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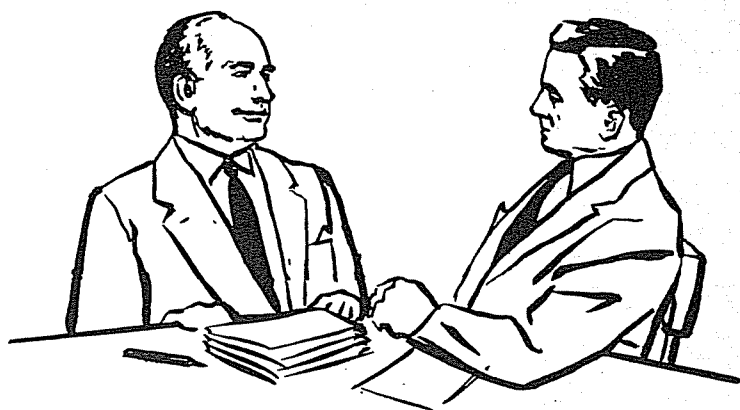
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# **Merchant-Dealer Credit**

**in North Dakota**

**PART II**

**Merchant-Dealer  
Problems and Practices**

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TABLE OF CONTENTS

	<u>Page</u>
<u>SUMMARY AND CONCLUSIONS.</u> . . . . .	1
SUMMARY. . . . .	1
<u>Volume of Merchant-Dealer Credit</u> . . . . .	1
<u>Cost of Merchant-Dealer Credit</u> . . . . .	1
<u>Factors Affecting Credit</u> . . . . .	1
<u>Merchant-Dealer Formal Contract Credit</u> . . . . .	2
<u>Future Expectations.</u> . . . . .	2
CONCLUSIONS. . . . .	2
PART II - MERCHANT-DEALER PROBLEMS AND PRACTICES . . . . .	4
<u>INTRODUCTION</u> . . . . .	4
OBJECTIVES . . . . .	5
METHOD OF STUDY. . . . .	5
<u>OPEN ACCOUNT CREDIT POLICIES</u> . . . . .	6
SERVICE CHARGE . . . . .	6
DUE DATE - NO INTEREST . . . . .	7
SPRING TO FALL CREDIT POLICY . . . . .	8
CASH DISCOUNT AND RELATED CREDIT POLICIES. . . . .	8
USE OF CREDIT POLICIES . . . . .	8
<u>FORMAL CREDIT PRACTICES AND POLICIES</u> . . . . .	9
SUPPLIERS OR MANUFACTURER. . . . .	10
COMMERCIAL BANKS . . . . .	13
PRODUCTION CREDIT ASSOCIATION. . . . .	17
<u>MERCHANT-DEALER CREDIT</u> . . . . .	17
AGGREGATE SUPPLY OF CREDIT . . . . .	17
FACTORS AFFECTING CREDIT . . . . .	19
<u>Product Sales.</u> . . . . .	20
<u>Credit Policy.</u> . . . . .	21
<u>Tests of Significance.</u> . . . . .	21

	<u>Page</u>
<u>FINAL SOURCES OF MERCHANT-DEALER FORMAL CREDIT</u> . . . . .	22
COMMERCIAL BANKS . . . . .	23
SUPPLIERS . . . . .	26
PRODUCTION CREDIT ASSOCIATION . . . . .	28
<u>PLANNED CHANGES AND FUTURE EXPECTATIONS</u> . . . . .	29
OPEN ACCOUNT CREDIT POLICIES . . . . .	29
FORMAL CONTRACT CREDIT POLICIES . . . . .	31

LIST OF TABLES

<u>Table Number</u>		<u>Page</u>
1	Due Dates and Finance Charges of Firms Reporting a Service Charge Open Account Credit Policy, 255 Firms, North Dakota, 1967 . . . . .	7
2	Distribution of Firms According to Open Account Credit Policies, 663 Firms, North Dakota, 1967. . . . .	8
3	Sales Volume Data of Firms with Various Types of Credit Policies, 581 Firms, North Dakota, 1967 . . . . .	9
4	Percent of Firms Selling Selected Products Using Selected Credit Policies, 663 Firms, North Dakota, 1967. . . . .	10
5	Finance Charges Reported by Dealers Selling Farm Machinery, Supplier Formal Contract Credit, 35 Firms, North Dakota, 1967 . . . . .	11
6	Repayment Periods Reported by Dealers Selling Farm Machinery, Supplier Formal Contract Credit, 35 Firms, North Dakota, 1967 . . . . .	12
7	Commercial Bank Finance Charges Reported by Merchant-Dealers, Conditional Sales Contracts Sold to Commercial Banks, New and Used Machinery, 47 Firms, North Dakota, 1967 . . . . .	14

<u>Table Number</u>		<u>Page</u>
8	Finance Charges for Conditional Sales Contracts Reported by 20 Commercial Banks, New and Used Machinery, North Dakota, 1967 . . . . .	14
9	Repayment Periods Reported by Dealers Selling Farm Machinery, Bank Formal Contract Credit, 47 Firms, North Dakota, 1967 . . . . .	15
10	Repayment Periods Reported by Commercial Banks, Farm Machinery Formal Contract Credit, 20 Banks, North Dakota, 1967 . . . . .	15
11	Down Payment Requirements Reported by 20 Commercial Banks, New and Used Machinery, North Dakota, 1967 . . . . .	16
12	Finance Charges and Repayment Periods for Formal Contract Credit Sold to Commercial Banks by Merchants Selling Products Other Than Farm Machinery, 22 Firms, North Dakota, 1967 . . . . .	16
13	Volume of Credit Extended and Percent of Total Sales, 333 Merchants and Dealers, North Dakota, 1967. . . . .	18
14	Extended Open Account and Formal Contract Credit, Percent of Total Sales Reported by Merchants Selling Various Products to North Dakota Farmers, 1967 . . . . .	19
15	Percent of Sales Carried as Extended Open Account and Formal Credit by Merchants Selling Various Products, 333 Merchants, North Dakota, 1967. . . . .	19
16	Percent of Sales Carried as Extended Open Account Credit for Selected Periods of Time, 290 Firms Selling Various Products to Farmers, North Dakota, 1967. . . . .	20
17	Percent of Sales Carried as Extended Open Account Credit For Selected Periods of Time, 290 Firms Using Various Credit Policies, North Dakota, 1967. . . . .	21
18	Sales Volume, Percent of Sales Secured by Some Form of Formal Credit, 77 Firms, North Dakota, 1967. . . . .	22
19	Reasons Cited for Use of Formal Credit Instruments, Firms Selling Products Other Than Farm Machinery, 47 Firms, North Dakota, 1967 . . . . .	23

<u>Table Number</u>		<u>Page</u>
20	Volume of Agricultural Formal Credit Instruments Securing Sales of Farm Machinery Accepted with Various Financing Arrangements, 20 Commercial Banks, North Dakota, 1967. . . . .	24
21	Financial Reserve Requirements, Machinery Contracts, 20 Banks, North Dakota, 1967. . . . .	25
22	Interest Participation Reserves, 20 Banks, North Dakota, 1967 . . . . .	25
23	Volume of Agricultural Formal Credit Instruments Securing Sales of Products Other Than Farm Machinery Purchased with Various Financing Arrangements, Nine Commercial Banks, North Dakota, 1967. . . . .	26
24	Volume of Agricultural Formal Contract Credit Accepted with Various Financing Arrangements, Three Machinery Suppliers, North Dakota, 1967. . . . .	27
25	Percent of Firms Predicting a Significant Loss of Business if a More Stringent Credit Policy Were Adopted, 663 Firms, North Dakota, 1967. . . . .	29
26	Planned Open Account Credit Policy Changes, 663 Firms, North Dakota, 1967 . . . . .	30
27	Percent of Firms Selling Selected Products Planning to Use Selected Credit Policies, 663 Firms, North Dakota, 1967 . . . . .	31
28	Percent of North Dakota Firms Anticipating an Increase in Formal Contract Credit, 96 Firms, 1967. . . . .	32

## SUMMARY AND CONCLUSIONS

### SUMMARY

Historically, merchant-dealers have played an important part in financing agriculture. Colonial farmers depended upon English merchants to provide supplies until crops were harvested and delivered to England. Rapid technological changes have caused farmers to depend upon merchant-dealers for increasing amounts of short- and intermediate-term credit. A study published in 1964 estimated that merchant-dealers supplied 40 percent of the nonreal estate debt owed by farmers.

Merchant-dealers provided credit in three forms: open account, extended open account, and formal contract credit. Open account credit was defined as credit sales carried less than 30 days. Extended open account credit was credit extended longer than 30 days. Formal credit was secured by a formal credit instrument. This study was undertaken to determine the cost and volume of various types of merchant-dealer credit.

#### Volume of Merchant-Dealer Credit

Total sales of \$74 million in 1967 were reported by 333 responding firms. Of that amount, 77 percent was carried as some form of credit. The merchant-dealers reported 14 percent of sales was carried as open account credit for less than 30 days; 40.2 percent was carried longer than 30 days; and 22.8 percent was carried as formal contract credit.

#### Cost of Merchant-Dealer Credit

The cost of merchant-dealer credit varied with the established credit policy of the merchant. Four types of open account credit policies were reported. These were: (1) service charge, (2) due date - no interest, (3) spring to fall credit, and (4) cash discount and related policies. The most common service charge credit policy was a charge of 12 percent per annum employed at the end of 30 days. The farmers received charge-free credit from 58 percent of the firms, but the remaining firms (which had 60 percent of the total sales) charged interest on overdue accounts.

#### Factors Affecting Credit

Firms selling petroleum products carried a significantly greater percentage of sales as open account credit than firms selling farm machinery or crop production inputs. Firms selling crop production inputs carried a significantly greater percentage of sales as open account credit than firms selling farm machinery. The type of credit policy used by the firms did not affect the amount of open account credit carried by the merchant-dealer.

### Merchant-Dealer Formal Contract Credit

Firms selling farm machinery used conditional sales contracts to secure formal credit sales. Firms selling products other than farm machinery used check-notes or unsecured notes. Banks purchased over 50 percent of the volume of formal credit written by the merchant-dealers. Suppliers purchased 26 percent and Production Credit Associations purchased 12 percent.

Machinery suppliers made somewhat higher finance charges, but required a smaller down payment and were willing to write the contract for longer periods of time than other lenders. The financial charges made by commercial banks varied greatly, but many banks charged 7 percent simple interest. The down payment required by banks was usually higher than required by suppliers and the repayment period was usually shorter. The finance charges by Production Credit Associations varied, but were generally less than that made by suppliers and commercial banks. The down payment requirements and repayment periods were comparable to commercial banks.

Commercial banks, suppliers, and Production Credit Associations accepted a majority of contracts and notes with full recourse to the dealer in case of default. Suppliers used a limited recourse agreement which was more lenient than other lenders. All machinery suppliers and a majority of banks required a financial reserve and shared the interest income with the dealer. Production Credit Associations did not require a financial reserve and a majority did not share the interest income with the dealer.

### Future Expectations

Most merchant-dealers anticipated a significant effort to reduce accounts receivable. A service charge credit policy was anticipated by a majority of the firms. A majority of the merchants anticipated increased use of formal contract credit.

### CONCLUSIONS

1. Merchant-dealers provided a substantial amount of open account credit to farmers. Most merchant-dealers were willing to carry extended open account credit for several months until crops or livestock were sold. A service charge was made on a substantial amount of this extended open account credit.

2. A service charge did not reduce the percentage of sales carried as extended open account credit. This indicated farmers either were not concerned about the service charge or were not aware that a service charge was being imposed.



3. Merchant-dealers anticipated a substantial increase in the efforts made to decrease accounts receivable. This indicated farmers can expect decreasing amounts of interest-free merchant-dealer credit in the future.

4. Commercial lenders anticipated a substantial increase in the competition for agricultural loans. This indicated that more merchant-dealer formal credit will be financed by lenders with no recourse to the merchant-dealer. A majority of the lenders anticipated increased interest participation with the dealer and decreased dealer financial reserves.

5. The financial charges reported by lenders and merchant-dealers indicated that direct short- and intermediate-term loans from commercial lenders to purchase production inputs were often less expensive than merchant-dealer formal credit. This is especially true for purchases of farm machinery and equipment.

MERCHANT-DEALER CREDIT IN NORTH DAKOTA

PART II - MERCHANT-DEALER PROBLEMS AND PRACTICES

Fred R. Taylor and Maury E. Bredahl<sup>1</sup>

INTRODUCTION

Credit has become an indispensable tool in farm ownership and operation. The trend toward larger farms, increased use of equipment and other purchased inputs, rising land prices, and other factors have forced farmers to use larger amounts of credit, both individually and in the aggregate.

Since 1940, product prices have declined and production costs have increased. Consequently, farmers have increased the size of their farm enterprises to capture available economies of scale. Since 1940, the average size of farms in North Dakota increased from 513 acres to 875 acres in 1965.<sup>2</sup> The increase in land values has made this expansion especially costly.

Farmers have acquired much of the capital required in their business by increased borrowing. To finance land purchases, farmers have increased their real estate debt. National farm real estate debt (any debt which is secured by mortgages, deeds of trust, or land purchase contracts) increased from \$6.6 billion in 1940 to \$23.5 billion estimated for January 1, 1967. The increase in production costs has been paralleled by an increase in nonreal estate agricultural debt. Since 1940, national farm nonreal estate debt has increased from \$3.0 billion to \$21.4 billion estimated for January 1, 1967.<sup>3</sup> In North Dakota real estate debt has increased from \$153 million in 1940 to \$249 million in 1965. North Dakota nonreal estate debt has grown from \$80.6 million in 1959 to \$208.7 million in 1965.<sup>4</sup>

Most nonreal estate debt is used to finance production inputs. The Agricultural Finance Outlook states: "Many things have tended to

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<sup>2</sup>North Dakota Crop and Livestock Reporting Service, Agricultural Census Data for North Dakota 1964, Fargo, North Dakota, 1966, p. 4.

