Analysis of agricultural income and price movements with particular reference to Montana

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The University of Montana
ANALYSIS
of
AGRICULTURAL INCOME AND PRICE MOVEMENTS
WITH PARTICULAR REFERENCE TO MONTANA
by

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B.A., Stanford University, 1948

Presented in partial fulfillment of the requirement for the degree of Master of Arts.

Montana State University
1951

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INTRODUCTION

The level of cash farm income in Montana and the United States is of primary concern to all students of economics. Farm income is of special interest to residents of Montana, because agriculture is the basic industry of the state. The prosperity of Montana agriculture and that of Montana business in general are closely integrated. Of major importance in determining the level of net farm income and the prosperity of agricultural enterprise are fluctuations in both prices received and prices paid by farmers. It is realized that other primary and secondary forces such as demand for agricultural products, acreage restrictions, price controls, and international trade are important in determining cash farm income. However, this study is confined mainly to an analysis of changes in agricultural prices and income.

Sufficient statistical evidence with regard to what has happened in the past is essential as a guide for the formulation of sound agricultural policy. Although considerable raw statistical data are available concerning the economic condition of agriculture, very little work has thus far been done in tying these data together so that they will be useful in making policy decisions. It is hoped that the analysis will make a contribution toward this end.
The study will first attempt to trace fluctuations in farm prices received and cash farm income both in Montana and the United States. Second, consideration is given to price and quantity as two components of cash farm income. Prices paid by farmers will also be analyzed. Special attention will be given to farm wages, taxes, and interest because of their peculiar nature as partial determinants of the disparity between agricultural and non-agricultural prices. The analysis was limited to a certain extent with regard to this aspect of the problem because insufficient statistical data concerning prices paid by Montana farmers were available.

This work is a result of the effort of many people besides the writer. Acknowledgment is due first of all to Dr. Roy J. W. Ely whose helpful suggestions have been a great contribution. P. J. Creer, Agricultural Statistician, Bureau of Agricultural Economics, Helena, Montana, and E. E. Houghton, Bureau of Agricultural Economics, Washington, D.C., aided me with certain statistical problems which I encountered. For the inspiration and suggestion to tackle the problem I give credit to Dr. K. J. Arrow, Stanford University. S. V. Wantrup, University of California, came to my aid on several occasions and helped me avoid certain pitfalls which he had encountered when making a related study.
CHAPTER I

FLUCTUATIONS IN FARM PRICES RECEIVED AND CASH FARM INCOME

Cash farm income statistics. For the purposes of this study, cash farm income component of gross farm income is defined as all cash income from farm marketings. Additional components of gross farm income include the value of home consumed products and government payments, such as conservation payments, parity payments, and production subsidies.

Cash farm income statistics published by the Bureau of Agricultural Economics are more readily adaptable to the purposes of this investigation than are other farm income statistics. Price movements will more directly affect cash farm income than other components of gross farm income. Therefore, farm income statistics in this analysis will generally represent cash farm income.

Years analyzed. Satisfactory farm income statistics for Montana are not available for Montana prior to 1924. Consequently, Montana farm income and United States farm income are compared only during the period, 1924 to 1948.

^The definition is equivalent to that of the Department of Agriculture.
United States farm income is analyzed from 1913 to 1948.

Survey of price changes. The general wholesale price level in the United States rose from an average of sixty-eight in 1896 and 1897 (1910 to 1914 equals one hundred) to one hundred in 1909. The rise was gradual and fairly well sustained during this period. The same price index, from 1915 to 1920, rose from 102 to 244, reflecting a very decided inflation (Figure 1, page 5). War inspired price movements in this period can be divided into two periods: the first began in the autumn of 1915 and ended with America's entry into the World War; the second period extended from April, 1917, to May, 1920, when prices reached their peak as a result of increased war activity in the United States. The most spectacular rise occurred during this second period.

As stated above, the general wholesale price level reached its highest point in May, 1920. Beginning in June the index declined slightly for two months and then fell rapidly during the remainder of 1920 and the early months of 1921 when it reached a low of 134 in January, 1922. The index changed little from 1922 to 1929.

As shown in Figure 1, page 5, the index of prices received by farmers for products sold declined sharply in 1921 ending the highly inflationary period of World War I and immediate post-war years. Farm prices remained
Figure 1

Index, Wholesale Prices, United States
Farm Prices Received in Montana and United States, 1910-1948
1910-1914 = 100

Source:
Montana: Mimeograph Circular Number 51, Montana State College Agricultural Experiment Station

United States:
Index Numbers of Prices Received By Farmers, 1900-1948, B.A.E., U.S.D.A.
fairly stable from 1924 to 1929, as did the general wholesale price level. Farm prices during this period remained about fifty per cent above prices prevailing in the decade preceding the war.

Both the wholesale price index and the index of farm prices received declined severely from 1929 to 1933. From 1933 to 1937 the indexes climbed; however, major losses occurred again in 1937. With defense activities and war beginning in the early 1940's, both indexes spiraled and with the cessation of war time price control in 1945, the United States entered the highly inflationary era which exists today. Significantly for the purposes of this study, analysis of Figure 1, page 5, reveals that during periods of inflation the prices of farm products rise more rapidly proportionately than do wholesale prices of all commodities. Conversely, in periods of deflation prices of farm products fall relatively faster than do prices of all commodities.

Changes in Montana and United States farm income, 1924 to 1948. Indexes representing Montana and United States cash farm income for the period 1924 to 1948 are graphically presented in Figure 2, page 7. The graph indicates a strong secular trend for these years because of the large increases in cash farm income after 1940. From 1940 to 1948, the Montana index increases about three hundred per cent and
Figure 2
Index of Total Cash Farm Income
Montana and United States, 1924 to 1948
1935 to 1939 = 100

Sources:
the United States index 270 per cent. The fluctuations in both indexes are similar in amplitude and direction. Also, when both indexes are increasing, the Montana cash-farm-income index rises relatively faster than that for the United States. Conversely, when income is declining, the income situation for Montana seems to be relatively in a poorer situation than for the entire nation.

Figure 3, page 9, plots the relative deviations from trend of cash farm income for Montana and the United States.² It has been observed that over this period secular trend ascends rapidly because of the large increases in cash farm income from 1941 to 1948. Deviations of actual cash farm income from trend shows that based on a 1924 to 1948 trend, the actual data for years 1924 to 1929 are far above the trend. It would seem that the actual data for 1941 to 1948 would be quite well advanced over the trend. However, in 1948 Montana cash farm income is only 156 per cent of the trend and United States cash farm income is about 145 per cent of the trend. In 1924 cash farm income for both Montana and the United States is 234 per cent of the trend; in 1928 cash farm income in Montana is 185 per cent, whereas

²Trend was calculated by the use of the least squares method through the period 1924 to 1948. The deviations indicate the percentages actual data is of trend for each year.
Figure 3
Percentage Deviation, Total Cash Farm Income
Montana and United States From Trend, 1924 through 1948
Trend = 100

Source: See Figure 2.
that for the United States if 155 per cent of the trend. For both Montana and the United States incomes below the trend are indicated from 1931 to 1942.

It is impossible to prognosticate, and state that this trend indicates the long time movement in cash farm income. It is a matter of conjecture whether the economy will suffer from further serious inflation in the next fifty years, which will bring price indexes far above even the high points which they have reached today. It is obvious, however, that a rapidly increasing trend such as during the years 1924 to 1948 cannot be considered secular. Some possibility exists that the increased paternalistic attitude of government and the utilization of price controls will lead to more moderate inflationary price rises. It is likely, however, that as long as the inception of price control is up to Congress, large increases in prices will occur before direct action is taken.

The analysis of relative deviations of cash farm income from trend as displayed in Figure 3, page 9, indicates that the severity of fluctuations in Montana and the United States are similar. That fluctuations of cash farm income for Montana and the United States correspond as closely as they do is remarkable. This correspondence exists in spite of the fact that most Montana agriculture depends upon marginal rainfall. When relative deviations of cash farm
income from trend are calculated for Montana and the United States, only small differences are revealed.

**United States farm income, 1913 to 1948.** United States cash farm income is plotted as relative deviations from the trend, 1913 to 1948, in Figure 4, page 12. When Analysis applies to this longer period, the rate of increase in trend is decreased considerably. The years 1924 to 1929 do not show such large deviations from the trend as in Figure 3, page 9. The year 1919 has a maximum amount of deviation equal to about 190 per cent. The year 1948 indicates actual data to be about 170 per cent of trend compared with about 145 per cent when the years 1924 to 1948 were used to calculate trend.

**Conclusions.** At this point in the analysis it is possible to make certain conclusions which will point the way for the rest of the study. Cash farm income has shown a strongly increasing trend whether trend is calculated on the period 1924 to 1948 or 1913 to 1948. During the years 1924 to 1948 fluctuations in cash farm income for the United States and for Montana are quite similar in direction, amplitude and time of variation. Cash farm income during the periods of analysis has been subject to several major fluctuations.
Figure 4
Percentage Deviation, Cash Farm Income, Prices Received, and Volume of Farm Marketings in The United States, From Trend, 1913-1948
Trend = 100

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Source: Volume Farm Marketings; Agricultural Outlook Charts, 1950, Bureau of Agricultural Economics, U.S.D.A., October 1949; See also Figures 1 and 2.
CHAPTER II

SOURCES OF CHANGE IN CASH FARM INCOME

Cash farm income from farm marketings is the product of two factors: price and quantity. Quantity relates to prices, income levels, internal cycles, and physical environment. Prices are a consideration of farm prices received and farm prices paid.

I. QUANTITY OF PRODUCTION

Prices. It is probable that the interaction of supply on price is somewhat different for agricultural commodities than for other commodities. A short crop in one year might result in a high price which would encourage producers to plan for an increase in production. The additional output would affect the market a year or two hence, and when this increased production is thrown on the market the price may be forced down. This could result in forcing many producers out of production. Output would then be decreased which would tend to cause an upward price movement. In Montana from 1920 to 1941 when farm prices received were at a relative disadvantage to farm prices paid, a somewhat

different situation existed.\textsuperscript{2} In Montana and many other regions, in order for a farmer to maintain an adequate standard of living from 1920 to 1941, it was necessary to place low quality land under cultivation. This tended sometimes to reduce average farm profits per acre for each operating unit; however, in the short run aggregate net income could be increased.\textsuperscript{3} After inflation developed in 1941, agricultural enterprises were characterized by increased mechanization, high land prices, and high fixed costs. In states like Montana where idle land and grazing land could be put into wheat production if sufficient rainfall occurred, attempts were made to increase output of wheat. These efforts were stimulated by the hope to become solvent for the first time in two decades, and to develop a highly profitable business for one's self and children. Many farmers in Montana believed that the above average precipitation that fell during the

\textsuperscript{2}See \textit{Agricultural Statistics}, U.S.D.A., p. 597. The income parity ratio from 1921 to 1941 was less than 100 except in 1935 and 1937 when it equalled 107.

