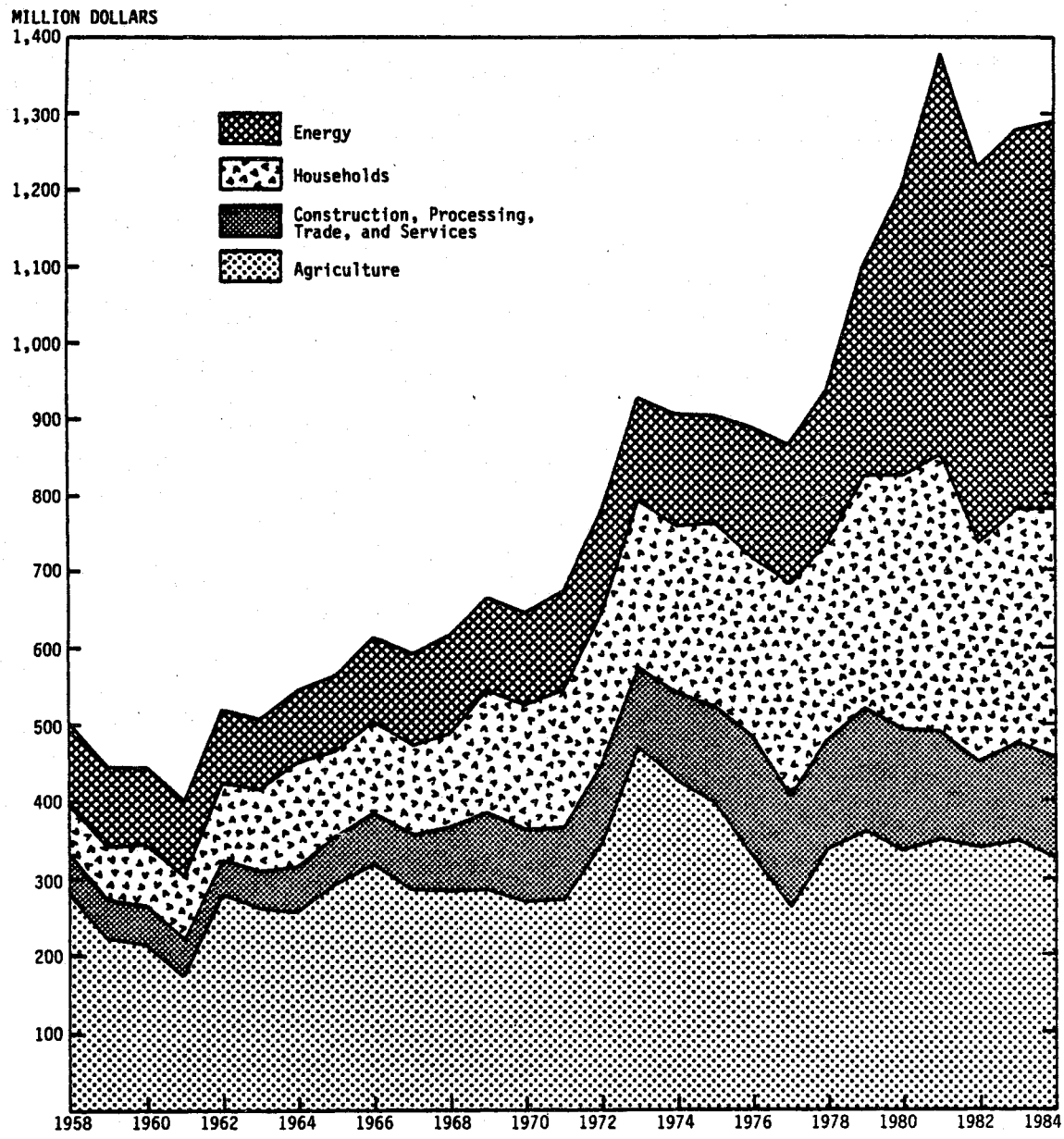


Figure 14. State Region 7 Economic Base Components in 1980 Dollars, 1958-1984

elevenfold from 1966 to 1984 (Table 16). Conversion of North Dakota's lignite coal into electricity is a common means of making it more price competitive with the higher grade coals available in Montana and Wyoming. Also, one of the world's largest plants to convert coal to synthetic natural gas (the Great Plains Coal Gasification Project) is located in State Region 7 and currently is operational. Construction of this $2.1 billion facility began in 1981 with the plant becoming fully operational in 1985 (North Dakota Lignite Council 1985). This plant has the capacity to produce 125 million cubic feet of synthetic natural gas per day and will consume 4.7 million tons of coal per year, or almost 20 percent of the total mined in North Dakota (Miller 1986). Associated with the operation of the gasification plant are the Freedom Coal Mine and Antelope Valley Station I and II electric generating facilities with employment at the gasification plant and auxiliary facilities totaling over 1,300 in 1985. Data are not available at this time to estimate the contribution this plant makes to the region's economic base. Also, it should be noted that at this time (early 1986) the future of the plant is in doubt.

Growth of State Region 7's economic base and its component parts is presented in Figure 15. The total economic base for this region has increased over two and three-fourths times from the 1958-1962 average of $462.3 to a 1984 level of $1,289.7 million. Real growth over time has considerably reduced the crop and livestock sectors' shares of the economic base. Construction, agricultural processing and miscellaneous manufacturing, retail trade, business and personal services, and petroleum refining sectors have experienced very little change in their portion of total economic activity over the period. However, large percentage changes in economic base contributions have taken place in the household, coal mining, and thermal-electric generation sectors from the 1958-1962 average to 1984. The real growth in the economic base of State Region 7 can be characterized as stable and steady increases in the nonenergy sectors and very rapid and steady growth in the diverse energy industry as a result of increased resource development.

State Region 8

The eight-county area located in the southwest corner of the state makes up State Region 8. Dickinson serves as the major retail trade center for this area. Agriculture was the largest single factor influencing the region's economic base until the mid-1970s when petroleum exploration and extraction became the dominant force in the region's economy. Figure 16 shows the real growth in the economic base and its component parts for State Region 8. Corresponding sales for final demand for each sector and year are given in Appendix C, Table 8. During the 1958 to 1984 period, agriculture has shown a small amount of real growth. The Russian wheat sales of the 1970s were the major force influencing the crop sector sales for final demand over the 27-year period. Since the time (1973-1975) of the high wheat prices associated with these sales, the agriculture sector has had only a small real growth.

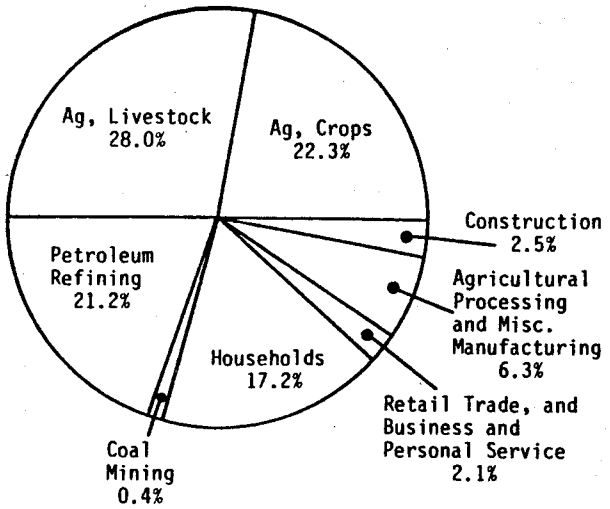
Construction, processing, trade, and services, and household sectors have experienced very similar patterns of growth over the 27-year period. None of these categories has comprised a very large portion of the region's total economic base, but they have grown slowly and steadily over the 1958 to 1984 period. The most noticeable change that has occurred to the economic

TABLE 16. COAL-FIRED THERMAL-ELECTRIC GENERATION PRODUCED FOR SALES FOR FINAL DEMAND IN STATE REGION 7, 1966-1984

Year	Thermal-Electric Generation
	- - - kwh - - -
1966	1,640,544,400
1967	2,697,626,400
1968	3,296,815,500
1969	3,311,955,300
1970	4,070,409,500
1971	4,865,725,300
1972	5,628,764,400
1973	5,365,414,500
1974	5,737,459,100
1975	5,167,206,400
1976	7,160,642,100
1977	8,381,238,700
1978	9,823,874,200
1979	11,574,317,400
1980	13,054,936,200
1981	14,161,313,600
1982	15,415,853,400
1983	16,884,650,200
1984	18,526,047,400

SOURCE: North Dakota Public Service Commission 1966-1975; Public Service Commission 1975-1984.

1958-1962 Average = $462.3 Million



1984 = $1,289.7 Million

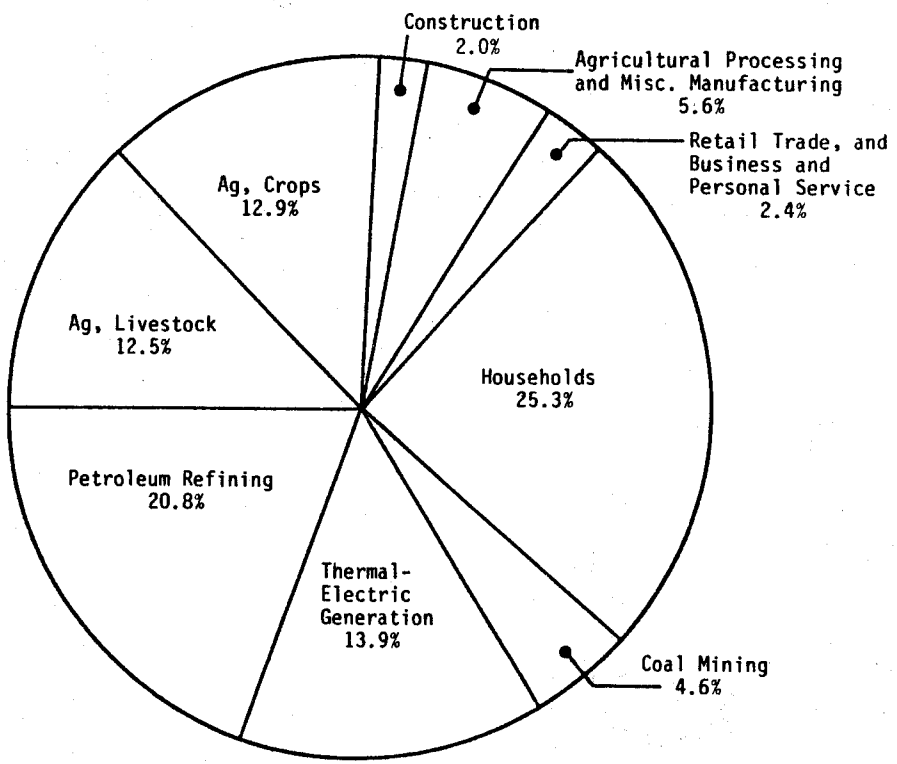


Figure 15. Real Growth in State Region 7 Economic Base, 1958-1962 Average to 1984

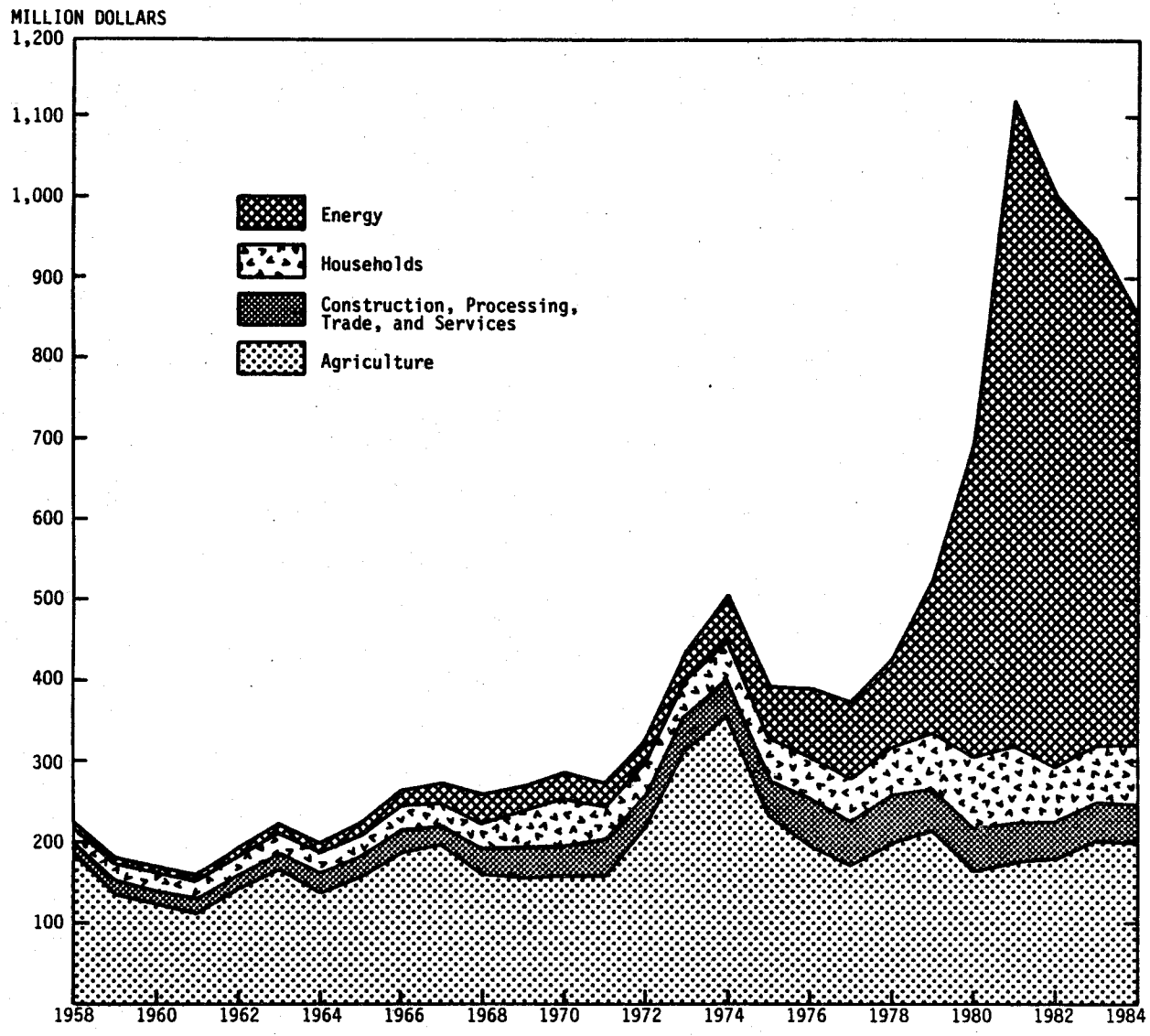


Figure 16. State Region 8 Economic Base Components in 1980 Dollars, 1958-1984

base of State Region 8 was the extremely rapid growth in the energy industry since the mid-1970s. Petroleum exploration and extraction was almost solely responsible for the growth in the energy industry; even though the coal mining sector increased its sales for final demand, it remained rather insignificant when compared to the oil industry. Table 17 shows the growth in oil production for State Region 8 from 1958 to 1984. The 23.6 million barrels of oil produced in 1984 were primarily responsible for the growth in the region's petroleum industry. Growth in the petroleum exploration and extraction industry has slowed, and, in fact, the industry has declined since 1981, reflecting the changing world oil situation. However, the "boom" in the oil industry has greatly added to the region's economic base, and, while recent declines in this sector have reduced the region's total economic base, it still remains above pre-1980 levels.