<sup>3</sup>United States Department of Agriculture, Agricultural Research Service, Agricultural Finance Outlook, Washington, D. C., November, 1966, p. 14.

<sup>4</sup>United States Department of Agriculture, Agricultural Statistics, Washington, D. C., 1967.

expand nonreal estate debt of farmers. These include rising costs, the cost-price squeeze, the increasing use of fertilizers and insecticides, increases in farm size and continuing mechanization of farm operations."<sup>5</sup>

The capital needs of agricultural production have been obtained through borrowing. Prior to a national survey conducted in 1960, estimates of the unsecured (nonreal estate) debt held by various lenders were based on limited data. The 1960 survey revealed that merchants and dealers ranked first in the total number of farmers financed and second only to banks in the total amount of credit extended.<sup>6</sup>

### OBJECTIVES

This study was undertaken to determine the credit practices of North Dakota merchants and the volume of credit extended to farmers. Specifically, the objectives were:

1. To determine the volume of credit extended to farmers by merchants and dealers in the form of open account credit, extended open account credit, and formal credit sales.
2. To determine the cost of open account and formal credit as indicated by merchant and dealer credit practices.
3. To analyze and compare sources of merchant-dealer loan funds.
4. To determine the effect of credit policies and business type on the amount of credit extended to farmers.
5. To determine future expectations and planned credit changes of North Dakota merchants and dealers.

### METHOD OF STUDY

The entire population of the agribusinesses serving North Dakota was sampled. A list was compiled from the trading area reference book of a firm which rated the financial strength of all North Dakota agribusiness firms. The list of 1,534 firms contained a majority of the firms serving North Dakota agriculture. A questionnaire was initially sent requesting a limited amount of information which was relatively easy to supply. The results of the first questionnaire were used to stratify the population according to sales volume, business type, and type of credit policy.

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<sup>5</sup>United States Department of Agriculture, op. cit., p. 16.

<sup>6</sup>Morelle, W.; Hasser, L., and Melichar, E., Merchant and Dealer Credit in Agriculture, Board of Governors of the Federal Reserve System, Washington, D. C., 1966, Forward written by Charles N. Shepardson.

A second mail questionnaire was sent to obtain information of greater detail from the 663 firms which responded to the first questionnaire. The purpose of the second questionnaire was to gather detailed information about the volume of credit extended to farmers. The results of the second questionnaire were coordinated with the data of the first questionnaire.

A third mail questionnaire was sent to the 264 firms which indicated use of some type of formal credit. This questionnaire was designed to gather data about cost to the farmer, maximum repayment period, and other information necessary to evaluate farmer use of formal merchant-dealer credit.

Many merchant-dealers were unable to provide a complete and accurate picture of their formal credit practices and policies. For that reason, sources of merchant-dealer loan funds were contacted to supplement the data provided by merchant-dealers. A mail questionnaire was sent to 11 commercial banks located in various areas of the state and nine banks were personally interviewed. In addition, three machinery suppliers, three Production Credit Associations, and one supplier of seed, fertilizer, and agricultural chemicals were personally interviewed.

#### OPEN ACCOUNT CREDIT POLICIES

The open account and formal credit policies of agribusiness firms influence the cost and volume of a great deal of short- and intermediate-term credit to farmers. The goal of this section was to obtain an understanding of each type of credit policy and the use of each type.

The firms reported four types of established open account credit policies. These were: (1) service charge, (2) due date - no interest, (3) spring to fall credit, and (4) cash discount and related types of policies. A substantial number of merchants reported that their firm lacked an established credit policy. Each type of credit policy, including cost to the farmer and extent of use by the responding firms, was analyzed in this section.

#### SERVICE CHARGE

Farmers have become large users of credit as farms have become larger and more specialized. This trend has caused business firms to adopt policies making use of a service charge after an established due date. This has been necessary to pay the cost of the merchant's financial resources tied up in accounts receivable. The service charge credit policy was defined as any credit policy assessing a penalty on accounts unpaid after an established period of time has elapsed.

The due dates and service charges varied considerably among agribusiness firms. Due dates ranging from 30 days to 3 months and service charges varying from 6 percent to over 18 percent simple annual interest were reported by the 255 firms (39 percent of all firms)

indicating a service charge credit policy (Table 1). The most common type of service charge credit policy was an interest charge of 12 percent simple interest employed on accounts over 30 days of age. This type of credit policy was used by 35 percent of the firms reporting a service charge. An additional 30 percent assessed an interest charge of 6 to 7 percent simple interest on accounts over 30 days old and 5 percent charged 18 percent simple interest on accounts over 30 days old. Thus, 71 percent of the firms which reported a service charge made that charge when the accounts were unpaid at the end of 30 days from the date of purchase. An additional 19 percent employed a service charge on accounts over 60 days old and only 11 percent of the firms waited three months before initiating an interest charge. Over 50 percent of the firms reporting a service charge used an interest charge of one percent per month (12 percent per year). An additional 42 percent made an interest charge of 6 to 7 percent on accounts past due. Only 8 percent of the firms made an interest charge of 18 percent per year.

TABLE 1. DUE DATES AND FINANCE CHARGES OF FIRMS REPORTING A SERVICE CHARGE OPEN ACCOUNT CREDIT POLICY, 255 FIRMS, NORTH DAKOTA, 1967

Due Date	Finance Charge (Percent)	Number of Firms	Percent of Firms Reporting a Service Charge
30 days	6-7	76	30
	12	91	35
	18	12	5
60 days	6-7	19	7
	12	25	10
	18	4	2
90 days	6-7	12	5
	12	12	5
	18	<u>2</u>	<u>1</u>
Total		255	100

DUE DATE - NO INTEREST

Seven percent of the firms reported an established due date but no charge was imposed on accounts unpaid by the due date. In many cases customers were refused further credit until accounts were paid up to date. The established past due deadline ranged from 30 days to four months from the date of purchase. Most of the firms considered accounts past due after 30 or 60 days from time of sale had elapsed. Some firms indicated two yearly due dates (April 1 and November 1).

SPRING TO FALL CREDIT POLICY

Approximately 3 percent of the firms indicated a credit policy of carrying customers from planting to harvest. The firms considered a normal account would make no payment until after harvest. These firms expected no compensation for financial resources used to finance accounts receivable. These firms indicated they would not carry accounts more than one year.

CASH DISCOUNT AND RELATED CREDIT POLICIES

Three percent of the firms indicated a type of credit policy which rewarded customers making advance payment or payment within an established period of time. This type of policy may have been used by additional firms, but it was not their major credit policy. The discount was given on accounts paid in advance, paid at time of sale or delivery, paid by the first of the following month, or in 30 days. The discount ranged from a percentage of the account to an established discount per gallon of fuel or per ton of fertilizer.

USE OF CREDIT POLICIES

In addition to an understanding of each type of credit policy, the number of firms using each type of credit policy and their yearly agricultural sales was essential in understanding the importance of each credit policy. The firms which reported no established credit policy made up 45 percent of the responding firms (Table 2). The firms with a service charge credit policy made up 39 percent of the firms and 13 percent of the firms reported other types of credit policies. Three percent did not respond to the question.

TABLE 2. DISTRIBUTION OF FIRMS ACCORDING TO OPEN ACCOUNT CREDIT POLICIES, 663 FIRMS, NORTH DAKOTA, 1967

Type of Credit Policy	Number of Firms	Percent of All Firms
Service Charge	255	39
Other Types		
Due Date - No Interest	49	7
Spring to Fall	21	3
Cash Discount and Related Types	<u>23</u>	<u>3</u>
Total - Other Types	93	13
No Established Credit Policy	295	45
No Response	<u>20</u>	<u>3</u>
Totals	663	100

To determine the importance of each of the different credit policies, the sales of the merchant-dealers using each type were considered. The 225 firms (39 percent of the firms reporting a sales volume) using a service charge credit policy reported sales of 87.6 million dollars which was 60 percent of the total sales reported by all firms (Table 3). (Thirty firms reporting a service charge credit policy did not report their yearly sales volume.) The average sales volume of firms reporting a service charge credit policy was \$389,244.

TABLE 3. SALES VOLUME DATA OF FIRMS WITH VARIOUS TYPES OF CREDIT POLICIES, 581 FIRMS, NORTH DAKOTA, 1967

Type of Credit Policy	Number of Firms	Percent of All Firms	Total Sales	Percent of All Sales	Sales per Firm
Service Charge	225	39	\$ 87,580,100	60	\$389,244
Other Types	78	14	18,188,200	13	233,182
No Credit Policy	270	46	38,762,600	26	143,565
No Response	3	1	1,193,000	1	149,125
Totals	581*	100	\$145,723,900	100	

\*Eighty-two firms did not report sales volume.

The firms using other types of credit policies comprised 14 percent of the responding firms and 13 percent of the total sales. The 78 firms reported sales of 18.1 million dollars. The average sales volume per firm was \$233,182.

Almost 46 percent of the responding firms reported no established credit policy, but this group was responsible for only 26 percent of the total sales of all firms. The 270 responding firms (25 firms did not report their sales volume) reported sales of \$38.7 million, an average of \$143,565 per firm.

Responding firms indicated the type of product sold by their firm as well as the type of credit policy. The most common credit policy reported by firms selling all types of products except petroleum products was a service charge credit policy (Table 4).

#### FORMAL CREDIT PRACTICES AND POLICIES

The terms of merchant-dealer formal contract credit varied with the type of product financed and the agency purchasing the contract. The purpose of this section was to analyze the cost of formal credit for new and used machinery, petroleum products, seed, and other production factors when the contract is purchased by suppliers, banks, and Production Credit Associations. The agency purchasing contracts was the basis for the organization of this section.

TABLE 4. PERCENT OF FIRMS SELLING SELECTED PRODUCTS USING SELECTED CREDIT POLICIES, 663 FIRMS, NORTH DAKOTA, 1967

Type of Product Sold	Type of Credit Policy			
	Service Charge	Other Types	No Established Credit Policy	No Response
	(percent)			
Feed and Feed				
Equipment	47	2	43	8
Machinery	48	11	39	2
Petroleum	17	28	50	5
Crop Production				
Inputs	48	7	42	3
Service and Other				
Farm Supplies	44	8	48	0
All Firms	39	13	45	3

#### SUPPLIERS OR MANUFACTURER

The inability of many merchant-dealers to finance large amounts of accounts receivable has prompted suppliers to enter the agricultural credit field. Machinery suppliers actively compete with commercial lenders for agricultural paper. These corporations have established a credit agency as an integral part of their company. Most companies supplying products other than machinery serve as an intermediary between their dealers and a commercial lender (such as the Bank for Cooperatives). The data for this section were obtained by interviewing 97 merchant-dealers, four suppliers, and 23 representatives of commercial lenders.

Conditional sales contracts were the formal credit instruments used by implement dealers and farm machinery suppliers. The conditional sales contract agreements normally included a financial statement of the purchaser and a retail installment contract which included a schedule of installment payments and details of the sales transaction. The retail installment contract included a Uniform Commercial Code Form I which was filed with the Registrar of Deeds of the local County. The conditional sales contract did not include a charge for property and life insurance, but such a charge was normally included in the total financing charge made by the supplier.

Almost two-thirds of the firms reported an interest charge ranging from 9 to 12 percent for new and used equipment (Table 5). Thirty-five machinery dealers reported financial charges for new equipment which ranged from 7 to 13 percent simple interest and averaged 9.6 percent. They reported an average finance charge of 10.2 percent for used equipment purchases with a range of 8 to 15 percent.



TABLE 5. FINANCE CHARGES REPORTED BY DEALERS SELLING FARM MACHINERY, SUPPLIER FORMAL CONTRACT CREDIT, 35 FIRMS, NORTH DAKOTA, 1967

Finance Charge-Percent Per Year	New Equipment		Used Equipment	
	Number	Percent	Number	Percent
7 - 7.9	3	9	3	9
8 - 8.9	5	14	3	9
9 - 9.9	7	20	7	22
10 - 10.9	5	14	4	12
11 - 11.9	2	6	4	12
12 - 12.9	8	23	6	18
13 - 13.9	1	3	2	6
No Response	4	11	4	12
Total	35	100	33*	100

\*Two firms did not write formal contracts for used equipment.

To substantiate the responses of merchant-dealers, three farm machinery suppliers were interviewed. The representatives of these companies indicated finance charges ranging from 13 to 13.5 percent on new equipment and 13 to 15 percent on used equipment. These charges included life and property insurance. (Life and property insurance were required on the original loan value regardless of the amount of the contract unpaid.) Suppliers often used the term "7 percent financing charge" to describe their credit program. This accounts for the merchants reporting a 7 percent finance charge. If a premium is added for life and property insurance, the cost reported by the dealers closely approximates that reported by the representatives of the implement suppliers.

An important consideration is the interest-free period allowed by the supplier. The suppliers provide a waiver of finance charges to promote "off season" sales of equipment and machinery. A typical program would carry an October or November tractor purchase interest free until April 1; a combine would be carried until July 1. The supplier representatives indicated about 75 percent of the contracts purchased from their dealers were written during this period. Many farmers were refinancing with a commercial lender and liquidating the contract held by the supplier at the end of the interest-free period. An estimate of the percent of contracts handled in this manner ranged from 33 percent to 70 percent with an average of 51 percent.