\textsuperscript{3}This opinion is based on discussions with agricultural economists and farmers in Montana. Many of them contend that when farm profits were possible and rainfall adequate, low quality land often proved expensive which tended to reduce real average farm profits per acre for each operating unit. At the same time, however, aggregate net income could be increased as long as rainfall was sufficient. With favorable conditions, Montana farmers were usually anxious to increase output because often they operated an enterprise barely able to provide them a subsistence living.
1940's would last forever, a belief which led them to buy more land, invest in expensive machinery, all with a view to larger output. The monetary disadvantage of placing low quality land under cultivation was often offset by the advantages of more efficient use of machinery when applied to larger acreages, and the spreading of fixed costs over more units of production.

Price supports and government stimulated demand for agricultural products, contributed to uniformly high prices and the expansion of land under cultivation.

It may be noted that the period during which production rose faster than a straight line trend, that is, between 1935 and 1946, was also a period of rising prices, see Figure 4, page 12. When prices declined between 1929 and 1935, the increase of production was retarded, especially in the United States. Likewise, price fluctuations before 1929 do not correspond to fluctuation of production in the opposite direction. There is no indication therefore that variations in the volume of production were the cause of major fluctuations in price. On the other hand, there is some indication throughout the whole period of study that major swings in prices are related changes in the volume of production in the same direction.

Income levels. As national income increases, the
rise in demand and the consequent increase in quantity of production varies greatly from one class of consumer's goods to another. Presumably, the increase in demand for the less necessary consumer goods will be greater than for the more necessary commodities. Since food is among the necessities, the demand for other things will increase more as national income increases than the demand for food. To some extent the increased demand for food is reflected in a greater demand for the services of the food processor and retailer rather than for those of the farmer. Also, as national income increases rapidly, the demand for more expensive high-protein foods advances rapidly. Consumer desires change from demands for grain and potatoes to demands for high protein foods, such as meat and milk. The significance of this change in consumer preference is that energy inputs, in terms of both labor and capital costs, increase as a result of the more intensive cultivation necessary for high protein foods.4

During the years following World War II, somewhat contradictory to the analysis above, a great demand for food occurred in comparison to other things.5 The experience

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4For statistical evidence relating to statements in this paragraph refer to: Ciriacy-Wantrup, S.V., Major Economic Forces Affecting Agriculture (Berkeley: California Agricultural Experiment Station, 1947), p. 48.

5Ibid., p. 38.
after the war, however, was probably due to the fact that rent control was continued, and automobiles and other durable goods were in short supply. These conditions made more than a normal proportion of income available for expenditures on food. Thus, in 1946 and 1947 the proportion of disposable income after taxes which was spent on food was higher than in any previous peace-time year.6

It is safe to assume, according to the Bureau of Agricultural Economics, that the shift in consumption habits in the post-war years was not due to price increases or decreases, but due to genuine temporary shifts in demand. In other words, such changes in consumption have taken place that the whole demand schedule for grain products and potatoes has shifted downward and to the left, whereas the demand schedule for fruits and vegetables, dairy products, eggs, meats, poultry and fish has shifted upward and to the right. The recent upward trend in meat and egg consumption, after having declined for many years, is evidence of the effect on demand of an increase in real money income.7

Increases and decreases in consumer demand due to

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6Trend in Per Capita Consumption of Foods by Groups, Bureau of Agricultural Economics, United States Department of Agriculture, Neg. 43787.

income changes do not immediately affect the quantity of farm production. Demand changes must first be reflected in the inventory of the processors and merchants. Often differences may occur in fluctuations in farm prices, wholesale prices and retail prices. Further, decreases in consumer demand leading to decreases in prices may often cause an increase in farm production. This is a result of attempts to increase farm income and to spread the high fixed costs of agricultural operations over more units of production. In the absence of price controls this secondary increase in production may lead to further declines in prices.

Internal cycles. The quantity of production of many farm products is affected by what is called internal cycles. The most important cycle, as far as Montana is concerned, is the beef cycle. There is a well-known tendency for beef-cattle population to reach successive peaks at intervals of about twelve to fourteen years. These cycles are partly a reaction to prices. When livestock numbers are low, the price of beef is likely to be high in comparison with that of other things because the relatively small herd means that few cattle and calves are coming to the market. The high price stimulates cattle men to keep back breeding stock from the market, which shortens supply even more and causes prices to advance. Because of the length of the breeding
period, it takes six to nine years to build up the number of cattle. After herds are built up, and as long as high profits are prevailing, larger numbers will be marketed. This increase in market supply causes a reduction in price and liquidation of what now appear as unprofitable herds. Supply becomes short again and the cycle begins all over.

Poultry and egg production have been characterized in recent years by a certain degree of rhythm in the ratio between egg prices and feed prices, and also between prices of chickens and prices of feed. The typical cycle has been about three years in length. During the thirty years before the second World War, wool prices tended to move in cycles of around nine years in length, largely because of cyclical fluctuations in wool production.8

Physical environment. Physical environment is of considerable significance in determining Montana's agricultural production. It is somewhat less significant in the United States as a whole. The most important physical element affecting farm output in Montana is rainfall. The long time average rainfall for Montana of about fifteen inches per year has been barely enough to sustain profitable dry

8Wool cycles have been of special importance in Montana. For an excellent discussion of wool and livestock cycles see: Waite, W.C. and H. C. Trelogan, *Agricultural Market Prices* (New York: John Wiley and Sons, 1951), pp. 69-76.
land agriculture in the state. When precipitation fell below that which occurred during the homesteading period from 1910 to 1920, many of those who were farming low quality land were forced to abandon their holdings. Periods of above average rainfall similar to that which occurred in the last decade have led to increases in quantity of production and the plowing of range and idle land for use as crop land.

In both Montana and the United States soil depletion has also had an important bearing on the quantity of farm production. The history of our nation has been characterized by continuous migrations westward as soils became worn out due to intensive operations and lack of necessary preventative measures. With advances in agricultural education, County Extension services, and scientific knowledge concerning the maintenance of soil fertility, changes in quantity of farm production due to soil depletion will become less noticeable.

Further development of irrigation by the Federal

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9Climatological Data, Montana, United States Department of Commerce, Vol. LII, No. 1, 1946. There is wide variation of precipitation through the state. The long time average for the Western Division is 17 inches; Central Division, 15 inches; and Eastern Division, 14 inches.

10"Types of Farming in Montana, Part I. Physical Factors and Economic Factors Affecting Montana Agriculture," Montana Agricultural Experiment Station Bulletin 328, pp. 36-37. Average annual precipitation from 1910 to 1920 equalled about 16 inches whereas average annual precipitation from 1931 to 1936 equalled about 13 inches.
government is being widely promoted by both Republican and Democratic political forces in the West. As irrigated acreage increases, changes in precipitation will have less effect on fluctuations of agricultural production and cash farm income.

**Conclusions.** It has been observed that quantity of production is closely related to prices, income levels, internal cycles, and physical environment. Quantity is one of the components making up cash farm income, the other being price. It is not the purpose of this study to examine intensively the quantity component of cash farm income. It must be assumed that the volume of production in any one year does affect cash farm income, but to make an empirical study of the degree of cause and effect is outside the scope of this thesis. Note that the variation in the volume of production, Figure 4, page 12, rarely varies from the trend more than ten per cent, except in periods of drought. From this evidence it may be concluded that changes in volume of production have had only minor effect on cash farm income, except during periods of insufficient rainfall.

**II. PRICES RECEIVED BY FARMERS**

It was mentioned earlier that price movements in Montana and United States are rather similar. Figure 1,
page 5, shows that the direction of price changes, amplitude, and timing correspond quite closely. This occurs because the prices of most agricultural products in Montana are determined in national markets.

The purposes of the study demand proof that farm price movements either have or have not had an effect on the level of cash farm income. Figure 5, page 23, displays relative variation of Montana cash farm income from trend for the years 1924 to 1948. Figure 1, page 5, shows relative variation of United States cash farm income from trend for the years 1913 to 1948.

When fluctuations in cash farm income and in prices are compared in these graphs, it is observed that the cause of fluctuation of cash farm income may, to a great degree, be attributed to price changes. It must be admitted that in both Figures 5 and 1 some differences do occur. In Figure 1 it is noted that United States cash farm income is considerably above the price series during both wars and before World War I. During the second World War price increases were curbed by governmental controls. During both wars the effort to increase production was aided by good harvests, depletion of soil fertility, and by technological improvements, especially by greater use of fertilizers and improved plant and livestock varieties. The cash farm income before World War I was advanced above the price
Figure 5
Percentage Deviation, Cash Farm Income, Farm Prices Received, From Trend
Montana
Trend = 100

Source: See Figures 1 and 2.
series because agriculture was at this time in a state of expansion, the nation's lands were being transformed into a more intensive type of cultivation, and farm machinery was being more widely used. The drought period in the middle 1930's caused another divergence in the two series. Where divergence occurs it can, therefore, be largely explained by some factor which affects the quantity of production.

Figure 5, page 23, also demonstrates certain differences in movements of prices received by farmers and cash farm income in Montana. It is well known that the quantitative factors have had an effect on Montana cash farm income. Precipitation has been one influence, and when the difference between the cash farm income series and farm prices series occurs, it can be often explained by deviations in annual precipitation. Further, Montana agricultural production was still influenced by the great expansion of homesteads from 1910 to 1920. The accumulated effects of the decline in prices from the trend, after 1925, caused many small farm enterprises conceived under the Homestead Act to become submarginal or unprofitable, and led to their ultimate abandonment in many cases. Aside from such divergences, the evidence presented in Figure 5, page 23, demonstrates rather conclusively that price variations in Montana have, to a
large extent, either directly or indirectly, been a major cause in fluctuation of cash farm income.

