



The effects of a domestic parity plan on Montanas wheat industry  
by George A Nielsen

A THESIS Submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree  
of Master of Science in Agricultural Economics  
Montana State University  
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**Abstract:**

This study is concerned with the effects of a domestic parity program for wheat on Montana's wheat industry. The effects of two general types of domestic parity programs are analyzed. The first type treats all wheat as one commodity. The second type differs from the first one mainly in that it recognizes and provides for classes of wheat. In addition to the two main plans, two variations of the first and one variation of the second are also analyzed. The variations embody provisions for surplus reduction and the use of different time periods within which normal yield data necessary for quota calculations are determined.

The total revenue accruing to the Montana wheat industry under each of the various plans and under the present wheat program is the main criterion by which they are compared. This revenue is calculated at both 1958 and 1959 prices. In the case of the domestic parity plans, these revenue calculations are based on the various bushel quotas provided by them and on the 1949-1958 Montana average wheat and barley yields. Total revenue under the present program is based on the 1958 Montana wheat acreage allotment and on the 1949-1958 Montana average wheat and barley yields. The same price series is used for all revenue calculations.

The results of the study indicate that the revenue accruing to the Montana wheat industry would be greater under a domestic parity plan than under the present wheat program — provided that the domestic parity program which becomes a reality, if and when one does, is not significantly different from those studied herein. The results indicate only slight differences in the revenues accruing under the various domestic parity plans studied. However, they do point out that a given production or marketing restriction would reduce revenue to the wheat industry less under a domestic parity plan than under the present wheat program.

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MONTANA'S WHEAT INDUSTRY

39  
by

GEORGE A. NIELSEN

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Any errors or omissions in this study are the responsibility of the author.

## ABSTRACT

This study is concerned with the effects of a domestic parity program for wheat on Montana's wheat industry. The effects of two general types of domestic parity programs are analyzed. The first type treats all wheat as one commodity. The second type differs from the first one mainly in that it recognizes and provides for classes of wheat. In addition to the two main plans, two variations of the first and one variation of the second are also analyzed. The variations embody provisions for surplus reduction and the use of different time periods within which normal yield data necessary for quota calculations are determined.

The total revenue accruing to the Montana wheat industry under each of the various plans and under the present wheat program is the main criterion by which they are compared. This revenue is calculated at both 1958 and 1959 prices. In the case of the domestic parity plans, these revenue calculations are based on the various bushel quotas provided by them and on the 1949-1958 Montana average wheat and barley yields. Total revenue under the present program is based on the 1958 Montana wheat acreage allotment and on the 1949-1958 Montana average wheat and barley yields. The same price series is used for all revenue calculations.

The results of the study indicate that the revenue accruing to the Montana wheat industry would be greater under a domestic parity plan than under the present wheat program -- provided that the domestic parity program which becomes a reality, if and when one does, is not significantly different from those studied herein. The results indicate only slight differences in the revenues accruing under the various domestic parity plans studied. However, they do point out that a given production or marketing restriction would reduce revenue to the wheat industry less under a domestic parity plan than under the present wheat program.

## PART I

### INTRODUCTION

#### The Problem Situation

The history of the government's role in agriculture in this country is almost as old as the history of American agriculture itself. This role dates back as far as 1631 when "the colonial authorities stipulated that no tobacco might be offered for purchase of English goods at a valuation of less than sixpence a pound."<sup>1/</sup> Other examples of government intervention can be cited all through the remaining history of American agriculture.<sup>2/</sup> However, since the passage of the Agricultural Marketing Act of 1929, the role of government in this field has been greatly expanded. This, of course, has meant that Federal farm policies have become increasingly important to the American farmer and the agricultural economy.

These national policies have often been designed to fit either the agricultural economy in general or some particular segment of it. A common procedure has been to classify these segments according to the type of crop produced, rather than by geographic areas, income level, or some combination thereof. This type of policy has come to be known as

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<sup>1/</sup> John Kenneth Galbraith, American Capitalism, the Concept of Countervailing Power, Boston, Houghton Mifflin Co., 1952, p. 161.

<sup>2/</sup> For a comprehensive review of the history of farm policies, see M. R. Benedict, The Farm Policies of the United States, 1790-1950, New York, Twentieth Century Fund, 1953.

a "commodity program." The broad scope of these economy or commodity wide policies has given rise to some problems. A national policy designed to fit such broad classifications is not always beneficial to all of the sub-classes within it. Thus, a national farm program, acceptable on the basis of its overall effect, may not be beneficial to Montana farmers because of the peculiar characteristics of Montana agriculture. These peculiar characteristics may include such things as weather, farm size, transportation costs, and marketing facilities. Insofar as these characteristics differ from the general characteristics of agriculture for which a farm policy is designed, they may prevent the benefit it is intended to create from accruing to Montana farmers. This possibility makes it desirable to determine, in advance if possible, the economic impact of Federal farm policies on Montana agriculture.

Among the current proposals for agriculture is a domestic parity plan for wheat. Some bills incorporating this plan have been introduced in this session of Congress. A domestic parity plan is essentially a two-price plan. In its broadest form, it is designed to bring the farmer a parity price for that portion of his production that is consumed as domestic food wheat and a free market price, or at least some lower price, for the remainder of his wheat crop.<sup>1/</sup>

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<sup>1/</sup> The word "free" is herein used to denote markets in which there is no government support price to directly interfere with normal supply and demand price formation.

A great many variations of this plan have been proposed. For example, there were five bills, known as the McNary-Haugen bills, introduced in Congress in the period from 1924 to 1928. These bills were essentially domestic parity plans, but even they differed considerably. However, in general the present day proposals are designed to operate somewhat as follows: The farmer sells his wheat in the free market. For that portion of his production that is consumed domestically as food wheat, he receives a "stabilization certificate" which has a value equal to the difference between the free market and the parity price. Thus, he receives the parity price for the wheat making up his share of the domestic food wheat market, and the free market price for the remainder of his production.

The processor, like the farmer, transacts his business in the market at free market prices. He then pays the difference between that price and parity for that portion of his purchases which he later sells in the domestic food wheat market. This payment could conceivably be made in the form of stabilization certificates which the processor purchased from the same agent that cashed them for the farmer. He would presumably pass much of this cost on to the consumer. In this way, the consumer pays and the farmer receives the parity price for wheat consumed domestically as food, while wheat not so consumed is free to move into the uses that can pay the most for it.

## The Research Problem and Limitations

### The Research Problem

This study is concerned with the analysis of the effects of two general types of domestic parity programs for wheat on the Montana wheat industry. One type of program treats wheat as one commodity while the other recognizes and provides for the classes of wheat. These programs will be analyzed in terms of their effect on the total revenue received by the state wheat industry in relation to such revenue under the present farm program.

### Limitations to the Problem

At the time of this writing, a domestic parity program has not yet been enacted into law. This makes it necessary to fabricate a domestic parity program from which to determine operational procedures and their effects. Insofar as this hypothetical program differs from the one that becomes a reality, if and when one does, the results will be affected. However, it is believed that the hypothetical programs used in this study will be close enough to the probable one that the results will be affected only in degree and not in nature. Nevertheless, the latter possibility should not be disregarded.

Another limitation is the non-availability of yield and planted acreage data by states with regard to classes of wheat. Since such data are not available, the analysis of the effects of the domestic parity programs which recognize classes of wheat is restricted to the principal types of wheat grown in Montana, Hard Red Winter and Hard Red Spring.

### Objectives

The main objective of this study is to determine the effects of a domestic parity program for wheat on the income of Montana's wheat industry.<sup>1/</sup>

Two minor objectives are: (1) to compare the effects of a domestic parity program which does not recognize classes of wheat with one which does, and (2) to compare the effects of using two time periods of different lengths for purposes of calculating normal yield data to be used in determining bushel quotas.

### Hypothesis

The incorporation and implementation of a domestic parity plan for wheat in our Federal farm program will reduce the total revenue received by the Montana wheat industry compared to the revenue received under the present program. This income reduction will occur because: (1) the parity price will apply to too few bushels to offset the effects of the lower price which will be lower than present supports on the remaining bushels, and (2) any acres released for wheat production from the present acreage restrictions will have little effect on raising revenue because wheat produced on these acres will sell at a price which will compare with barley supports.

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<sup>1/</sup> Unless otherwise stated, the term "income" as used herein refers to gross money income.

### Procedure

Part II of this study will consist of a discussion of the theoretical implications of a domestic parity plan. The plan will be analyzed from the standpoint of a government-sponsored price discrimination scheme. A theoretical analysis of price discrimination will be presented first, followed by an application of the theory to a domestic parity plan. Included will be a discussion of the method by which profit maximizing prices and levels of output for the wheat industry can be determined.