In addition to the finance charges, the repayment period and down payment requirements are important factors. The implement dealers indicated the most common repayment period was 48 months (four autumns) for new and used machinery (Table 6). The supplier representatives indicated 42 to 48 months (four autumns) was the most common repayment period for new machinery and 36 months for used machinery. The suppliers indicated they would accept contracts for 60 months for self-propelled

or high-cost equipment. Thus, dealers selling expensive grain, sugarbeet, or potato harvesting equipment might write a majority of their new machinery contracts for 60 months and used machinery contracts for 48 months.

TABLE 6. REPAYMENT PERIODS REPORTED BY DEALERS SELLING FARM MACHINERY, SUPPLIER FORMAL CONTRACT CREDIT, 35 FIRMS, NORTH DAKOTA, 1967

Repayment Period-Months	New Equipment		Used Equipment	
	Number	Percent	Number	Percent
24	0	0	4	11
30	0	0	1	3
36	3	9	10	29
42	4	11	1	3
48	22	63	13	36
60	5	14	0	0
No Response	<u>1</u>	<u>3</u>	<u>6</u>	<u>18</u>
Total	35	100	35	100

The supplier representatives estimated the normal down payment required was 30 percent for new machinery and 35 percent for used equipment. They indicated a down payment of 25 percent would be accepted from farmers with good credit ratings.

Firms selling products other than farm machinery and equipment dealt with commercial lenders; no supplier actively participated in formal credit arrangements with dealers. However, cooperative suppliers have developed a program to finance formal credit purchases using a check-note as the credit instrument. The check-note was handled as a note until the due date when it was handled as a check. The check-note could be sold by local cooperative associations to the central office where the check-note was held by the supplier (if securing fertilizer sales) or sold to a Bank for Cooperatives. Also, the local cooperative could sell the check-note to a local bank or hold the check-note at the local office. Notes held by the central office were deposited at the Bank for Cooperatives; if a large number were handled, the Bank for Cooperatives sent due check-notes by letter to the local banks. If a small number were involved, magnetic ink coding was added and the check-note was handled as a check through the Federal Reserve System.

Three programs have been established: (1) fall to spring, (2) spring to fall, and (3) an alternative program. The fall sales of fertilizer could be carried until April 1 of the following year (eight-month maximum) with a finance charge of 1½ percent. Spring sales of fertilizer could be carried until December 1 (eight-month's maximum) with a financial charge of 3 percent. The alternative program would carry check-notes up to one year with a financial charge of ½ percent per month.

Eleven firms indicated use of this type of formal credit. Four firms used the spring to fall program and seven firms used the alternative program carrying notes at 6 percent simple yearly interest for periods up to 12 months. One firm indicated the finance charge was canceled if the note was paid by the due date.

#### COMMERCIAL BANKS

Commercial lenders actively participate in the purchasing of formal credit instruments. Banks are willing to hold this type of agricultural paper because these contracts provide income greater than long-term real estate loans or direct intermediate-term loans to farmers. Since most merchant-dealers prefer to deal with local lending agencies, banks are an important final source of financing formal merchant-dealer credit.

The cost to the farmer varies not only with the stated interest rate, but with the method the finance charge is calculated and collected. Commercial banks used three methods of calculating and collecting finance charges. These included: (1) calculating interest on the basis of the unpaid balance, (2) subtracting the interest from the face value of the loan (discounted note), and (3) adding the interest to the loan at the beginning of the repayment period (add-on interest). If the note is written as a single (annual) payment note, an "add-on" finance charge is the same true interest rate as a finance charge calculated on the basis of the unpaid balance.

Merchant-dealers selling farm machinery reported a range of 6 to 12 percent simple interest for new machinery contracts and 6.5 to 13 percent on used machinery contracts purchased by commercial banks (Table 7). The average finance charge reported by all responding merchants was 8.1 percent for new machinery and 8.3 percent for used machinery. A finance charge ranging from 7 to 10 percent was reported by 85 percent of the merchant-dealers. A charge of 7 percent was the most common finance charge reported for contracts sold to commercial banks.

Commercial banks reported a finance charge of 7 to 11.8 percent on new and used machinery conditional sales contracts. Only three banks required life or property insurance which added .5 percent to the stated finance charge. Only one bank indicated the finance charge was calculated on the basis of "add-on" interest. Forty percent of the banks indicated the finance charge was subtracted in advance from the total amount of the contract. Discounting the note and calculating interest on the basis of "add-on interest" were the exception rather than the most common practice. The average finance charge reported by all banks was 8.5 percent for new machinery contracts and 8.9 percent for used machinery (includes cost of life insurance if required). The most common finance charge was 7 percent simple interest (Table 8).

Merchant-dealers reported repayment periods ranging from 24 to 60 months for contracts sold to commercial banks. The most common repayment period reported for new machinery was 48 months and 36 months was most common for used machinery (Table 9).

TABLE 7. COMMERCIAL BANK FINANCE CHARGES REPORTED BY MERCHANT-DEALERS, CONDITIONAL SALES CONTRACTS SOLD TO COMMERCIAL BANKS, NEW AND USED MACHINERY, 47 FIRMS, NORTH DAKOTA, 1967

Financial Charge- Percent Per Year	New Equipment		Used Equipment	
	Number	Percent	Number	Percent
6 - 6.9	2	4	1	2
7 - 7.9	21	45	21	46
8 - 8.9	5	11	4	10
9 - 9.9	10	21	10	22
10 - 10.9	5	11	4	10
11 - 11.9	2	4	2	4
12 - 12.9	1	2	1	2
13 - 13.9	0	0	1	2
No Response	<u>1</u>	<u>2</u>	<u>1</u> *	<u>2</u>
Total	47	100	45*	100

\*Two firms did not write formal contracts for used machinery.

TABLE 8. FINANCE CHARGES FOR CONDITIONAL SALES CONTRACTS REPORTED BY 20 COMMERCIAL BANKS, NEW AND USED MACHINERY, NORTH DAKOTA, 1967

Financial Charge- Percent Per Year	New Equipment		Used Equipment	
	Number	Percent	Number	Percent
7 - 7.9	8	40	8	40
8 - 8.9	3	15	2	10
9 - 9.9	5	25	2	10
10 - 10.9	2	10	3	15
11 - 11.9	<u>2</u>	<u>10</u>	<u>5</u>	<u>25</u>
Total	20	100	20	100

TABLE 9. REPAYMENT PERIODS REPORTED BY DEALERS SELLING FARM MACHINERY, BANK FORMAL CONTRACT CREDIT, 47 FIRMS, NORTH DAKOTA, 1967

Repayment Period-Months	New Machinery		Used Machinery	
	Number	Percent	Number	Percent
24	2	4	14	30
36	15	32	21	44
48	25	53	7	14
60	4	9	0	0
No Response	<u>1</u>	<u>2</u>	<u>5</u>	<u>11</u>
Total	47	100	47	100

Commercial banks reported a range of 24 to 60 months as the most common repayment period for new machinery and 12 to 36 months for used machinery contracts (Table 10). A repayment period of 36 months for new machinery contracts was reported by 80 percent of the banks.

TABLE 10. REPAYMENT PERIODS REPORTED BY COMMERCIAL BANKS, FARM MACHINERY FORMAL CONTRACT CREDIT, 20 BANKS, NORTH DAKOTA, 1967

Repayment Period-Months	New Machinery		Used Machinery	
	Number	Percent	Number	Percent
12	0	0	2	10
24	2	10	10	50
36	16	80	8	40
48	1	5	0	0
60	<u>1</u>	<u>5</u>	<u>0</u>	<u>0</u>
Total	20	100	27	100

The most common down payment requirement reported by commercial banks ranged from 20 to 40 percent for new machinery and 30 to 50 percent for used machinery (Table 11). The down payment requirement reported most often was 30 percent for new and used machinery. The average down payment requirement was 30 percent for new machinery and 37 percent for used machinery.

The formal credit instruments purchased by banks securing sales of petroleum products, seed, fertilizer, agricultural chemical or feed were written for periods of less than one year and were paid in a single payment. North Dakota law limits the maximum finance charge to 7 percent simple interest on single payment loans. Only 45 percent of the responding banks held notes of this type; all but one of these banks made a finance charge of 7 percent simple interest, one bank

reported a finance charge of 6 percent. A finance charge of 7 percent was reported by 50 percent of the merchants. The average finance charge reported by all merchants was 6.8 percent. In all cases the most common repayment period was less than one year and the average was 9.1 months (Table 12).

TABLE 11. DOWN PAYMENT REQUIREMENTS REPORTED BY 20 COMMERCIAL BANKS, NEW AND USED MACHINERY, NORTH DAKOTA, 1967

Down Payment Requirement- Percent	New Machinery		Used Machinery	
	Number	Percent	Number	Percent
25	5	25	0	0
30	12	60	11	55
40	1	5	3	15
50	0	0	4	20
No Response	<u>2</u>	<u>10</u>	<u>2</u>	<u>10</u>
Total	20	100	20	100

TABLE 12. FINANCE CHARGES AND REPAYMENT PERIODS FOR FORMAL CONTRACT CREDIT SOLD TO COMMERCIAL BANKS BY MERCHANTS SELLING PRODUCTS OTHER THAN FARM MACHINERY, 22 FIRMS, NORTH DAKOTA, 1967

Finance Charge- Percent Per Year	Number	Percent	Repayment Period- Months	Repayment	
				Number	Percent
5.5	1	5	6	12	55
6.0	4	18	8	2	9
6.5	2	9	10	0	0
7.0	13	59	12	7	31
No Response	<u>2</u>	<u>9</u>	NR	<u>1</u>	<u>5</u>
Total	22	100		22	100

Some cooperatives have established check-note programs with local banks. The local cooperative association estimated the amount of credit needed during a growing season. The bank accepted check-notes from the cooperative until the prearranged limit was reached. The finance charge on check-notes handled in this manner was 7 percent simple interest and the maximum repayment period was one year.

## PRODUCTION CREDIT ASSOCIATION

Production Credit Associations (PCA's) were very active in financing formal credit of seed, petroleum products, fertilizer and agricultural chemicals. However, only one PCA was actively competing with other lenders for paper securing sales of farm machinery and equipment. Primarily, cooperative oil companies and farmers' elevators were the types of firms dealing with PCA's.

Eleven firms selling farm machinery reported sale of conditional sales contracts to a PCA. The merchant-dealers reported the financial charges ranged from 6.5 to 7 percent simple interest, the most common was 7 percent simple interest. The most common repayment period for new machinery sales was 48 months and 36 months for used machinery. In many cases, implement dealers reported local PCA offices preferred to deal directly with the farmer. The PCA required a down payment of 35 to 40 percent on new and used machinery contracts. The PCA loan officers reported a repayment period of 48 months for new machinery contracts and 36 months for used machinery contracts.

Seven firms selling fertilizer, seed, or petroleum products reported selling paper to a PCA. These firms participated in the PCA "supply loan program." All of the firms using this program were consumer cooperatives. Under this program, a prearranged limit was established for each patron. The patron could sign a note for the entire amount or sign individual notes as the credit was used. If the farmer signed a note for the entire amount, he was charged interest as he used the credit. The finance charge for this type of formal credit ranged from 6.8 to 8.4 percent, depending on the requirements of the local PCA.

It is difficult to determine the true finance charge because voting membership stock purchases, loan service fees, and member equity requirements vary greatly among PCA offices. In some cases the consumer cooperatives purchased the necessary membership stock. The cooperative did not object to this practice because the stock reverted to nonvoting stock when the note was paid. This type of stock paid a dividend of 4.5 to 5 percent.

### MERCHANT-DEALER CREDIT

The purpose of this section was to determine the volume of credit extended to North Dakota farmers by merchant-dealers. In addition, the relationship of the type of product sold and the credit policy of the merchant to the amount of credit were discussed.

### AGGREGATE SUPPLY OF CREDIT

The total credit extended by merchants and dealers includes open account, extended open account, and formal contract credit. Total sales of \$74 million were reported by 333 firms which indicated the percentage of total sales carried as various forms of credit. Of

that amount, 77 percent was carried as some form of credit (Table 13). Excluding open account credit (accounts carried less than 30 days as credit), these merchants supplied over 47 million dollars of short- and intermediate-term credit; 63 percent of their total sales was financed as formal contract and extended open account credit.

TABLE 13. VOLUME OF CREDIT EXTENDED AND PERCENT OF TOTAL SALES, 333 MERCHANTS AND DEALERS, NORTH DAKOTA, 1967

Type of Credit	Volume	Percent of Total Sales
Open Account Credit	\$10,432,521	14
Extended Open Account Credit		
Carried 30 - 90 Days	\$12,777,580	17
Carried 90 Days - One Year	14,484,949	19
Carried More Than One Year	<u>2,627,163</u>	<u>4</u>
Total Extended Open Account Credit	\$29,889,642	40
Formal Contract Credit	<u>16,963,618</u>	<u>23</u>
Total Credit	\$57,285,781	77
Cash Sales	\$17,152,795	23
Total Sales	\$74,438,576	100

Merchants financed 23 percent of their total sales with some form of formal credit agreement, such as a check-note or conditional sales contract. They carried 40 percent of total sales as extended open account credit and 14 as open account credit. The merchants reported 17 percent of the total sales was carried as extended open account credit 30 to 90 days, 19 percent for 90 days to one year, and 4 percent for periods longer than one year.