Figure 17 shows the growth in the region's total economic base and its components from 1958-1962 average to 1984. The shares of all sectors of the State Region 8 economy, except petroleum exploration and extraction and coal mining, declined during this time span. Coal mining expanded its percentage of the region's economic base from 0.5 percent to 1.9 percent through this period. During the same time, petroleum exploration and extraction grew from 2.4 percent of the region's total economic activity to 60.5 percent. The result of this tremendous growth in the oil industry was that the region's economic base shifted from one relying on crop and livestock production to an economy dominated by the oil industry; future changes in the oil industry will strongly influence the composition and growth of this region's economy.

North Dakota

Summation of the sales for final demand for the eight regions essentially yields the North Dakota economic base. This holds true for all sectors except petroleum refining, where some of those products are exported out of the producing region to other locations in the state. Figure 18 presents the economic base components for the North Dakota economy for the 1958 to 1984 period. State level sales for final demand for all sectors for the corresponding years are given in Appendix C, Table 9. As would be expected, when regional sales for final demand are aggregated, much of the year-to-year variability disappears. When viewing Figure 18, the one thing that immediately stands out was the effect of the Russian wheat sales in the mid-1970s. The dramatic growth in the state's economic base as a result of these sales is unparalleled throughout the 27-year span. However, the postsale decline in the economic base also was the largest downturn the state experienced during the period.

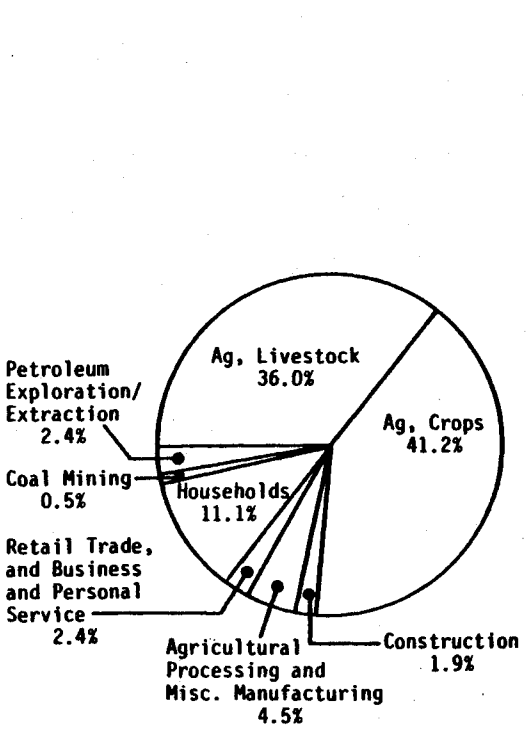
Real growth occurred not only in the agricultural sectors, but in all sectors from 1958 to 1984. The construction, processing, trade, and services sectors grew at a rather small but steady rate throughout the period. Growth in the household sector has been steady with a larger rate of expansion since the mid-1970s. Energy sector growth was rather slight until the mid-1970s, but increases since the late 1970s have been extremely large. Overall, the total North Dakota economic base grew in real terms from $2.6 billion to $5.7 billion from 1958 to 1984.

TABLE 17. OIL PRODUCTION IN STATE REGION 6, BY COUNTY, 1958-1984

Year	Billings	Bowman	Dunn	Golden Valley	Hettinger	Slope	Stark	Total
				barrels				
1958	370,090	15,213	--	--	--	--	33,297	418,600
1959	365,701	11,837	--	--	--	--	6,347	383,885
1960	478,461	53,229	39,617	--	--	--	8,317	579,624
1961	608,250	399,727	66,420	--	--	--	30,170	1,104,567
1962	646,775	883,261	43,171	--	--	--	48,037	1,621,244
1963	650,559	1,015,766	29,930	--	--	--	35,074	1,731,329
1964	746,485	789,073	27,681	--	--	--	51,943	1,615,182
1965	1,252,388	706,300	23,949	--	--	--	103,714	2,086,351
1966	2,179,081	753,357	32,106	--	--	69,589	110,640	3,147,773
1967	2,363,323	711,358	23,696	--	--	107,581	1,016,675	4,222,633
1968	4,174,609	643,343	17,669	--	--	87,473	1,401,945	6,925,039
1969	3,353,934	641,085	18,107	39,023	--	67,614	1,450,509	5,570,272
1970	2,999,976	748,731	11,642	58,129	--	44,704	1,966,394	5,829,586
1971	1,675,293	932,794	15,376	64,253	--	128,803	1,721,476	4,537,995
1972	1,855,830	980,379	11,583	89,332	--	120,854	1,241,100	4,299,078
1973	2,221,269	1,457,129	2,697	70,071	--	104,339	915,081	4,770,586
1974	2,074,291	1,436,804	695	56,146	--	85,136	1,050,078	4,703,150
1975	2,115,634	1,437,371	43,505	49,163	--	79,468	1,908,833	5,633,974
1976	2,078,355	1,798,284	96,370	50,098	--	76,413	2,082,054	6,181,574
1977	2,183,053	1,804,039	985,672	52,240	--	93,141	2,058,179	7,176,324
1978	3,074,811	1,694,533	1,647,103	71,007	--	76,168	1,786,166	8,349,788
1979	7,075,233	1,632,156	2,747,452	286,381	--	51,139	1,611,433	13,403,794
1980	14,458,733	1,532,850	2,755,447	450,165	36,920	41,691	1,574,162	20,849,961
1981	19,532,475	1,472,330	2,562,628	583,735	35,050	43,394	1,206,299	25,435,911
1982	18,468,965	1,430,731	3,707,576	616,830	30,481	72,601	1,322,140	25,649,324
1983	17,349,422	1,462,658	3,762,833	545,211	23,253	91,294	2,087,830	25,318,055
1984	15,527,216	1,810,212	3,762,833	545,211	23,518	83,504	1,811,428	23,563,922

SOURCE: North Dakota Industrial Commission 1958-1984.

1958-1962 Average = $180.4 Million



1984 = $854.6 Million

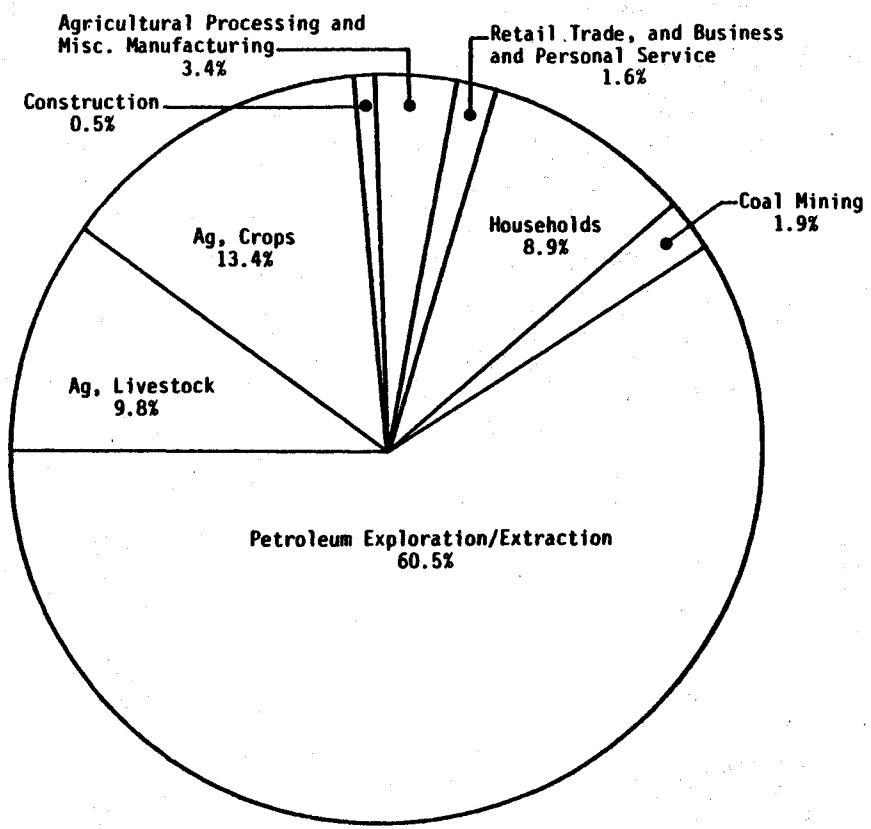


Figure 17. Real Growth in State Region 8 Economic Base, 1958-1962 Average to 1984

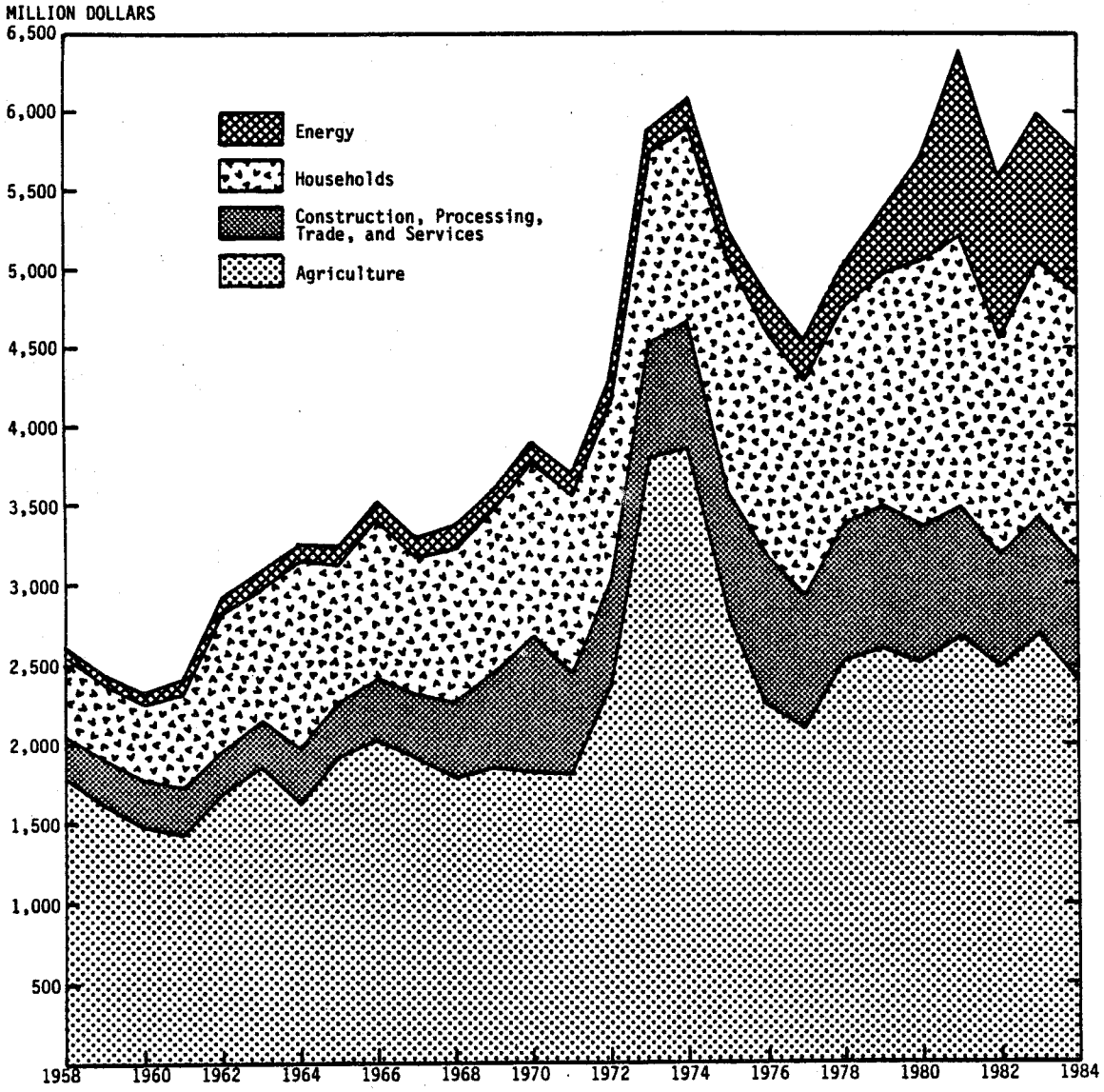


Figure 18. North Dakota Economic Base Components in 1980 Dollars, 1958-1984

Viewing the state-level economic base components in Figure 18 leads to several salient observations:

- There has been real growth in each of the categories presented.
- The increase in crop prices following the Russian wheat sales in 1972 was the event that had the largest impact on the total economic base of the state during the 1958 to 1984 period.
- Agriculture's share of the state's economic base has declined throughout the 27-year span.
- Rapid growth has occurred in the energy and household sectors since the mid-1970s.
- North Dakota's economy has diversified during the 27-year period.
- A 120 percent real growth in the state-level sales for final demand has occurred from 1958 to 1984.