The alternatives available to the Montana commercial wheat farm under a domestic parity program and the method of choosing between such alternatives will also be discussed. This will be followed by an analysis of the method by which the farm firm can determine the optimum level of output under a domestic parity plan.

In Part III, the significant or relevant features of the several domestic parity plans studied in this work will be presented. A more detailed form of the bills themselves will be placed in Appendix E. Even in the Appendix, however, the bills are "condensed" in the sense that only factors relevant to this analysis, or those necessary for an understanding of the operation of the programs, are included.

In Part IV, the effects of the different bills and their variations will be analyzed. This analysis will be concerned with three major variables. These variables are: (1) the domestic parity plan in general in relation to the present program, (2) the difference in the

quotas provided for by the various bills, and (3) the domestic parity plan which recognizes classes of wheat in relation to one that does not.

Bill No. 1 will be considered first. The variations of this bill will be analyzed next, followed by a similar analysis of the effects of Bill No. 2 and its variations. Relevant bushel quotas and total revenue to the Montana wheat industry will be calculated for each of the plans. The bushel quotas will be based on the distribution during the marketing year beginning July 1, 1958, and total revenue will be calculated at both 1958 and 1959 prices. As a basis of comparison, total income to Montana's wheat industry under the present program will be calculated, applying the yield and price data used in this analysis and the 1958 acreage allotments.

Part V will consist of a summary of the results of the analysis. From these results, inferences will be drawn regarding the effects of a domestic parity plan.

A study shrouded with assumptions, as this one necessarily is, leaves room for much in the line of further research. Suggestions regarding this research will also be made in Part V.

## PART II

### THEORETICAL IMPLICATIONS OF THE PROBLEM

A program such as the domestic parity plan has significant economic implications. It creates what is essentially a "government cartel" designed to capture a portion of both the consumers' and producers' surpluses through price discrimination.<sup>1/</sup> The program captures consumers' surplus by raising the price to the consumers of domestic food wheat. It captures producers' surplus, which can result from a high support price by lowering the price to the users of non-food wheat.

For a price discrimination scheme to operate effectively in increasing total revenue, three conditions must be present. First, the firm (or cartel) must have monopoly power in the sense that others cannot enter the market and undersell it; second, it must be able to effectively separate the markets in which it charges different prices; and third, the price elasticities of demand for the product must be different in each market at each possible price.

For exposition purposes, discriminatory pricing for a monopolist with two effectively separated markets will be discussed first. Then the analysis can be generalized to include the wheat industry and its component markets. Once the theoretical background has been established, the analysis can be applied to a domestic parity plan.

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<sup>1/</sup> For a description of the consumer's and producer's surpluses, see K. E. Boulding's Economic Analysis, Revised Edition, New York, Harper & Brothers Publishers, 1948, pp. 767-768. For a further refinement of the measurement of consumer's surplus, see J. R. Hicks, A Revision of Demand Theory, London, Oxford University Press, 1956, Chapter 10.

The method by which a monopolist in a position to sell in two or more effectively separated markets can maximize his total revenue is presented in Figure 1. For convenience, the quantity axis for Market II indicates from right to left.

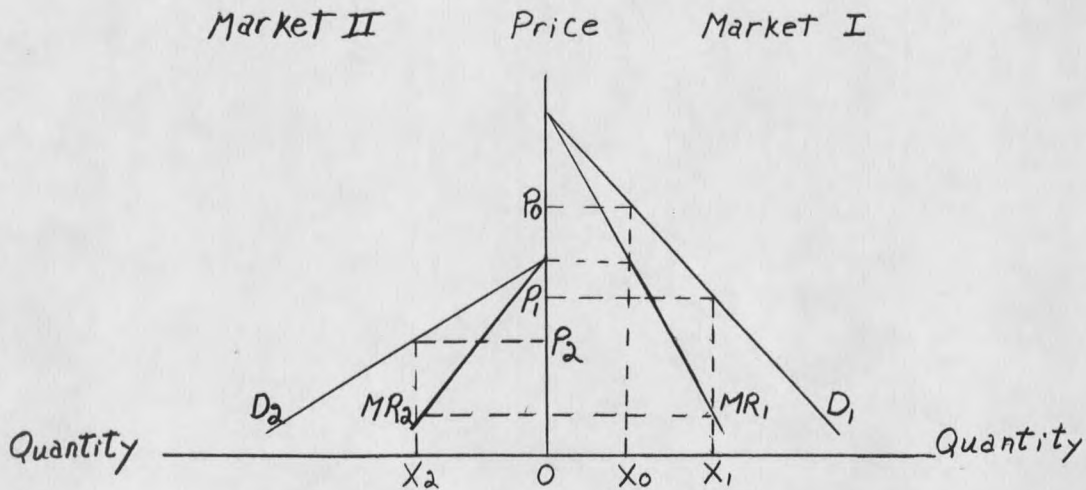


Figure 1. Price Discrimination in Two Markets:

A monopolist can maximize his total revenue by selling in the market with the highest marginal revenue. Thus, he should distribute his sales in the separate markets in such a manner that the marginal revenues are kept equal in both markets. Referring to Figure 1, if the monopolist has less than  $X_0$  units of product, he should sell it all in Market I. However, if he has  $X_1$  plus  $X_2$  units of product, he should sell  $X_1$  in Market I and amount  $X_2$  in Market II. In this way, he is always selling in the market where the marginal revenue is equal to or greater than that in the other market.

The prices this monopolist should charge are  $P_1$  in Market I and  $P_2$  in Market II. This explains why different price elasticities of demand are required for a price discrimination scheme. If the price elasticities were the same, the prices to charge in each market would be equal where the marginal revenues were equal, and there would be no point in trying to separate the markets.<sup>1/</sup>

The profit maximizing position of the firm practicing price discrimination incorporates the concept described above with the cost curves for the firm. Since it is selling identical products in separate markets, the marginal and average cost curves for the firm's entire output can be used. Also, the demand and marginal revenue curves from both markets can be put in one diagram and the horizontal sum of the marginal revenue curves taken to form the sum of the marginal revenues curve ( $\Sigma MR$ ). This curve shows the levels of marginal revenue corresponding to different total sales volumes. These curves are presented in Figure 2.

With this method, the profit-maximizing problem is reduced to a simple monopoly problem. The firm maximizes profits where the sum of the marginal revenues is equal to the marginal cost ( $\Sigma MR = MC$ ). The quantity that should be sold in each market is that amount where the  $MR_1 = MR_2 = \Sigma MR = MC$ . All of the output will be sold at these prices since the  $\Sigma MR = MR_1$  plus  $MR_2$  and  $X_3 = X_1$  plus  $X_2$ . In this way, a profit-maximizing output is produced and sold at revenue-maximizing prices.

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<sup>1/</sup> This is further explained by the relationship,  $MR = P - P/E$ . For a complete analysis of this, see Richard H. Leftwich, The Price System and Resource Allocation, New York, Rinehart & Co., Inc., 1957, pp. 199 and 213.

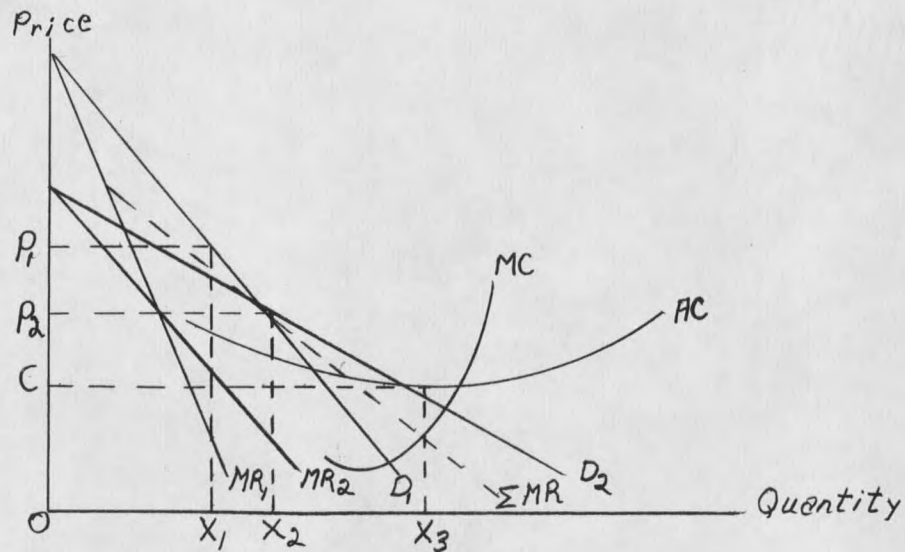


Figure 2. Optimum Level of Output When a Product Sells In Two Markets.