The analysis of firms selling various types of products indicated firms selling all types of products financed between 53 and 65 percent of their aggregate sales as extended open account and formal contract credit (Table 14). Firms selling petroleum products, farm machinery, and several types of products financed more than 64 percent of their total sales as credit. Firms selling crop production inputs (seed, fertilizer, and agricultural chemicals) and those selling feed products financed similar percentages of their aggregate sales, 56 percent, and 55 percent, respectively. Firms supplying services and other farm supplies financed 53 percent of their total sales.

Merchants selling petroleum products, several types of products, and feed products financed over 50 percent of their sales as extended open account credit (Table 15). The merchants selling crop production inputs financed 44 percent of their total sales as extended open account credit. Firms providing services and other farm supplies carried 37



percent of their sales as extended open account credit. Dealers selling farm machinery and equipment carried only 24 percent of their sales as extended open account credit. However, farm machinery dealers financed 40 percent of their sales with some type of formal credit, usually conditional sales contracts. Merchants selling other types of products financed no more than 16 percent of their sales by means of formal contract credit.

TABLE 14. EXTENDED OPEN ACCOUNT AND FORMAL CONTRACT CREDIT, PERCENT OF TOTAL SALES REPORTED BY MERCHANTS SELLING VARIOUS PRODUCTS TO NORTH DAKOTA FARMERS, 1967

Type of Product Sold	Number of Firms	Volume	Percent of Total Sales
Feed and Feed Equipment	11	\$ 975,113	55
Farm Machinery	97	\$21,485,249	64
Petroleum Products	106	\$14,503,129	65
Crop Production Inputs	76	\$ 4,783,796	56
Services and Other			
Farm Supplies	12	\$ 2,492,140	53
Several Types	31	\$ 4,410,307	65

TABLE 15. PERCENT OF SALES CARRIED AS EXTENDED OPEN ACCOUNT AND FORMAL CREDIT BY MERCHANTS SELLING VARIOUS PRODUCTS, 333 MERCHANTS, NORTH DAKOTA, 1967

Product Sold	Extended Open Account Credit	Formal Credit
Feed and Feed Equipment	52	3
Farm Machinery	24	40
Petroleum Products	58	7
Crop Production Inputs	44	12
Services and Other		
Farm Supplies	37	16
Several Types	55	10

#### FACTORS AFFECTING CREDIT

The preceding analysis has been based on aggregate sales of all firms selling each type of product and the total volume of extended open account and formal contract credit. The purpose of this discussion was to determine the percent of sales financed by extended open account credit and to analyze its relationship to the credit policy and type of product sold. The amount of sales secured by formal credit contracts

was not included because the credit policy of the firm has no effect upon the use of formal credit instruments.

The analysis of this section is based on the percentages of total sales reported as credit sales by each firm rather than their dollar volume of credit. This was necessary to exclude the bias caused by firms with large and small sales.

Product Sales

To facilitate statistical analysis, firms selling feed and feed equipment were grouped with firms selling fertilizer, seed, and agricultural chemicals. In most cases, the merchants selling these products were country elevators whose primary business was the merchandising of small grains. The firms which sold several types of products and firms providing services and other farm supplies were excluded because of the heterogeneity of the firms comprising each group.

Firms selling petroleum products reported the largest percentage of their sales as extended open account credit and they carried that credit longer than firms selling farm machinery or those selling crop production inputs and feed (Table 16). Firms selling petroleum products reported an average of 63 percent of sales carried as extended open account credit, compared with an average of 42 percent for firms selling crop production inputs and 26 percent for the firms selling farm machinery. Firms selling petroleum products also carried more extended open account credit beyond 90 days, 43 percent of sales versus 21 percent average for firms selling crop production inputs and 11 percent average for firms selling farm machinery. The standard deviation for the percent of sales carried more than 30 and 90 days was calculated for the 290 firms in this sample. In a normally distributed population, about 67 percent of the observations are within one standard deviation of the mean. This range is indicated for each of the type of firms in Table 16.

TABLE 16. PERCENT OF SALES CARRIED AS EXTENDED OPEN ACCOUNT CREDIT FOR SELECTED PERIODS OF TIME, 290 FIRMS SELLING VARIOUS PRODUCTS TO FARMERS, NORTH DAKOTA, 1967

Type of Product Sold	Carried More Than 30 Days		Carried More Than 90 Days	
	Average	Range Including 67% of Firms	Average	Range Including 67% of Firms
Petroleum	63	39 - 86	43	18 - 69
Crop Production				
Inputs	42	17 - 68	21	3 - 40
Machinery	26	8 - 43	11	2 - 28

Credit Policy

In addition to an analysis of the sale of each type of product, firms with each of the three types of credit policies were analyzed to determine the relationship of credit policy to the percent of sales carried as extended open account credit.

The objective in differentiating credit policies was to compare firms using a service charge credit policy with firms having no established credit policy. For that reason any credit policy other than a service charge was included in the category titled "other types of credit policies."

Firms using a service charge type of credit policy reported an average of 38 percent of sales carried longer than 30 days and 20 percent of sales carried longer than 90 days. In comparison, firms with no established credit policy reported an average of 44 percent of sales carried longer than 30 days and 28 percent carried longer than 90 days. Firms with other types of credit policies carried an average of 56 percent of sales longer than 30 days and 37 percent was carried longer than 90 days. The range for each type of credit policy that would include 67 percent of the firms is indicated in Table 17.

TABLE 17. PERCENT OF SALES CARRIED AS EXTENDED OPEN ACCOUNT CREDIT FOR SELECTED PERIODS OF TIME, 290 FIRMS USING VARIOUS CREDIT POLICIES, NORTH DAKOTA, 1967

Type of Product Sold	<u>Carried More Than 30 Days</u>		<u>Carried More Than 90 Days</u>	
	Average	Range Including 67% of Firms	Average	Range Including 67% of Firms
Service Charge	38	17 - 60	20	3 - 36
No Established Credit Policy	44	23 - 65	28	8 - 48
Other Types	56	29 - 73	37	12 - 62

Tests of Significance

Statistical methods were employed to determine if the difference that existed in the amount of credit extended for the various product sales and under various credit policies was statistically significant. Analysis of variance indicated that a significant difference existed among the three types of products sold with respect to the percentage of sales carried longer than 90 days. Further analysis indicated that petroleum firms extended significantly more open account credit than firms selling farm machinery or firms selling crop production inputs. Firms selling crop production inputs extended significantly more open account credit than firms selling farm machinery.

No significant difference in extended open account credit was associated with the various credit policies. This indicated that firms with no established credit policy did not extend significantly more extended open account credit than firms using a service charge or other credit policy.

FINAL SOURCES OF MERCHANT-DEALER FORMAL CREDIT

The merchants of North Dakota indicated extensive use of formal contract credit to secure sales of products to farmers. These formal credit contracts can be sold to commercial lending agencies for face value, thus reducing the finances needed for accounts receivable. Also, the formal credit contracts reduce collection responsibility, and may provide interest income.

The purpose of this section was to analyze the arrangements used by commercial lenders in purchasing agricultural paper from merchants and dealers. Included in this discussion were "holdback" reserves, interest participation reserves, liability in case of default, and normal collection policies. In addition, the merchants indicated the lending agency they used and the reason for using that agency.

A selected group of 77 merchants indicated total sales of \$27.9 million. The merchant-dealers indicated 39 percent of total sales was secured by some type of formal credit. The merchants sold 55 percent of their formal credit instruments to banks, 26 percent to suppliers and 12 percent to a Production Credit Association or other financial source (Table 18). The merchants held 7 percent of the credit instruments unsold.

TABLE 18. SALES VOLUME, PERCENT OF SALES SECURED BY SOME FORM OF FORMAL CREDIT, 77 FIRMS, NORTH DAKOTA, 1967

Agency Purchasing Contract	Machinery (000)		Other Products (000)		All Firms (000)	
	Volume	Percent	Volume	Percent	Volume	Percent
Banks	\$ 4,773	56	\$1,179	53	\$ 4,952	55
Suppliers	2,746	32	0	0	2,746	26
PCA	589	7	739	33	1,328	12
Unsold	420	5	312	14	732	7
Total Formal Credit	\$ 8,528	100	\$2,230	100	\$10,758	100
Total Sales	\$18,036		\$9,919		\$27,955	

Merchants selling farm machinery used conditional sales contracts because of the large dollar volume involved in the sale of expensive farm machinery. Merchants selling products other than farm machinery

reported various reasons for using formal credit. The reason cited by most of the dealers was the need for security on large sales not paid in cash at time of sale, or when accounts were expected to run a long time. A second reason was the need for collateral in case the firm needed to borrow to meet operating expenses. Some firms used formal credit only for accounts that had become past due (Table 19).

TABLE 19. REASONS CITED FOR USE OF FORMAL CREDIT INSTRUMENTS, FIRMS SELLING PRODUCTS OTHER THAN FARM MACHINERY, 47 FIRMS, NORTH DAKOTA, 1967

Reason Given	Number	Percent of All Firms
Large Sales Not Paid in Cash	21	45
Used for Past Due Accounts	5	11
If Accounts Are Expected to be Unpaid for a Long Period	5	11
Held Unsold for Collateral	7	14
Other Reasons	5	11
No Response	<u>4</u>	<u>8</u>
Total	<u>47</u>	<u>100</u>

The purpose of the following discussion is to analyze the financial arrangements used by agencies in purchasing agricultural paper. Included in this discussion will be normal collection policies, financial reserves, interest participation reserves, liability of dealers and collection policies for defaulted paper. The type of financial agency purchasing the credit instruments will be the basis for the organization of this discussion.

#### COMMERCIAL BANKS

Because the financial arrangements differ widely between machinery dealers and merchant-dealers selling other products, each must be discussed separately. The 20 banks interviewed reported machinery paper purchases of 4.7 million dollars (Table 20). Of this amount, 74 percent was fully guaranteed by the merchant-dealer; the merchant-dealer was fully liable for all defaulted obligations. An additional 24 percent of the volume was written with limited dealer obligation to the banks. Each of these limited recourse agreements will be discussed later in this section. Only 2 percent of the dollar volume was accepted by the banks with no recourse to the dealer if the obligation defaulted.

The financial arrangement which limited the liability of the dealer varied among the various banks. In one case, a substantial volume of machinery paper was accepted with a 120-day repurchase agreement. The terms of this arrangement relieved the merchant-dealer of any responsibility if the equipment was not delivered to his place of

business within 120 days after the due date. In a second case, the dealer was relieved of responsibility after the first annual payment was made. Another bank guaranteed repossession of defaulted machinery with the dealer assuming full responsibility of the note after the machinery was delivered to his business. Another type of arrangement limited the liability of the merchant-dealer during any calendar year to 10 percent of the face value of all notes purchased or \$2,000, whichever was greater.

TABLE 20. VOLUME OF AGRICULTURAL FORMAL CREDIT INSTRUMENTS SECURING SALES OF FARM MACHINERY ACCEPTED WITH VARIOUS FINANCING ARRANGEMENTS, 20 COMMERCIAL BANKS, NORTH DAKOTA, 1967

Type of Financial Arrangement	Number of Banks Using*	Dollar Volume	Percent of Total Volume
Full Endorsement	19	\$3,436,970	74
Limited Recourse			
120-Day Repurchase Agreement	1	\$689,700	
After First Payment	1	2,300	
Guaranteed Repossession	1	54,400	
Limited Liability	1	195,750	
Other	<u>2</u>	<u>200,000</u>	
Total Limited Liability	5	\$1,142,280	24
Nonrecourse	4	82,660	2
Total		<u>\$4,661,910</u>	<u>100</u>

\*Some banks used more than one financial arrangement.

Historically, banks have required financial reserves to insure the merchant-dealer's ability to meet all defaulted obligations. Normally, this reserve was established and maintained by withholding a percentage of the advance paid the dealer when the note was purchased. This reserve was adjusted annually to a fixed percentage of the face value of all outstanding notes with any excess remitted to the dealer. Thirty-five percent of the responding banks indicated this type of reserve was not used (Table 21). Over 75 percent of the banks requiring a financial reserve indicated the "holdback" was waived if the dealer was financially well established or if his reserve fund was substantial. The most common holdback requirement was 5 percent with the account adjusted yearly to 10 percent of the value of all outstanding notes. The holdback varied from a low of 1 percent of each note to a high of 5 percent. The financial reserve requirements varied from 3 percent to 10 percent of the value of all outstanding notes. Only two banks paid the dealer interest on the money withheld in the financial reserve (3 and 5 percent, respectively).

TABLE 21. FINANCIAL RESERVE REQUIREMENTS, MACHINERY CONTRACTS, 20 BANKS, NORTH DAKOTA, 1967

Holdback Requirement (Percent)	Reserve Requirement (Percent)	Number of Banks	Percent of Responding Banks
1	3	1	5
3	6	1	5
4*	10	1	5
5*	5	1	5
5	7	1	5
5	10	5	25
None	None	7	35
No Response		<u>3</u>	<u>15</u>
Total		20	100

\*These banks paid interest to the dealer for the money withheld for the financial reserve.

In addition to the holdback reserve, financial reserves were established through the sharing of the interest income by the merchant-dealer and the bank. Fifty percent of the responding banks indicated sharing of interest income. The most common interest participation was 10 percent of the net financial charge (Table 22). Another popular method provided the merchant with 1 to 2 percent of the face value of the note.