In summary, the North Dakota economy has grown and diversified, but still relies on agriculture for a significant share of its total sales for final demand.

Figure 19 shows the state's real economic growth and the changing shares of the individual economic base sectors from the 1958-1962 average to 1984. The reliance on agriculture decreased during this period as livestock sales' share declined from 21.0 to 9.1 percent and crop sales for final demand decreased from 41.7 to 32.7 percent. Construction was the only other sector experiencing a decreased share of the state's economic base during this span. The petroleum exploration and extraction sector increased its share of the economic base the most; it grew from 1.5 percent of the economic base for 1958-1962 average to 10.0 percent by 1984. Oil production within the state has increased almost fourfold between 1958 and 1984; in response to high world oil prices in recent years, production increased by over 70 percent from 1979 to 1984. Total annual production of oil in North Dakota is presented in Table 18. The household sector was the second largest gainer, increasing its share of the basic economic activity by 6.3 percent during this span. Remaining sector sales for final demand shares of the total grew rather moderately during the 1958 to 1984 period.

In addition to the economic base, total business activity and employment for each sector and year provide added economic measures. Application of the input-output interdependence coefficients (Appendix A, Table 1) to the economic base activities, or sales for final demand (Appendix C, Table 9), yields estimates of total business activity, or gross business volume. (For a complete discussion of input-output analysis and associated terminology involved in this application, see Coon et al. [1985].) State employment was disaggregated to correspond with the input-output model's sector delineations. Gross business volumes and employment by sector are presented only for North Dakota because the emphasis of the regional analysis was on the economic base, its composition, and changes that have occurred from

1958-1962 Average = $2,540.3 Million

1984 = $5,736.0 Million

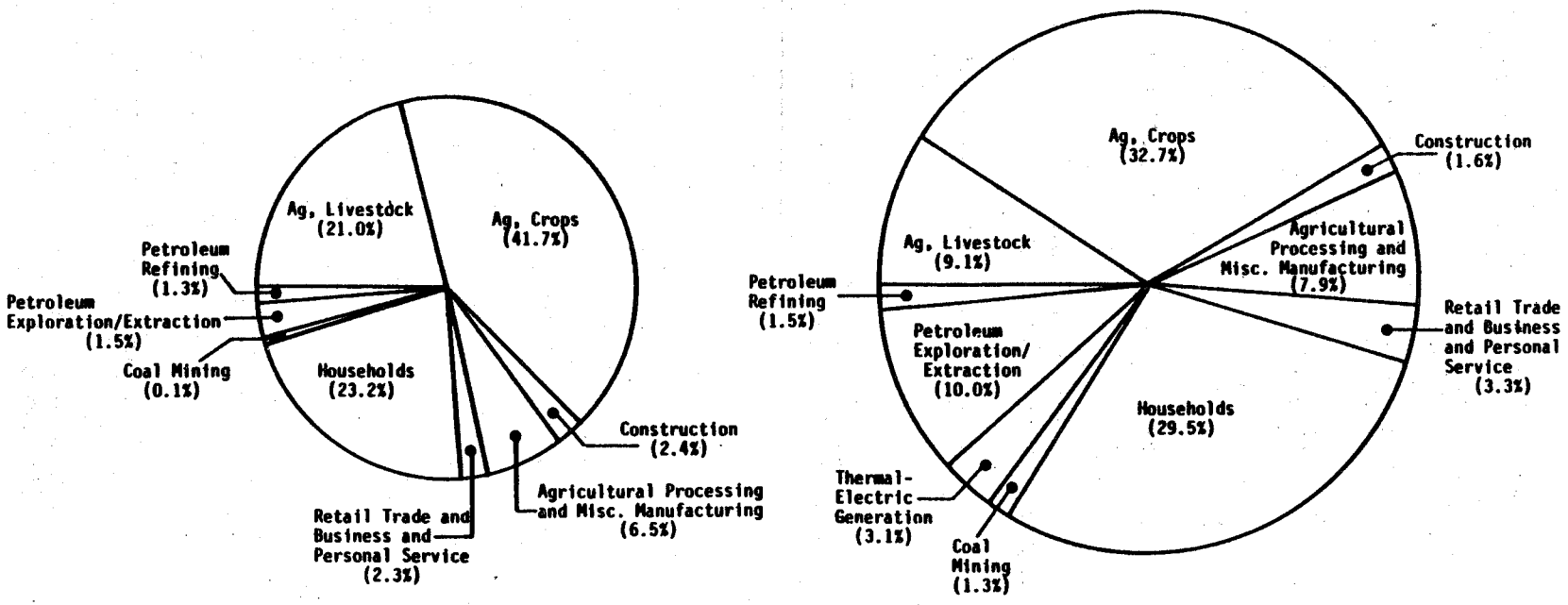


Figure 19. Real Growth in North Dakota Economic Base, 1958-1962 Average to 1984

TABLE 18. NORTH DAKOTA OIL PRODUCTION, 1958-1984

Year	North Dakota
	- -barrels- -
1958	14,259,279
1959	17,816,850
1960	21,992,945
1961	23,671,115
1962	25,175,563
1963	25,030,102
1964	25,730,346
1965	26,345,778
1966	27,126,243
1967	25,315,759
1968	25,039,995
1969	22,706,384
1970	22,000,300
1971	21,654,201
1972	20,624,199
1973	20,235,104
1974	19,696,849
1975	20,451,051
1976	21,724,690
1977	23,272,804
1978	24,815,577
1979	30,913,888
1980	40,354,030
1981	45,706,999
1982	47,548,128
1983	50,736,503
1984	52,654,336

SOURCE: North Dakota Industrial Commission, 1958-1984.

1958 to 1984. (Gross business volumes and employment for each of the eight state regions are available in Coon et al. [1984].)

Gross business volumes for North Dakota represent the total business activity occurring as a result of the multiplier process on sales for final demand. North Dakota gross business volumes for the 1958-1984 period are presented in Table 19. Gross business volumes are derived from sales for final demand and, therefore, follow trends similar to those that occurred in the economic base. For example, the extremely high crops sales for final demand in 1973 and 1974 resulted in large gross business volumes in the crops sector and increased business activity in many of the other sectors for those years. The high level of business activity in the retail trade sector is second only to that of the household sector. The reason for this is the large share of dollars coming into the state for exported products that in turn is spent on purchases in the retail trade sector. The household sector has the largest amount of business activity, and by definition, gross business volume of this sector is personal income. Substantial real growth has occurred in the state's personal income from 1958 to 1984. It should be remembered that these estimates of personal income are in terms of the 1980 dollar and should not be compared with estimates made in current year dollars.

North Dakota per capita income has increased to nearly the United States' level in recent years. State per capita personal income was 82.7 percent of the national level in 1958, but it had increased to 96.6 percent by 1984 (Table 20). The trend toward reaching the U.S. per capita income level has been steady throughout the 1958 to 1984 period with two exceptions: (1) the period of high crop prices in the mid-1970s and (2) the year oil prices reached their highest level. During the mid-1970s, state per capita income exceeded that for the U.S., and in 1973 North Dakota achieved its highest level relative to the rest of the nation (122.8 percent). The state also surpassed national per capita income in 1981 (102.2 percent), a time when oil prices and oil lease bonus payments associated with the development of this resource reached their highest levels (Coon, Anderson, and Leistritz 1986). Oil lease bonus payments (i.e., cash payments to landowners for the petroleum exploration rights) were significant contributions to the household sector in the early 1980s and helped maintain North Dakota's per capita income near national levels during a period of falling agricultural prices. Per capita incomes and personal income estimates that were used for model validation are in current year dollars.

Employment by sector shows the number of workers not only in the economic base sectors but also in those that serve and support the economic base activities (Table 21). Employment in agriculture has experienced a steady decline with approximately one-half the people engaged in crop and livestock production in 1984 compared to 1958. Agriculture has shown real growth in sales for final demand, but has been the only sector of the North Dakota economy to have a decline in the number of workers during the 27-year period. Retail trade employment was one of the largest sources of employment in the state, which corresponds with its large gross business volume. This further indicates the importance of those sectors that support the basic economic sectors; many of the dollars coming into the state were spent making retail trade purchases. Increased employment in the agricultural processing and miscellaneous manufacturing sector gives a good indication of the additional activity in the processing of agricultural products grown in the

TABLE 19. GROSS BUSINESS VOLUMES OF ECONOMIC SECTORS ESTIMATED BY THE INPUT-OUTPUT MODEL, NORTH DAKOTA, MILLION DOLLARS, (1980=BASE DOLLARS), 1958-1984

Year	(1) Ag Crops	(2) Ag Lvstk	(3) Nonmetallic Mining	(4) Const	(5) Trans	(6) Comm & Pub Util	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(9) FIRE	(10) Bus & Pers Service	(11) Prof & Soc Service	(12) House-holds	(13) Govt	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining
1958	878.8	1,649.5	18.7	251.4	31.2	228.7	846.8	1,949.6	405.6	171.7	181.4	2,746.3	246.2	3.0	--	45.2	35.3
1959	838.1	1,468.9	18.1	260.8	29.3	213.8	778.9	1,809.4	375.6	160.5	169.4	2,566.5	228.8	2.6	--	59.4	33.8
1960	698.0	1,406.9	17.5	265.2	27.6	202.4	743.8	1,708.8	355.9	150.3	160.3	2,432.8	216.2	2.6	--	67.8	32.3
1961	810.0	1,301.0	17.4	250.4	28.8	212.7	784.6	1,759.1	367.6	155.5	170.1	2,586.7	225.5	3.3	--	85.7	32.3
1962	793.1	1,633.1	20.0	274.6	33.9	260.8	793.9	2,169.0	454.9	190.5	211.5	3,229.7	277.8	3.8	--	89.0	31.5
1963	822.6	1,811.2	21.1	286.4	35.7	272.6	864.1	2,292.2	478.7	202.3	219.7	3,347.9	291.3	3.2	--	88.9	31.0
1964	839.7	1,565.5	22.6	334.4	37.1	294.3	863.2	2,399.1	503.9	212.9	241.8	3,708.4	310.4	3.7	--	95.0	31.1
1965	920.5	1,824.6	22.9	329.4	37.9	286.6	919.2	2,409.0	498.8	217.9	230.0	3,504.5	304.6	3.6	--	99.7	32.0
1966	984.4	1,942.4	24.1	331.8	41.0	312.9	974.6	2,635.9	543.2	243.1	251.9	3,840.2	332.1	4.6	10.2	102.2	32.5
1967	972.7	1,803.3	22.6	311.5	38.7	290.5	970.4	2,464.3	502.6	233.5	231.9	3,528.5	307.4	7.7	18.8	96.3	33.1
1968	906.5	1,737.3	22.7	320.0	39.0	296.5	955.1	2,512.0	508.7	244.2	237.3	3,619.4	311.8	9.4	26.4	107.4	32.0
1969	907.6	1,895.1	24.5	349.8	41.4	316.5	1,152.8	2,686.4	544.9	260.2	253.3	3,863.0	333.4	8.7	23.9	84.2	30.7
1970	898.8	1,856.7	33.1	648.6	44.4	337.5	1,077.3	2,831.9	573.3	273.4	268.9	4,104.9	351.5	10.5	26.8	89.2	29.9
1971	932.5	1,814.7	25.9	396.9	42.3	325.2	1,106.0	2,744.6	554.9	269.2	261.0	3,984.9	340.7	11.6	32.3	91.5	29.8
1972	1,097.2	2,386.2	30.7	463.1	49.6	378.3	1,248.5	3,216.7	657.8	303.4	302.8	4,612.5	400.8	11.9	37.9	92.4	30.3
1973	1,379.3	3,910.2	40.8	560.6	67.9	512.1	1,717.6	4,466.0	916.7	409.3	406.1	6,164.6	551.4	12.1	32.4	97.6	32.4
1974	1,278.3	4,110.7	42.2	588.1	70.3	527.2	1,796.3	4,589.3	945.4	416.3	417.1	6,332.4	567.3	13.1	34.6	158.2	35.4
1975	1,148.2	2,981.6	36.3	530.6	60.3	462.6	1,551.2	3,917.4	806.1	363.1	371.2	5,663.7	490.2	14.6	29.1	160.4	35.8
1976	1,150.4	2,462.5	31.8	436.7	56.0	424.8	1,799.7	3,545.1	726.9	337.4	339.6	5,182.5	445.2	29.7	51.8	179.3	37.1
1977	1,072.0	2,256.5	29.9	418.0	52.2	397.4	1,567.9	3,319.9	678.4	319.1	318.1	4,855.6	415.9	32.4	58.7	173.4	38.0
1978	1,121.6	2,713.9	33.3	466.0	57.5	436.1	1,640.6	3,695.1	754.3	353.7	347.6	5,295.8	459.3	38.3	77.3	171.9	37.6
1979	1,293.0	2,734.4	35.6	502.5	62.0	464.5	1,808.8	3,848.9	797.3	357.3	370.7	5,650.6	487.2	51.0	99.8	261.9	52.7
1980	1,328.6	2,612.5	37.7	561.7	67.0	488.7	1,800.8	3,937.0	822.6	359.7	388.5	5,930.5	505.3	67.4	120.1	513.8	76.3
1981	1,075.7	2,956.6	39.8	599.2	77.1	527.5	1,727.4	4,197.1	875.8	381.9	409.8	6,259.2	536.1	69.9	127.7	1,070.2	121.7
1982	990.8	2,705.8	34.5	504.5	67.3	458.2	1,486.9	3,692.8	766.7	340.1	354.3	5,398.5	467.7	71.7	138.7	893.9	106.2
1983	1,053.9	2,907.9	37.4	549.9	70.5	498.1	1,528.7	4,043.3	839.7	373.8	390.0	5,949.4	511.9	89.0	161.8	787.2	95.6
1984	1,013.8	2,611.9	36.3	551.5	66.9	481.5	1,498.3	3,860.0	808.3	352.8	380.7	5,815.4	494.2	105.1	179.7	702.1	90.0

TABLE 20. PER CAPITA PERSONAL INCOME, NORTH DAKOTA AND THE UNITED STATES, AND NORTH DAKOTA AS A PERCENT OF THE UNITED STATES, 1958-1984

Year	Per Capita Income		N.D. as Percent of U.S.
	North Dakota	United States	
	- - - - - - dollars - - - - - -		- - - - percent - - - -
1958	1,695	2,050	82.7
1959	1,547	2,145	72.1
1960	1,681	2,201	76.4
1961	1,553	2,248	69.1
1962	2,125	2,353	90.3
1963	1,988	2,436	81.6
1964	1,968	2,572	76.5
1965	2,323	2,750	84.5
1966	2,401	2,963	81.0
1967	2,543	3,142	80.9
1968	2,650	3,401	77.9
1969	2,947	3,667	80.4
1970	3,077	3,893	79.0
1971	3,448	4,132	83.4
1972	4,235	4,493	94.3
1973	6,117	4,981	122.8
1974	5,883	5,428	108.4
1975	5,896	5,861	100.6
1976	5,781	6,402	90.3
1977	5,887	7,042	83.6
1978	7,375	7,772	94.9
1979	8,017	8,651	92.7
1980	8,651	9,494	91.1
1981	10,777	10,544	102.2
1982	11,008	11,113	99.1
1983	11,667	11,690	99.8
1984	12,352	12,789	96.6

SOURCE: U.S. Department of Commerce 1972-1985.