Prices of farm products in this country are affected by marketings of foreign producers in so far as they influence international trade. Space does not permit a detailed review of quantities of agricultural products marketed in nations other than the United States. The Ciriacy-Wantrup report has indicated that the relative stability of aggregate quantities of farm marketings and the parallelism between relatively small fluctuations of quantities and relatively great fluctuations of price, which were illustrated in Figure 4, page 12, hold also and possibly more so for the world's trading nations as a whole.\textsuperscript{12}

It has been observed that fluctuations of cash farm income are caused to some extent by price phenomena. The next step in the analysis is to determine whether prices of productive services and charges show fluctuations similar to those of farm prices and cash farm income. It will then be possible to draw conclusions with respect to changes in the well-being and financial condition of the farmer.

\footnote{Ciriacy-Wantrup, \textit{op. cit.}, p. 20.}
CHAPTER III

AGRICULTURE AND DISPARITY OF PRICES

To understand agricultural income problems, it must be realized that depressions suffered by agriculture usually apply to all industries. The thing that differentiates depression in agriculture from that in other industries is that deflation usually strikes it first and with greater impact and longer duration. As a rule, industrial establishments are able to offer more resistance to forces of deflation than farm units. When many industrial firms are first hit by depression and perhaps threatened by insolvency, they are often in a better position than agricultural enterprises to operate by depleting either reserve or capital funds. They hope that conditions will improve in time to ward off complete bankruptcy.

In other words, comparison is often made of farm prices and those of many other industries without weighing these by relative volume of sales. It is sometimes argued that if the farmer loses money on each unit of his production, he becomes worse off because of his large production. But such a conclusion is not valid. It may be partly true for the farmer whose volume of production is a result of a policy of expansion and whose gross operating expenses have been augmented by large expenditures for the hire of
additional labor and capital. But for the family sized unit, the expense of producing a crop for any given year consists largely of fixed charges—interest on land, interest and depreciation on tools and equipment, expenditures for feed of work stock, and food for the family labor force. Most of these fixed charges are incurred irrespective of the volume of production or the price of a product. Under such conditions it is not logical to contend that the individual farmer is less well off by having produced a larger rather than a smaller crop.¹

Curtailment of production in order to increase profits is most practicable under conditions where operating costs constitute a large element in total costs.² Such portion of these costs as is due to wages of labor do not fall with the break in prices as rapidly as do prices in general. Therefore, any curtailment of production to strengthen demand, may keep the unit price of the commodity nearer its cost level than if no curtailment were practiced. But according to Wiley, this is done at tremendous loss in the volume of business.³

²Ibid., p. 13.
Adjustment of production, prices and costs. Although price changes have some undesirable effects in the economy, they are the chief basis upon which people make a choice of what and how much to produce or consume. Price changes also affect the redistribution of income. For example, farmers have a tendency to increase their indebtedness during periods of rising prices, indicating that they are capitalizing the added returns resulting from the increase in price. Then when prices fall, these farmers find themselves in difficulty because of high fixed costs. The lack of adjustment between prices and fixed costs may be the cause of low income. Small size farms, indebtedness, tax delinquency, and other problem situations often occur when fixed costs are incurred at a high price level. When fixed costs are incurred at a low price level, future returns may be higher than the anticipated total costs if the price level advances.

Since prices tend to fluctuate, the farmer must constantly attempt to make the necessary adjustments between costs and prices. A Montana State College report suggests several methods by which the necessary adjustments can be


5Ibid., p. 15.
When greater total returns to the farm can be achieved by furnishing a greater portion of family living from the farm than previously, it is economically feasible to do so. Another alternative is to build up cash and feed reserves during years of relative prosperity and high production. Additional adjustments may be necessary with respect to methods of payment for the use of the land so that the operator will not need to carry all the burden during years of low prices and drought.

Production expenses in relation to gross income.
Total production expenses may be expressed as percentages of gross farm income. For the country as a whole, the percentage was 55 in 1929, 57 in 1939 and 1940, 49 in 1942, 46 in 1943, and 47 in 1944. In computing these percentages, government payments to farm operators have been included in gross income because certain production expenses, such as purchases of fertilizer and some of the outlays on dairy farms, are interrelated with payments made under the conservation and dairy production programs.

Production expenses dropped one-fifth between 1929 and 1939, and then rose nearly nine-tenths from 1939 to

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6Ibid., p. 16.
7Income Parity for Agriculture, Part VI, Bureau of Agricultural Economics, United States Department of Agriculture, p. 15.
But neither the decline nor the increase was proportionately as large as the corresponding change in gross income, which declined one-fourth from 1929 to 1939 and more than doubled between 1939 and 1944. Thus, when gross income was relatively low, as in 1933, expenses counted for a larger proportion of gross income than in years when income was high. And as income rose, from 1940 to 1944, expenses accounted for a decreasing proportion of gross income. These fluctuations emphasize the greater amplitude in fluctuation of prices received than prices paid by farmers.

Opportunities to curtail production. There was a great need during the depression of the 1930's to reduce the supply of agricultural products. Why did agricultural producers continue operations at practically the usual rate after the depression struck, and to what extent does agriculture differ in this respect from other industries, especially manufacturing?

In the first place, the individual farm operator is not in a position to reduce materially his labor force as is the factory operator. In the main, the farmer's labor

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8Production expenses equalled $7,654,778,000 in 1929; $5,958,264 in 1939; and $11,058,706,000 in 1944.

force consists of himself and his family. These he cannot dismiss, except under penalty of supporting idle laborers. If he decrees they shall not work, he is, nevertheless, burdened with their upkeep. So long as he and his family remain on the farm, his economic interest is best served by producing more, not less. Professor Warren states the case very pointedly when he says,

> Even if agriculture were organized on the basis of hired labor, it could not close down in periods of hard time. Agriculture is biological rather than a mechanical industry. If a manufacturer closes his plant it will be there when he wants it again. A farmer cannot stop feeding his pigs and horses. He cannot stop his cropping system, if he hopes to go back into farming again. Agriculture is not a one year business.\(^\text{10}\)

This difference between agriculture and most manufacturers is the crux of the agricultural price problem. It is one of the chief reasons for the failure on the part of agriculture to reduce its output in time of falling prices.\(^\text{11}\)

If a manufacturer finds it no longer profitable to produce at the going price, he can reduce his labor force and the amount of raw materials purchases in an attempt to adjust to the point where production is profitable once more. But the farmer is at once capitalist, manager, and laborer. He

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usually has no labor to dismiss, and no raw materials to cease buying.

The farming business is necessarily one of slow change. Shift of emphasis in production within the industry can be made only once in a year, or some twenty-five to thirty times in the farming life of an individual. 12 This characteristic is especially true of the livestock industry, owing to the long period required for the maturity of many farm animals. In addition to this period of investment in growth, several years more may elapse before the farmer can expect to pay for his livestock investment out of income from livestock products. 13

The value of the farmer's plant and equipment is large in proportion to the gross annual value of his production. 14 In this respect agriculture is similar to the railroad industry. In each of these industries, capacity operation is a matter of no small importance. Due to heavy fixed costs, labor and investment inputs do not vary in direct proportion with size. Net income depends largely on volume of business.

12 Ibid., p. 63.

13 It is estimated that the rate of such agricultural turnover is once in 7.5 years. See Warren and Pearson, op. cit., p. 25.

14 Wiley, op. cit., p. 64.
Retail and wholesale prices. Retail prices lag behind fluctuations of farm and wholesale prices. The basic reason is that farm prices respond much more rapidly to changes in economic conditions than do the prices of the goods and services involved in getting a farm product to the final consumer. There are a number of causes for this response.

First, rents, interest rates and, to a considerable extent, wages which are costs involved in getting farm goods to market are subject to long term contracts. Taxes, while not contractual, share the nature of contracted costs, because they are usually set for a year at a time, and in any case authorities are reluctant to change them. Likewise freight rates and other charges fixed by government bodies change very slowly. Second, as well as being fixed by contract, the prices of labor, capital, land, and buildings tend to be fairly uniform. These prices generally do not move until a general price level change has been under way.

The rigidity of non-farm costs works a double hardship on the farmer when prices are going down. There is a tendency both to hold up the prices of things farmers buy and at the same time to prevent a reduction in the difference

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15 Dummeier, Heflebower, and Norman, op. cit., p. 323.
16 Ibid., p. 324.
between farm prices and retail prices, so that the farmer gets a smaller share of the consumer dollar.\(^\text{17}\)

But what works to the disadvantage of the farmer when prices are falling works to his advantage when they are rising. Wages and other costs mentioned are almost as sluggish in catching up with a rise in the general price level as they are with a fall. In periods of general increased demand farm production will usually be at near maximum, whereas monopolists will have been producing at less than full capacity. Thus, at the first stage of the general increase in demand, the supply of agricultural products will be much more inelastic than the supply of other products. The farmer will get a double advantage. His prices will go up faster than the costs of distribution so he gets a larger share of the consumer's dollar; and, because marketing costs do not rise proportionately with farm prices, sales of his products can expand proportionately to total retail sales.\(^\text{18}\)

**Purchasing power parity for agriculture.** The two outstanding assumptions implicit in the aims of "parity" are: first, that a balance will be achieved between general whole-

\(^{17}\text{Ibid.}, p. 324.\)

\(^{18}\text{Ibid.}, p. 325.\)
sale prices at point of production with retail prices at point of consumption in farm areas; and second, that the relationship which prevailed in a selected base period a quarter of a century ago affords an ideal toward which planning for the future should aim.