TABLE 22. INTEREST PARTICIPATION RESERVES, 20 BANKS, NORTH DAKOTA, 1967

Terms of Interest Participation	Number of Banks	Percent of Responding Banks
Interest Participation		
10% of Net Charge	5	25
25% of Net Charge	1	5
1 to 2% of Note Value	<u>4</u>	<u>20</u>
Total	10	50
No Participation	9	45
No Response	1	5

In case of default, 50 percent of the banks required the dealer to repurchase the note for the amount due and did not aid the dealer in repossessing the machine. In this case, any established reserve fund would not be reduced unless the merchant was financially unable

to repurchase the note. Twenty percent of the banks required the dealer to repossess the equipment and the amount due was deducted from the reserve fund. Twenty-five percent of the banks either assumed all responsibility or assisted with repossession, but required the dealer to repurchase the note for the amount due. One bank allowed the dealer to sell the repossessed machine before asking for the amount due.

Nine banks (45 percent) purchased notes securing the sales of products other than farm machinery. The banks purchased 95 percent of the notes with full recourse (Table 23). One bank used an agreement under which the dealer was fully liable until 120 days after the due date. After this 120-day period the bank assumed full responsibility.

TABLE 23. VOLUME OF AGRICULTURAL FORMAL CREDIT INSTRUMENTS SECURING SALES OF PRODUCTS OTHER THAN FARM MACHINERY PURCHASED WITH VARIOUS FINANCING ARRANGEMENTS, NINE COMMERCIAL BANKS, NORTH DAKOTA, 1967

Type of Financial Arrangement	Number of Banks	Dollar Volume	Percent of Total Volume
Full Endorsement	8	\$371,900	95
Limited Recourse			
120-Day Repurchase	<u>1</u>	<u>20,000</u>	<u>5</u>
Total	9	\$391,900	100

In all the cases where no financial reserve was required, the dealer did not participate in the income from finance charges and the bank was responsible for all normal collections. In case of default, the dealer repurchased the note for the unpaid balance and was responsible for any further collections. All banks handled this type of note in this manner.

#### SUPPLIERS

As in the case of commercial banks, financial arrangements varied greatly for notes securing machinery sales and sales of other products, such as fertilizer, seed, and petroleum products. Machinery suppliers will be analyzed in the first part and suppliers of other products later in this discussion.

The three machinery suppliers held \$13.0 million of formal contract credit. Of this amount 44 percent was accepted with full recourse to the dealer and 56 percent was accepted with limited liability (Table 24). One supplier accepted only contracts written with full recourse to the dealer. The other suppliers limited the liability of the dealer in a calendar year to the amount of the reserve



fund. Paper securing new machinery sales was accepted with limited liability and that securing used machinery sales was accepted with full recourse by the suppliers.

TABLE 24. VOLUME OF AGRICULTURAL FORMAL CONTRACT CREDIT ACCEPTED WITH VARIOUS FINANCING ARRANGEMENTS, THREE MACHINERY SUPPLIERS, NORTH DAKOTA, 1967

Type of Financial Arrangement	Number of Suppliers Using	Dollar Volume	Percent of Total Dollar Volume
Full Endorsement	3	\$ 5,730,000	44
Limited Liability	2	7,270,000	56
Total		\$13,000,000	100

Under the terms of the limited recourse agreement used by two suppliers, the dealer was responsible only for the amount in his reserve fund. The value of a defaulted machine was appraised and the difference between that amount and the actual amount owed was the responsibility of the dealer. Therefore, if the appraised value of the machine was \$4,000 and \$6,000 was owed on the machine, the \$2,000 difference was the responsibility of the dealer. If the dealer had only \$1,600 in his reserve fund, the supplier would stand a loss of \$400. The dealer would repurchase the note for the appraised value or he would "floor plan" the machine with the supplier.<sup>7</sup> In all cases the supplier required a financial reserve and shared the finance charge income with the dealer. The holdback and the finance charge income due the dealer were grouped in one account which was titled the "dealer reserve" or the "dealer contingent liability reserve." Two suppliers withheld 1 percent of each note. One supplier waived the withholding requirement when the dealer reserve reached \$3,000. The other varied the holdback requirement in relation to the proportion of the value of the machine to be financed. If the amount of financing was high in relation to the wholesale price (manufacturer's cost) the amount withheld was larger.

In all cases, the dealer received 10 percent of the finance charge income. If the note ran the full period, this would amount to 1.3 percent of the face value of the note per year. This interest was added to the amount withheld from the advance of each note.

<sup>7</sup>Under the terms of a floor plan arrangement, the dealer gets possession of the goods, but is not required to pay for the goods until they are sold. The dealer pays interest on the wholesale value of the machine until it is sold.

The financial reserves were adjusted yearly by two suppliers and twice yearly by the third. One supplier paid 75 percent of the reserve to the dealer and held the remaining 25 percent. The following year, the amount withheld from the previous year and the 75 percent of the amount withheld from that year were paid the dealer. The other suppliers adjusted the account to 3 percent of the face value of all outstanding notes with a minimum of \$1,000 in the account.

In addition to limiting the liability on new machinery contracts, the suppliers provided liberal floor plan programs for their dealers. The suppliers would carry repossessed machinery interest free if periodic payments were made by the dealer on the amount due. If the dealer elected not to make payments, the floor planned machine was carried at 7 percent simple interest.

Only one supplier of local cooperative associations accepted notes securing sales of products other than farm machinery. In all cases, these notes were accepted with full recourse to the dealer, no reserve was required, and the dealer did not share in the finance charge income. In this case, the supplier had entered the credit field to provide a convenience to the member cooperative associations and their patrons.

#### PRODUCTION CREDIT ASSOCIATION

The procedure followed by the Production Credit Associations differed from that followed by suppliers and commercial banks. Unlike other lenders, supply loans (fertilizer, seed, etc.) were handled in the same manner as conditional sales contracts securing machinery sales. PCA's had a large volume of supply loans, but were not competing actively with suppliers and bankers for machinery paper.

The merchant-dealer could follow two methods in establishing a working relationship with his PCA. He could estimate the total volume of credit his customers needed during the year, or he could ask each customer to estimate his individual needs. Machinery sales were handled in much the same manner.

For all types of product sales, the merchant-dealer was fully liable for all defaulted obligations. In the case of machinery contracts, he fully endorsed the contract. For other types of sales, he guaranteed the repayment schedule made by the farmer requesting credit. This guarantee included full liability in case of default.

None of the associations required a financial reserve. However, two of the associations required the merchant-dealer to purchase the membership stock necessary to secure the loan. This committed some of the dealers' funds to the PCA. Only one of the associations shared interest income with the merchant-dealer. In this case, the merchant received 1 percent of the loan value for writing the note.

If the obligation was unpaid by the due date, the PCA assisted the merchant-dealer in collection attempts. If the customer was unable to meet his obligation and he would not refinance with the PCA involved, the merchant-dealer was required to repurchase the note for the amount due. The PCA officers felt that this type of arrangement was an excellent method to obtain business from farmers who were not established patrons of the PCA.

PLANNED CHANGES AND FUTURE EXPECTATIONS

Traditionally, merchant-dealers carried many purchases of farmers as extended open account credit for long periods. They carried this amount of agricultural credit because farmers' incomes were largely seasonal. The increased cost of production inputs has brought about increased use of merchant-dealer credit by farmers, individually and in aggregate, and has forced merchant-dealers to reappraise their open account and formal contract credit practices and policies.

The purpose of this section was to infer the future credit policies of North Dakota merchant-dealers. The data used in the first part of this section were collected from 663 firms which indicated planned or anticipated changes in open account credit policies. The second part discussed formal credit practices and was based on data gathered from 96 merchants, 4 suppliers, and 23 commercial lenders. This section will aid in determining the role merchant-dealers will play in financing future agricultural production.

OPEN ACCOUNT CREDIT POLICIES

Historically, farmers have received credit for the length of the growing season or until livestock was marketed. Merchant-dealers have been reluctant to change this policy because they anticipated farmers would buy goods from merchants with less stringent credit policies. Sixty percent of the responding firms anticipated a significant loss of business if a more stringent credit policy were adopted (Table 25). Sixty-four percent of the firms with no established credit policy and 55 percent of the firms with a service charge anticipated a significant loss of business if a more stringent credit policy were adopted.

TABLE 25. PERCENT OF FIRMS PREDICTING A SIGNIFICANT LOSS OF BUSINESS IF A MORE STRINGENT CREDIT POLICY WERE ADOPTED, 663 FIRMS, NORTH DAKOTA, 1967

Loss Significant Business	All Firms (Percent)	Credit Policy	
		None (Percent)	Service Charge (Percent)
Yes	60	64	55
No	39	34	44
No Response	1	2	1

Although 60 percent of the responding firms anticipated a loss of business would follow the adoption of a more stringent credit policy, 46 percent of the firms anticipated adoption of a credit policy which would be more restrictive than their present policy (Table 26). Forty percent of the firms indicated no change was planned in their open account credit policy. However, 31 percent of the firms which planned no change in their present policy had previously established a service charge credit policy. This indicated merchant-dealers were willing to lose some business in order to more effectively control accounts receivable.

TABLE 26. PLANNED OPEN ACCOUNT CREDIT POLICY CHANGES, 663 FIRMS, NORTH DAKOTA, 1967

Type of Change Planned	Number	Percent of All Firms
Stricter Collection and Extension	193	29
Increase or Initiate a Service Charge	64	10
Increase Use of Formal Credit	30	5
Charge Plates	9	1
Yes, But Undecided	<u>32</u>	<u>4</u>
Total Planning a Change	328	50
No Change Planned	266	40
No Response	<u>69</u>	<u>10</u>
Total	663	100

Many merchant-dealers were not willing to adopt a credit policy effective for all patrons. To reduce slow-paying accounts, 29 percent of the merchants reported more restrictive extension and more rigorous collection policies would be adopted. Increased use of formal contract credit was reported by 5 percent of the firms. Increased finance charges or the initiation of a finance charge were reported by 10 percent of the firms. An additional 6 percent of the firms reported future adoption of charge plates or were undecided of the change, but were sure one would be made.

Nine of the firms indicated they will adopt a charge plate credit system. A charge plate, similar to a credit card, is supplied by the dealer for each account. The charge plate is placed in a file at the dealer's sales counter and used when a farmer purchases goods on open account. This speeds the processing of open account purchases because the farmer's name, address, and account number are printed automatically on the sales slip. The slip is presented to a cashier whose responsibility is pricing goods found by partsmen. This relieves partsmen of pricing goods and frees them to locate goods from the inventory. If a portion of the account becomes past due, the card is removed from the file. When the card is not in the file, the farmer cannot purchase goods on open account until he pays the past due

amount or makes other arrangements. All the firms reporting future adoption of this system sold farm machinery, reported yearly sales greater than \$250,000 and charged interest on past due accounts.

In order to determine the future role to be played by merchants in the field of farm credit, the present credit policies of merchant-dealers were compiled with the anticipated changes. The analysis of these data indicated 47 percent of the responding firms anticipated adoption of a service charge credit policy and 22 percent anticipated adoption of other types of credit policies (Table 27).

TABLE 27. PERCENT OF FIRMS SELLING SELECTED PRODUCTS PLANNING TO USE SELECTED CREDIT POLICIES, 663 FIRMS, NORTH DAKOTA, 1967

Type of Product Sold	Type of Credit Policy Anticipated			
	Service Charge	Other*	None	No Response
Feed and Feed Equipment	60	15	17	8
Farm Machinery	54	17	27	2
Petroleum Production	28	38	37	5
Crop Production Inputs	60	12	23	5
All Firms	47	22	28	3

\*Includes firms indicating adoption of some form of credit policy, but were unsure as to the policy to be adopted.

A service charge credit policy was the most common credit policy anticipated by firms selling feed and feed equipment, farm machinery, and crop production inputs. Only 28 percent of the firms selling petroleum products anticipated adoption of a service charge credit policy. However, 38 percent anticipated adoption of some other type of credit policy (usually a discount for cash payment or an established due date with no credit carried beyond that date). The data in Table 27 summarize the anticipated credit policies of firms selling various products.

#### FORMAL CONTRACT CREDIT POLICIES

The purpose of this section is to analyze the anticipated changes in formal contract credit policies reported by merchant-dealers, suppliers, and commercial lenders. First, the anticipated changes reported by merchant-dealers will be presented followed by a discussion of the anticipated changes reported by commercial lenders and suppliers.

Merchant-dealers use formal contract credit because it reduces accounts receivable and often provides interest income. Fifty-eight percent of the firms selling farm machinery anticipated an increase in

use of conditional sales contracts; 67 percent of the firms selling products other than farm machinery anticipated an increase in use of unsecured notes and check-notes (Table 28).

TABLE 28. PERCENT OF NORTH DAKOTA FIRMS ANTICIPATING AN INCREASE IN FORMAL CONTRACT CREDIT, 96 FIRMS, 1967

Anticipate Increase	Type of Product Sold			
	Farm Machinery		Other Products	
	Number	Percent	Number	Percent
Yes	29	58	31	67
No	12	24	12	26
No Response	9	18	3	7

The firms indicated the extent of the change by estimating the anticipated percentage increase in use of formal contract credit instruments. The average anticipated increase reported by firms selling farm machinery was 63 percent. Firms selling products other than farm machinery reported an average anticipated increase of 40 percent. This indicated these firms anticipated a substantial increase in their use of formal credit instruments.

Suppliers have been willing to purchase agricultural loans because of the substantial interest income and the increased "off season" sale of products by allowing an interest-free period. The representatives of one supplier indicated his company would accept contracts securing the sale of machinery of any manufacturer in the near future. At present the suppliers would accept paper securing only sales of machinery manufactured by that company. All supplier representatives indicated some change would be made in the method used to handle contracts terminated at the end of the interest-free period. They agreed that the waiver of interest would not be canceled, but that some penalty might be assessed farmers terminating contracts at the end of the interest-free period.