TABLE 21. EMPLOYMENT BY ECONOMIC SECTOR, NORTH DAKOTA, 1958-1984[a]

Year	(1) & (2) Ag	(3) Nonmetallic Mining	(4) Const	(5) Trans	(6) Comm & Pub Util	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(9) FIRE	(10) Bus & Pers Service	(11) Prof & Soc Service	(12) House-holds	(13) Govt	(14) Coal Mining	(15) Thermal-Elec Generation	(16) Pet Exp/Ext	(17) Pet Refining	TOTAL
1958	99,670	130	14,430	6,558	7,995	16,448	36,400	5,070	12,474	14,067	--	30,260	380	60	1,903	335	246,180
1959	94,670	127	15,879	6,637	8,121	16,812	37,385	5,380	13,312	15,009	--	31,280	383	60	1,800	325	247,180
1960	91,750	123	13,860	6,585	8,032	16,608	37,627	5,580	13,613	15,350	--	31,500	383	60	1,344	315	242,730
1961	87,670	130	13,619	6,351	7,686	16,279	37,277	5,710	14,177	15,986	--	32,310	382	60	1,438	305	239,380
1962	87,670	115	15,644	6,225	7,629	16,789	36,352	5,940	14,634	16,501	--	33,920	381	60	1,274	296	243,430
1963	82,750	109	14,476	6,143	7,573	18,154	37,952	6,070	15,257	17,204	--	36,370	365	75	1,206	286	243,990
1964	78,000	113	15,291	6,071	7,503	19,055	39,226	6,230	15,804	17,821	--	38,740	349	83	1,278	276	245,840
1965	74,750	135	15,128	5,986	7,484	19,711	39,755	6,360	15,737	17,746	--	40,320	289	127	1,506	266	245,300
1966	70,660	135	12,071	6,033	7,667	20,085	40,235	6,450	16,076	18,129	--	42,080	354	188	1,441	266	241,870
1967	65,170	128	11,242	6,027	7,724	19,894	39,819	6,710	16,818	18,966	--	44,420	345	194	1,357	266	239,080
1968	63,500	125	10,565	5,941	7,680	20,335	40,119	6,740	17,329	19,542	--	47,240	337	193	1,328	256	241,230
1969	60,750	136	10,467	5,921	7,686	20,617	40,544	6,800	17,392	19,611	--	48,330	325	196	1,399	247	240,420
1970	51,920	132	12,407	5,721	7,012	19,796	40,049	6,422	17,598	19,851	--	44,920	334	239	1,003	216	227,620
1971	51,410	132	13,135	5,736	7,050	20,282	40,805	6,568	18,579	20,950	--	45,019	357	249	981	207	231,460
1972	51,580	129	14,884	5,677	7,089	21,713	42,945	6,809	19,406	21,884	--	45,927	374	269	934	200	239,820
1973	51,080	128	14,064	5,751	7,279	23,979	44,936	7,074	20,359	22,957	--	46,481	384	281	908	209	245,870
1974	52,670	137	14,869	5,874	7,486	26,022	46,639	7,479	21,387	24,118	--	47,527	356	312	1,033	201	256,110
1975	48,750	150	17,095	5,804	7,357	29,945	48,809	7,850	22,651	25,543	--	50,053	426	334	1,352	201	266,320
1976	51,250	156	19,363	5,941	7,611	30,772	52,205	8,397	23,658	26,679	--	51,633	514	354	1,645	202	280,380
1977	56,750	161	20,125	6,228	7,962	30,713	53,279	9,075	24,616	27,758	--	52,841	599	358	2,051	204	292,720
1978	54,270	165	22,555	6,690	8,583	32,326	54,437	9,627	26,090	29,421	--	55,079	742	363	2,996	206	303,550
1979	52,450	170	22,325	7,199	9,276	34,448	56,146	10,089	27,292	30,775	--	55,817	809	368	3,969	207	311,340
1980	52,680	175	19,996	7,525	9,724	32,701	55,928	10,532	28,114	31,704	--	56,057	970	386	6,066	212	312,770
1981	52,270	180	18,161	7,741	9,995	32,962	55,175	10,814	29,806	33,610	--	55,784	1,134	498	8,753	217	317,100
1982	51,870	184	19,240	7,620	9,722	32,469	55,960	10,845	31,299	35,295	--	55,596	1,302	553	7,202	193	319,350
1983	51,370	189	21,292	7,342	9,371	31,579	56,303	11,013	32,367	36,500	--	56,467	1,395	599	4,885	198	320,870
1984	50,870	194	17,528	7,530	9,546	32,380	58,358	11,242	33,453	37,725	--	57,123	1,557	646	5,065	203	323,420

[a]Includes nonagricultural self-employed, unpaid family and domestics (proprietors), and adjusted wage and salary employment (employees, not jobs).

state and the manufacturing of farm-related machinery and equipment. Business and personal and professional and social services employment also has grown rapidly during the 27-year span; however, many of these services are not evenly distributed throughout the state but rather are concentrated in the state's largest cities. For example, medical facilities and services in Fargo serve a much broader area than just State Region 5, state government offices located in Bismarck provide statewide services, and institutions of higher education essentially distribute knowledge and/or skilled workers throughout the entire state. Total employment in North Dakota has increased over 30 percent for the 1958 to 1984 period.

Productivity ratios measure the dollar output per worker for each respective sector of the economy. They are calculated by dividing annual gross business volume for each sector (Table 18) by the corresponding employment (Table 20). Because the gross business volumes were in 1980 base dollars, the resulting productivity ratios also are in real terms. Productivity ratios for North Dakota in real dollars for each sector for 1958 to 1984 are presented in Table 22. Output per worker has increased in most sectors, although the largest increases have occurred in the natural resource industries (agriculture and energy). Agriculture has increased its productivity nearly threefold during the 27-year period, which explains the continually declining employment in that sector. Petroleum refining output per worker has followed a pattern similar to that of agriculture and total employment in that sector also has decreased. Coal mining, thermal-electric generation, and petroleum exploration and extraction have all experienced increasing output per worker, but output in each of these sectors has increased substantially during the 1958-1984 period resulting in substantial employment growth in each sector. Output per worker for the retail trade sector (the sector with the most workers in 1984) increased only moderately during the 27-year span.

Conclusions

The economic base of North Dakota and its eight regions was analyzed to determine its level of activity, composition, and major trend changes that have happened during the 1958 to 1984 period. Each region has its own distinct economic base; some regions are very dependent on a single activity, and others have economies that are more diverse. Real economic growth has occurred in each of the eight regions over the 27-year period and when accumulated has resulted in sizeable growth in basic economic activity at the state level. Table 23 presents a summary of the growth in the total economic base from 1958 to 1984 at the state region level. State Regions 1 and 8 had the largest percentage increase during this period, and the state had a 120.1 percent increase.

Each of the state regions has its own mix of basic economic components. The percentage each of the basic sectors contributed to the total economic activity for each state region and the state in 1984 is presented in Table 24. The primary economic factor throughout all the regions has been natural resourse-based industries. These industries include agriculture (crop and livestock production) or energy (coal mining, thermal-electric generation, petroleum exploration and extraction, and petroleum refining). In State Regions 1 and 8 the economic base has been dominated by oil production while State Region 2 has relied on not only oil production but also crop sales and

TABLE 22. GROSS BUSINESS VOLUME TO EMPLOYMENT (PRODUCTIVITY) RATIOS, BY ECONOMIC SECTOR, NORTH DAKOTA, (1980-BASE DOLLARS), 1958-1984

Year	(1) & (2) Ag	(3) Nonmetallic Mining	(4) Const	(5) Trans	(6) Comm & Pub Util	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(9) FIRE	(10) Bus & Pers Service	(11) Prof & Soc Service	(12) House-holds	(13) Govt	(14) Coal Mining	(15) Thermal-Elec Generation	(16) Pet Exp/Ext	(17) Pet Refining
1958	25,366	143,846	17,422	4,757	28,605	51,483	53,560	80,000	13,764	12,895	--	8,136	7,894	--	23,751	105,373
1959	24,368	142,519	16,424	4,414	26,326	46,330	48,399	69,814	12,056	11,286	--	7,314	6,788	--	33,000	104,000
1960	22,941	142,276	19,134	4,191	25,199	44,785	45,414	63,781	11,040	10,442	--	6,863	6,788	--	50,446	102,539
1961	24,078	133,846	18,386	4,534	27,673	48,197	47,189	64,378	10,968	10,640	--	6,979	8,638	--	59,596	105,901
1962	27,674	173,913	17,553	5,445	34,185	47,286	59,666	76,582	13,017	12,817	--	8,189	9,973	--	69,858	106,418
1963	31,828	193,577	19,784	5,811	35,996	47,598	60,397	78,863	13,259	12,770	--	8,009	8,767	--	73,714	108,391
1964	30,835	200,000	21,869	6,111	39,224	45,300	61,160	80,882	13,471	13,568	--	8,012	10,601	--	74,334	112,681
1965	36,723	169,629	21,774	6,331	38,295	46,633	60,596	78,427	13,846	12,960	--	7,554	12,456	--	66,201	120,300
1966	41,420	178,518	27,487	6,795	40,811	48,523	65,512	84,217	15,121	13,894	--	7,892	12,994	54,255	70,922	122,180
1967	42,596	176,562	27,708	6,421	37,610	48,778	61,887	74,903	13,883	12,227	--	6,920	22,318	96,907	70,965	124,436
1968	41,634	181,600	30,288	6,564	38,606	46,968	62,613	75,474	14;091	12,143	--	6,600	27,893	136,787	80,873	125,000
1969	46,134	180,147	33,419	6,992	41,178	55,915	66,258	80,132	14,960	12,916	--	6,898	26,769	121,938	60,185	124,291
1970	53,072	250,758	52,277	7,761	48,132	54,420	70,711	89,271	15,536	13,546	--	7,825	31,437	112,134	88,933	138,426
1971	53,437	196,212	30,216	7,374	46,127	54,531	67,261	84,485	14,489	12,458	--	7,567	32,492	129,718	93,272	143,961
1972	67,533	237,984	31,113	8,737	53,364	57,500	74,902	96,607	15,634	13,836	--	8,726	31,818	140,892	98,929	151,500
1973	103,553	318,750	39,860	11,806	70,353	71,629	99,385	129,587	20,104	17,689	--	11,862	31,510	115,302	107,488	155,023
1974	102,316	308,029	39,552	11,967	70,424	69,030	98,400	126,407	19,465	17,294	--	11,936	36,797	110,897	153,146	176,119
1975	84,713	242,000	31,038	10,389	62,878	51,801	80,259	102,687	16,030	14,532	--	9,793	34,272	87,125	118,639	178,109
1976	70,495	203,846	22,553	9,426	55,813	58,484	67,907	86,566	14,261	12,729	--	8,622	57,782	146,327	108,996	183,663
1977	58,651	185,714	20,770	8,381	49,912	51,050	62,311	74,754	12,963	11,459	--	7,870	54,090	163,966	84,544	186,274
1978	70,674	201,818	20,660	8,594	50,809	50,751	67,878	78,352	13,556	11,814	--	8,338	51,617	212,947	57,376	182,524
1979	76,785	209,165	22,508	8,610	50,078	52,508	68,552	79,022	13,093	12,046	--	8,729	62,989	271,195	65,991	254,628
1980	74,811	215,297	28,091	8,903	50,255	55,070	70,394	78,103	12,793	12,253	--	9,014	69,570	311,139	84,707	360,075
1981	77,144	220,933	32,993	9,958	52,772	52,407	76,069	80,983	12,813	12,192	--	9,611	61,632	256,425	122,261	560,982
1982	71,265	187,326	26,219	8,827	47,126	45,794	65,990	70,696	10,866	10,037	--	8,413	55,056	250,814	124,111	549,985
1983	77,121	197,698	25,824	9,606	53,148	48,407	71,813	76,247	11,548	10,686	--	9,066	63,806	270,117	161,142	482,889
1984	71,273	187,119	31,463	8,882	50,444	46,273	66,143	71,896	10,545	10,091	--	8,652	67,513	278,173	138,609	443,438

TABLE 23. TOTAL ECONOMIC BASE BY STATE REGION, AND GROWTH DURING THE TWENTY-SEVEN YEAR PERIOD 1958 TO 1984, 1980 BASE DOLLARS

State Region	Total Economic Base 1958	1984	Increase
	- - - -million dollars - - - -		- -percent- -
1	159.9	749.3	368.6
2	330.7	848.0	156.4
3	251.4	449.4	78.8
4	351.8	802.4	128.1
5	505.8	881.3	74.2
6	423.9	672.1	58.6
7	502.2	1,289.7	156.8
8	216.5	854.6	294.7
North Dakota	2,605.5	5,736.0	120.1

the household sector (i.e., primarily the federal government expenditures to maintain and staff the Minot Air Force Base) for its economic growth. Agriculture has been the major factor affecting the economies of State Regions 3 and 6 where crop sales predominately have been responsible for economic growth. State Region 4 has relied heavily on crop sales, households (federal government expenditures for the Grand Forks Air Force Base), and agricultural processing for its economic strength. Economic growth in State Region 5 has resulted from crop sector sales for final demand, households, and agricultural processing and miscellaneous manufacturing. State Region 7, the region with the largest economic base in 1984, has a relatively diverse economy. Extensive energy resources located within the region in addition to crop and livestock sales and the household sector have given this region a broad economic base that has experienced significant real growth.