The price data used by the Department of Agriculture in measuring the purchasing power of farm income represent prices received by farmers for farm products and prices paid by farmers for commodities bought. The comparison is thus between raw materials at producers' wholesale prices, on the one hand, and finished goods at consumers' retail prices, on the other. Students of price behavior know at once that there are fluctuations in these comparisons which have no direct significance to comparative farm and non-farm well being. In times of depression, wholesale prices of raw materials drop more rapidly and recover more rapidly than wholesale prices of finished goods. Also, wholesale prices as such tend to decline and recover with more amplitude and more rapidity than retail prices as such. Automatically, in these figures, regardless of general farm versus non-farm considerations, the farm would be shown relatively worse off

20 Ibid., p. 114.
in periods of cyclical decline and correspondingly better off in times of recovery.

Warren and Pearson discuss these problems when they comment on a report of the Secretary of Agriculture. They state:

The Report of the Secretary of Agriculture repeats the popular error that establishing an equilibrium in price structure is a separate problem from restoring the general price level. He says, 'Permanent farm relief has two principal requirements: (1) A rise in the general price level so that the burden of debt and taxes will be lightened, and (2) a closing of the gap between agricultural prices. Only the first requirement can be confidently expected from controlled inflation. If the general price level rises through monetary influences, with a proportionate change in production, supplies, and consumption, all prices not merely prices to farmers respond eventually, though perhaps not uniformly. The disparity persists on a higher general price level.' As has been repeatedly shown any force that lowers prices automatically throws prices that farmers or other basic producers receive out of line with retail prices. Conversely, it has been repeatedly shown that whenever the price level rises, raw materials rise most, and that if the rise is sufficient, such prices are forced higher than their normal relationship to prices of manufactured goods, retail prices, the cost of living, and prices of things that farmers buy. There have been many cases in history when prices have risen above the level to which business is adjusted, and the writers have found no case in which this principle does not hold.

As to the logic of parity assumption, presumably the

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21 Report of the Secretary of Agriculture, 1910 to 1935, United States Department of Agriculture.

government is now required to reverse its program when the index of parity for farm prices goes above the pre-World-War-I base. Martin says that some action should be taken, such as increasing agricultural production, decreasing agricultural production, or otherwise influencing markets when this occurs.23

The disparity existing between agricultural prices received and paid has now been discussed generally. The next step in the analysis will be to examine in detail some of the more important farm production expenses. With a knowledge of the effect of farm prices received on cash farm income, and an understanding of the nature of agricultural prices paid, it will be possible to come to certain conclusions with regard to the influences price changes have on the well-being of the farmer.

CHAPTER IV

FARM WAGES

Changes in the nature of agricultural enterprises. American agriculture underwent tremendous changes during the decade of the thirties. Advancement in technology, improvement of farming methods and greater crop yields greatly decreased the number of persons required to produce a given quantity of food and fiber. Concentrations in land ownerships and management controls, and intense commercialization and specialization of farming contributed toward a more efficient agriculture. Stratification of the farm population developed. It was no longer usual for hired laborers to become owners through the use of their farm wage earnings. In fact, the movement seemed reversed—many owners were becoming landless. Drought and bankruptcy hastened this reversal in the Great Plains States. The Industrial Revolution in agriculture hastened it everywhere.¹

The effect of recent technological advances on farming

methods, farm size and farm ownership has varied from area to area. The initial effect of the introduction of new machines and methods often has been a modification of customary farming patterns, not the imposition of new types of farming.\(^2\) In Iowa, for example, family farms, often operated with the aid of a year-round hired man, were common. Here the immediate result of mechanization in many cases was a marked increase in the acreage per farm operated as "family size" farms.\(^3\) In other areas, increased corporate ownership and operation have attended mechanization of farming.

A "shift from farming as a way of life to farming as a commercial enterprise"\(^4\) is believed by some writers to have been caused by technical changes in agricultural production and by increases in the number and productive importance of large farm enterprises. This shift in turn is associated with important alterations in economic relationships among men and women engaged in agriculture.\(^5\) One writer says, "the trend toward the introduction of business methods on the farm indicates a more extensive use of labor

\[^{2}\text{Background of the War Farm Labor Problem, Bureau of Agricultural Economics, United States Department of Agriculture, p. 86.}\]

\[^{3}\text{Ibid., p. 87.}\]

\[^{4}\text{Select Committee, op. cit., p. 276.}\]

\[^{5}\text{Background of the War Farm Labor Problem, op. cit., p. 87.}\]
saving machinery, a reduction in the number of small farmers and the traditional hired men, and the creation of a large landless agricultural working class."  

Because prices of farm products in 1931 and 1932 were extremely low, farmers used every means available to cut production costs. In fact they were so low that farmers could not pay normal wages to hired labor. Yet, despite these low prices there was a distinct trend of population from cities to farms. Many men were willing to work for low wages in order to have employment and obtain food and shelter,

During the early forties, with near full employment, cities again offered work to workers from the land. According to Holmass, at this time, short term seasonal agricultural jobs offered average wage rates of about sixteen cents per hour. Thus, he maintains, agriculture found it difficult to compete with the attractive wage rates offered in the cities. 

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6W. S. Hopkins, Social Insurance and Agriculture (Washington: Social Science Research, Committee on Social Security, 1947)

7H. C. Filley, Effects of Inflation and Deflation Upon Nebraska Agriculture, 1914 to 1932 (Lincoln, Neb.: Nebraska Agricultural Experiment Station Research Bulletin 71, 1934), p. 46.

8A. J. Holmass, Agricultural Wage Stabilization in World War II, Bureau of Agricultural Economics, United States Department of Agriculture, p. 6.
World War II created serious shortages in manpower and material, and sent prices and wages spiraling upward.\(^9\) Farm wage rates increased.\(^{10}\) In response to higher prices, production—industrial and agricultural—increased to unprecedented heights.\(^{11}\)

According to T. W. Schultz, for the most part the efficiency of labor was not impaired during the transition to peacetime conditions. Rather, excess productive capacity of agriculture and industry was utilized more fully which resulted in lowering overhead cost per unit. Selling costs fell and wages tended to follow the upward spiral of prices.\(^{12}\)

Agricultural labor. Agricultural labor can be broken down into three distinct types: non-casual, casual, and family.\(^{13}\) The first type is regularly employed with wages

\(^{9}\)Ibid., p. 7.
\(^{10}\)For supporting data see, Farm Labor Needs, United States Extension Service, January, 1944, p. 7.
\(^{11}\)See Agricultural Statistics, United States Department of Agriculture, 1950, p. 602; and Federal Reserve Bulletins, (Washington: Board of Governors of Federal Reserve System, April, 1951), p. 43. The index of gross farm output (1935-1939 = 100) increased from 110 in 1940 to 138 in 1948. The index of unadjusted industrial production (1935-1939 = 100) increased from 125 in 1940 to 192 in 1948.
\(^{13}\)For an excellent bibliography see F. M. Colvin and J. C. Folsom, Agricultural Labor in the U.S., Bureau of Agricultural Economics Bibliography No. 54, December, 1935.
and employment in this category determined usually by annual agreement. Casual labor is the type employed for only a few weeks or months during peak periods of production. In some sections it migrates in large numbers from one seasonal crop to another. Family labor in most cases is unpaid and includes children who assist in the numerous farm chores.\(^{14}\)

During the week of March 24 to 30, 1940, thirty-five per cent of the entire working force on the farms of the United States were owner-operators or managers and twenty-two per cent were tenant operators including croppers. Croppers, considered by themselves, made up five per cent of the farm labor at that time. Unpaid farm family workers made up twenty-seven per cent of the total workers on farms as compared with sixteen per cent for hired laborers.\(^{15}\)

For purposes of estimating the income available for living on the farm, all farm laborers living on farms are treated as a part of the farm population. Some of the hired labor is furnished by one farmer to another, and this represents a cost to one farmer but income to the other. In so far as it is possible to do so, the wage payments of one farmer to another are treated as costs to the farm operators, and on the other side as income to farmers from labor off

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\(^{14}\)Martin, op. cit., p. 71.

\(^{15}\)Background of the War Farm Labor Problem, op. cit., p. 15.
their own farms.\textsuperscript{16}

In a real sense, all farm labor used in production is a cost, but as a practical matter in estimating the costs of farm production to farmers, it seems better to treat hired farm labor separately from the labor of the farmer and his family.\textsuperscript{17} From the viewpoint of the farm operator, whatever is paid to the hired laborer in the form of wages and products of the farm, including living quarters, constitute costs of production, and are deductible from gross income in determining net income.

\textbf{Seasonality of hired labor.} The seasonality of labor demands in agriculture leads to a great expansion of the farm working force in the summer and fall months. On approximately three million farms or fifty per cent of the nation's farms, the peak labor demands are met by the operator and members of the operator's family who assist on an unpaid basis, and by the operator himself working longer hours per week. But on the remaining farms, some hired labor is used during the course of a year. The majority of these latter farms (eighty per cent in 1945) use less than one full man

\textsuperscript{16}\textit{Income Parity for Agriculture}, Part II, Bureau of Agricultural Economics, United States Department of Agriculture, p. 1.

\textsuperscript{17}\textit{Ibid.}, p. 1.
year of hired labor. On many of the family sized farms only a few man days of labor are hired at harvest time. On the largest farms, hundreds of man years are used. 18

Most of the farms which hire labor do not require the same number of workers throughout the year. Thus, they provide only intermittent employment for many of their wage workers. For this reason, the number of hired workers reported as employed on farms during any current week, even at the height of the season is less than the total number of persons who work on farms for wages during some time of the year. 19

The Bureau of Agricultural Economics 20 discusses seasonality in the farm labor situation in Montana as follows:

Wheat is the most important crop in Montana. It is cut—mostly combined—from more than half of the harvested cropland acreage—and takes about a third of the crop labor. Hay requires almost a third of the crop labor. Sugar beets require a tenth of the crop labor even though the acreage is relatively small. Sheep take more labor than any other livestock enterprise. They are followed by milk cows,

18 For a more detailed analysis of this problem see Employment and Wages of the Hired Farm Working Force in 1945, Bureau of Agricultural Economics, United States Department of Agriculture, June 1946, p. 1.

19 Ibid., p. 1.

20 R. W. Hecht, Farm Labor Requirements in the United States, 1939 and 1944, Bureau of Agricultural Economics, United States Department of Agriculture, April, 1947, p. 55.
beef cattle, and horses and mules. Man-hours of labor required for all farm work increased about eight per cent from 1939 to 1944. The increase is caused chiefly by additional livestock numbers. Labor requirements for livestock rose sixteen per cent and those of crops only three per cent. Production of beef rose substantially in the period and required about three-fourths more labor. Fewer hours were required for wheat in 1944 even though production was about three-fifths the greater, chiefly because of higher yields. Little work can be done on crops before the latter part of March, but in April considerable spring grain is seeded. Crop work is gradually heavier from then until August when the crest is reached during the small grain harvest. After spring the amount of crop work drops rapidly.