The firm's total profits from the enterprise in Figure 2, would be equal to  $CP_1$  times  $X_1$  plus  $CP_2$  times  $X_2$ .

The above analysis can now be applied to the wheat industry. Under government control, a price discrimination scheme for this industry could conceivably be put into effect. The three necessary conditions mentioned above for such a scheme could be created under a government-sponsored plan. The "government cartel" can create the necessary monopoly power. Also, with the proper controls, it could effectively separate the various markets. The condition of different price elasticities is not quite so easily established. There is ample evidence to indicate a significant difference between the price elasticities for domestic food wheat and the aggregate of the export and the domestic

feed wheat markets.<sup>1/</sup> This would justify a two-price plan. However, there is also reason to believe there is a significant difference between the domestic food, the export, and the domestic feed wheat markets. The domestic food wheat market is definitely less elastic than the other two. It will be assumed herein that the export market is less elastic than the domestic feed wheat market within the price range likely to be encountered but more elastic than the domestic food wheat market. This condition would give us the three demand curves presented in Figure 3.

The demand and marginal revenue curves in Figure 3 are labeled as  $D_1$  and  $MR_1$  for the domestic food wheat market;  $D_2$  and  $MR_2$  for the wheat export market; and  $D_3$  and  $MR_3$  for the feed wheat market. The average and marginal cost curves are those for the entire wheat industry.

According to the demand and cost curves presented in Figure 3, the wheat industry should produce an output of  $X_4$ . It should sell  $X_1$  of this output in the domestic food market at price  $P_1$ ,  $X_2$  bushels of wheat in the export market at price  $P_2$ , and  $X_3$  bushels at price  $P_3$  in the feed wheat market. The total profits for the industry would be equal to  $CP_1$  times  $X_1$  plus  $CP_2$  times  $X_2$  plus  $CP_3$  times  $X_3$ .

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<sup>1/</sup> Kenneth W. Meinken, The Demand and Price Structure for Wheat, United States Department of Agriculture, Technical Bulletin No. 1136, Washington, D.C., United States Government Printing Office, November, 1955.

A domestic parity plan is a step in the direction of the analysis in Figure 3. However, most of the present day proposals, as well as those in the past, aim at price discrimination in only two markets, the domestic food market and the "free" market. If the above assumption of greater elasticity in the domestic feed wheat market than in the export market is correct, selling in only two markets where three exist fails to maximize total revenue for the wheat industry. One reason for this may be insufficient knowledge concerning the elasticities in the feed and export markets. Also, social considerations may be an important factor in limiting the use of price discrimination.

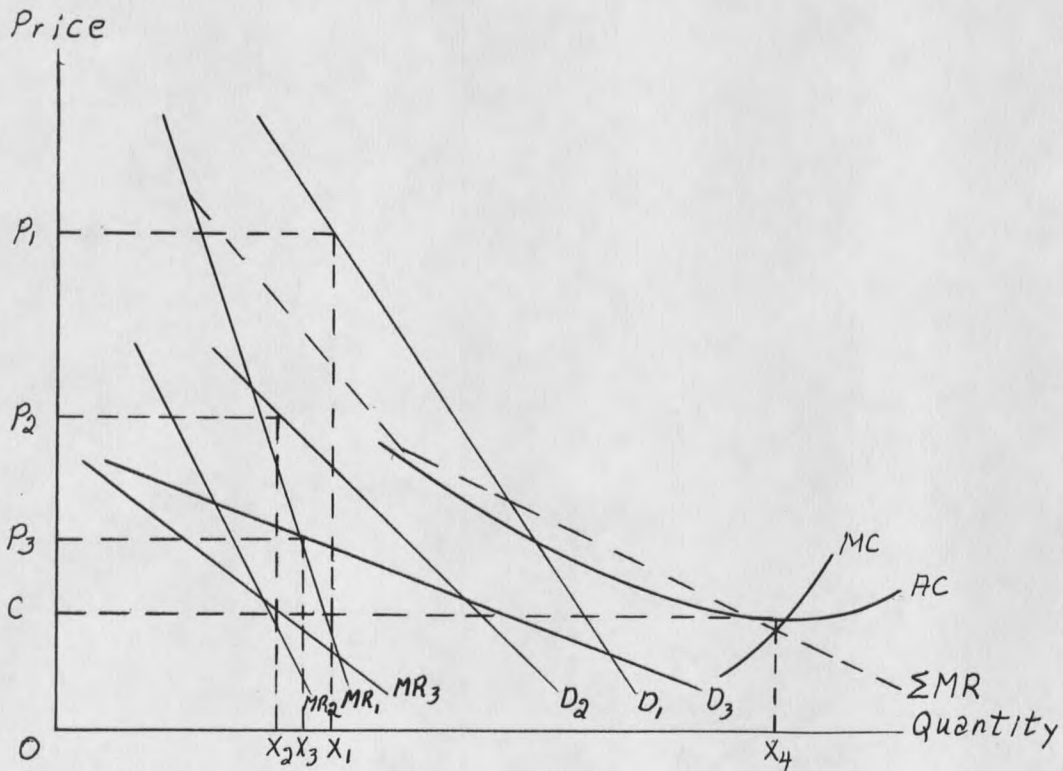


Figure 3. Optimum Level of Output When a Product Sells in Three Markets.

Since the domestic parity plan recognizes only two markets, the diagram in Figure 2 can be used as the analytical framework for this plan. Given  $D_1$  and  $D_2$  in Figure 2, quantity  $X_2$  of wheat should be sold in the free market at price  $P_2$ . This will enable the wheat industry to sell quantity  $X_1$  of wheat in the domestic food market at price  $P_1$ . Unfortunately, in the present political atmosphere, the criterion by which  $P_1$  will be determined under a domestic parity plan will be parity itself and not the equality of  $MR_1$  and  $MR_2$ . It is quite unlikely that a parity determined  $P_1$  would be the same as that established by the market forces in Figure 2. Insofar as it differs from the economically determined  $P_1$ , total revenue and net profits to the wheat industry will be lowered.

Mention was made above of certain social considerations as factors responsible for the use of a two-price rather than a possible three-price discrimination scheme for the wheat industry. Among these social aspects are equity problems. Fear has often been expressed that a free market policy for wheat would cause undue hardship on other feed grain producers. However, assuming  $D_1$ ,  $D_2$ , and  $D_3$  (Figure 3) to be representative demand curves for the wheat industry, it might be possible to protect the feed grain producers through the use of a two-price plan in relation to their market position under a three-price plan. This would require that production, or marketable bushels, be rigidly controlled to prevent an output greater than  $X_4$ . If this was accomplished and  $X_1$  bushels were sold in the domestic food market, the price for the

remaining bushels ( $X_2$  plus  $X_3$ ) would tend to be an average of  $P_2$  and  $P_3$ . In other words, the export market may help hold the free market price up high enough to prevent excessive competition in the feed grain market. This consideration might serve as a deterrent to maximizing revenue for the wheat industry under a three-price scheme, even if the relevant elasticities were known to be as assumed above.

Up to this point, the theoretical aspects of a domestic parity plan have been discussed only in relation to the wheat industry as a whole. The next problem is to consider these aspects with respect to the individual wheat farmer.

Under a two-price plan, each farmer will be allotted a certain number of bushels for which he will receive stabilization certificates. This will be true regardless of whether the parity price and quantity are determined on the basis of the economic forces described in Figure 2, or if they are arbitrarily determined through political or administrative decisions. Since the bushels covered by marketing certificates will represent only part of the farm firm's historical production, each farm will have some excess acres -- excess in the sense that wheat produced on them will not be covered by marketing certificates. Thus, the entrepreneur has the problem of what to do with these acres.

On most Montana farms, the two main alternatives will be wheat or barley. These are not the only alternatives. Other feed or cash crops are also economic possibilities. However, they are probably the most common and will be considered as the only ones for purposes of this analysis. Additional alternatives can be handled in the same way.

The choice between two alternatives can be determined by using product transformation curves, which show the various combinations of the two products that can be produced with a fixed amount of resources. As is often done in conventional theory, the physical product transformation curve can be converted into value terms. It then becomes an iso-cost curve which can be used in conjunction with an iso-revenue curve in determining the choice between two alternative products. This has been done in Figure 5.