North Dakota and its eight regions have realized real economic growth during the 1958 to 1984 period. The source of this growth varies from region to region but almost invariably is linked to the state's natural resources--agriculture and energy. The domination of agriculture has given way to either energy or a more diversified economic base for most of the eight state regions. However, agriculture still remains a very important source of basic economic activity within the state despite its decreased share of the total activity during the 27-year span. Growth and diversification of basic economic activities at the regional level add up to sizable real growth at the state level. Changes at the regional level are mirrored in total state economic base activity which has as its central feature the dimension of strong real growth resulting from many sectors of the economy.

TABLE 24. COMPOSITION OF ECONOMIC BASE BY STATE REGION, 1980=BASE DOLLARS, 1984

Sector	State Region 1	2	3	4	5	6	7	8	State
	percent								
Ag, Livestock	3.5	6.5	5.7	2.1	5.3	16.3	12.5	9.8	9.1
Ag, Crops	6.3	24.3	49.8	44.2	46.7	52.0	12.9	13.4	32.7
Construction	0.6	1.7	1.7	1.6	1.3	1.2	2.0	0.5	1.6
Ag Proc & Misc Mfg	2.0	7.7	3.7	10.5	14.9	6.0	5.6	3.4	7.9
Retail Trade	1.0	2.6	2.7	2.4	2.9	3.0	1.8	1.2	2.5
Bus & Pers Service	0.3	0.8	0.9	0.8	1.0	1.0	0.6	0.4	0.8
Households	13.7	39.8	35.5	38.4	27.9	20.5	25.3	8.9	29.5
Coal Mining	a	--	--	--	--	--	4.6	1.9	1.3
Elec Generation	--	--	--	--	--	--	13.9	--	3.1
Pet Exp/Ext	69.1	16.6	--	--	--	--	--	60.5	10.0
Pet Refining	3.5	--	--	--	--	--	20.8	--	1.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

a = less than 0.1 percent

APPENDIX A

North Dakota and State Region Input-Output Interdependence Coefficients

TABLE A1. INPUT-OUTPUT INTERDEPENDENCE COEFFICIENTS, BASED ON TECHNICAL COEFFICIENTS FOR 17-SECTOR MODEL FOR NORTH DAKOTA

Sector	(1) Ag, Lvstk	(2) Ag, Crops	(3) Nonmetallic Mining	(4) Const	(5) Trans	(6) Comm & Pub Util	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(9) FIRE
(1) Ag, Livestock	1.2072	0.0774	0.0445	0.0343	0.0455	0.0379	0.1911	0.0889	0.0617
(2) Ag, Crops	0.3938	1.0921	0.0174	0.0134	0.0178	0.0151	0.6488	0.0317	0.0368
(3) Nonmetallic Mining	0.0083	0.0068	1.0395	0.0302	0.0092	0.0043	0.0063	0.0024	0.0049
(4) Construction	0.0722	0.0794	0.0521	1.0501	0.0496	0.0653	0.0618	0.0347	0.0740
(5) Transportation	0.0151	0.0113	0.0284	0.0105	1.0079	0.0135	0.0128	0.0104	0.0120
(6) Comm & Public Util	0.0921	0.0836	0.1556	0.0604	0.0839	1.1006	0.0766	0.0529	0.1321
(7) Ag Proc & Misc Mfg	0.5730	0.1612	0.0272	0.0207	0.0277	0.0239	1.7401	0.0452	0.0704
(8) Retail Trade	0.7071	0.8130	0.5232	0.4100	0.5475	0.4317	0.6113	1.2734	0.6764
(9) Fin, Ins, Real Estate	0.1526	0.1677	0.1139	0.0837	0.1204	0.1128	0.1322	0.0577	1.1424
(10) Bus & Pers Services	0.0562	0.0684	0.0430	0.0287	0.0461	0.0374	0.0514	0.0194	0.0766
(11) Prof & Soc Services	0.0710	0.0643	0.0559	0.0402	0.0519	0.0526	0.0530	0.0276	0.0816
(12) Households	1.0458	0.9642	0.8424	0.6089	0.7876	0.7951	0.7859	0.4034	1.2018
(13) Government	0.0987	0.0957	0.0853	0.0519	0.2583	0.0999	0.0796	0.0394	0.1071
(14) Coal Mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(15) Thermal-Elec Generation	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(16) Pet Exp/Ext	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(17) Pet Refining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gross Receipts Multiplier	4.4931	3.6851	3.0284	2.4430	3.0534	2.7901	4.4509	2.0871	3.6778

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TABLE A1. INPUT-OUTPUT INTERDEPENDENCE COEFFICIENTS, BASED ON TECHNICAL COEFFICIENTS FOR 17-SECTOR MODEL FOR NORTH DAKOTA (CONTINUED)

Sector	(10) Bus & Pers Service	(11) Prof & Soc Service	(12) Households	(13) Govt	(14) Coal Mining	(15) Thermal-Elec Generation	(16) Pet Exp/Ext	(17) Pet Refining
(1) Ag, Livestock	0.0384	0.0571	0.0674	0.0000	0.0376	0.0251	0.0159	0.0145
(2) Ag, Crops	0.0152	0.0229	0.0266	0.0000	0.0285	0.0321	0.0062	0.0057
(3) Nonmetallic Mining	0.0043	0.0050	0.0057	0.0000	0.0032	0.0019	0.0045	0.0037
(4) Construction	0.0546	0.0787	0.0902	0.0000	0.0526	0.0328	0.1148	0.0929
(5) Transportation	0.0118	0.0100	0.0093	0.0000	0.0084	0.0048	0.0180	0.0172
(6) Comm & Public Util	0.1104	0.1192	0.1055	0.0000	0.0712	0.0378	0.0510	0.0444
(7) Ag Proc & Misc Mfg	0.0237	0.0362	0.0417	0.0000	0.0618	0.0782	0.0097	0.0089
(8) Retail Trade	0.4525	0.6668	0.7447	0.0000	0.3995	0.2266	0.1838	0.1675
(9) Fin, Ins, Real Estate	0.1084	0.1401	0.1681	0.0000	0.0771	0.0977	0.0388	0.0358
(10) Bus & Pers Services	1.0509	0.0455	0.0605	0.0000	0.0289	0.0201	0.0139	0.0127
(11) Prof & Soc Services	0.0497	1.1026	0.0982	0.0000	0.0493	0.0301	0.0210	0.0195
(12) Households	0.7160	1.0437	1.5524	0.0000	0.6666	0.3973	0.3205	0.2951
(13) Government	0.0774	0.0881	0.1080	1.0000	0.0511	0.0444	0.0280	0.0285
(14) Coal Mining	0.0000	0.0000	0.0000	0.0000	1.0000	0.1582	0.0003	0.0002
(15) Thermal-Elec Generation	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000
(16) Pet Exp/Ext	0.0000	0.0000	0.0000	0.0000	0.0138	0.0084	1.0981	0.8227
(17) Pet Refining	0.0000	0.0000	0.0000	0.0000	0.0168	0.0102	0.0000	1.0000
Gross Receipts Multiplier	2.7133	3.4159	3.0783	1.0000	2.5664	2.2057	1.9245	2.5693

TABLE A2. INPUT-OUTPUT INTERDEPENDENCE COEFFICIENTS, BASED ON TECHNICAL COEFFICIENTS FOR 17-SECTOR MODEL, NORTH DAKOTA REGIONS

	Sector	(1) Ag, Lvstk	(2) Ag, Crops	(3) Nonmetallic Mining	(4) Const	(5) Trans	(6) Comm & Pub Util	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(9) FIRE
(1)	Ag, Livestock	1.2072	0.0774	0.0445	0.0343	0.0455	0.0379	0.1911	0.0889	0.0617
(2)	Ag, Crops	0.3938	1.0921	0.0174	0.0134	0.0178	0.0151	0.6488	0.0317	0.0368
(3)	Nonmetallic Mining	0.0083	0.0068	1.0395	0.0302	0.0092	0.0043	0.0063	0.0024	0.0049
(4)	Construction	0.0722	0.0794	0.0521	1.0501	0.0496	0.0653	0.0618	0.0347	0.0740
(5)	Transportation	0.0151	0.0113	0.0284	0.0105	1.0079	0.0135	0.0128	0.0104	0.0120
(6)	Comm & Public Util	0.0921	0.0836	0.1556	0.0604	0.0839	1.1006	0.0766	0.0529	0.1321
(7)	Ag Proc & Misc Mfg	0.5730	0.1612	0.0272	0.0207	0.0277	0.0239	1.7401	0.0452	0.0704
(8)	Retail Trade	0.7071	0.8130	0.5232	0.4100	0.5475	0.4317	0.6113	1.2734	0.6764
(9)	Fin, Ins, Real Estate	0.1526	0.1677	0.1139	0.0837	0.1204	0.1128	0.1322	0.0577	1.1424
(10)	Bus & Pers Services	0.0562	0.0684	0.0430	0.0287	0.0461	0.0374	0.0514	0.0194	0.0766
(11)	Prof & Soc Services	0.0710	0.0643	0.0559	0.0402	0.0519	0.0526	0.0530	0.0276	0.0816
(12)	Households	1.0458	0.9642	0.8424	0.6089	0.7876	0.7951	0.7859	0.4034	1.2018
(13)	Government	0.0987	0.0957	0.0853	0.0519	0.2583	0.0999	0.0796	0.0394	0.1071
(14)	Coal Mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(15)	Thermal-Elec Generation	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(16)	Pet Exp/Ext	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
(17)	Pet Refining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gross Receipts Multiplier		4.4931	3.6851	3.0284	2.4430	3.0534	2.7901	4.4509	2.0871	3.6778

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TABLE A2. INPUT-OUTPUT INTERDEPENDENCE COEFFICIENTS, BASED ON TECHNICAL COEFFICIENTS FOR 17-SECTOR MODEL, NORTH DAKOTA REGIONS (CONTINUED)

Sector	(10) Bus & Pers Service	(11) Prof & Soc Service	(12) Households	(13) Govt	(14) Coal Mining	(15) Thermal-Elec Generation	(16) Pet Exp/Ext	(17) Pet Refining
(1) Ag, Livestock	0.0384	0.0571	0.0674	0.0000	0.0375	0.0250	0.0159	0.0040
(2) Ag, Crops	0.0152	0.0229	0.0266	0.0000	0.0284	0.0321	0.0062	0.0016
(3) Nonmetallic Mining	0.0043	0.0050	0.0057	0.0000	0.0031	0.0019	0.0045	0.0007
(4) Construction	0.0546	0.0787	0.0902	0.0000	0.0514	0.0320	0.1148	0.0168
(5) Transportation	0.0118	0.0100	0.0093	0.0000	0.0082	0.0046	0.0180	0.0053
(6) Comm & Public Util	0.1104	0.1192	0.1055	0.0000	0.0707	0.0374	0.0510	0.0106
(7) Ag Proc & Misc Mfg	0.0237	0.0362	0.0417	0.0000	0.0617	0.0781	0.0097	0.0025
(8) Retail Trade	0.4525	0.6668	0.7447	0.0000	0.3975	0.2254	0.1838	0.0458
(9) Fin, Ins, Real Estate	0.1084	0.1401	0.1681	0.0000	0.0767	0.0975	0.0388	0.0101
(10) Bus & Pers Services	1.0509	0.0455	0.0605	0.0000	0.0287	0.0200	0.0139	0.0035
(11) Prof & Soc Services	0.0497	1.1026	0.0982	0.0000	0.0491	0.0300	0.0210	0.0055
(12) Households	0.7160	1.0437	1.5524	0.0000	0.6630	0.3951	0.3205	0.0828
(13) Government	0.0774	0.0881	0.1080	1.0000	0.0508	0.0443	0.0280	0.0094
(14) Coal Mining	0.0000	0.0000	0.0000	0.0000	1.0000	0.1582	0.0003	0.0000
(15) Thermal-Elec Generation	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000
(16) Pet Exp/Ext	0.0000	0.0000	0.0000	0.0000	0.0016	0.0010	1.0981	0.0954
(17) Pet Refining	0.0000	0.0000	0.0000	0.0000	0.0168	0.0102	0.0000	1.0000
Gross Receipts Multiplier	2.7133	3.4159	3.0783	1.0000	2.5452	2.1928	1.9245	1.2940

APPENDIX B

North Dakota and State Regions
Annual Personal Income Estimate Comparisons

TABLE B1. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	1,022,412	--
1959	1,008,057	978,420	- 2.94
1960	--	942,488	--
1961	--	1,011,462	--
1962	1,460,980	1,285,790	-11.99
1963	--	1,353,864	--
1964	--	1,521,191	--
1965	1,497,762	1,470,129	- 1.84
1966	1,555,539	1,662,394	6.87
1967	1,595,042	1,573,010	- 1.38
1968	1,643,964	1,684,451	2.46
1969	1,850,417	1,890,973	2.19
1970	1,913,283	2,117,319	10.66
1971	2,158,416	2,156,642	- 0.08
1972	2,676,385	2,601,416	- 2.80
1973	3,841,862	3,674,738	- 4.35
1974	3,739,859	4,104,667	9.75
1975	3,755,431	4,009,827	6.77
1976	3,828,880	3,860,970	0.84
1977	3,982,404	3,829,503	- 3.84
1978	4,798,839	4,481,331	- 6.62
1979	5,228,461	5,187,221	- 0.79
1980	5,657,789	5,390,502	- 4.72
1981	7,123,641	6,899,460	- 3.15
1982	7,306,383	6,305,332	-13.70
1983	7,936,951	7,223,150	- 8.99
1984	8,479,079	7,324,837	-13.61
Absolute Average Difference			5.47