Bank and PCA representatives indicated that the competition between lenders would cause many changes in their future policies. Some of the changes anticipated by these representatives were:

1. Abolishing or reducing holdback requirements.
2. Increased participation in interest income by merchant-dealers.
3. Paying interest on holdback reserve funds.
4. Accepting more contracts with limited or no recourse to the dealer.

Representatives of all commercial lenders indicated their organization will actively compete with other lending agencies and other sources of merchant-dealer funds for agricultural formal contract credit.

purchased, approximately 72 pounds of flour and 28 pounds of millfeed, including clears, are produced. The risk for price change in wheat can be hedged by buying futures or actually buying the wheat needed if the mill has elevator space.<sup>21</sup>

#### Wheat Purchases by Region

The United States was divided into 17 regions for the purpose of studying the distribution or flows of the various classes of wheat in the United States (Figure 14). Several factors were considered when determining the size and location of these regions. These were: the production of wheat by class, the locations of wheat processors, the distribution patterns of wheat by class, and geographical locations or boundaries.

Data on domestic wheat purchases by class and region for 1950, 1955, 1960, and 1965 were obtained from a mail survey of all wheat processors in the United States.

Thirty-seven percent of the total wheat grindings for these years were accounted for by the questionnaires that were returned. The proportions of the wheat ground, reported for 1950, 1955, 1960, and 1965, were 29.0, 34.3, 41.1, and 43.5 percent, respectively.

Ratio estimators were used to expand the data received by the questionnaires that were returned (Table 15). Thus, the total wheat purchases by class and region were derived from 37 percent of the wheat purchases that were known. A larger proportion of the wheat ground was reported for the later years than for earlier years. Mill closures, lack of records, and changes of ownership were responsible for this increase in wheat grindings reported.

Wheat purchases have been significantly increasing in regions 2, 4, 12, 13, 15, and 17. Wheat purchases in California and Nevada have increased 68.4 percent from 1950 through 1965. Processors in region 4 have purchased 40.8 percent more wheat in 1965 than in 1950. Wheat purchases in regions 12, 13, and 15 have increased by 36.6, 74.0, and 7.7 percent, respectively, from 1950 through 1965. This indicates a shift of milling capacity to the Southwestern states, East North Central states, and the East South Central states. Population increases have been the reasons in some regions. The population of California has

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<sup>21</sup>National Commission on Food Marketing, Organization and Competition in the Milling and Baking Industries, Technical Study No. 5, Washington, D. C., June 1966, p. 43.

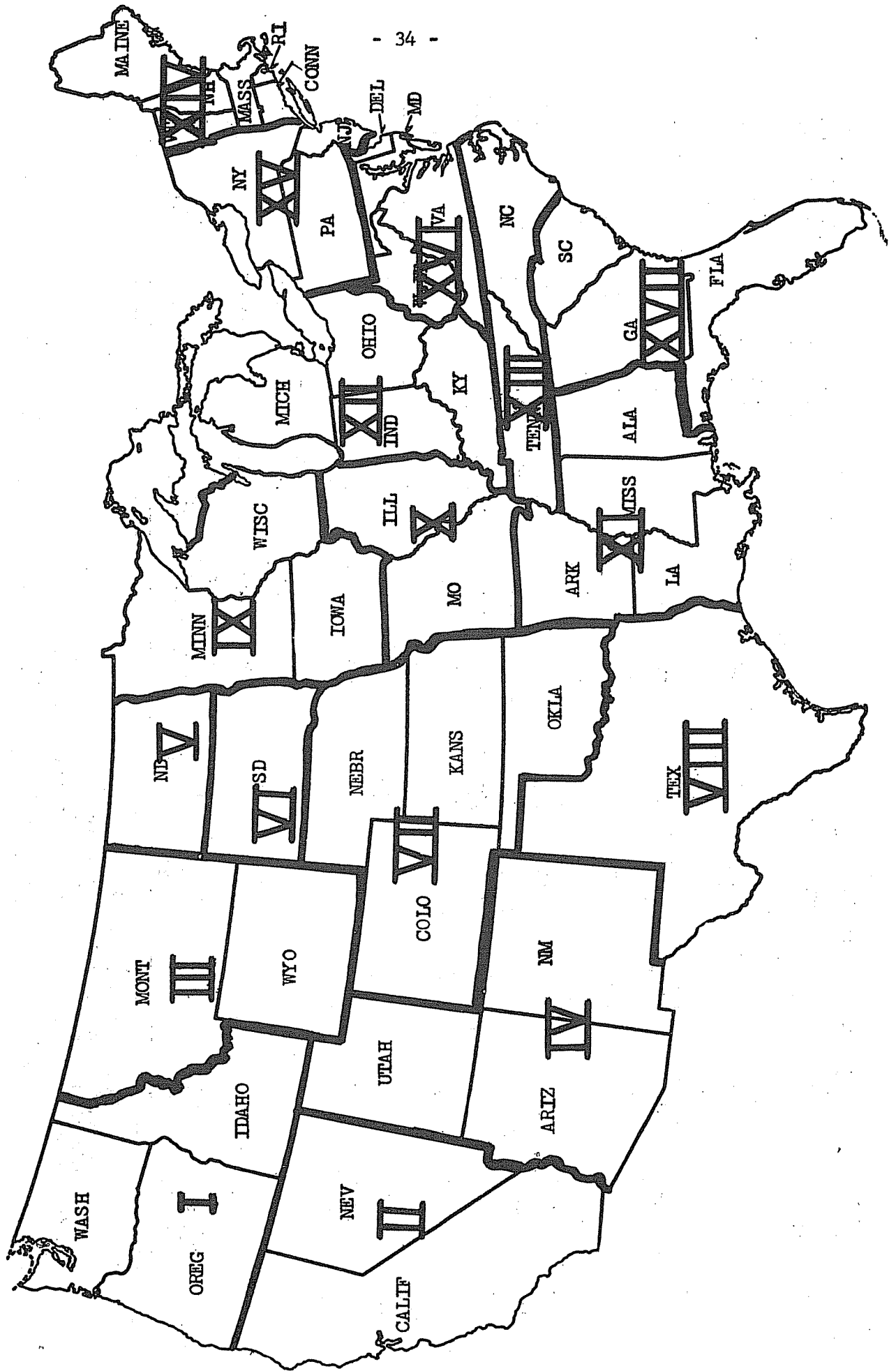


Figure 14. Boundaries of the Seventeen Wheat Consumption Regions of the United States.



TABLE 15. TOTAL WHEAT GROUND, REPORTED WHEAT GROUND, AND RATIO ESTIMATES BY REGION FOR 1950, 1955, 1960, AND 1965

Region	Total Wheat Ground (000 bushels)			Reported Wheat Ground (000 bushels)			Ratio Estimators		
	1950	1955	1960	1950	1955	1960	1950	1955	1960
I	34,829	37,852	39,865	4,500	18,075	27,978	7.74	2.09	1.42
II	10,441	12,975	14,801	573	779	8,005	18.23 <sup>c</sup>	16.65 <sup>c</sup>	1.85
III	7,153	7,685	6,775	6,600	6,404	6,775	1.08	1.20	1.00
IV	9,493	12,823	14,734	416	815	4,189	22.83 <sup>c</sup>	15.74 <sup>c</sup>	3.52
V	6,285	6,703	7,655	4,039	4,955	4,224	1.56	1.35	1.81
VI	1,406	2,365	3,169	890	971	1,332	1.58	2.44	2.38
VII	128,629	116,173	138,274	14,022	22,421	35,083	9.17	5.18	3.94
VIII	31,364	28,354	34,451	10,848	11,224	11,659	2.89	2.53	2.95
IX	79,914	84,188	85,336	32,778	33,826	41,975	2.44	2.49	2.03
X	76,755	79,754	86,456	21,419	23,340	34,448	3.58	3.42	2.51
XI <sup>a</sup>	0	0	0	0	0	0	-	-	-
XII	49,872	49,959	57,377	16,003	16,385	22,028	3.12	3.05	2.60
XIII	12,278	8,965	9,009	3,165	3,682	3,786	3.88	2.44	2.38
XIV <sup>b</sup>	0	0	0	0	0	0	-	-	-
XV	66,759	65,593	74,623	32,744	32,684	33,956	2.04	2.01	2.20
XVI	6,885	4,793	6,220	1,861	1,968	2,614	3.70	2.44	2.38
XVII	2,000	4,668	4,710	1,970	1,917	1,979	1.02	2.43	2.38
Total <sup>d</sup>	523,441	522,851	583,453	151,827	179,445	240,032	3.45	2.91	2.43

<sup>a</sup>Wheat purchases in these regions were insignificant.

<sup>b</sup>Total wheat ground estimated from reported wheat ground.

<sup>c</sup>Several mills did not have records for this year.

<sup>d</sup>Totals were calculated before figures were rounded to thousands.

SOURCE: Bureau of Census, Current Industrial Reports, U.S. Department of Commerce, Series M20A (64-67).

increased 56.8 percent from 1950 to 1960.<sup>22</sup> The population of Florida increased 105.8 percent in this same period.<sup>23</sup>

Wheat processors have shown a tendency to purchase the class of wheat which is produced adjacent to the mill (Table 16). This was especially true with respect to the soft wheat classes. Hard wheat classes were sometimes milled in regions other than the production regions.

Soft red winter wheat was processed in the Central and Eastern regions in the United States. Wheat processors in region 12 purchased the largest amount of soft red winter wheat. This trend has increased over the last 20 years (Table 17). Wheat processors in regions 10, 13, and 15 purchased a considerable amount of soft red winter wheat. Soft red winter wheat was the largest class of wheat processed in regions 12, 13, 16, and 17 (Table 18).

Hard red winter wheat was processed in every region in the United States where a substantial amount of wheat was ground. Wheat purchases of hard red winter wheat in region 7 were by far the largest amount purchased by any region. Region 10 ranked second to region 7 in wheat purchases of hard red winter wheat. Wheat processors in regions 1, 2, 4, 6, 7, 8, and 10 processed more hard red winter wheat than any other class of wheat. Hard red spring wheat was processed in nearly every region of the United States. The amount of hard red spring wheat processed in these regions was generally small except in regions 9 and 15. Wheat processors in region 9 purchased the largest amount of hard red spring wheat. Wheat processors in regions 3, 5, 9, and 15 purchased more hard red spring wheat than any other class of wheat.

White wheat has been processed in Western and Northeastern regions of the United States. Wheat processors in region 7 purchased the largest amount of white wheat. White wheat purchases in regions 1 and 4 were also important. White wheat was not the major class of wheat milled in any one region. Generally, more hard red winter wheat or soft red winter wheat than white wheat was milled in any one region.

Wheat processors in region 9 have purchased most of the durum wheat. Some durum wheat has been processed in regions 1, 2, 3, 5, and 7. Durum wheat has not been the major class of wheat processed in any one region.

Wheat processors in region 7 purchased the largest amount of all classes of wheat. Wheat purchases in regions 9, 10, 12, and 15 were also relatively large.

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<sup>22</sup>Bureau of the Census, Statistical Abstract of the United States, U. S. Department of Commerce, Washington, D. C., 1967.

<sup>23</sup>Ibid.

TABLE 16. WHEAT PURCHASES BY CLASS AND REGION IN THE UNITED STATES FOR 1950, 1955, 1960, AND 1965

Class of Wheat Purchased	Year	Wheat Purchases by Region																	Total <sup>a</sup>
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	
(000 bushels)																			
SRW	1950	0	0	0	0	0	0	0	523	0	27,954	0	15,415	12,275	0	12,319	6,404	1,513	76,403
	1955	0	0	0	0	0	0	448	448	0	27,838	0	19,154	8,842	0	12,490	4,477	3,207	82,092
	1960	0	4,157	0	0	0	0	541	541	0	23,293	0	28,722	8,982	0	16,870	5,910	2,996	95,882
	1965	0	1,141	0	0	0	0	1,662	1,662	0	19,933	0	39,735	21,322	0	14,693	6,139	2,782	111,212
HRW	1950	30,185	6,356	2,681	5,585	1,271	741	128,583	30,841	9,669	39,272	0	10,728	0	0	21,006	111	487	287,518
	1955	20,505	7,345	3,052	7,335	1,403	1,704	108,682	27,906	10,287	42,959	0	6,525	122	0	21,078	73	1,315	260,291
	1960	21,294	3,649	2,646	8,814	1,734	2,258	130,435	33,910	7,882	56,179	0	6,691	0	0	22,918	71	1,428	299,909
	1965	19,360	8,888	2,344	7,379	1,263	1,286	118,987	27,789	15,708	52,188	0	2,189	0	0	20,521	76	1,513	279,491
HRS	1950	4,644	1,402	4,472	46	3,268	665	46	45,716	6,459	0	7,061	0	0	0	31,427	185	0	105,390
	1955	11,324	1,643	4,633	63	3,878	660	962	46,561	6,006	0	3,600	0	0	0	29,894	122	146	109,493
	1960	9,218	2,269	4,129	1,642	4,486	911	2,788	50,313	4,778	0	3,586	0	0	0	32,251	119	285	116,775
	1965	5,498	2,601	4,013	14	3,291	530	3,338	150,405	3,233	0	2,268	0	0	0	32,571	126	303	97,995
White	1950	0	2,683	0	3,862	0	0	0	0	3,070	0	16,668	3	0	2,007	185	0	0	28,477
	1955	5,694	3,787	0	5,425	0	0	0	0	2,950	0	20,680	1	0	2,132	122	0	0	40,792
	1960	8,503	3,995	0	4,278	0	0	0	0	2,206	0	18,378	27	0	2,584	119	0	0	40,090
	1965	7,521	4,540	0	5,973	0	0	0	0	2,030	0	23,947	45	0	4,135	126	0	0	48,315
Durum	1950	0	0	0	0	1,746	0	0	24,528	0	0	0	0	0	0	0	0	0	26,274
	1955	329	200	0	0	1,422	0	892	27,340	0	0	0	0	0	0	0	0	0	30,182
	1960	851	730	0	0	1,435	0	641	27,141	0	0	0	0	0	0	0	0	0	30,798
	1965	1,184	414	311	0	2,437	0	887	22,479	0	0	0	0	0	0	0	0	0	27,712

<sup>a</sup>Total of unrounded figures.