There is reason to believe that the product transformation curves for wheat and barley will be of the linear type for most Montana wheat farms. This is because, for all practical purposes, the production functions for either wheat or barley will be linear when acres are the variable input. The linearity results from the limited number of acres available to be applied to the fixed amount of labor, capital, and management present on most Montana wheat farms. This can best be shown by use of the hypothetical production functions shown in Figures 4a and 4b where  $Y_1$  denotes bushels of wheat;  $Y_2$ , bushels of barley;  $X_1$ , acres of crop land;  $X_2$ , some fixed amount of labor;  $X_3$ , some fixed amount of capital; and  $X_4$ , some fixed amount of management. The functions then become  $Y_1 = f(X_1 | X_2, X_3, X_4)$  and  $Y_2 = f(X_1 | X_2, X_3, X_4)$  for wheat and barley respectively.

There is naturally some question as to the validity of the linear nature of the production functions shown in Figures 4a and 4b. However, it is believed that increasing the number of acres while the labor,

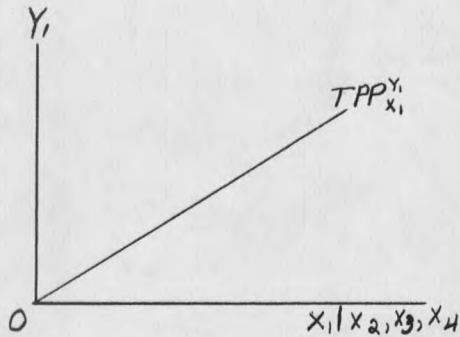


Figure 4a. Hypothetical Wheat Production Function for Montana Farms.

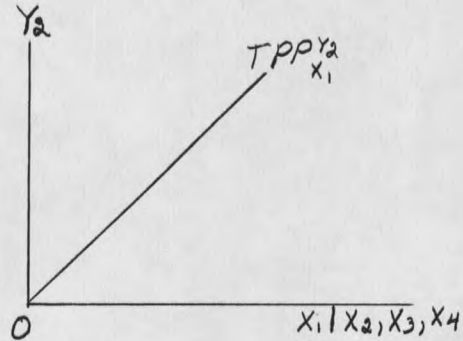


Figure 4b. Hypothetical Barley Production Function for Montana Farms.

capital, and management present on most Montana wheat farms are held fixed, will result in constant returns to the variable input within the range covered by the limited number of acres available.<sup>1/</sup> This assumes, of course, that the labor, capital, and management already present on most Montana farms is sufficient to prevent production in the range of rapidly decreasing average productivity for cropland. This amounts to an assumption that as the available acres are applied to the fixed resources, the average productivity is essentially constant. This is probably not an unrealistic assumption in view of the nature of production on Montana wheat farms. This does not prevent decreasing average productivity to acres of cropland as the number of acres is increased beyond the optimum level for the fixed resources.

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<sup>1/</sup> See Earl O. Heady, Economics of Agricultural Production and Resource Use, Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1957, Chapter 3, for a discussion of linear production functions in agriculture.

Heady maintains that if the input-output relationships for two products or enterprises are linear, the resulting product transformation curves will also be linear if "the enterprises (a) require the same physical resources and at the same time of the year, (b) are produced at identical times of the year, and (c) do not produce by-product services which aid in the production of each other."<sup>1/</sup> He also cites wheat and barley as two Great Plains crops which result in this relationship.<sup>2/</sup>

A straight line product transformation curve will also produce a straight line iso-cost curve in agriculture, since the farmer pays a constant price for the resources he buys. The curve NA in Figure 5 portrays such an iso-cost curve for wheat and barley. The slope of this curve is equal to the marginal cost of  $Y_1$  divided by the marginal

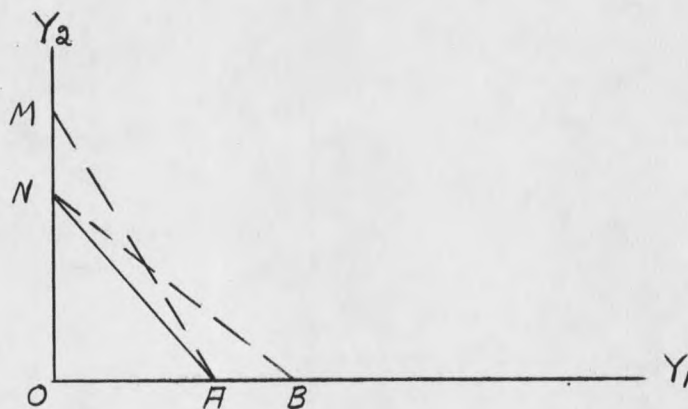


Figure 5. Hypothetical Iso-cost and Iso-revenue Curves for Montana Wheat and Barley.

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<sup>1/</sup> Ibid., p. 208.

<sup>2/</sup> Ibid., p. 209.

cost of  $Y_2$  ( $MC_{Y_1}/MC_{Y_2}$ ).<sup>1/</sup> Since the production functions are linear, the marginal costs are constant. Hence, the linear iso-cost contour.

The dotted lines in Figure 5 represent iso-revenue curves under different prices for wheat and barley. The slope of these curves is equal to the price  $Y_1$  divided by the price of  $Y_2$  ( $P_{Y_1}/P_{Y_2}$ ).<sup>2/</sup> Since under the competitive conditions found in agriculture the prices of wheat and barley are constant, the iso-revenue functions are also linear. Thus, the contour NB represents a lower price for wheat in relation to the price of barley than does contour MA.

The iso-revenue and iso-cost functions in Figure 5 can now be used to determine the combination of wheat and barley that should be produced in a given price and cost situation. Since both functions are linear, either all wheat or all barley should be produced. With the cost situation represented by the iso-cost contour NA, all wheat should

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<sup>1/</sup> This can be seen by considering the relationship between  $Y_1$  (wheat) and  $Y_2$  (barley) for movements along the iso-cost curve. When the production of  $Y_1$  is decreased by one unit, the change in total cost is equal to the  $Y_1$  times  $MC_{Y_1}$ . The additional amount of  $Y_2$  that can now be produced can be represented as  $Y_2$  times  $MC_{Y_2}$ . Since the total cost must be kept constant, the decrease in cost must be matched by an increase. Therefore, (1)  $Y_1$  times  $MC_{Y_1}$  equals  $Y_2$  times  $MC_{Y_2}$  or (2)  $\frac{Y_2}{Y_1}$  equals  $\frac{MC_{Y_1}}{MC_{Y_2}}$  equals the slope of the iso-cost curve.

<sup>2/</sup> This can be seen by considering the relationship between points such as N and B in Figure 5. The total revenue at point B is equal to the quantity OB of  $Y_1$  times the price of  $Y_1$  (OB times  $P_{Y_1}$ ). Likewise, the total revenue at point n is equal to quantity ON of  $Y_2$  times the price of  $Y_2$  (ON times  $P_{Y_2}$ ). Since the total revenue and the prices of wheat and barley are constant along the iso-revenue curve, (1)  $ON \times P_{Y_2} = OB \times P_{Y_1}$  or (2)  $\frac{ON}{OB} = \frac{P_{Y_1}}{P_{Y_2}}$  = the slope of the iso-revenue contour.

be produced when the relationship between the price of wheat and the price of barley is such as that represented by iso-revenue contour MA. However, if this price relationship should change in a manner that lowered the price of wheat in relation to the price of barley by an amount represented by iso-revenue contour NB, all barley should be produced. Any single price change would change the slope of the iso-revenue contour. However, as can be seen in Figure 5, this price change will not affect the decision to produce wheat or barley unless it is great enough to change the slope of the iso-revenue contour for one which has a slope greater than the iso-cost curve to one which has a slope less than the iso-cost curve or vice versa.

The question may be raised as to how this analysis accounts for the fact that even with a price relationship such as that represented by iso-revenue contour MA in Figure 5, some farmers still prefer to plant part of their land to barley. This can be handled by the same analysis. However, the iso-cost contour in this situation is not a straight line function. The farmer may attach some risk cost to raising all wheat. In this case, barley might substitute for wheat at an increasing rate as the upper limit of the available cropland is approached, as opposed to the constant marginal rate of substitution on the linear iso-cost curves discussed thus far.<sup>1/</sup> The iso-cost contour in this case might look like contour NA in Figure 6, while the

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<sup>1/</sup> See Heady, op.cit., p. 209, for a discussion of competitive products under increasing rates of substitution.

iso-revenue contour is still a straight line function such as MB. Under these circumstances, OQ of wheat and OZ of barley would be produced.