Perquisites. Wages in agriculture are received both in cash and in kind. As in the case of the income in kind of farm operators, farm value of the products consumed by the laborers should be taken as the measure of cost. This is also part of the national income. For comparison of the income of farm labor with that of urban labor, the valuation should be made at city retail prices, and other perquisites of farm labor not received by urban labor should be in-

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21 The following definitions which are used in the study are derived from United States Department of Agriculture, Bureau of Agricultural Economics, Income Parity for Agriculture, Part II--Expenses of Agricultural Production, Section I--The Cost of Hired Farm Labor, 1902-1928, p. 1. The "farm labor bill" is the aggregate annual cost to farmers of payment in cash and in kind to farm laborers. For this yearly payment in wages the term "cash wage bill" is used. The term "board" is used for table board only and does not include "lodging" or unprepared foodstuffs. The term "lodging" refers to house or room provided for hired laborers. The term "other perquisites" means all other goods or services given to hired laborers except board and lodging. The term "cost" when applied to these various perquisite items, refers to the valuation that farmers assign to them as an expense of production.
Throughout the country cash is the predominant form in which agricultural wages are paid. Scrip and token money have been used frequently, but, other than cash, the only important form of payment is that of "perquisites." Because of the variations, perquisites complicate greatly the problem of determining just what constitutes real wages.\textsuperscript{23}

According to the Bureau of Agricultural Economics,\textsuperscript{24} "In industry, cash wages prevail and variations are likely to apply to a considerable number of workers. In agriculture on the other hand, perquisites make up nearly two-fifths of the wages of non-casual hired farm hands the country over, and their nature may vary from farm to farm." Perquisites are ordinarily defined as emoluments given in addition to wages at the going rates. In agriculture, however, they are looked upon by both workers and employers as emoluments in place of cash wages, the two together constituting total wages. Perquisites include a wide range of goods and services, such as board and room, housing, dairy and meat products, flour and meal, and various privileges, such as keeping

\textsuperscript{22}Martin, op. cit., p. 73.

\textsuperscript{23}Background of the War Farm Labor Problem, Bureau of Agricultural Economics, United States Department of Agriculture, May 1942, p. 95.

\textsuperscript{24}Ibid., pp. 95-96.
livestock with feed or pasturage. The precise combination is determined by custom. Of 916,000 workers who reported that they were furnished one or more of the major perquisite items, the value of such items received during 1945 was estimated as averaging 146 dollars. This amount was equal to thirty-one per cent of the cash wages received for farm work during the year.

Farm labor bill and wage rates. The farm labor bill has averaged close to a billion dollars annually but there have been wide fluctuations from year to year. From 1909 to 1915, it remained around 700 or 800 million dollars. Beginning in 1916, it rose steadily to a peak of 1.8 billion dollars in 1920, when wage rates and other prices were at unusually high levels. In 1921, it fell to between 1.1 and 1.2 billion dollars, and remained close to that level through 1930 when another decline set in. From a 1933 depression low of a little over 500 million dollars, it rose to almost 800 million dollars in 1937, but declined again in 1938 to 758 million dollars.


Similar fluctuations have occurred in the cash-wage bill. From a level between 500 and 600 million dollars in 1909, it reached a high point in 1920 at 1.3 billion dollars. From 1921 to 1930, it fluctuated narrowly around 900 million dollars. Its low point in 1933 was 366 million dollars, from which it rose to 570 million dollars in 1937 and 556 million dollars in 1938. Changes in the cash wage bill before 1930 were due chiefly to fluctuations in farm wage rates for average employment of hired farm laborers remained rather stable. In the thirties, however, declines in the cash wage bill were associated with significant reductions in the number employed, as well as with lower wage rates.

Schultz points out that

\[ \ldots \text{the level of wages has been anything but constant.} \]

\[ \text{Inflation has been the lubricant, and we have used it freely in mobilizing the economy for war and again in making the transition to peacetime production. We have had enough inflation to overcome a multitude of frictions and also enough to reduce sharply the buying power of all whose money income is inelastic. While it is difficult to ascertain exactly how much the level of wages has risen, taking all non-agricultural industries together, the increase in average hourly earnings in} \]

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29 Average employment of hired farm laborers numbered around 2,800,000 from 1910 to 1930. After 1930 employment decreased continuously except in 1935, 1936, 1937 and 1947. Farm employment equalled 2,500,000 in 1935; 2,800,000 in 1940; 2,400,000 in 1945 and 1948.
manufacturing will serve our purpose. The 1940 monthly average was \$ .66 per hour and at midyear, 1947, it had reached \$1.22 per hour, a rise of nearly eighty-five per cent.30

Table I, page 50, portrays a series of comparisons of farm wage rates, farm prices, cash farm marketings, physical sales volume, prices paid for producers' goods, and taxes, interest and rent since 1939 and 1929. Analysis of the table reveals that although farm wage rates rose thirteen per cent more than farm prices from 1939 to 1943, they had risen twenty-nine per cent less than cash farm marketings, and eighty per cent less than net farm income. The series in the lower section of the table show why the lag of wages behind net farm incomes is greater than it is behind cash farm marketings. Direct production expenses, not including wages of labor, advanced only seventy-four per cent while cash farm marketings advanced 144 per cent, from 1939 to 1943. The increase in direct production expenses was due about equally to the rising cost of producer goods and to the increase in volume of such goods used.31 These figures are only as accurate as the series on cash farm marketings, production expenses, and prices, since they are nothing more than deriv-


31For further analysis of these figures refer to Schwartz, "Review of Wages of Agricultural Labor in the U.S.," by L.J. Ducoff, Journal of Farm Economics, August 1945, 573.
TABLE I
CHANGES SINCE 1939 AND SINCE 1929 IN FARM WAGES, NET FARM INCOME, AND OTHER RELEVANT DATA, UNITED STATES.

<table>
<thead>
<tr>
<th>Item</th>
<th>1939</th>
<th>1942</th>
<th>1943</th>
<th>1944</th>
<th>1929</th>
<th>1942</th>
<th>1943</th>
<th>1944</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Wages......</td>
<td>100</td>
<td>163</td>
<td>215</td>
<td>237</td>
<td>100</td>
<td>112</td>
<td>148</td>
<td>162</td>
</tr>
<tr>
<td>Net Farm Income</td>
<td>100</td>
<td>225</td>
<td>295</td>
<td></td>
<td>100</td>
<td>165</td>
<td></td>
<td>218</td>
</tr>
<tr>
<td>Difference...</td>
<td>-62</td>
<td>-80</td>
<td></td>
<td></td>
<td>-53</td>
<td>-70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm Prices....</td>
<td>100</td>
<td>167</td>
<td>202</td>
<td>206</td>
<td>100</td>
<td>107</td>
<td>129</td>
<td>132</td>
</tr>
<tr>
<td>Difference...</td>
<td>-4</td>
<td>13</td>
<td>31</td>
<td></td>
<td>5</td>
<td>19</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Cash Farm--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketings...</td>
<td>100</td>
<td>196</td>
<td>244</td>
<td>274</td>
<td>100</td>
<td>137</td>
<td>170</td>
<td>191</td>
</tr>
<tr>
<td>Difference...</td>
<td>-33</td>
<td>-29</td>
<td>-37</td>
<td></td>
<td>-25</td>
<td>-22</td>
<td>-29</td>
<td></td>
</tr>
</tbody>
</table>

Physical Sales--
Volume......     100  117  121  133  100  128  132  145
Production Ex-
   penses--
   Less Wages      100  162  174  100  140  150
Prices Paid For--
   Producers Goods 100  122  134  100  101  111
Volume of Pro-
   ducers--
   Goods..........  100  133  130  100  138  135
Taxes, Interest,  
   Rent...........  100  142  156  100  99   109

Source: Adapted from Agricultural Statistics, United States Department of Agriculture, 1940, 1943, 1944, and 1945.
Table II, page 52, notes the variations in total cost of farm labor and changes in the percentage that farm labor cost is of total production cost in the years 1929, 1939, and 1944. These figures indicate that labor costs are an important component of total cost. Labor cost for Montana was twenty-one per cent of total cost in 1929 and twenty-seven per cent of total cost in 1944. Comparable percentages for the United States indicate an increase from seventeen per cent to nineteen per cent over the same period. Thus, labor costs are relatively slightly more significant in Montana than in the United States as a whole.

United States wage rates with board have shown considerable variation. They averaged $21.00 per month in 1909, $52.00 in 1920, $34.00 in 1921, $41.00 in 1928, $18.00 in 1933, $28.00 in 1940, $62.00 in 1943, and $102.00 in 1948. Montana wage rates with board averaged $38.00 per month in 1909, $75.00 in 1920, $42.00 in 1921, $45.00 in 1928, $20.00 in 1933, $39.00 in 1940, $92.00 in 1943, and $139.00 in

Mr. R. D. Jennings of the Bureau of Agricultural Economics points out that an eleven per cent increase in the amount of feed consumed per unit of livestock product occurred over the period. This unit increase multiplied by the increased output of livestock products gives more than a thirty per cent increase for the livestock part of our agricultural output.
## TABLE II

**FARM LABOR EXPENSES AND TOTAL PRODUCTION EXPENSES OF FARM OPERATORS, 1929, 1939 and 1944**  
**MONTANA AND UNITED STATES**

<table>
<thead>
<tr>
<th></th>
<th>Montana</th>
<th></th>
<th></th>
<th>United States</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Production Expenses</td>
<td>Labor Cost</td>
<td>% Labor Cost is of Total Prod. Expenses</td>
<td>Total Production Expenses</td>
<td>Labor Cost</td>
<td>% Labor Cost is of Total Prod. Expenses</td>
</tr>
<tr>
<td>Year</td>
<td>Dollars</td>
<td>Dollars</td>
<td></td>
<td>Dollars</td>
<td>Dollars</td>
<td></td>
</tr>
<tr>
<td>1929</td>
<td>95,263,000</td>
<td>20,270,000</td>
<td>21</td>
<td>7,654,778,000</td>
<td>1,284,105,000</td>
<td>17</td>
</tr>
<tr>
<td>1939</td>
<td>66,761,000</td>
<td>13,748,000</td>
<td>21</td>
<td>5,958,264,000</td>
<td>981,608,000</td>
<td>16</td>
</tr>
<tr>
<td>1944</td>
<td>116,330,000</td>
<td>31,219,000</td>
<td>27</td>
<td>11,058,706,000</td>
<td>2,094,206,000</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: Adapted from *Income Parity for Agriculture*, Part VI, Section 1, Bureau of Agricultural Economics, United States Department of Agriculture, p. 39.
1948.\textsuperscript{33} Figure 6, page 54, displays an index of wage rates for Montana and the United States (1910 - 1914 equals 100). Since the base period, the United States index has been generally above the Montana index. During the 1920's the index for the United States advanced about thirty points over Montana, and during the middle 1930's the United States index stood about twenty points above that for Montana. In 1948 the index for the United States had advanced to 432 per cent of the base period, whereas the Montana index had advanced to 376 per cent of the same base period.