TABLE 17. REGIONAL PROPORTIONS OF WHEAT PURCHASES BY CLASS IN THE UNITED STATES FOR 1950, 1955, 1960, AND 1965

Class of Wheat Purchased	Year	Regional Proportion of Wheat Purchases (percent)																	
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	Total
SRW	1950	.0	.0	.0	.0	.0	.0	.7	.0	36.6	.0	20.2	16.1	.0	16.1	8.4	2.0	100	
	1955	.0	.0	.0	.0	.0	.0	6.9	.6	33.9	.0	23.3	10.8	.0	15.2	5.5	3.9	100	
	1960	.0	4.3	.0	.0	.0	.0	4.6	.6	24.3	.0	30.0	9.4	.0	17.6	6.2	3.1	100	
	1965	.0	1.0	.0	.0	.0	.0	3.4	1.5	17.9	.0	35.7	19.2	.0	13.2	5.5	2.5	100	
HRW	1950	10.5	2.2	.9	1.9	.4	.3	44.7	10.7	3.4	13.7	.0	3.7	.0	7.3	.0	.2	100	
	1955	7.9	2.8	1.2	2.8	.5	.7	41.8	10.7	4.0	16.5	.0	2.5	.1	8.1	.0	.5	100	
	1960	7.1	1.2	.9	2.9	.6	.8	43.5	11.3	2.6	18.7	.0	2.2	.0	7.6	.0	.5	100	
	1965	6.9	3.2	.8	2.6	.5	.5	42.6	9.9	5.6	18.7	.0	.8	.0	7.3	.0	.5	100	
HRS	1950	4.4	1.3	4.2	.0	3.1	.6	.0	43.4	6.1	.0	6.7	.0	.0	29.8	.2	.0	100	
	1955	10.3	1.5	4.2	.1	3.5	.6	.9	42.5	5.5	.0	3.3	.0	.0	27.3	.1	.1	100	
	1960	7.9	1.9	3.5	1.4	3.8	.8	2.4	43.1	4.1	.0	3.1	.0	.0	27.6	.1	.2	100	
	1965	5.6	2.7	4.1	.0	3.4	.5	3.4	40.9	3.3	.0	2.3	.0	.0	33.2	.1	.3	100	
White	1950	.0	9.4	.0	13.6	.0	.0	.0	.0	10.8	.0	58.5	.0	.0	7.1	.7	.0	100	
	1955	14.0	9.3	.0	13.3	.0	.0	.0	.0	7.2	.0	50.7	.0	.0	5.2	.3	.0	100	
	1960	21.2	10.0	.0	10.7	.0	.0	.0	.0	5.5	.0	45.8	.1	.0	6.5	.3	.0	100	
	1965	15.6	9.4	.0	12.4	.0	.0	.0	.0	4.2	.0	49.6	.1	.0	8.6	.3	.0	100	
Durum	1950	.0	.0	.0	.0	6.6	.0	.0	93.4	.0	.0	.0	.0	.0	.0	.0	.0	100	
	1955	1.1	.7	.0	.0	4.7	.0	3.0	90.6	.0	.0	.0	.0	.0	.0	.0	.0	100	
	1965	4.3	1.5	1.1	.0	8.8	.0	3.2	81.1	.0	.0	.0	.0	.0	.0	.0	.0	100	
All Wheat	1950	6.7	2.0	1.4	1.8	1.2	.3	24.5	6.0	15.3	14.7	.0	9.5	2.3	.0	12.7	1.3	.4	100
	1955	7.2	2.5	1.5	2.5	1.3	.5	22.2	5.4	16.1	15.3	.0	9.6	1.7	.0	12.6	.9	.9	100
	1965	5.9	3.1	1.2	2.4	1.2	.3	22.5	5.2	13.9	13.7	.0	12.1	3.8	.0	12.7	1.2	.8	100

TABLE 18. CLASS PROPORTIONS OF WHEAT PURCHASES BY REGION IN THE UNITED STATES FOR 1950, 1955, 1960, AND 1965

Class of Wheat Purchased	Class Proportions of Wheat Purchases by Region																	
	Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
SRW	1950	.0	.0	.0	.0	.0	.0	.0	1.7	.0	36.4	.0	30.9	100.0	.0	18.5	93.0	75.6
	1955	.0	.0	.0	.0	.0	.0	4.9	1.6	.0	34.9	.0	38.3	98.6	.0	19.0	93.4	68.7
	1960	.0	28.1	.0	.0	.0	.0	3.2	1.6	.0	26.9	.0	50.1	99.7	.0	22.6	95.0	63.6
	1965	.0	6.5	.0	.0	.0	.0	3.0	5.6	.0	25.8	.0	58.3	99.8	.0	20.4	94.9	60.5
	1950	86.7	60.9	37.5	58.8	20.2	52.7	100.0	98.3	12.1	51.2	.0	21.5	.0	.0	31.5	1.6	24.4
HRW	1955	54.2	56.6	39.7	57.2	20.9	72.1	93.6	98.4	12.2	53.9	.0	13.1	1.4	.0	32.1	1.5	28.2
	1960	53.4	24.7	39.1	59.8	22.7	71.3	94.3	98.4	9.2	65.0	.0	11.7	.0	.0	30.7	1.2	30.3
	1965	57.7	50.5	35.2	55.2	18.1	70.8	93.7	93.9	20.1	67.4	.0	3.2	.0	.0	28.5	1.2	32.9
	1950	13.3	13.4	62.5	.5	52.0	47.3	.0	.0	57.2	8.4	.0	14.2	.0	.0	47.1	2.7	.0
	1955	29.9	12.7	60.3	.5	57.9	27.9	.8	.0	55.3	7.5	.0	7.2	.0	.0	45.6	2.5	3.1
HRS	1960	23.1	15.3	60.9	11.1	58.6	28.7	2.0	.0	59.0	5.5	.0	6.3	.0	.0	43.2	1.9	6.1
	1965	16.4	14.8	60.2	.1	47.1	29.2	2.6	.5	51.2	4.2	.0	3.3	.0	.0	45.3	2.0	6.6
	1950	.0	25.7	.0	40.7	.0	.0	.0	.0	.0	4.0	.0	33.4	.0	.0	3.0	2.7	.0
	1955	15.0	29.2	.0	42.3	.0	.0	.0	.0	.0	3.7	.0	41.4	.0	.0	3.3	2.5	.0
	1960	21.3	27.0	.0	29.0	.0	.0	.0	.0	.0	2.6	.0	32.0	.3	.0	3.5	1.9	.0
White	1965	22.4	25.8	.0	44.7	.0	.0	.0	.0	.0	2.6	.0	35.1	.2	.0	5.8	2.0	.0
	1950	.0	.0	.0	.0	27.8	.0	.0	.0	30.7	.0	.0	.0	.0	.0	.0	.0	.0
	1955	.9	1.5	.0	.0	21.2	.0	.8	.0	32.5	.0	.0	.0	.0	.0	.0	.0	.0
	1960	2.1	4.9	.0	.0	18.8	.0	.5	.0	31.8	.0	.0	.0	.0	.0	.0	.0	.0
	1965	3.5	2.4	4.7	.0	34.9	.0	.7	.0	28.7	.0	.0	.0	.0	.0	.0	.0	.0

CLASS PROPORTIONS OF WHEAT PURCHASES BY REGION IN THE UNITED STATES FOR 1950, 1955, 1960, AND 1965

Projected Wheat Purchases by Region

The volume of all classes of wheat processed in the United States has been increasing during the last 16 years with the exception of 1965 when the volume processed decreased because of a reduction in exports of wheat flour. Accurate separation of domestic flour consumption and flour exports data would be difficult because of the volume of wheat flour held in bond from foreign countries. Thus, it was necessary to project total wheat processed in the United States by percentage change or historical trend. The average percentage change was .5400 percent per year. Total wheat processed was projected at 580,303,000 bushels and 596,143,000 bushels for 1970 and 1975, respectively (Table 19).

Projections of wheat purchases by region for 1970 were developed by adding the average change in the proportion of total wheat purchased in that region to the proportion of the total wheat purchased in that region for 1965. Projections of wheat purchases by class for 1970 were made by adding the average changes in the proportion of that class of wheat purchases in that region to the proportion of that class of wheat purchased in that region for 1965. The same technique was used for 1975.

TABLE 19. TOTAL WHEAT GROUND BY COMMERCIAL MILLS IN THE UNITED STATES 1950 THROUGH 1966 AND PROJECTED FOR 1970 AND 1975

Year	Commercial Wheat Grindings (000 bushels)
1950	523,411
1951	535,235
1952	532,374
1953	515,446
1954	514,028
1955	522,851
1956	527,159
1957	548,532
1958	566,688
1959	570,856
1960	582,719
1961	591,999
1962	595,353
1963	599,710
1964	602,209
1965	564,724
1966	567,936
1970	580,303
1975	596,143

Source: Bureau of the Census, Current Industrial Reports, U. S. Department of Commerce, Series M20A (64-67).

The amount of wheat purchases by region and class was found by multiplying the proportions times the projected total wheat purchases for 1970 and 1975 (Table 20).

Soft red winter wheat purchases were projected to increase by approximately 11 million bushels from 1970 to 1975. Increases were found in all regions purchasing soft red winter wheat except regions 10 and 16. Large increases in soft red winter wheat purchases were found for regions 12 and 13.

Hard red winter wheat purchases were projected to remain relatively constant at approximately 278 million bushels. Purchases of hard red winter wheat were projected to substantially increase in regions 9 and 10 and substantially decline in regions 1, 7, and 8.

Purchases of hard red spring wheat were projected to remain relatively constant at approximately 95 million bushels. Hard red spring wheat purchases were projected to substantially increase in region 7 and substantially decrease in regions 9 and 10. Slight increases in wheat purchases were projected for regions 1, 2, 8, 15, and 17.

White wheat purchases by wheat processors were projected to increase by approximately five million bushels from 1970 to 1975. Substantial increases in white wheat purchases were projected for regions 1, 2, 4, 12, and 15. There was no breakdown as to whether these increases will be of hard or soft white wheat. White wheat purchases in regions 10, 13, and 16 have little affect on total white wheat purchases.

Projections in durum wheat purchases indicate a slight increase of approximately one-half million bushels. This increase was not found in the major processing region 9 for this class. Slight increases in durum wheat purchases were projected in regions 1, 2, 3, 5, and 7. No other regions reported durum wheat purchases; however, it is possible that durum wheat has been processed in region 15.

All wheat purchases were projected to substantially increase in regions 2, 4, 12, 13, 15, and 17. The greatest increases were projected for regions 2, 12, 13, and 15. The largest increases in wheat purchases were projected for regions 12, and 13. Both of these regions indicated large amounts of soft red winter wheat purchases. The purchases of white wheat were largest in region 12. Wheat purchases in regions 12 and 13 were projected to increase by large amounts and soft red winter wheat and white wheat have been the only classes of wheat projected to be processed in large quantities in at least one of these regions. Therefore, the large projected increases of soft red winter wheat and white wheat purchases were basically a result of the projected increases for regions 12 and 13 where no other classes of wheat have been projected to be processed.

Wheat purchases of hard red winter wheat, hard red spring wheat, and durum wheat should increase if they are made available to wheat processors in regions 12 and 13. However, during the last 20 years there has been both hard red winter wheat and hard red spring wheat purchased

TABLE 20. WHEAT PURCHASES BY CLASS AND REGION IN THE UNITED STATES; PROJECTED FOR 1970 AND 1975

Class of Wheat Purchased	Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	Total	
		(000 bushels)																		
SRW	1970	0	1,749	0	0	0	0	5,053	2,008	0	17,245	0	49,016	24,653	0	15,590	6,082	3,068	124,464	
	1975	0	2,487	0	0	0	0	6,285	2,334	0	14,528	0	55,691	28,161	0	16,516	5,984	3,296	135,282	
HRW	1970	15,893	5,520	2,234	8,010	1,261	1,502	115,891	26,771	17,674	56,588	0	0	0	0	20,371	65	1,978	277,758	
	1975	12,501	10,035	2,124	8,620	1,255	1,747	112,681	25,722	19,577	60,980	0	0	0	0	20,185	54	2,524	278,005	
HRS	1970	5,758	2,082	3,860	0	3,305	452	4,419	196	38,241	2,148	0	0	0	0	33,040	108	486	95,095	
	1975	6,000	3,610	3,704	0	3,307	360	5,486	239	36,380	1,054	0	0	0	0	33,489	91	718	94,438	
White	1970	9,888	5,227	0	6,826	0	0	0	0	0	1,681	0	25,957	67	0	4,926	108	0	54,680	
	1975	12,170	5,954	0	7,734	0	0	0	0	0	1,328	0	26,392	94	0	5,755	91	0	59,518	
Durum	1970	1,556	635	404	0	2,707	0	1,178	0	21,825	0	0	0	0	0	0	0	0	28,305	
	1975	1,916	903	492	0	2,988	0	1,465	0	21,139	0	0	0	0	0	0	0	0	28,903	
All	1970	33,095	20,213	6,499	14,836	7,273	1,954	126,541	28,975	77,739	77,661	0	74,973	24,720	0	73,928	6,364	5,532	580,303	
	1975	32,587	22,989	6,319	16,354	7,550	2,107	125,917	28,295	77,096	77,890	0	82,083	28,255	0	75,944	6,220	6,537	596,143	



in region 12. Hard red winter wheat and hard red spring wheat purchases in region 12 have shown a distinct declining trend and were projected to approach zero by 1970.