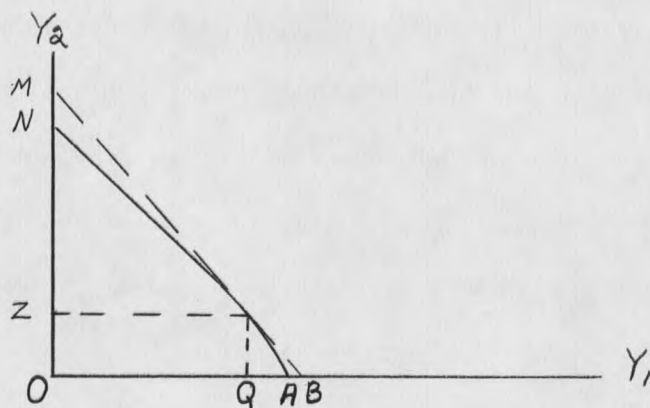


Figure 6. Hypothetical Iso-cost and Iso-revenue Curves for Montana Wheat and Barley.

Notice should be taken that the combination of wheat and barley to produce is determined at the point of tangency between the iso-cost and iso-revenue contours in Figure 6. Any quadrant such as  $Y_1$  and  $Y_2$  would incorporate many iso-revenue contours. Profits are maximized when the combination of  $Y_1$  and  $Y_2$  to be produced is determined at the point of contact with the highest iso-revenue contour the iso-cost curve can reach.

In case of a curvilinear iso-cost contour, the above proposition can be proven formally. Profits are maximized for a given cost-outlay when products are produced in such a combination that  $\frac{P_{Y_1}}{MC_{Y_1}} = \frac{P_{Y_2}}{MC_{Y_2}} \dots = \frac{P_{Y_n}}{MC_{Y_n}}$ .

(It should be remembered here that in the case of agricultural products, price, marginal revenue, and average revenue all are equal).

Since the slope of the iso-cost curve is equal to  $\frac{MC_{Y1}}{MC_{Y2}}$ , and the slope of the iso-revenue contour is equal to  $\frac{P_{Y1}}{P_{Y2}}$ , profits are maximized for the total outlay represented by cost contour NA in Figure 6 when this contour is tangent to the iso-revenue contour -- where the two slopes are equal.

In the case where both the cost and revenue functions are linear, such as those in Figure 5, the equality of the slopes can never be reached in the range shown. However, either of the iso-revenue functions shown are the highest the iso-cost contour can reach, and profits for that total outlay are accordingly maximized on one of these.

Once the farmer has determined which crops to produce, he must determine the level of output for each. If capital is unlimited, profits are maximized by producing each product at the level where the marginal cost is equal to the marginal revenue. As stated earlier, if capital is limited, costs are minimized and attainable profits maximized if the level of production for each product is extended to the point where (1)  $\frac{P_{Y1}}{MC_{Y1}} = \frac{P_{Y2}}{MC_{Y2}} = \dots = \frac{P_{Yn}}{MC_{Yn}}$ . It can be seen from equation (1) above that if capital is unlimited, production of each product can be extended until all the ratios are equal to one. Then marginal cost and marginal revenue are equal, and profits are maximized in the absolute sense.

For purposes of this analysis, it will be assumed that the price ratio between wheat and barley is that represented by iso-revenue contour MA in Figure 5. The farmer with the iso-cost curve NA will then produce all wheat. This wheat will be sold at the two prices established under a domestic parity plan.

When the producer sells his product under a condition of price discrimination, he faces a different demand situation than when he receives only one price. These two situations are presented diagrammatically in Figure 7. When the farmer sells in only one market, and receives only one price, he faces a horizontal demand curve such as  $P_1N$ . This curve, as are the other demand curves that might be faced by this farmer producer, is horizontal because he is one of "many" sellers in the same market.

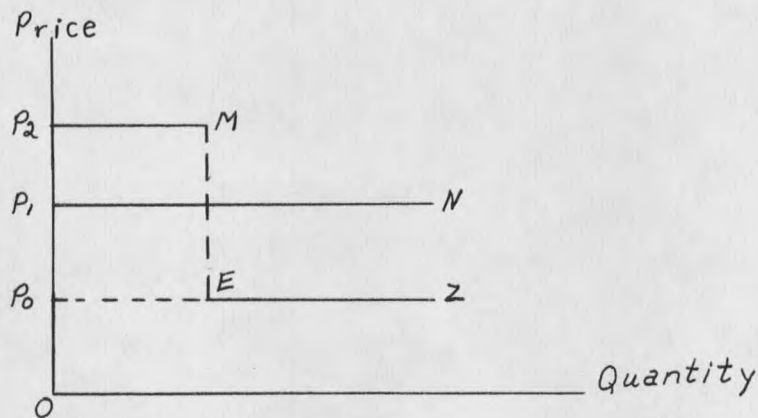


Figure 7. Shapes of the Demand Curves Facing a Wheat Producer under a Two-price Plan and under a Single-price Plan.

In the situation where price discrimination is being practiced, the farmer actually sells his one product in two markets. The two demand curves faced by the producer in this case are represented by lines  $P_2M$  and  $P_0Z$  in Figure 7. Looking at it another way, the entire demand curve facing the producer under price discrimination is line  $P_2MEZ$ . The breaking-off of the upper portion at point  $M$  is caused by some restriction placed on the producer's sales in that market. In the case of a domestic parity program, this limit would be set by the producer's marketing allotment.

Once the demand function facing the individual farmer has been established, the level at which he should produce is determined in the same manner as it was for the entire wheat industry above. However, since the demand and marginal revenue functions for the individual farmer are equal and are discontinuous in the case of price discrimination, the  $\Sigma MR$  curve does not exist. Rather, in this case, the relevant marginal revenue function is that which is equated by the marginal cost function for the firm's entire output. This is shown on page 25 in Figure 8. The variable input which the cost functions represent might be a composite of fertilizer, tractor fuel, labor, etc., being applied to the fixed land, capital equipment, and management resources of the farm.

The farm firm represented in Figure 8 should produce  $OQ_1$  bushels of wheat. Under the present domestic parity proposals, all of this wheat will be sold in the free market at price  $P_0$ . An amount of additional revenue per bushel equal to the difference between prices  $P_2$  and  $P_0$  will be received in the form of stabilization certificates for quantity  $OQ_0$  of wheat. The effective price for these bushels is then  $P_2$ .

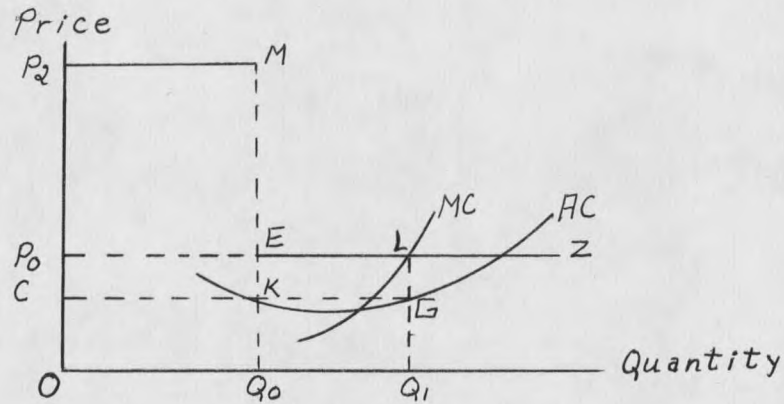


Figure 8. Demonstration of the Relevant Marginal Revenue Function under a Two-price Plan.

It may seem that since a higher price is received for part of the farm's production, the marginal revenue at which output is determined should be some sort of an average between the marginal revenues at prices  $P_2$  and  $P_0$ . This, however, would be irrational, since producing beyond  $OQ_1$  would be producing in an area where the marginal cost is greater than the effective marginal revenue.

The profit to the farmer from his wheat enterprise would equal to area  $CP_2MELG$ . The profit from the wheat sold domestically for food is equal to area  $CP_2MK$ . Of this profit, an amount equal to area  $P_0P_2ME$  is received in the form of stabilization certificates. The profit from the remainder of the farm's wheat production is equal to area  $ELGK$ .

A significant economic relationship can be cited between a farm firm producing under a single-price or under a two-price system. This relationship is demonstrated in Figure 9 on page 26.