According to Table II, page 52, the relative increase in the farm labor cost component when compared to total production costs, 1929 to 1944, is greater for Montana than for the United States. The relative change in labor cost component over this period was due mostly to the increase in wage rates, because the quantity of farm labor decreased most years after 1929.\textsuperscript{34}

In accordance with the nature and productivity of labor and general geographic factors, the rate of wage varies greatly by geographic regions. The highest daily wages are paid on the Pacific Coast and the lowest in the South.\textsuperscript{35}

\textsuperscript{33}See Figure 6 for source.

\textsuperscript{34}Refer to footnote 29, page 48, for data.

Figure 6
Wage Rates With Board
Montana and United States
1910 to 1950
1910 through 1914 = 100

Sources: United States:

Montana:
Reasons for regional variations in wage rates for similar work are not easy to isolate. It has been suggested that they "appear to be due to differences in the effectiveness with which productive resources and equipment are used in relation to manpower; such factors as the industrial competition for labor, the opportunity for some degree of permanence of employment, the efficiency of the laborers and their standards of living also have influence." 36

36 Ham, op. cit., p. 564.
CHAPTER V

TAXES AND INTEREST

I. TAXES

Importance of taxes as component of production expenses. Taxes made up eight per cent of total farm production expenses in 1929 for both Montana and the United States. By 1939 the Montana component had increased to nine per cent whereas the United States component remained the same. In 1944 taxes were eight percent of total production expenses in Montana and five per cent in the United States.¹ Taxes included in farm production expenses are real and personal property taxes. Income taxes are not included.

In 1948, property taxes paid by Montana farmers on their land equalled 22.92 cents, and on livestock 8.23 cents or a total of 31.15 cents of the property tax dollar.²

Importance as a source of revenue. Not only is the general property tax the principal source of revenue for Montana, but farm real estate makes up a large part of the

¹Income Parity for Agriculture, Part VI.—State Estimates of Income and Production Expenses, Section I—Net Income and Production Expenses of Farm Operators by States, United States Department of Agriculture, pp. 38-51

property tax base. At the turn of the century farm real estate made up one-fifth of total taxable valuation of all Montana property, while in 1936 it made up one-third.³ In 1948 farm real estate still made up about one-third of the property tax base.⁴ All property taxes comprised three-fifths, and taxes of farm and ranch property one-fifth of Montana tax revenue in 1948.⁵

State and local governments in the United States do not now rely on property taxes for revenue to the extent they did around the time of World War I. Other types of taxes, such as those on retail sales, income and motor fuels, provide an increasing proportion of State and local revenues. The high level of economic activity in recent years has stimulated collections from such taxes. This has tended to offset some of the pressure for additional revenue from property taxes.⁶

Both farmers and wage workers are vitally concerned in the way the tax load is distributed. Real estate taxes, which are the mainstay of local government revenue, bear

³R. R. Renne and H. H. Lord, Assessment of Montana Farm Lands, Montana Agricultural Experiment Station Bulletin 342, p. 5.

⁴Montana's Tax System, Montana Agricultural Experiment Station Bulletin 452, (cover.

⁵Ibid., p. 1.

⁶Farm Real Estate Taxes in 1946, United States Department of Agriculture, p. 3.
heavily upon them. Small properties are often assessed less favorably than large properties. Of greatest importance in Montana is the determination of a fair and systematic tax base.

Theories underlying taxation of landed property. It is a generally accepted principle among economists that farmers, as well as other individuals, should be taxed according to their ability to pay. Under the more primitive conditions of earlier times, when practically all of the wealth and sources of income were from tangible property, largely real estate, it was generally conceded that the best measure of this ability to pay was the amount of property owned. Hence, the widely used general property tax was well adapted to these conditions. Today conditions are different; only about one-fourth of the total national income is derived from ownership of real estate.

A second reason for heavier taxation of land is a belief that land owners receive more benefits from the gov-

8See p. 59 for further discussion of this subject.
9Renne and Lord, op. cit., p. 5.
ernment than those who derive their income from services. On the local government level, this is probably true.

**History of land assessment.** All property in Montana prior to 1919 was required by law to be taxed according to its full cash value. The above plan was changed to 1919 when a law was passed requiring property to be divided into seven classes, each carrying a different percentage of the true and full value which was to be used as a basis upon which the tax millages were to be levied. The main purpose in the 1919 classification law was to adjust the taxes upon the different kinds of property more in keeping with their respective abilities to pay. Under the provisions of the 1919 law, all farm land was to be classified as irrigated, non-irrigated, tillable, grazing, timber, or mineral lands.\(^{11}\) Most of the counties in Montana established from two to ten grades with each use classification, but in general the grades were not uniform among counties. In most counties the classification and grading were done hurriedly with little or no information to indicate the proper use and economic value of the various lands.\(^{12}\) Information collected during the last

\(^{11}\)Renne and Lord, *op. cit.*, p. 6.

\(^{12}\)Montana's *Tax System*, Montana Agricultural Experiment Station *Bulletin 452*, p. 11.
twenty years proves that the assessment classifications fail to reflect equitably the comparative productivity of different types of land.\textsuperscript{13} Over most of the State, efforts to improve the classification with a view to more equitable assessed valuations are still in the beginning stage.

Changes in the amount of farm taxes. Figure 7, page 61, shows farm real estate taxes per acre, 1913 to 1948, for Montana and the United States. It may be noted that average Montana farm taxes are considerably lower than for the United States. For most periods, change in direction and relative amplitude for both curves are similar. In comparing Montana farm real estate taxes per acre with comparable data assembled by the Bureau of Agricultural Economics for other states, it was found that Montana is one of the five states whose 1932 tax was lowest in relation to the 1913 tax. The average tax per acre in the forty-eight states in 1932 was 92 per cent greater than the 1913 figure, while in Montana it was but 62 per cent higher.\textsuperscript{14}

Taxes per acre in Montana and the United States varied

\textsuperscript{13}See Standards and Procedure for Classification and Valuation of Land for Assessment Purposes in Montana, Montana Agricultural Experiment Station Bulletin 404, p. 3.

\textsuperscript{14}R. R. Renne and B. W. Allin, Montana Farm Taxes, Montana Agricultural Experiment Station Bulletin 286, p. 21.
Figure 7

Farm Real Estate Taxes Per Acre
1913 to 1940
Montana and United States

Source: See Figure 8.
relatively little from 1939 to 1944, but in the nation as a whole they averaged about eight per cent higher in 1948 than in 1947. Montana remained the same.

Figure 8, page 63, displays an index of farm realty taxes per 100 dollars of full value for Montana and the United States. A comparison of the amount of taxes per 100 dollars of full value which farmers in Montana pay on their land and buildings with the average amount paid by all farmers in the United States shows that Montana farmers paid slightly more than the average of all United States farmers in 1932. Up to that year Montana farmers paid consistently less.

15 See Farm Real Estate Taxes in 1946, Bureau of Agricultural Economics, United States Department of Agriculture, p. 2, for further information.


17 Changes in farm real estate taxes per acre might be the result of either changes in value per acre of real estate or changes in the tax rate per dollar of value. To determine change in the average rate per dollar of value, it is necessary to eliminate the change in value per acre. This was done for Montana by dividing the estimated farm real estate value per acre into the estimated farm real estate tax per acre. The result of these calculations shows the farm real estate tax per 100 dollars of full value.

18 Montana taxes per $100 full value equalled $.41 in 1913; $.75 in 1920, $1.22 in 1930, $1.70 in 1932, $1.36 in 1940, and $1.09 in 1948. United States taxes per $100 full value equalled $.55 in 1913, $.79 in 1920, $1.30 in 1930, $1.54 in 1932, $1.22 in 1940, and $1.00 in 1948.

19 Renne and Allin, op. cit., pp. 22-23.
In 1933 the gross cash farm income of Montana farmers was larger than in 1932, due largely to higher prices of grain. The gross cash income of all Montana farmers in 1933 was thirty-eight per cent of the average for the three years 1924 to 1926. Farm real estate taxes were about eighty-six per cent of the average taxes for the three years 1924 to 1926. Thus, while the farmer's gross cash income in 1933 was but little more than a third of the 1924 to 1926 average, his taxes were more than four-fifths of the 1924 to 1926 average.20

Farm taxes per acre were relatively stable from 1934 to 1944. However, after the second World War, as the general price level increased and demands for more and better public services became effective, both taxes per 100 dollars full value and taxes per acre increased.21 According to a Department of Agriculture report,22 the increase in farm real estate taxes per acre in 1946 resulted to a considerable extent from the postwar demands for restoring or augmenting pre-war levels of State and local government services, combined with the rising costs of providing such services. In

20Renne and Allin, op. cit., p. 16.

21Agriculture Finance Review, United States Department of Agriculture, November, 1949, p. 98.

22Farm Real Estate Taxes in 1946, United States Department of Agriculture, p. 2.
some cases, war-induced shifts in population undoubtedly had much to do with the increased requirements of local governments. This probably was one of the main influences that led to the sharp increase in taxes in the Pacific States.