Mean = -1.875 (S.D. = 6.626)

Theil's U_1 Coefficient = .066

TABLE B2. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA REGION 1, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	44,687	--
1959	59,718	44,253	-25.90
1960	--	50,265	--
1961	--	44,640	--
1962	78,870	64,718	-17.94
1963	--	74,743	--
1964	--	70,466	--
1965	76,628	73,012	- 4.72
1966	78,795	83,290	5.70
1967	79,591	77,415	- 2.73
1968	78,775	78,134	- 0.81
1969	87,624	102,880	17.41
1970	84,689	98,959	16.85
1971	96,134	105,697	9.95
1972	136,057	134,840	- 0.89
1973	204,685	199,833	- 2.37
1974	194,571	225,908	16.10
1975	177,223	191,602	8.11
1976	201,363	189,657	- 5.81
1977	200,989	181,817	- 9.54
1978	237,102	221,063	- 6.76
1979	278,208	352,493	26.70
1980	342,397	473,362	38.25
1981	508,407	668,652	31.52
1982	518,947	548,678	5.73
1983	480,841	536,224	11.52
1984	--	528,162	--
Absolute Average Difference			12.64

Mean = 5.255 (S.D. = 15.428)

Theil's U_1 Coefficient = .141

TABLE B3. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA REGION 2, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	130,582	--
1959	147,978	131,035	-11.45
1960	--	138,169	--
1961	--	124,941	--
1962	229,664	244,366	6.40
1963	--	236,135	--
1964	--	310,427	--
1965	246,881	236,615	- 4.16
1966	255,947	287,789	12.44
1967	265,856	225,987	-15.00
1968	276,269	262,755	- 4.89
1969	297,901	312,349	4.85
1970	302,298	355,123	17.47
1971	338,986	367,950	8.54
1972	415,657	395,840	- 4.77
1973	644,783	628,638	- 2.50
1974	579,274	676,079	16.71
1975	590,364	773,761	31.06
1976	603,654	596,058	- 1.26
1977	620,179	598,010	- 3.57
1978	717,142	706,215	- 1.52
1979	763,259	795,481	4.22
1980	818,633	957,929	17.02
1981	1,051,453	1,200,131	14.14
1982	1,074,357	1,031,912	-3.95
1983	1,118,417	1,131,451	1.17
1984	--	1,133,385	--
Absolute Average Difference			8.91

Mean = 3.855 (S.D. = 10.904)

Theil's U_1 Coefficient = .078

TABLE B4. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA REGION 3, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	96,231	--
1959	75,380	98,344	30.46
1960	--	83,355	--
1961	--	90,564	--
1962	125,881	117,393	- 6.74
1963	--	120,242	--
1964	--	115,422	--
1965	113,252	120,271	6.20
1966	115,339	132,552	14.92
1967	116,210	137,643	18.44
1968	113,863	141,075	23.90
1969	132,362	156,659	18.36
1970	134,149	175,424	30.77
1971	171,319	187,663	9.54
1972	219,943	240,928	9.54
1973	344,686	347,427	0.80
1974	305,574	389,790	27.56
1975	329,634	404,116	22.60
1976	298,102	371,798	24.72
1977	282,327	358,218	26.88
1978	355,128	414,927	16.84
1979	345,120	468,468	35.74
1980	351,420	519,132	47.72
1981	472,003	566,170	19.95
1982	472,565	560,207	18.55
1983	524,581	636,841	21.40
1984	--	649,352	--
Absolute Average Difference			20.55

Mean = 19.912 (S.D. = 11.809)

Theil's U_1 Coefficient = .165

TABLE B5. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA REGION 4, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	145,193	--
1959	148,481	150,997	1.69
1960	--	153,247	--
1961	--	169,115	--
1962	237,296	214,410	- 9.64
1963	--	221,752	--
1964	--	300,422	--
1965	242,790	265,227	9.24
1966	255,725	283,196	10.74
1967	259,432	258,074	- 0.52
1968	263,231	285,615	8.50
1969	292,997	297,814	1.64
1970	321,032	425,682	32.60
1971	337,749	352,634	4.41
1972	411,977	438,847	6.52
1973	585,807	616,354	5.21
1974	550,925	711,895	29.22
1975	582,447	655,960	12.62
1976	575,480	740,622	28.70
1977	591,776	604,941	2.22
1978	680,502	682,950	0.36
1979	704,153	750,151	6.53
1980	785,965	891,764	13.46
1981	954,807	925,683	- 3.05
1982	990,250	879,163	-11.22
1983	1,090,085	1,167,613	7.11
1984	--	1,164,152	--
Absolute Average Difference			9.77

Mean = 7.446 (S.D. = 11.150)

Theil's U_1 Coefficient = .085

TABLE B6. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA REGION 5, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	210,311	--
1959	246,635	202,747	-17.79
1960	--	168,958	--
1961	--	246,713	--
1962	329,802	224,150	-32.03
1963	--	268,983	--
1964	--	276,766	--
1965	302,045	291,794	- 3.39
1966	313,531	325,413	3.79
1967	323,655	323,700	.01
1968	348,515	334,415	- 4.04
1969	387,405	349,439	- 9.80
1970	402,016	350,252	-12.88
1971	463,039	377,569	-18.46
1972	545,326	454,094	-16.73
1973	810,696	659,848	-18.61
1974	819,193	716,349	-49.17
1975	789,388	610,706	-22.63
1976	839,982	644,246	-23.30
1977	900,063	711,390	-20.96
1978	1,060,151	832,694	-21.46
1979	1,214,965	878,121	-27.72
1980	1,233,005	988,250	-19.85
1981	1,526,897	1,012,904	-33.66
1982	1,554,905	942,839	-39.36
1983	1,751,616	1,183,114	-32.46
1984	--	912,693	--
Absolute Average Difference			18.64

Mean = -18.281 (S.D. = 11.142)

Theil's U_1 Coefficient = .221

TABLE B7. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA REGION 6, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	160,836	--
1959	120,146	146,202	21.69
1960	--	144,804	--
1961	--	146,218	--
1962	178,769	165,510	- 7.42
1963	--	167,090	--
1964	--	168,434	--
1965	192,849	187,107	- 2.98
1966	197,939	207,613	4.89
1967	204,231	208,909	2.29
1968	207,914	226,161	8.78
1969	239,677	252,705	5.44
1970	237,269	265,927	12.08
1971	269,860	288,648	6.96
1972	331,369	344,838	4.06
1973	439,026	441,734	0.62
1974	478,364	538,335	12.54
1975	466,071	518,600	11.27
1976	421,773	466,084	10.50
1977	433,028	492,530	13.74
1978	548,042	606,340	10.64
1979	572,587	682,753	19.24
1980	609,341	672,614	10.38
1981	777,082	814,323	4.79
1982	758,957	797,575	5.09
1983	839,467	877,662	4.55
1984	--	900,398	--
Absolute Average Difference			8.57

Mean = 7.579 (S.D. = 6.616)

Theil's U_1 Coefficient = .066

TABLE B8. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA REGION 7, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	159,563	--
1959	146,689	144,166	- 1.72
1960	--	148,228	--
1961	--	135,701	--
1962	195,125	189,388	- 2.94
1963	--	187,168	--
1964	--	210,892	--
1965	231,558	216,662	- 6.43
1966	242,985	245,526	1.04
1967	250,605	236,824	- 5.50
1968	259,639	257,277	- 0.91
1969	298,470	302,708	1.42
1970	315,813	312,844	- 0.94
1971	348,358	345,985	- 0.68
1972	440,518	425,182	- 3.48
1973	564,662	540,288	- 4.32
1974	566,616	564,281	- 0.41
1975	632,638	622,156	- 1.66
1976	663,027	625,110	- 5.72
1977	716,783	658,735	- 8.10
1978	892,490	745,644	-16.45
1979	1,003,637	928,140	- 7.52
1980	1,107,550	1,052,365	- 4.98
1981	1,308,660	1,222,484	- 6.59
1982	1,390,399	1,113,950	-19.88
1983	1,584,282	1,250,481	-21.07
1984	--	1,328,201	--
Absolute Average Difference			5.80

Mean = -5.564 (S.D. = 6.192)

Theil's U_1 Coefficient = .102

TABLE B9. ESTIMATES OF PERSONAL INCOME AND DIFFERENCES IN ESTIMATES, NORTH DAKOTA REGION 8, 1958-1984 (THOUSAND DOLLARS)

Year	Department of Commerce Estimate	I-O Analysis Estimate	Percent Difference
1958	--	81,400	--
1959	63,030	67,749	7.49
1960	--	65,000	--
1961	--	62,782	--
1962	86,218	76,068	-11.77
1963	--	88,911	--
1964	--	80,448	--
1965	91,759	92,126	0.40
1966	95,278	110,365	15.83
1967	95,462	116,224	21.75
1968	95,758	111,175	16.10
1969	113,981	128,017	12.31
1970	116,019	145,196	25.15
1971	132,971	142,352	7.05
1972	175,538	178,924	1.93
1973	247,517	252,643	2.07
1974	245,342	307,670	25.40
1975	187,666	257,685	37.31
1976	225,499	257,666	14.26
1977	237,259	259,047	9.18
1978	308,282	312,423	1.34
1979	346,532	391,019	12.84
1980	409,478	474,843	15.96
1981	524,332	687,441	31.11
1982	546,003	640,783	17.36
1983	547,660	666,138	21.63
1984	--	660,583	--
Absolute Average Difference			14.68

Mean = 13.556 (S.D. = 11.220)

Theil's U_1 Coefficient = .134

APPENDIX C

North Dakota and State Regions Sales for Final Demand

TABLE C1. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA REGION 1, (1980=BASE DOLLARS) MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	27.7	43.5	2.1	7.3	2.4	0.8	15.6	0.3	--	47.3	12.9	159.9
1959	25.7	37.8	2.9	6.0	2.6	0.8	16.8	0.3	--	54.3	12.3	159.5
1960	20.7	49.6	3.6	6.7	2.1	0.8	18.8	0.3	--	65.8	11.9	180.3
1961	25.6	26.9	2.8	6.4	2.6	0.8	19.4	0.5	--	67.8	11.8	164.6
1962	23.1	71.3	1.8	5.5	2.5	0.8	23.9	0.5	--	75.9	11.6	216.9
1963	25.0	89.5	2.0	5.9	3.0	1.0	24.2	0.2	--	80.9	11.1	242.8
1964	26.6	59.0	3.2	6.3	3.7	1.2	31.2	0.2	--	88.5	10.7	230.6
1965	31.5	63.4	3.3	6.2	4.3	1.4	26.2	--	--	89.6	11.0	236.9
1966	33.0	76.0	2.3	6.5	5.8	1.8	28.9	--	--	89.6	10.6	254.5
1967	33.2	63.3	2.5	7.0	6.7	2.2	26.9	--	--	74.9	10.3	227.0
1968	29.9	56.7	2.6	7.1	8.2	2.8	29.4	--	--	71.8	9.9	218.4
1969	28.2	81.7	3.1	11.0	8.6	2.9	42.9	--	--	57.6	9.6	245.6
1970	29.1	74.3	1.4	9.5	9.1	3.1	36.6	--	--	56.0	9.9	229.0
1971	33.1	62.8	1.3	10.0	9.6	3.1	42.5	--	--	57.8	10.5	230.7
1972	38.1	105.7	4.4	9.9	8.3	2.8	40.4	--	--	55.5	10.6	275.7
1973	45.0	193.3	0.5	13.4	8.7	2.9	42.9	--	--	55.7	11.4	373.8
1974	36.1	197.5	1.7	15.6	7.9	2.6	42.1	--	--	111.1	12.7	427.3
1975	33.9	120.1	1.3	14.4	8.8	3.0	43.8	--	--	101.8	12.7	339.8
1976	34.6	94.8	2.7	20.8	9.9	3.4	41.3	--	--	116.5	12.9	336.9
1977	33.5	64.2	3.4	17.1	10.0	3.3	45.6	--	--	124.1	13.1	314.3
1978	34.9	94.1	4.3	17.0	10.7	3.5	44.4	--	--	128.6	12.8	350.3
1979	44.8	76.9	2.6	18.8	8.8	2.9	121.0	--	--	161.3	16.3	453.4
1980	45.0	81.2	5.3	18.6	7.9	2.6	156.3	0.2	--	251.1	22.5	590.7
1981	28.1	94.8	3.4	18.5	8.0	2.6	200.5	0.1	--	467.5	35.7	859.2
1982	26.4	85.1	2.2	14.9	7.9	2.7	128.5	0.1	--	436.4	31.0	735.2
1983	28.6	90.2	3.0	14.7	8.9	3.0	98.0	0.1	--	472.0	27.8	746.3
1984	26.4	47.3	4.1	15.1	7.7	2.5	102.2	0.1	--	517.9	26.0	749.3