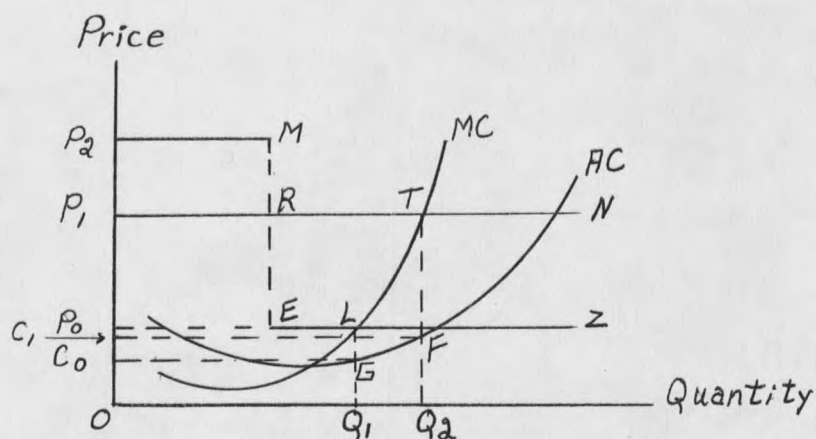


Figure 9. Demonstration of the Difference in Output under a Two-price Plan Compared to a Single-price Plan.

The demand curve facing the individual farmer in the two-price situation is again equal to line  $P_2MEZ$ . Line  $P_1N$  represents the demand curve facing this same farmer under a single-price plan, such as is presently in effect.<sup>1/</sup> While the various demand curves in Figure 9 make no claim concerning accuracy with respect to magnitude, it is believed they are accurate with respect to their relative positions. Since the idea of the domestic parity plan is to raise the price of wheat consumed domestically as food, price  $P_2$  should be higher than the present support price represented by price  $P_1$ . Also, since much of the wheat presently

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<sup>1/</sup> The present wheat program is often called a multiple pricing plan in view of the various export policies. However, any subsidy involved in these export programs does not go to the farmer, except as it is reflected in the free market price. Thus, he still faces only one price, which may be either the support or the free market price, depending on which is higher.

being produced is sold to the government, it is safe to assume price  $P_0$  will be lower than  $P_1$ .

Given the relative prices as established above, it can be seen in Figure 9 that the quantity of wheat produced under the two-price plan will be less than that produced under the single-price plan in the absence of acreage restrictions. The magnitude of this difference would, of course, depend on the relative prices and the slope of the marginal cost curve. Since the marginal cost curve for a composite of the normal annual variables in wheat production is apt to be quite steep, this difference may not be very great. However, even though the average price per bushel is higher under the two-price plan, total output should be higher under the single-price program, assuming no effective acreage restrictions, since the marginal revenue is higher in the relevant range. (This assumes the MC curve will never intersect line  $P_2M$ ).

If the cost curves for the farm firm in Figure 9 were fairly representative of the corresponding curves for the wheat industry, the analysis above could be extended accordingly. Again, this difference in output between the two types of programs may not be very large. However, if wheat farmers had accurate knowledge concerning their revenue and cost functions, the direction of this effect should be as described above.

The above discussion has assumed away the acreage restrictions. The significant point is that given the same average price for wheat, there is less need for such restrictions under a two-price program.

Insofar as a domestic parity plan would affect the level and distribution of wheat production, several segments of the economy would also be affected. Among the first of these would be the farm firm. Depending on the two price levels and the corresponding wheat acreages established under a domestic parity program, its income would be affected in relation to what it is under the present single-price program.

Another segment of the economy to be affected would be the consuming public. The consumers of food wheat would supposedly pay a higher price for the wheat products they purchase under a domestic parity program than they do now. This effect would be small. The Oregon Wheat Growers League estimates that if the farmer gave his wheat to the miller, the price of a pound loaf of bread would only be reduced 2.7 cents.<sup>1/</sup> Since they theoretically equate the ratios of the marginal utilities of the things they buy to their respective prices, they would consume less food wheat products. On the other hand, the buyers of feed wheat would increase their purchases, since they equate

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<sup>1/</sup> The Oregon Wheat Growers League, Wheat is Everybody's Problem, Lithographed in U.S.A., Abbot, Kerns & Bell Co., October, 1955, p. 15.

the ratios of the marginal value product of their factors of production to the respective marginal costs of these factors. The total change in wheat disappearance for domestic purposes, then would depend on the differences in the two levels of support for wheat and the marginal utility and marginal value productivity functions of the respective uses.

Foreign wheat markets would also be influenced by this change in prices. The lower price under the domestic parity plan would place United States wheat exporters in a more favorable position. Thus, they would tend to export more and thereby increase the supply in the world wheat market. Farnsworth says this price may still not be low enough to allow exporters to compete in the world markets on an unsubsidized basis.<sup>1/</sup>

The effects of a domestic parity program, then, are not confined to the wheat industry. However, it is here that the first impact is manifest. Thus, it is necessary to analyze the effects of such a program on this industry before the secondary effects can be determined.

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<sup>1/</sup> Helen C. Farnsworth, Multiple Pricing of American Wheat, Present System vs. Two-Price Plan, Stanford, California, Stanford University, Food Research Institute, 1958, pp. 29-30 and 46.

### PART III

#### CONDENSATION OF THE BILLS USED FOR THE STUDY

As stated in Part I, the bills establishing the domestic parity programs studied herein are presented in Appendix E. Only those provisions which apply directly to the analysis of Part IV will be discussed in this section.

In brief, two major plans are to be studied. These are referred to as Bill No. 1 and Bill No. 2. In addition to the main bills, two variations of Bill No. 1 and one variation of Bill No. 2 will be considered. Bill No. 1 is a domestic parity plan which treats all wheat as one commodity. The variations of this bill maintain this feature. Bill No. 2 and its variations provide for classes of wheat.

The different domestic parity programs were formulated mainly by synthesizing selected provisions of three bills incorporating such plans. All of these bills were referred to the Committee on Agriculture (or Agriculture and Forestry) during the first session of the Eighty-sixth Congress.<sup>1/</sup> Among the major criteria considered in choosing provisions from the three bills and various other proposals studied were (1) similarity with the "pure" domestic parity plan discussed in Part II, (2) the present wheat surplus, (3) the feed grain industry, and (4) political considerations.

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<sup>1/</sup> The bills drawn from were (1) Wheat Stabilization Act of 1959, H.R. 4716, introduced by Representative Johnson, February 18, 1959 (2) Wheat Income Improvement Act of 1959, H.R. 4991, introduced by Representative Burdick, February 25, 1959 (3) Wheat Stabilization Act of 1959, S. 1140, introduced by Senator Carlson and others, February 19, 1959.

The main features of the synthesized bills are discussed below.<sup>1/</sup> Bill No. 1 is considered first. However, any relevant provisions of this bill which are also common to other bills will be noted as such. This will make it possible to discuss the other plans from the point of their differences with respect to this first bill.

Provisions of Bill No. 1  
and Provisions Common to Other Bills

A national marketing quota is provided for under all the domestic parity plans considered. The quota under Bill No. 1 for each marketing year is composed of (1) the wheat consumed as human food domestically or outside the continental limits of the United States by members of the Armed Forces, and (2) the wheat exported during such marketing year.

This national quota is apportioned among the wheat-producing states. The apportionment is determined on the basis of each state's historical share of the wheat market. In the language of the bill: The national marketing quota less a reserve of 1 percent shall be apportioned among the states in such manner that the quota of any state will bear the same ratio to the national marketing quota as a figure determined by multiplying the base acreage of such state by its average yield bears to the corresponding figure for all states.

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<sup>1/</sup> When the term "bills" is used in an unspecified sense, it is intended to include the variations also.

This provision can most easily be seen by means of the following equation:

$$\frac{\text{State Marketing Quota}}{\text{National Marketing Quota}} - 1 \text{ percent} = \frac{\text{Product of State Base Average times its Normal Yield}}{\text{Corresponding Figure for All States}}$$

Since all of the plans studied herein apportion the national marketing quota in this manner, the equation above will be used throughout the remainder of this analysis.

Under all the bills pertaining to this study, the base acreage of a state is equal to the average number of acres planted to wheat for the 1952 and 1953 crops.

The normal yield is not the same in all cases. For Bill No. 1, Bill No. 1, Variation 1, and Bill No. 2, the normal yield of a state is the state's highest annual wheat yield per harvested acre during five consecutive years within the 25-year period immediately preceding the initial year under the program. (For Bill No. 1, Variation 2 and Bill No. 2, Variation 1, this period is shortened to 10 years).

The 1 percent reserve provided for is to be used to make adjustments in the county quotas because of new areas coming into production through reclamation and other means after 1953. This feature is also common to all the bills.

In addition to the marketing quotas for the states, the various bills also provide for county and farm marketing quotas. However, since this analysis is carried only to the state level, these provisions will not be discussed.