**Tax delinquency.** The problem of tax delinquency generally falls outside the scope of the thesis. A few points should be mentioned, as they relate rather closely to our problem. Since property taxes are a fixed and inescapable cost which must be met annually or semi-annually, the ability to pay taxes is largely dependent upon the amount of income secured by the property owner. When Montana farm income decreases, usually Montana tax delinquency increases. From 1927 to 1932, cash farm income in Montana dropped from more than 121 million dollars to less than 48 million dollars or a decrease of 60.4 per cent. During the same period the total property tax delinquency in the state increased from thirteen million dollars to almost nineteen million dollars, or about forty-six per cent.\(^\text{23}\)

Unpaid farm real estate taxes occur even during the best years, but during drought and depression periods when yields and prices are low, tax delinquency on farm lands

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becomes particularly acute. Numerous farms are lost through tax foreclosure and a smaller amount of revenue is available for governmental purposes, particularly in those areas where farm real estate comprises a large proportion of the total taxable property.24

Conclusions. Taxes show little resemblance to the fluctuations in gross income and production expenses, except a decrease after 1930 under the influence of foreclosures and of special public relief measures. Because there is little correlation between fluctuations in taxes and farm prices received or gross income, it is necessary to consider them at some length in this study. The importance of the rigidity of charges for the economic position of farmers has often been emphasized, especially with respect to the adjustment period after World War I. This rigidity exists today also. However, there is an important difference in the level of these fixed charges between the situation after World War I and that prevailing now. Although taxes per acre have risen in recent years, the pre-1930 level has not been surpassed in most cases. On the other hand, net income per acre and land values have far surpassed their 1930 level.

24Renne and Brownlee, op. cit., p. 13.
II. INTEREST

Importance of interest as component of production expenses. Farm mortgage interest charges for Montana equalled nine per cent of total production expenses in 1929; five per cent in 1939; and one per cent in 1944. For the United States they amounted to eight per cent in 1929; eight per cent in 1939; and two per cent in 1944. The decline in the relative importance of interest through the years 1929 to 1939 reflects a decrease both in indebtedness and interest rates.

Changes in interest charges. Figure 9, page 68, displays an index for interest charges per acre from 1910 to 1946, in the United States. It will be noted that the index increased about two hundred per cent from 1910 to the peak in 1922. With 1910 to 1914 average equal to 100, the index was at 260 in 1922. After 1922 the index declined steadily to the level of seventy in 1946.

Figure , page , shows an index for interest charges payable on outstanding mortgage debt from 1929 to 1948 for

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26See pages 71 to 75.
Figure 9

Index, Interest Charges Per Acre, United States
1913 to 1914
1913-1914 = 100

Source: Current Developments in Farm Real Estate Market,
Bureau of Agricultural Economics,
United States Department of Agriculture, April 1948, p 14.
Mountain States and the United States. With 1939 to 1944 equal to 100, the United States index shows a fairly uniform decline from about 215 in 1929 to 80 in 1945. After 1945 this index increased to 100 in 1948.

For the country as a whole the average interest rate on outstanding farm mortgages rose slightly from 1910 to 1916 and then remained relatively constant for the remainder of the decade. The average then rose to the beginning of 1923, and thereafter declined gradually for the remainder of the 1920's. From 1930 to 1933 there was little change. From 1933 to 1936 the average fell sharply, reflecting both the effects of the refinancing of a large volume of mortgages at reduced contract interest rates by the Federal Land Banks and the further reductions of interest rates payable by the borrower for specified periods as provided for in the emergency Farm Mortgage Act of 1933 and later legislation. From 1936 to 1939 the interest rates declined little. From 1939 to 1948 interest rates were fairly uniform.

For the Mountain States, interest rates followed nearly the same trend as that just described for the United States. There is an indication, however, that the difference

27 For an analysis of interest rates over this period, see Farm Mortgage Credit Facilities in the United States, United States Department of Agriculture, p. 26.
Figure 10

Index, Interest Charges Payable
On Outstanding Mortgage Debt
Mountain States and United States
1929 through 1948
1939-1944 = 100

Source: Adapted from figures in Agricultural Statistics,
United States Department of Agriculture, 1949.
between interest rates for the mountain region and those for the country as a whole is narrowing. Average interest rates on farm mortgages for the Mountain States in 1910 equalled 7.5 per cent and for the United States 6.0 per cent. In 1929 the rate for the Mountain States was 6.7 per cent and for the United States 6.0 per cent. In 1948 the rate for the farmer was 4.8 per cent and for the latter 4.6 per cent.28

Farm mortgage indebtedness in Montana and United States. Table III, page 72, shows an index of farm mortgage indebtedness for Montana and the United States from 1923 to 1948 (1937 equals 100). The Montana index decreased from 220 in 1923 to 52 in 1948, or 76 per cent. The United States index decreased from 151 in 1923 to 41 in 1948, or 73 per cent.

A substantial rise in farm mortgage debt occurred during the first half of the decade, 1910 to 1920. This was a result of the general expansion in agriculture that had been in progress for years. Farm mortgage debt rose about fifty-seven per cent in the United States during the first part of the decade, although farm prices and land values

28Current Developments in the Farm Real Estate Market, Bureau of Agricultural Economics, United States Department of Agriculture, p. 61.
TABLE III

FARM MORTGAGE DEBT
AND INDEX FARM MORTGAGE DEBT (1937 equals 100)
MONTANA AND UNITED STATES

<table>
<thead>
<tr>
<th>Year</th>
<th>Montana Dollars</th>
<th>% of 1937 debt</th>
<th>United States Dollars</th>
<th>% of 1937 debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>192,092,000</td>
<td>220</td>
<td>10,785,621,000</td>
<td>151</td>
</tr>
<tr>
<td>1930</td>
<td>129,744,000</td>
<td>148</td>
<td>9,630,768,000</td>
<td>135</td>
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<tr>
<td>1935</td>
<td>110,179,000</td>
<td>126</td>
<td>7,785,971,000</td>
<td>109</td>
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<tr>
<td>1937</td>
<td>87,434,000</td>
<td>100</td>
<td>7,153,963,000</td>
<td>100</td>
</tr>
<tr>
<td>1938</td>
<td>79,184,000</td>
<td>91</td>
<td>6,954,884,000</td>
<td>97</td>
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<tr>
<td>1939</td>
<td>72,670,000</td>
<td>83</td>
<td>6,779,318,000</td>
<td>95</td>
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<tr>
<td>1940</td>
<td>66,118,000</td>
<td>76</td>
<td>6,586,399,000</td>
<td>92</td>
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<tr>
<td>1941</td>
<td>63,536,000</td>
<td>73</td>
<td>6,534,487,000</td>
<td>91</td>
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<td>1942</td>
<td>57,535,000</td>
<td>66</td>
<td>6,483,847,000</td>
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<tr>
<td>1943</td>
<td>48,143,000</td>
<td>55</td>
<td>6,117,168,000</td>
<td>86</td>
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<tr>
<td>1944</td>
<td>39,876,000</td>
<td>46</td>
<td>5,634,772,000</td>
<td>79</td>
</tr>
<tr>
<td>1946</td>
<td>40,912,000</td>
<td>47</td>
<td>4,777,355,000</td>
<td>67</td>
</tr>
<tr>
<td>1947</td>
<td>42,143,000</td>
<td>48</td>
<td>4,881,744,000</td>
<td>68</td>
</tr>
<tr>
<td>1948</td>
<td>45,676,000</td>
<td>52</td>
<td>2,937,495,000</td>
<td>41</td>
</tr>
</tbody>
</table>

Source: Adapted from Agricultural Finance Review, Bureau of Agricultural Economics, United States Department of Agriculture, Various Volumes.
rose little for the country as a whole. Farm prices were at about the same level in 1915 as in 1910, and gross income from farm production for 1915 was only about eleven per cent above 1910.  

From 1910 to 1920, the largest percentage rise of mortgage debt occurred in the Mountain States. Land in farms in that region increased about ninety-seven percent from 1910 to 1920. The percentage of owner-operated mortgaged farms rose from 20.8 to 52.1 and the ratio of debt to value for mortgaged farms rose much more than for the country as a whole.

Before World War I, short term loans to farmers by commercial banks were about 1,600,000,000 dollars but when the war boom collapsed, such loans had risen to 3,900,000,000 dollars in 1920. Outstanding loans in 1920, apart from other debts and expenses, equaled twenty-nine per cent of the gross farm income of that year and forty-four per cent of the greatly reduced income of 1921. Part of this debt —

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29 *Farm Mortgage Credit Facilities in the United States*, Bureau of Agricultural Economics, United States Department of Agriculture, p. 2.

30 Ibid., p. 6.

31 *Agricultural Loans of Commercial Banks*, Technical Bulletin 521, United States Department of Agriculture, p. 3.

32 United States gross farm income equalled 15,908,000,000 dollars in 1920 and 10,478,000,000 in 1921.
was repaid by new long-term borrowing on mortgages. Part of it was defaulted and became a factor in the great wave of bank failures that swept through the farm states in the 1920's. Part of it was taken over by government agencies set up to meet the emergency of the first post-war crisis.33

Outstanding farm mortgage debt decreased during the 1920's following the peak reached in 1922 and 1923. The decrease was moderate in 1923 but in 1924 the rate of decline was greatly accelerated.34 The decline was partly a result of a gradual decline in land values.35 However, the average size of farm mortgages recorded during the middle 1920's did not move closely with the trend of land values. This was partly a reflection of how the large volume of loans which had been made earlier had influenced a higher land value level; but, by the end of the decade, the average size of new loans had become adjusted to the new lower level of land values.36

The movement of farm mortgage debt following the 1929 collapse had some elements in common with that following the 1920 collapse, but in most respects it was markedly different. The sharp decline in mortgage debt came in 1932 and

33Rochester, op. cit., p. 186.

34Farm Mortgage Credit Facilities in the United States, United States Department of Agriculture, p. 2.

35See pages 77, 78, 79 and 80 for a description of price levels of farm real estate during this period.

36See pp. 76-78 for discussion of price level of farm real estate.
1933, whereas the break in farm prices came much earlier, as was true in the mortgage movement after 1920. However, mortgage debt did not rise for the country as a whole following the 1929 collapse. In fact, the rate of decline was greater in 1930 and 1931 than for the years immediately preceding. Certain factors accounting for the increases in mortgage debt in 1920 and 1921 were of much less importance in 1930 and 1931. Land values had been declining for the country as a whole during the decade and the volume of transfers to be completed after the 1929 collapse was relatively small.37

According to the census, more than half of the farms in Montana were mortgaged in 1930. The average mortgage indebtedness per farm was approximately equal to forty percent of the value of land and buildings. The proportion of farms mortgaged varied from less than one-third in some counties to three-fourths in others. The estimated total farm mortgage debt of the state in 1935 was $99,918,000 or an average of nearly $2,000 per farm.38 This is a reduction of slightly more than one-third from the peak indebtedness of

37 For a more detailed description refer to Farm Mortgage Credit Facilities in the United States, United States Department of Agriculture, p. 4.