TABLE C2. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA REGION 2, (1980=BASE DOLLARS), MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	65.0	126.0	5.9	21.0	6.7	2.4	84.1	--	--	19.6	--	330.7
1959	60.1	131.4	8.7	19.4	7.3	2.4	76.3	--	--	32.8	--	338.4
1960	48.5	136.8	10.1	22.7	5.9	2.1	85.2	--	--	43.4	--	354.7
1961	59.6	59.3	7.4	23.8	6.9	2.3	100.0	--	--	53.5	--	312.8
1962	54.0	214.5	5.0	22.4	7.3	2.5	198.2	--	--	54.5	--	558.4
1963	55.4	220.1	5.2	26.2	8.4	2.7	172.4	--	--	53.4	--	543.8
1964	56.8	182.1	8.8	27.5	9.8	3.4	302.5	--	--	58.5	--	649.4
1965	64.8	186.4	8.8	26.9	12.2	4.1	169.2	--	--	60.5	--	532.9
1966	65.6	221.3	6.5	28.0	15.9	5.3	212.1	--	--	54.5	--	609.2
1967	67.1	147.2	6.5	30.3	18.8	6.3	154.3	--	--	48.2	--	478.7
1968	56.3	155.8	6.9	31.6	23.0	7.7	191.2	--	--	46.2	--	518.7
1969	53.1	195.7	4.3	47.6	23.9	8.0	209.6	--	--	40.9	--	583.1
1970	54.5	182.6	5.6	41.3	25.6	8.5	251.1	--	--	41.7	--	610.9
1971	65.6	169.4	9.2	43.1	26.6	8.9	242.8	--	--	45.1	--	610.7
1972	70.4	236.9	7.4	43.4	23.6	7.8	213.5	--	--	45.7	--	648.7
1973	82.5	522.2	11.7	58.5	24.5	8.2	246.1	--	--	42.9	--	996.6
1974	69.7	464.1	8.8	67.6	22.1	7.4	274.6	--	--	73.9	--	988.2
1975	66.2	291.8	7.6	62.3	24.4	8.2	419.9	--	--	65.7	--	946.1
1976	71.0	206.2	2.4	90.2	27.8	9.3	266.2	--	--	73.7	--	746.8
1977	68.8	167.2	14.5	74.4	26.8	9.4	270.2	--	--	64.7	--	696.0
1978	69.7	246.6	20.2	74.1	30.0	10.0	267.5	--	--	58.3	--	776.4
1979	81.5	193.2	16.7	82.0	24.7	8.3	311.0	--	--	67.6	--	785.0
1980	80.4	221.4	12.4	80.8	22.3	7.5	349.7	--	--	100.1	--	874.6
1981	57.3	287.8	11.9	80.4	22.4	7.5	393.0	--	--	176.0	--	1,036.3
1982	53.6	262.7	8.0	64.8	22.0	7.4	291.4	--	--	161.6	--	871.5
1983	58.1	266.8	10.9	63.6	25.0	8.3	318.7	--	--	145.5	--	896.9
1984	55.0	205.9	14.7	65.3	21.6	7.2	337.9	--	--	140.4	--	848.0

TABLE C3. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA REGION 3, (1980=BASE DOLLARS), MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	44.6	157.1	4.8	8.9	3.8	1.3	30.9	--	--	--	--	251.4
1959	42.0	152.7	7.1	7.3	4.2	1.3	34.9	--	--	--	--	249.5
1960	33.8	109.4	8.5	7.7	3.4	1.0	39.2	--	--	--	--	203.0
1961	40.9	119.9	6.1	7.4	3.8	1.3	39.4	--	--	--	--	218.8
1962	37.9	189.1	4.3	6.3	4.0	1.3	40.4	--	--	--	--	283.3
1963	37.8	185.7	4.2	6.7	4.7	1.5	43.8	--	--	--	--	284.4
1964	36.1	160.4	7.3	7.1	5.6	2.0	48.5	--	--	--	--	267.0
1965	40.8	159.0	7.4	6.9	6.7	2.1	49.3	--	--	--	--	272.2
1966	40.2	175.1	5.3	7.2	9.0	3.0	52.0	--	--	--	--	291.8
1967	40.2	174.7	5.4	7.6	10.5	3.6	52.9	--	--	--	--	294.9
1968	35.0	169.1	5.8	8.0	12.9	4.3	55.0	--	--	--	--	290.1
1969	32.5	165.5	1.8	12.3	13.3	4.5	69.1	--	--	--	--	299.0
1970	31.2	152.8	1.7	10.7	14.3	4.8	91.1	--	--	--	--	306.6
1971	32.5	157.2	7.9	11.1	15.0	5.0	88.9	--	--	--	--	317.6
1972	37.4	203.2	9.2	11.2	13.1	4.4	109.0	--	--	--	--	387.5
1973	43.4	371.1	10.4	15.1	13.8	4.5	98.3	--	--	--	--	556.6
1974	37.3	353.4	6.5	17.4	12.3	4.2	126.2	--	--	--	--	557.3
1975	35.0	306.1	7.2	16.0	13.7	4.5	137.4	--	--	--	--	519.9
1976	34.5	203.2	5.0	23.2	15.4	5.1	151.9	--	--	--	--	438.3
1977	31.4	176.1	3.0	19.1	15.6	5.2	144.7	--	--	--	--	395.1
1978	31.9	215.1	5.6	19.0	16.8	5.6	142.0	--	--	--	--	436.0
1979	37.9	248.6	3.7	21.1	13.8	4.6	130.9	--	--	--	--	460.6
1980	38.6	242.0	19.0	20.8	12.4	4.1	135.0	--	--	--	--	471.9
1981	27.3	270.3	6.0	20.7	12.5	4.2	126.6	--	--	--	--	467.6
1982	25.9	262.2	4.0	16.7	12.3	4.1	113.5	--	--	--	--	438.7
1983	27.4	246.7	5.5	16.4	13.9	4.6	150.0	--	--	--	--	464.5
1984	25.6	224.0	7.5	16.8	12.1	4.1	159.3	--	--	--	--	449.4

TABLE C4. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA REGION 4, (1980=BASE DOLLARS), MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	31.4	189.1	8.3	16.1	6.2	2.1	98.6	--	--	--	--	351.8
1959	29.9	203.0	12.1	17.1	6.6	2.1	92.9	--	--	--	--	363.7
1960	24.8	185.9	14.2	22.5	5.4	1.8	103.5	--	--	--	--	358.1
1961	28.4	196.2	10.2	24.6	6.1	2.0	118.7	--	--	--	--	386.2
1962	26.4	151.2	7.0	25.1	6.5	2.3	217.0	--	--	--	--	435.5
1963	26.0	193.1	7.2	33.6	7.4	2.5	192.9	--	--	--	--	462.7
1964	24.9	167.5	12.4	35.6	8.8	2.9	324.4	--	--	--	--	576.5
1965	27.2	273.2	12.4	34.8	10.7	3.6	192.4	--	--	--	--	554.3
1966	27.0	223.8	9.0	36.3	14.3	4.9	236.3	--	--	--	--	551.6
1967	25.1	235.8	9.2	39.0	16.8	5.6	179.2	--	--	--	--	510.7
1968	21.3	210.4	9.7	40.6	21.5	6.9	217.2	--	--	--	--	527.6
1969	20.8	219.0	23.1	61.5	21.2	7.2	192.8	--	--	--	--	545.6
1970	16.9	258.4	292.4	53.3	22.7	7.8	208.6	--	--	--	--	860.1
1971	18.8	216.7	52.7	55.6	23.7	7.9	213.8	--	--	--	--	589.2
1972	22.3	303.5	73.0	56.0	20.9	7.1	231.9	--	--	--	--	714.7
1973	25.8	513.7	42.3	75.7	21.8	7.2	265.7	--	--	--	--	952.2
1974	25.3	587.3	63.9	87.3	19.6	6.6	248.2	--	--	--	--	1,038.2
1975	21.5	389.0	34.7	80.4	21.8	7.3	277.4	--	--	--	--	832.1
1976	24.3	289.1	19.1	116.4	24.7	8.3	367.8	--	--	--	--	849.7
1977	21.8	281.0	9.8	96.1	25.0	8.4	242.0	--	--	--	--	684.1
1978	22.5	320.8	4.7	95.6	26.7	9.0	244.2	--	--	--	--	723.5
1979	26.5	326.6	5.6	106.0	22.0	7.4	240.7	--	--	--	--	734.8
1980	37.5	344.3	12.1	104.4	19.8	6.7	269.5	--	--	--	--	794.3
1981	19.4	331.9	10.1	103.9	20.0	6.7	244.5	--	--	--	--	736.5
1982	18.3	322.0	6.8	83.7	19.6	6.6	219.4	--	--	--	--	676.4
1983	19.3	422.5	9.2	82.1	22.2	7.4	289.8	--	--	--	--	852.5
1984	17.2	355.0	12.5	84.4	19.2	6.4	307.7	--	--	--	--	802.4

TABLE C5. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA REGION 5, (1980=BASE DOLLARS), MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	80.6	199.6	9.9	53.7	8.1	2.7	151.2	--	--	--	--	505.8
1959	81.3	195.7	14.4	47.0	8.7	2.9	133.3	--	--	--	--	483.3
1960	67.6	179.4	16.8	52.7	7.2	2.3	87.8	--	--	--	--	413.8
1961	78.8	230.7	12.3	52.7	8.2	2.8	175.2	--	--	--	--	560.7
1962	74.6	117.8	8.3	47.0	8.5	2.8	208.7	--	--	--	--	467.7
1963	72.7	216.6	8.4	52.2	9.9	3.2	211.2	--	--	--	--	574.2
1964	69.5	155.3	14.9	55.1	11.7	3.9	252.8	--	--	--	--	563.2
1965	77.7	215.5	14.8	53.9	14.3	4.8	222.9	--	--	--	--	603.9
1966	81.8	234.7	10.9	56.1	18.9	6.5	242.8	--	--	--	--	651.7
1967	80.8	221.8	11.0	60.6	22.7	7.4	231.3	--	--	--	--	635.6
1968	69.4	201.3	11.6	63.0	27.5	9.2	243.2	--	--	--	--	625.2
1969	67.6	212.5	16.5	95.6	28.4	9.4	215.7	--	--	--	--	645.7
1970	64.4	218.5	22.3	83.0	30.4	10.1	195.0	--	--	--	--	623.7
1971	66.5	223.0	22.2	86.5	31.8	10.5	200.5	--	--	--	--	641.0
1972	78.4	311.9	19.3	87.1	28.0	9.4	208.9	--	--	--	--	743.0
1973	95.6	601.2	30.5	117.8	29.0	9.7	191.6	--	--	--	--	1,075.4
1974	95.3	606.3	19.0	135.8	26.2	8.8	184.0	--	--	--	--	1,075.4
1975	77.7	340.8	39.5	125.1	29.1	9.7	200.7	--	--	--	--	822.6
1976	77.9	307.2	4.2	181.1	32.9	11.0	206.8	--	--	--	--	821.1
1977	66.4	377.7	8.9	149.5	33.3	11.2	208.7	--	--	--	--	855.7
1978	68.7	422.7	12.2	148.8	35.7	11.9	230.2	--	--	--	--	930.2
1979	73.0	411.7	11.2	164.8	29.4	9.8	211.3	--	--	--	--	911.2
1980	73.8	419.2	16.4	162.4	26.4	8.9	226.9	--	--	--	--	934.0
1981	52.2	426.7	9.3	161.5	26.7	8.9	195.3	--	--	--	--	880.6
1982	49.3	374.1	6.2	130.2	26.2	8.7	175.3	--	--	--	--	770.0
1983	48.3	456.4	8.5	127.8	29.6	9.9	231.5	--	--	--	--	912.0
1984	46.4	412.1	11.4	131.2	25.7	8.6	245.9	--	--	--	--	881.3

TABLE C6. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA REGION 6, (1980=BASE DOLLARS), MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	123.0	223.2	6.4	22.8	6.4	2.1	40.0	--	--	--	--	423.9
1959	119.1	169.7	9.2	18.9	6.8	2.4	45.4	--	--	--	--	371.5
1960	95.0	175.8	10.8	20.1	5.7	1.8	50.9	--	--	--	--	360.1
1961	113.6	158.3	7.9	18.7	6.4	2.0	50.9	--	--	--	--	357.8
1962	107.0	209.2	5.3	15.6	6.8	2.3	53.0	--	--	--	--	399.2
1963	110.3	195.4	5.4	16.1	7.7	2.5	57.1	--	--	--	--	394.5
1964	112.4	174.8	9.5	16.8	9.3	3.2	64.1	--	--	--	--	390.1
1965	126.1	195.2	9.5	16.4	11.2	3.8	64.4	--	--	--	--	426.6
1966	132.8	215.5	6.9	17.3	14.8	5.1	67.9	--	--	--	--	460.3
1967	133.0	199.9	7.2	18.6	17.5	5.8	68.6	--	--	--	--	450.6
1968	118.8	224.1	7.5	19.3	21.5	7.1	72.2	--	--	--	--	470.5
1969	112.2	224.9	5.5	29.4	22.1	7.4	91.1	--	--	--	--	492.6
1970	109.2	209.2	16.9	25.6	23.7	7.9	99.3	--	--	--	--	491.8
1971	112.2	218.2	3.5	26.6	24.8	8.3	107.4	--	--	--	--	501.0
1972	134.2	281.0	4.8	26.8	21.8	7.3	104.4	--	--	--	--	580.3
1973	159.7	371.2	3.9	36.2	22.6	7.7	109.9	--	--	--	--	711.2
1974	134.1	497.7	2.3	41.8	20.4	6.8	105.1	--	--	--	--	808.2
1975	129.8	392.5	5.2	38.4	22.7	7.5	109.7	--	--	--	--	705.8
1976	136.9	248.2	9.0	55.7	25.8	8.6	114.2	--	--	--	--	598.4
1977	125.5	259.5	5.3	45.9	26.0	8.6	120.5	--	--	--	--	591.3
1978	130.5	338.8	6.4	45.7	27.9	9.2	126.1	--	--	--	--	684.6
1979	158.5	348.6	8.3	50.7	23.0	7.6	117.4	--	--	--	--	714.1
1980	138.0	278.8	6.8	49.9	20.7	6.8	130.7	--	--	--	--	681.7
1981	115.4	406.5	6.7	49.6	20.8	6.9	109.3	--	--	--	--	715.2
1982	111.3	380.5	4.5	40.0	20.5	6.8	98.1	--	--	--	--	661.7
1983	115.3	364.7	6.3	39.3	23.1	7.7	129.6	--	--	--	--	686.0
1984	109.6	349.4	8.4	40.3	20.1	6.7	137.6	--	--	--	--	672.1