Besides the national marketing quota, a national domestic quota is also provided for in all the bills. Under Bill No. 1 and its variations, this national domestic quota is to be the amount of wheat consumed as human food domestically or outside the United States by members of the Armed Forces.

All the bills provide that this national domestic quota be apportioned among the farms in such a manner that the quota for each farm will bear the same ratio to the farm marketing quota as the national domestic quota bears to the national marketing quota.

This provision is modified somewhat for purposes of this analysis. Since this study is carried only to the state level, a state domestic quota is determined, and the national quota is thus apportioned to the states. The state quota as determined herein will closely approximate the sum of the farm quotas determined on an individual basis.

The state domestic quotas are determined in the manner shown by the following equation:

$$\frac{\text{State Domestic Quota}}{\text{State Marketing Quota}} = \frac{\text{National Domestic Quota}}{\text{National Marketing Quota}}$$

All of the bills provide "stabilization certificates" as the means by which parity price is obtained for each farm's share of the domestic market. The certificates are apportioned to each farm in an amount which covers the number of bushels of wheat in the farm's domestic quota. Since the farm marketing quotas for Montana wheat farms are being determined as the total for the state, stabilization certificates amount equal to the state domestic quota will be received.

The value of these certificates is to be equal to the difference between the estimated parity price for wheat and the expected average market price. Thus, wheat covered by the state domestic quota will receive a price equal to parity.

Each bill also states that price support equal to 60 percent of parity will be provided for the wheat covered by the state marketing quota. Thus, that portion of the marketing quota that is not covered by the domestic quota will receive a price of at least 60 percent of parity.

All of the bills stipulate that no person engaged in the processing of wheat into food products composed wholly or partly of wheat can market any such product for domestic food consumption or export, and no person can export unprocessed wheat unless such wheat is marketing quota wheat.

However, under Bill No. 1 and its variations, wheat other than marketing quota wheat can be sold off the farm for other uses. Thus, wheat produced on any excess acres can be sold in the free market.

#### Provisions Peculiar to Bill No. 1, Variation 1

This first variation of Bill No. 1 differs from its parent in only one respect. This difference is that 75 million bushels are to be deducted from the national marketing quota any year in which the carryover exceeds 600 million bushels. This represents an attempt to reduce stocks through the quota program.

Provisions Peculiar to Bill No. 1, Variation 2

As far as this analysis is concerned, Bill No. 1, Variation 2 also differs from Bill No. 1 in only one respect. Under this variation, the normal yield of a state is the state's highest annual wheat yield per harvested acre during five consecutive years within the 10-year period immediately preceding the initial year under this program.

Provisions Peculiar to Bill No. 2

As stated earlier, Bill No. 2 and its one variation are domestic parity plans which recognize classes of wheat. This bill and its variation differ from Bill No. 1 in three main respects. (1) The various quotas are established in terms of classes of wheat. (2) Wheat used for feed, seed, and industrial purposes within the continental limits of the United States is included in the national marketing quota. (3) Only wheat covered by the marketing quota can be transferred for use off the farm.

Provisions Peculiar to Bill No. 2, Variation 1

This variation is the counterpart to Variation 2 under Bill No. 1. For present purposes, it differs from Bill No. 2 only in the respect that the normal yield of a state is the state's highest annual wheat yield per harvested acre during five consecutive years within the 10-year period immediately preceding the initial year under this bill.

PART IV

ANALYSIS OF THE EFFECTS OF THE VARIOUS DOMESTIC PARITY PROGRAMS

Bill No. 1

As stated in Part I, wheat is treated as a single commodity under Bill No. 1 and its variations. The national, state and domestic quotas provided for in this bill and its variations are therefore determined in terms of "All" wheat.

Table I gives the distribution of United States wheat by All wheat, Hard Red Winter wheat, and Hard Red Spring wheat for the marketing year beginning July 1, 1958.

TABLE I. WHEAT DISTRIBUTION, UNITED STATES, FOR 1958-1959, MARKETING YEAR FOR ALL WHEAT, HARD RED WINTER, AND HARD RED SPRING WHEAT.

Item	All Wheat <sup>a/</sup> (million bushels)	Hard Red Winter <sup>b/</sup> (million bushels)	Hard Red Spring <sup>b/</sup> (million bushels)
Food	489 <sup>c/</sup>	---	---
Seed	66	---	---
Industry	---	---	---
Feed	60	---	---
Total Domestic Disappearance	615	253	143
Export	454	270	42
Total Disappearance	1,069	523	185

<sup>a/</sup> United States Department of Agriculture, The Wheat Situation, Washington, D. C., Agricultural Marketing Service, June, 1955, p. 6.

<sup>b/</sup> Ibid., p. 8.

<sup>c/</sup> Includes military food use at home and abroad. Shipments of four million bushels to U. S. Territories were deducted from domestic food and added to exports. (See United States Department of Agriculture, The Wheat Situation, op.cit., p. 6, footnote four and p. 8, footnote one.)

Since the national marketing quota under this bill is composed of wheat used for food and export, the quota for 1958 will equal 489 plus 454 for a total of 943 million bushels. This national quota is apportioned among the states in the manner described in Part III.

The figure determined by multiplying the Montana base acreage times its normal yield and the corresponding figure for all states are presented below in Table II.<sup>1/</sup> Since the normal yield is determined within the immediately preceding 25 years under Bill No. 1, the first column of the table pertains to the present case. For purposes of this analysis, the normal yields for the states are determined from the crop years 1934 through 1958.<sup>2/</sup>

TABLE II. PRODUCT OF MONTANA BASE ACREAGE TIMES ITS NORMAL YIELD AND THE CORRESPONDING FIGURE FOR ALL STATES FOR ALL WHEAT<sup>a/</sup>

Item	25-Year Basis (million bushels)	25-Year Basis (million bushels)
Montana Base Acreage Times Its Normal Yield	126.6	126.6
Corresponding Figure for All States	1,650.2	1,628.8

<sup>a/</sup> Taken from Appendix D, Table 1.

<sup>1/</sup> See Appendix D, Table I for base acreage, normal yield by states.

<sup>2/</sup> Technically, this is a contradiction. However, an estimate of the distribution by classes is not available for the 1959-1960 marketing year, and it is desirable to have 1958 yields reflected in the normal yields, since such yields will most certainly be used if a domestic parity program becomes a reality.

Before proceeding, a set of general symbols will be established. These symbols will be used in the various equations throughout the remainder of this work.

- B = State Base Acreage
- N = State Normal Yield
- BN = State Base Acreage times State Normal Yield
- $\sum BN$  = Corresponding Figure for All States
- $Q_n$  = National Marketing Quota
- $Q_s$  = State Marketing Quota
- $D_n$  = National Domestic Quota
- $D_s$  = State Domestic Quota
- R = Residual of the State Marketing Quota Minus the State Domestic Quota
- T = Total Number of Acres Normally Devoted to the Production of Wheat and Barley
- E = Excess Acres (Acres Normally Devoted to the Production of Wheat and Barley Not Needed to Fill the State Marketing Quota)
- P = Production on the Excess Acres
- $Y_w$  = 1949-1958 Montana Average Wheat Yield Per Planted Acre
- $Y_b$  = 1949-1958 Montana Average Barley Yield Per Planted Acre

With figures obtained from Table I and Table II, the marketing quota for Montana is calculated in equation (1) to follow.

$$(1) \frac{Q_s}{Q_n - 1\%} = \frac{BN}{\sum BN}$$

$$\frac{Q_s}{933.6} = \frac{126.6}{1,650.2}$$

$$Q_s = 71.6 \text{ million bushels}$$

This 71.6 million bushel state marketing quota is divided into two parts for pricing purposes. This division will be discussed in more detail later, but first two other quotas, the state and national domestic quotas, must be established.

Since under Bill No. 1 the national domestic quota is the amount of wheat which the Secretary determines will be consumed domestically or by the Armed Forces as human food, this quota is 489 million bushels for the 1958-1959 marketing year.

The state domestic quota can now be determined. The quota for Montana is calculated in equation (2).

$$(2) \frac{D_s}{Q_s} = \frac{D_n}{Q_n}$$

$$\frac{D_s}{71.6} = \frac{489}{943}$$

$$D_s = 37.1 \text{ million bushels}$$

The division of the state marketing quota mentioned earlier can now be made. As reported in Part III, all of the domestic parity plans included in this study provide that stabilization certificates be issued to each farm to cover its domestic quota. Since the value of each

stabilization certificate is to be equal to the difference between the estimated parity price for wheat and the expected average market price, domestic quota wheat will bring what is essentially a price equal to parity. The remainder of the farm firm's production will supposedly be sold in the free market. However, all the bills further provide that price support at 60 percent of parity will be available for all marketing quota wheat. Herein lies the division of the state marketing quota. That portion of it covered by stabilization certificates will receive a total price equal to parity. The remainder of the state marketing quota will receive a price of at least 60 percent of parity. Since a free market price that might rule under a domestic parity program cannot be accurately determined in advance, minimum prices or supports will be applied throughout this analysis. Therefore, Montana parity will apply to the wheat covered by the domestic quota, and Montana average support at 60 percent of parity will apply to the residual.