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**APPENDIX**

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~~Dependent and independent variables employed in domestic demand analysis using regression techniques.~~

Dependent Variables

- Y<sub>1</sub> = Per capita disappearance of hard red spring wheat.
- Y<sub>2</sub> = Per capita disappearance of hard red winter wheat.
- Y<sub>3</sub> = Per capita disappearance of soft red winter wheat.
- Y<sub>4</sub> = Per capita disappearance of white wheat.
- Y<sub>5</sub> = Per capita disappearance of durum wheat.

Independent Variables

- X<sub>1</sub> = Price of hard red spring wheat.
- X<sub>2</sub> = Price of hard red winter wheat.
- X<sub>3</sub> = Price of soft red winter wheat.
- X<sub>4</sub> = Price of white wheat.
- X<sub>5</sub> = Price of durum wheat.
- X<sub>6</sub> = Per capita production of hard red spring wheat.
- X<sub>7</sub> = Per capita production of hard red winter wheat.
- X<sub>8</sub> = Per capita production of soft red winter wheat.
- X<sub>9</sub> = Per capita production of white wheat.
- X<sub>10</sub> = Per capita production of durum wheat.
- X<sub>11</sub> = Protein content of hard red spring wheat.
- X<sub>12</sub> = Protein content of hard red winter wheat.
- X<sub>13</sub> = Per capita deflated disposable income.
- X<sub>14</sub> = Time (1947=1, 1948=2, 1949=3, ..., 1966=20).

Equation 1. (Per capita disappearance of hard red spring wheat =  $Y_1$ )  
1947-1966.\*

$$\text{Log}Y_1 = -.1943 - .00781X_{14} + .3081\text{log}X_6$$

$$(.00303) \quad (.1070)$$

$$-.5581\text{log}X_{12} - .1093\text{log}X_7$$

$$(.3218) \quad (.0911)$$

$$+.6842\text{log}X_{11} + .2277\text{log}X_2$$

$$(.5576) \quad (.2516)$$

$$R^2 = .8834$$

Equation 2. (Per capita disappearance of hard red spring wheat =  $Y_1$ )  
1952-1966 delete logarithms (price and time only).

$$\text{Log}Y_1 = .2663 - .0157X_{14} - .4424\text{log}X_1$$

$$(.0023) \quad (.1920)$$

$$R^2 = .8564$$

Equation 3. (Per capita disappearance of hard red spring wheat =  $Y_1$ )  
1952-1966 (all variables).

$$\text{Log}Y_1 = -4.6977 - .0269X_{14} - .0689\text{log}X_1$$

$$(.0066) \quad (.2563)$$

$$+1.5909\text{log}X_{13} + .1533\text{log}X_7 - .2938\text{log}X_{12}$$

$$(.8741) \quad (.0988) \quad (.2676)$$

$$R^2 = .9160$$

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\*Figures in brackets are the values of the standard error of the slope or beta coefficients.

Equation 4. (Per capita disappearance of hard red winter wheat =  $Y_2$ )  
1947-1966, delete logarithms

$$Y_2 = .1605 - .0856X_{14} - 1.2035X_4 + .9587X_1 + .0014X_{13}$$

(.0255)    (.3885)    (.3791)    (.00075)

$$R^2 = .6810$$

Equation 5. (Per capita disappearance of hard red winter wheat =  $Y_2$ )  
logarithms

$$Y_2 = .9541 - .0919X_{14} - 1.0139\log X_4 + .8951\log X_1$$

(.3829)    (.3588)

$$+ .0018\log X_{13} + .0738\log X_7$$

(.00074)    (.0431)

$$R^2 = .7363$$

Equation 6. (Per capita disappearance of soft red winter wheat =  $Y_3$ )

$$\log Y_3 = .0980 - .0100\log X_{14} + .2237\log X_8$$

$$- .2629\log X_4$$

(.0014)    (.0816)    (.1206)

$$R^2 = .9134$$

Equation 7. (Per capita disappearance of white wheat =  $Y_4$ )

$$\log Y_4 = -14.2930 - .0711X_{14} - 1.2288\log X_4$$

(.0128)    (.3802)

$$+ 4.6016\log X_{13}$$

(1.5530)

$$R^2 = .8778$$

Equation 8. (Per capita disappearance of durum wheat =  $Y_5$ )

$$\text{Log}Y_5 = .6085 - .3392\text{log}X_5 + .4474\text{log}X_7 + .3975\text{log}X_6 + .5603\text{log}X_{10}$$

(.1040)      (.1755)      (.1749)      (.3050)

$$R^2 = .8423$$

Equation 9. (Per capita disappearance of hard red spring wheat =  $Y_1$ )  
using time and price only and time in logarithmic form, 1952-1966  
to project demand through 1970.

$$\text{Log}Y_1 = .48888 - .41961\text{log}X_{14} - .36144\text{log}X_1$$

(.0456)      (.1383)

$$R^2 = .9131$$

APPENDIX TABLE 1. REGRESSION ANALYSIS OF INCOME ON THE CONSUMPTION OF DIFFERENT WHEAT PRODUCTS, UNITED STATES, 1955 AND 1965<sup>a</sup>

Wheat Products (Dependent Variables)	Type of b Equation		Coefficient of Determination			
			A		B1	
	1955	1965	1955	1965	1955	1965
Flour and other cereal products	Log	Square	2.0424	5.9810	-.3558	-.0002578
White flour	Log	Square	2.2739	2.6056	-.5295	-.0002251
Prepared flour mixes	Square	Log	.2375	-1.9499	.0001275	.4353
Cold wheat cereals	Square	Square	.1125	.0908	.00003692	.00003013
Hot wheat cereals						
Macaroni, Spaghetti, Noodles	Square	Log	.2681	-1.5054	.00005828	.2984
Bakery products	Square	Square	3.6252	4.0583	.001074	.0008617
White and whole wheat bread	Square	Square	2.7039	2.5295	.0005943	.0004052
Baked goods other than bread	Square	Square	.8724	1.4658	.0003633	.0004081

<sup>a</sup>Variables Y<sub>1</sub>, Y<sub>2</sub>, Y<sub>3</sub>, Y<sub>4</sub>, Y<sub>7</sub>, and Y<sub>9</sub> were significant at the 99 percentile in 1955 and 1965. Variable Y<sub>5</sub> was insignificant at the 95 percentile in 1955 and 1965. Variables Y<sub>6</sub> and Y<sub>8</sub> were significant at the 95 percentile in 1955 and at the 99 percentile in 1965.

<sup>b</sup>Linear indicates a linear equation. Log indicates a logarithmic equation. Square indicates a quadratic equation.

<sup>c</sup>The income level of maximum and minimum consumptions was found by setting the first derivative of the quadratic equations equal to zero. The calculated incomes were generally high in comparison to the data used in deriving the regression equations because of the quadratic form of the curve and a lack of data for higher incomes.

Table is continued on following page.

APPENDIX TABLE 1. REGRESSION ANALYSIS OF INCOME ON THE CONSUMPTION OF DIFFERENT WHEAT PRODUCTS, UNITED STATES, 1955 AND 1965<sup>a</sup>  
(Continued)

Wheat Products (Dependent Variables)	B <sub>2</sub>		Income of Maximum Quantity		Income of Minimum Quantity	
	1955	1965	1955	1965	1955	1965
Flour and other cereal products	—	—	—	—	—	—
White flour	—	.000000006359	—	—	—	20,191
Prepared flour mixes	—	.000000006421	—	—	—	17,528
Cold wheat cereals	-.000000005895	—	10,812	—	—	—
Hot wheat cereals	-.000000001920	—	9,612	13,919	—	—
Macaroni, Spaghetti, Noodles	—	—	—	—	—	—
Bakery products	-.000000002986	—	9,757	—	—	—
White and whole wheat bread	-.00000005056	—	10,621	14,386	—	—
Baked goods other than bread	-.00000003124	—	9,511	11,812	—	—
	-.00000000146	—	12,442	17,260	—	—

<sup>a</sup>Variables Y<sub>1</sub>, Y<sub>2</sub>, Y<sub>3</sub>, Y<sub>4</sub>, Y<sub>7</sub>, and Y<sub>9</sub> were significant at the 99 percentile in 1955 and 1965. Variable Y<sub>5</sub> was insignificant at the 95 percentile in 1955 and 1965. Variables Y<sub>6</sub> and Y<sub>8</sub> were significant at the 95 percentile in 1955 and at the 99 percentile in 1965.

<sup>b</sup>Linear indicates a linear equation. Log indicates a logarithmic equation. Square indicates a quadratic equation.

<sup>c</sup>The income level of maximum and minimum consumptions was found by setting the first derivative of the quadratic equations equal to zero. The calculated incomes were generally high in comparison to the data used in deriving the regression equations because of the quadratic form of the curve and a lack of data for higher incomes.



APPENDIX TABLE 2. REGRESSION ANALYSIS OF INCOME ON THE CONSUMPTION OF VARIOUS WHEAT PRODUCTS IN FOUR REGIONS OF THE UNITED STATES IN 1955

Region	Flour and Other Cereal Products		Flour Other Than Mixes		Prepared Flour Mixes		Cold Wheat Cereals		Hot Wheat Cereals		Macaroni Spaghetti Noodles		Bakery Products		White and Whole Wheat Bread		Baked Goods Other Than Bread	
	Type of equation <sup>b</sup>	Relationship	Type of equation <sup>b</sup>	Relationship	Type of equation <sup>b</sup>	Relationship	Type of equation <sup>b</sup>	Relationship	Type of equation <sup>b</sup>	Relationship	Type of equation <sup>b</sup>	Relationship	Type of equation <sup>b</sup>	Relationship	Type of equation <sup>b</sup>	Relationship	Type of equation <sup>b</sup>	Relationship
Northeast																		
Significance <sup>a</sup>	*	**	*	**	*	**	*	NS	NS	NS	*	**	*	**	NS	**	**	**
Type of equation <sup>b</sup>	Log Inverse	Square Inverse	Log Inverse	Square Inverse	Square Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct
Relationship																		
R-squared	.5829	.6988	.6664	.6360	.7864	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360
A	.0119	5.898	1.7423	9.749	.3048	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749
B1	-.1717	-.000223	-.4634	.2368	.0000948	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368
B2		.0000000599		.000000112	-.0000000536													
North Central																		
Significance <sup>a</sup>	*	**	*	**	*	**	*	NS	NS	NS	*	**	*	**	NS	**	**	**
Type of equation <sup>b</sup>	Log Inverse	Square Inverse	Log Inverse	Square Inverse	Square Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct
Relationship																		
R-squared	.6988	.6988	.6664	.6360	.7864	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360	.6360
A	.0119	5.898	1.7423	9.749	.3048	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749	9.749
B1	-.1717	-.000223	-.4634	.2368	.0000948	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368	.2368
B2		.0000000599		.000000112	-.0000000536													
South																		
Significance <sup>a</sup>	**	**	**	**	*	*	*	*	NS	NS	*	**	*	**	**	**	**	**
Type of equation <sup>b</sup>	Square Inverse	Square Inverse	Square Inverse	Square Inverse	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct
Relationship																		
R-squared	.9874	.9874	.9874	.9874	.5009	.5009	.5009	.5009	.5009	.5009	.5009	.5009	.5009	.5009	.5009	.5009	.5009	.5009
A	16.2683	16.2683	16.2683	16.2683	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535	-1.535
B1	-.002256	-.002256	-.002256	-.002256	.3393	.3393	.3393	.3393	.3393	.3393	.3393	.3393	.3393	.3393	.3393	.3393	.3393	.3393
B2	.000000104	.000000104	.000000104	.000000104														
West																		
Significance <sup>a</sup>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Type of equation <sup>b</sup>	Linear Inverse	Linear Inverse	Linear Inverse	Linear Inverse	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct	Log Direct
Relationship																		
R-squared	.5944	.5944	.5944	.5944	.6790	.6790	.6790	.6790	.6790	.6790	.6790	.6790	.6790	.6790	.6790	.6790	.6790	.6790
A	5.6481	5.6481	5.6481	5.6481	.4415	.4415	.4415	.4415	.4415	.4415	.4415	.4415	.4415	.4415	.4415	.4415	.4415	.4415
B1	-.000127	-.000127	-.000127	-.000127	.3009	.3009	.3009	.3009	.3009	.3009	.3009	.3009	.3009	.3009	.3009	.3009	.3009	.3009
B2		.0000000111		.0000000111														

<sup>a</sup>NS indicates not significant.  
<sup>b</sup>Linear indicates a linear equation. Log indicates a logarithmic equation. Square indicates a quadratic equation.  
 \*Significant at the 95 percentile.  
 \*\*Significant at the 99 percentile.