TABLE C7. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA REGION 7, (1980=BASE DOLLARS), MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	145.9	134.8	9.1	31.4	7.5	2.4	65.3	1.6	--	--	104.2	502.2
1959	139.8	81.3	13.4	27.0	7.9	2.6	70.8	1.3	--	--	100.2	444.3
1960	107.4	105.1	15.5	29.9	6.5	2.1	79.2	1.5	--	--	95.8	443.0
1961	134.3	36.1	11.5	29.7	7.4	2.6	82.1	2.0	--	--	95.7	401.4
1962	119.1	160.0	7.5	26.4	8.0	2.8	101.2	2.3	--	--	93.4	520.7
1963	125.4	135.8	7.9	28.9	9.1	3.0	102.1	2.0	--	--	91.7	505.9
1964	129.7	128.0	13.7	30.7	10.7	3.7	132.9	2.7	--	--	92.4	544.5
1965	148.3	144.7	13.6	30.0	13.1	4.3	110.6	3.1	--	--	95.4	563.1
1966	165.4	153.6	9.9	31.2	17.6	5.8	122.7	2.8	10.2	--	97.0	616.2
1967	164.9	122.5	10.1	33.6	20.6	7.0	113.7	4.0	18.8	--	98.5	593.7
1968	154.7	131.0	10.7	35.0	25.1	8.4	124.4	4.5	26.4	--	95.0	615.2
1969	148.1	136.9	13.1	52.9	26.1	8.8	157.9	4.5	23.9	--	91.5	663.7
1970	147.7	122.9	9.1	45.9	28.1	9.3	162.5	5.6	26.8	--	88.6	646.5
1971	153.5	118.8	7.8	47.9	29.2	9.8	179.8	5.9	32.3	--	87.4	672.4
1972	183.3	171.5	8.5	48.2	25.9	8.7	200.5	5.1	37.9	--	89.0	778.6
1973	220.9	249.0	3.5	65.3	26.8	8.9	218.9	6.2	32.4	--	95.3	927.2
1974	184.7	242.1	6.8	75.1	24.1	8.0	218.1	6.8	34.6	--	103.8	904.1
1975	171.9	227.8	19.4	69.2	26.8	8.9	239.0	7.2	29.1	--	104.8	904.1
1976	187.1	142.4	14.6	100.3	30.5	10.1	233.3	11.0	51.8	--	107.9	889.0
1977	169.5	93.2	17.8	82.7	30.8	10.1	278.3	12.4	58.7	--	110.3	863.8
1978	173.5	164.9	16.2	82.4	33.0	10.9	254.5	15.5	77.3	--	110.5	938.7
1979	213.7	146.2	34.2	91.3	27.1	9.0	302.8	21.2	99.8	--	156.6	1,101.9
1980	243.9	93.1	33.6	89.9	24.4	8.1	331.2	30.5	120.1	--	228.8	1,203.6
1981	156.6	192.1	20.5	89.4	24.6	8.2	359.8	33.3	127.7	--	368.9	1,381.1
1982	156.2	185.5	13.8	72.1	24.2	8.0	274.7	35.3	138.7	--	320.2	1,228.7
1983	164.6	184.1	18.9	70.7	27.3	9.1	306.1	49.7	161.8	--	286.5	1,278.8
1984	160.5	166.2	25.5	72.7	23.7	7.9	325.7	59.9	179.7	--	267.9	1,289.7

TABLE C8. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA REGION 8, (1980=BASE DOLLARS) MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	73.6	109.3	2.7	7.0	3.2	1.1	16.7	0.8	--	2.1	--	216.5
1959	72.1	64.3	3.9	6.8	3.4	1.0	18.9	0.8	--	1.8	--	173.0
1960	55.0	67.1	4.6	8.3	2.8	1.0	21.2	0.8	--	3.1	--	163.9
1961	66.0	46.5	3.3	9.2	3.3	1.0	21.2	0.8	--	5.9	--	157.2
1962	58.5	84.4	2.3	9.3	3.5	1.3	21.9	1.0	--	9.0	--	191.2
1963	61.1	106.8	2.2	11.4	4.0	1.2	23.5	0.7	--	10.1	--	221.0
1964	64.1	72.9	3.9	11.9	4.6	1.5	26.1	0.7	--	9.8	--	195.5
1965	73.7	84.4	4.1	11.7	5.7	1.9	26.7	0.5	--	12.9	--	221.6
1966	81.3	107.6	3.0	12.2	7.6	2.5	28.0	0.5	--	18.9	--	261.6
1967	85.9	109.9	2.9	9.0	9.0	2.9	27.1	0.4	--	24.7	--	271.8
1968	82.3	77.4	3.2	13.8	11.0	3.7	29.9	0.6	--	36.3	--	258.2
1969	78.9	75.0	4.5	20.8	11.2	3.7	45.6	0.4	--	29.6	--	269.7
1970	75.4	82.2	3.9	18.0	12.0	4.1	56.8	0.6	--	32.8	--	285.8
1971	80.7	78.5	7.6	18.8	12.6	4.2	42.7	0.6	--	27.2	--	272.9
1972	103.2	115.1	2.5	19.0	11.2	3.7	42.4	0.7	--	26.6	--	324.4
1973	125.3	190.6	0.7	25.7	11.6	3.9	45.6	0.7	--	30.4	--	434.5
1974	109.4	248.4	2.8	29.6	10.5	3.5	45.0	0.8	--	58.0	--	508.0
1975	103.5	129.4	2.5	27.3	11.6	3.8	50.4	2.8	--	63.7	--	395.0
1976	83.8	111.9	3.4	39.5	13.2	4.4	50.2	10.5	--	74.6	--	391.5
1977	95.7	75.4	2.9	32.6	13.3	4.4	55.1	10.7	--	84.2	--	374.3
1978	94.1	105.8	8.3	32.4	14.2	4.7	59.2	10.5	--	94.8	--	424.0
1979	120.3	92.0	2.7	35.8	11.8	3.9	70.0	13.8	--	175.2	--	525.5
1980	124.2	41.6	2.5	35.4	10.6	3.5	88.1	17.6	--	375.3	--	698.8
1981	82.6	92.3	3.7	35.2	10.6	3.5	91.5	16.1	--	807.7	--	1,143.2
1982	76.5	102.4	2.5	28.3	10.5	3.5	67.5	14.1	--	702.7	--	1,008.0
1983	84.3	116.1	3.4	27.8	11.8	4.0	71.5	13.4	--	615.2	--	947.5
1984	83.4	114.6	4.6	28.6	10.2	3.4	76.1	16.4	--	517.3	--	854.6

TABLE C9. SALES FOR FINAL DEMAND, BY ECONOMIC SECTOR, NORTH DAKOTA, (1980=BASE DOLLARS), MILLION DOLLARS, 1958-1984

Year	(1) Ag, Lvstk	(2) Ag, Crops	(4) Constr	(7) Ag Proc & Misc Mfg	(8) Retail Trade	(10) Bus & Pers Serv	(12) Households	(14) Coal Mining	(15) Thermal-Elec Gen	(16) Pet Exp/Ext	(17) Pet Refining	Total
1958	591.7	1,182.6	49.2	167.9	44.3	14.8	502.3	3.0	--	14.5	35.2	2,605.5
1959	570.0	1,035.9	71.4	149.5	47.2	15.7	489.2	2.6	--	28.6	33.8	2,443.9
1960	452.8	1,009.0	84.4	170.6	38.5	12.9	485.0	2.6	--	37.4	32.3	2,325.5
1961	547.1	873.9	61.4	172.6	44.0	14.8	606.6	3.3	--	53.7	32.2	2,409.6
1962	500.6	1,197.7	41.4	157.2	47.0	15.8	864.6	3.8	--	57.3	31.4	2,916.8
1963	513.6	1,343.0	42.3	180.5	53.7	17.8	827.2	3.2	--	57.6	30.9	3,069.8
1964	520.0	1,100.0	73.6	191.1	63.9	21.2	1,182.8	3.7	--	63.1	31.0	3,250.4
1965	590.0	1,321.8	73.9	186.9	78.7	26.2	861.5	3.6	--	66.7	31.9	3,241.2
1966	627.2	1,407.7	53.8	194.5	104.0	34.7	990.1	3.0	10.2	68.6	32.3	3,526.1
1967	630.1	1,275.0	54.7	205.7	122.7	40.8	854.2	4.7	18.8	62.8	32.8	3,302.3
1968	567.7	1,225.8	58.0	218.1	149.8	49.8	962.4	5.2	26.4	73.7	31.6	3,368.5
1969	541.4	1,311.1	71.9	330.9	154.9	51.7	1,024.5	4.9	23.9	53.5	30.4	3,599.1
1970	528.3	1,300.9	353.0	287.1	166.1	55.3	1,100.6	6.2	26.8	58.7	29.5	3,912.5
1971	563.0	1,244.8	112.2	299.3	173.3	57.8	1,118.1	6.5	32.3	60.8	29.4	3,697.5
1972	667.4	1,728.7	129.3	301.4	153.0	51.1	1,150.7	5.9	37.9	61.3	29.8	4,316.5
1973	798.4	3,012.4	103.3	407.6	158.5	52.8	1,219.1	6.9	32.4	64.4	32.0	5,887.8
1974	691.9	3,196.7	111.7	470.2	142.9	48.0	1,243.4	7.6	34.6	117.4	34.9	6,099.3
1975	639.5	2,197.5	117.1	433.1	158.9	53.0	1,478.7	10.0	29.1	119.1	35.3	5,271.3
1976	650.1	1,603.1	60.3	627.1	180.1	60.1	1,431.8	21.5	51.8	135.3	36.2	4,857.4
1977	612.8	1,494.4	65.6	517.4	182.1	60.6	1,365.2	23.1	58.7	129.3	37.0	4,546.2
1978	625.6	1,908.8	77.8	515.0	195.0	64.9	1,368.2	26.0	77.3	128.2	36.4	5,023.2
1979	756.1	1,843.8	85.0	570.6	160.7	53.6	1,505.3	35.1	99.8	198.8	51.1	5,359.9
1980	781.4	1,721.6	108.1	562.2	144.5	48.2	1,687.4	48.3	120.1	410.4	74.3	5,706.5
1981	538.9	2,122.4	71.5	559.1	145.5	48.5	1,720.5	49.4	127.7	882.8	119.6	6,385.9
1982	517.6	1,974.3	48.0	450.8	143.2	47.7	1,368.3	49.5	138.7	734.0	103.9	5,576.0
1983	545.8	2,147.4	65.6	442.3	161.8	54.0	1,595.0	63.2	161.8	644.8	92.9	5,974.6
1984	524.1	1,874.6	88.6	454.5	140.4	46.8	1,692.4	76.5	179.7	571.5	86.9	5,736.0

APPENDIX D

Current Year Dollar Prices for North Dakota Crops and Petroleum

TABLE D1. SEASON AVERAGE PRICES RECEIVED BY NORTH DAKOTA FARMERS FOR SELECTED COMMODITIES, 1958-1984

Year	Spring Wheat	Durum	Barley	Rye	Oats	Flax	Soybeans	Sugarbeets	Potatoes	Sunflower
				$/bu				$/ton		$/cwt
1958	1.87	2.03	.84	.87	.44	2.57	1.82	10.20	.90	--
1959	1.86	2.06	.82	.88	.48	2.79	1.85	10.20	1.18	--
1960	1.86	2.02	.75	.78	.49	2.71	1.84	11.30	1.70	--
1961	1.93	2.44	.84	.84	.50	2.93	2.35	10.10	1.18	--
1962	3.12	2.62	.88	.90	.53	2.94	2.17	12.40	.97	--
1963	2.04	2.11	.78	.97	.50	2.70	2.33	12.70	.97	--
1964	1.65	1.62	.80	.97	.49	2.77	2.34	10.60	1.74	--
1965	1.46	1.30	.94	.84	.51	2.80	2.48	11.30	3.28	--
1966	1.61	1.52	1.01	.89	.53	2.83	2.75	13.30	1.39	--
1967	1.56	1.68	.97	.88	.55	2.87	2.49	14.40	1.52	--
1968	1.41	1.59	.84	.85	.53	2.84	2.38	13.20	1.41	--
1969	1.40	1.43	.76	.85	.48	2.70	2.31	13.90	1.34	4.75
1970	1.50	1.37	.80	.81	.50	2.48	2.45	14.60	1.48	5.10
1971	1.38	1.33	.83	.74	.49	2.30	2.79	15.40	1.23	5.05
1972	1.53	1.55	.86	.74	.54	2.57	3.09	13.60	1.50	4.93
1973	2.98	3.93	1.51	1.41	.82	5.89	6.38	25.80	3.26	8.48
1974	4.68	6.33	2.72	2.52	1.33	9.76	6.23	38.70	4.80	15.51
1975	4.05	5.18	2.82	2.27	1.35	6.92	4.99	28.50	2.60	10.80
1976	3.45	3.31	2.34	2.40	1.32	6.52	5.38	19.70	3.45	11.10
1977	2.40	2.45	1.77	1.80	1.15	5.86	6.69	21.40	2.70	10.60
1978	2.66	2.87	1.77	1.69	1.02	5.01	5.91	22.90	2.60	10.40
1979	3.25	3.71	2.05	1.70	1.09	6.26	5.80	34.10	3.25	8.89
1980	3.82	4.98	2.29	2.64	1.42	6.34	7.02	46.30	6.85	11.00
1981	3.92	4.06	2.52	2.77	1.78	7.05	5.66	20.50	4.05	10.90
1982	3.52	3.34	1.93	2.01	1.43	6.01	5.41	35.70	4.35	10.48
1983	3.61	3.79	1.99	1.91	1.27	5.57	7.34	32.59	4.90	10.36
1984*	3.60	3.78	2.14	1.65	1.47	6.46	5.65	36.93	4.50	10.33

*Preliminary

SOURCE: North Dakota Crop and Livestock Reporting Service 1959-1985.

TABLE D2. ESTIMATED PRICES FOR NORTH DAKOTA CRUDE PETROLEUM, 1958-1984

Year	Price
	- - - $/barrel - - -
1958	1.80
1959	1.90
1960	2.00
1961	2.10
1962	2.20
1963	2.35
1964	2.50
1965	2.60
1966	2.60
1967	2.60
1968	2.67
1969	2.60
1970	2.90
1971	3.25
1972	3.50
1973	3.80
1974	8.00
1975	8.00
1976	9.00
1977	9.25
1978	9.60
1979	12.00
1980	18.00
1981	35.00
1982	32.00
1983	29.50
1984	28.50

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