38 See D. C. Horton, Regional Variations in the Sources and in the Tenure Distribution of Farm Mortgage Credit Outstanding, United States Department of Agriculture, p. 8.
$155,000,000 in 1920, which resulted from the large agricultural settlement and development in Montana during the decade, 1910 to 1920, when boom prices and activity prevailed.

During the period 1940 to 1944 the greatest decreases in outstanding farm mortgage debt occurred in the Western and Northwestern states and the smallest decreases in the New England and South Atlantic states. The largest percentage decrease occurred in the Mountain states where it amounted to 27.6 per cent.39

In 1946, the farm real estate debt for the country as a whole showed the first increase that had been reported since 1927. With the exception of 1946, however, the 1947 debt was still less than for any other years since 1914.40 Since 1945 farm mortgage debt in Montana has been showing slight increases, (See Table III, page 72).

For several years prior to 1945, Montana had led all the states in the relative rate of reduction of farm mortgage indebtedness. This is true partly because earlier Montana's position with regard to mortgage indebtedness was poor in relation to other states. From an all-time peak of


40 Agricultural Finance Review, United States Department of Agriculture, November, 1947, p. 69.
about $196,000,000 in 1921 the mortgage indebtedness was reduced to about $66,000,000 in 1940. From 1940 to 1946, the figure was reduced from $66,000,000 to $31,000,000.  

Price level of farm real estate. Table IV, page 78, presents index numbers of estimated value per acre of farm real estate from 1915 to 1948 for Montana and the United States. With 1912 to 1914 equal to 100, it may be noted that the United States index equalled 170 on March 1, 1948, the same as that reported for March 1, 1920. Similarly, there is but three points difference in the Montana index for these two dates. The Montana index increased twenty-six per cent from 1915 to 1920 whereas the United States index increased sixty-five per cent over the same period. Through the 1920's and 1930's, the index declined steadily for both the Montana and the United States.

The price level for farm real estate in 1948 was more than twice as high as it was in 1940 according to Table IV, page 78. The index increased from 55 to 129 for Montana, and 84 to 170 for the United States. At the present time, the supply of land held by willing sellers is about

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41 Layton S. Thompson, Changing Aspects of the Farm Real Estate Situation in Montana, 1940 to 1946, Montana Agricultural Experiment Station, p. 15.

42 Current Developments in the Farm Real Estate Market, United States Department of Agriculture, April 1, 1948, p. 2.
### TABLE IV

**INDEX, ESTIMATED VALUE FARM REAL ESTATE, PER ACRE, MONTANA AND UNITED STATES 1915 to 1948**

(1912-1914 equals 100)

<table>
<thead>
<tr>
<th>Year</th>
<th>Montana</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1915</td>
<td>100</td>
<td>103</td>
</tr>
<tr>
<td>1920</td>
<td>126</td>
<td>170</td>
</tr>
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<td>1925</td>
<td>75</td>
<td>127</td>
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<tr>
<td>1930</td>
<td>72</td>
<td>115</td>
</tr>
<tr>
<td>1935</td>
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</tr>
<tr>
<td>1940</td>
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<td>84</td>
</tr>
<tr>
<td>1942</td>
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<td>91</td>
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<td>1943</td>
<td>69</td>
<td>99</td>
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<td>1944</td>
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<td>1947</td>
<td>117</td>
<td>159</td>
</tr>
<tr>
<td>1948</td>
<td>129</td>
<td>170</td>
</tr>
</tbody>
</table>

Source: Adapted from *Current Developments in Farm Real Estate Market*, Bureau of Agricultural Economics, United States Department of Agriculture, April, 1948, p. 7.
exhausted. Those wanting to buy land are finding it necessary to buy from owners who are not eager sellers. With strong prices for farm products and with good yields, lenders are anxious to invest their funds. Many purchasers have funds with which to bid up prices.\(^4^3\) Farm buyers in the United States paid all cash in about half of all purchases during recent years and in mortgage-financed transfers the down payments have averaged about two-fifths of the purchase price.\(^4^4\)

**Conclusions.** Men who utilize their credit when prices are high and dollars are cheap, and pay their debts when prices are low and dollars are dear, pay a very high price for what they receive. Farmers who buy land or automobiles or buildings in an inflationary period, and delay payment until after the price of farm products fall, are often in a position to offer evidence of the difficulty of paying for high-priced commodities with high-priced dollars.

That the farm owner's fixed charges for mortgage payments increase out of all proportion to average farm income

\(^{4^3}\)Thompson, *op. cit.*, p. 3.

\(^{4^4}\)*Current Developments in the Farm Real Estate Market*, United States Department of Agriculture, April, 1948, p. 1. It should be realized that properties that now carry a debt of fifty per cent are actually mortgaged for as much as the full market value in 1940.
is illustrated by the following example. In 1925, gross income of farmers was eighty per cent above pre-war, but its purchasing power was only twelve per cent above pre-war. The average farm mortgage debt and the average tax per acre were over 130 per cent larger than before the war. Allowing for the change in prices of farm products, the average debt (on mortgaged farms) and the average tax per acre represented a volume of farm production of about fifty-two per cent above pre-war.
CHAPTER VI

SUMMARY AND CONCLUSIONS

This analysis has consisted largely of a statistical presentation and study of some forces which cause fluctuations in net farm income, with particular reference to Montana. Net cash farm income is influenced directly by three factors: production, prices received, and prices paid. Indirectly net cash farm income is influenced by other important considerations, such as demand for agricultural products, acreage restrictions, price controls, international trade, and soil factors.

The study has analyzed primarily farm prices received and farm prices paid. It is not implied that other determinants of cash farm income are not important. The analysis has simply confined itself within certain limits, and does not pretend to tell the complete story.

Cash farm income has shown a strong increasing trend in both Montana and the United States. Fluctuations in cash farm income for both Montana and the United States are similar in direction, amplitude, and time of variation. Changes in the volume of production have probably had only a minor effect on cash farm income, except during periods of insufficient rainfall. This is true because volume of production rarely varies from the trend more than ten per cent, except
in periods of drought. (See page 11).

Prices received by farmers in Montana and the United States are very similar. The changes in their direction, amplitude, and timing correspond quite closely. Upon comparison, it is shown that changes in farm income and prices can be attributed largely to price changes.

The well-being of agricultural enterprises is also dependent upon the level of prices paid by farmers. Prices received by farmers respond much more rapidly to changes in economic conditions than do the prices farmers pay in order to produce. Many non-farm costs are characterized by considerable rigidity or lag when compared to prices received by farmers. From this aspect, the most significant prices of goods and services involved in getting a farm product to the final consumer are wages, interest payments and taxes. Interest rates are subject to long term contracts. Taxes, while not contractual, share the nature of contracted costs, because they are usually set for a year at a time and, in any case, authorities are reluctant to change them. As well as being fixed by contract, interest rates and taxes tend to be fairly uniform. These prices generally do not move until a general price level change has been under way.

Although the importance of the rigidity of charges for the economic position of farmers is as important today, as
the period after World War I, there is an important difference in the level of these fixed charges between the situation prevailing now and that prevailing after World War I. Although taxes per acre have risen in recent years, the pre-1930 level has not been reached. On the other hand, net income per acre and land values have far surpassed their 1930 level. The interest burden has steadily fallen since 1930, partly because interest rates have fallen, and partly because farmers have used their increased income during World War II more intelligently than during World War I. (See Chapter V). Instead of purchasing land on credit, they have reduced their indebtedness.

Wage rates change the economic position of farmers in the course of price fluctuations mainly through lag rather than through rigidity. The lag in the movement of wage rates behind that of prices received tends to impair the economic position of farmers in the beginning of price decreases, and to improve it in the beginning of price increases. Nevertheless, the flexibility of wage rates for farm labor together with the flexibility of remuneration under which the operator and his family work is one of the reasons for the great stability of agricultural production (refer to pages 30 to 32).

Expenses, other than those mentioned above, are less significant components of total production expenses. They
generally have a less important bearing on the well-being of farmers. The prices for feed and livestock vary almost proportionately with prices received by farmers. Maintenance and depreciation charges and purchases of fertilizer and lime are the only other expenses that affect the well-being of the farmer to any extent. In so far as these charges involve the purchase of manufactured products, they are characterized by a considerable degree of rigidity and lag during major price fluctuations. The rigidity does not prevent stability of agricultural production, however, because during depressions, farmers can postpone buying machinery and fertilizer. They can use their old equipment, and deplete the soil.

In conclusion, it is logical to ask what the farmer as an individual can do to guard against price and income fluctuations. The results of this study suggest the following recommendations:

1. The farmer must keep himself well informed about the national outlook for non-agricultural business activity.

2. During prosperity the farmer should attempt to decrease fixed charges. The increase of net income during the upswing should be used for decreasing long-term debts.

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1This component of total production expenses was not analyzed because of lack of sufficient statistical data.
3. Land should usually be purchased in the beginning of the upswing before land values have materially increased. After land values have increased, disposable income is better accumulated in liquid reserves. Prices of farm machinery are rather rigid during economic fluctuations, and it is usually profitable to invest in farm machinery during prosperity in order to decrease hired labor costs which are rather flexible during economic fluctuations.

4. The investments that should receive priority during prosperity are those that decrease recurrent cash expenditures. Such a decrease helps greatly in weathering a depression. For example, a farmer who rents land might well purchase land provided he has cash available. Also, it might be advisable for a farmer to improve buildings and equipment in order to reduce hired labor costs.
A. BOOKS


B. UNITED STATES GOVERNMENT PUBLICATIONS


C. COLLEGE AND UNIVERSITY PUBLICATIONS

Filley, H. C., Effects of Inflation and Deflation Upon Nebraska Agriculture, 1914 to 1932. University of Nebraska Experiment Station Bulletin 71, Lincoln, Neb.: University of Nebraska, 1934.


D. PERIODICALS