The prices to be used for this analysis are summarized in Table III. The residual of the state marketing quota is calculated in equation (3) to follow,

$$(3) \quad R = Q_s - D_s$$

$$R = 71.6 - 37.1$$

$$R = 34.5 \text{ million bushels}$$

Because the marketing quota covers only a portion of the state's historical wheat and barley production, there will be some excess acres. Under Bill No. 1, and its variations, wheat grown on these excess acres can be marketed through the free market. The problem arises, then, as to whether wheat or barley (the only other alternative assumed for this study) should be grown on these acres. In order to solve this problem, the relevant cost and revenue data for wheat and barley must be determined.

As a substitute for the somewhat indeterminate free market price, a corn-equivalent price for wheat for both 1958 and 1959 has been determined in Appendix B. These prices are presented in Table III.

This corn-equivalent price has been selected to apply to the wheat produced on the excess acres because it is felt that Congress will not allow the price of wheat to become low enough to jeopardize the feed grain industry, at least during the initial "feeler" years under a domestic parity program. This protection could conceivably be in the form of a "floor" support based on the price of feed grain. Corn has been selected to represent the feed grain market because of its primacy in that market. This floor support for wheat has been made just equal to the price of an equivalent amount of feed value in some other grain in order that wheat can participate in the feed grain market without being able to engage in further price competition with other feed grains.

TABLE III. MONTANA AVERAGE WHEAT<sup>a/</sup> AND BARLEY<sup>b/</sup> SUPPORTS AND OTHER PRICES FOR 1958 AND 1959.

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Montana Average Support	1958	1959
<hr/>		
Wheat		
Montana Parity	\$2.22	\$2.21
75 Percent of Parity	1.62	1.61
60 Percent of Parity	1.25	1.24
Corn-equivalent price	1.16	1.06
Barley Supports	.75	.59

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<sup>a/</sup> Prices summarized from Appendix B.

<sup>b/</sup> All prices calculated by the author.

In Appendix C, the costs per bushel of producing wheat and barley are determined. This cost is 37 cents and 24 cents per bushel for wheat and barley respectively.<sup>1/</sup>

In the theory section of this paper, the iso-cost -- iso-revenue method of choosing between alternatives was discussed. This method can now be applied to the present problem.

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<sup>1/</sup> These costs do not include the returns to land, labor or management.

The iso-cost curve for wheat and barley is represented by line CD in Figure 10. As indicated therein, this curve shows the various combinations of wheat and barley that can be produced for \$100. The cost and

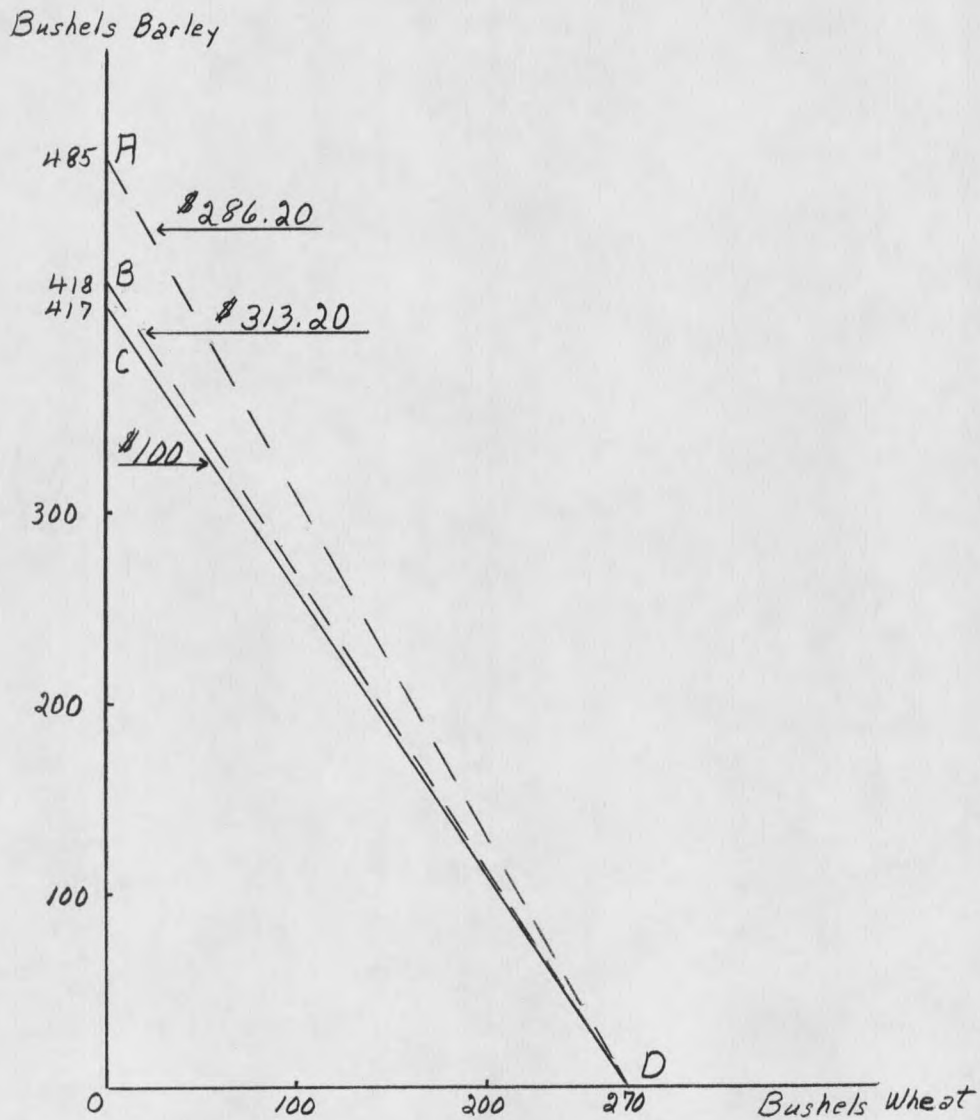


Figure 10. Iso-cost and Iso-revenue Curves for Wheat and Barley.

revenue curves in this case are linear functions -- either all wheat or all barley should be produced. With an outlay of \$100, either 270 bushels of wheat (100 minus .37) or 417 bushels of barley (100 minus .24) can be produced.

At the 1958 per bushel prices of \$1.16 for wheat and 75 cents for barley, the highest revenue curve that can be reached is that represented by line BD in Figure 10. Any combination of wheat and barley indicated by a pair of coordinates from this curve will bring \$313.20 revenue (i.e., 270 times \$1.16); but, only when all wheat is produced can this revenue be attained with an outlay of \$100.<sup>1/</sup>

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<sup>1/</sup> Notice that curve BD has almost the same slope as the iso-cost curve. When the two are parallel, either wheat or barley would be an economic choice. Letting the subscripts (w) and (b) denote wheat and barley respectively, this is demonstrated in equation (a) below. Since the slope of the iso-cost curve is equal to the  $MC_w/MC_b$ , and that of the iso-revenue curve is equal to  $MR_w/MR_b$ , the two curves are parallel when these two ratios are equal.

$$(a) \frac{MC_w}{MC_b} = \frac{MR_w}{MR_b}$$

At a price of \$1.16 for wheat, this equality is reached under the present cost situation when the price of barley is as determined in equation (b) below.

$$(b) \frac{.37}{.24} = \frac{1.16}{MR_b}$$

$$.37 MR_b = .2784$$

$$MR_b = .75243$$

The  $MR_b$  of .75243 is very close to the 75 cents actually received for barley. This accounts for the near coincidence of the two curves.

At the 1959 per bushel prices of \$1.06 for wheat and 59 cents for barley, all wheat is again the most profitable alternative. This situation is represented by iso-revenue curve AD, along which \$286.20 is attainable. The \$286.20 revenue can be attained with 270 bushels of wheat (270 times 1.06), but, it takes 485 bushels of barley (286.20 divided by .59) to bring the same revenue. As shown by the iso-cost curve, this amount of barley cannot be produced for \$100.

The next step is to determine the number of excess acres. The state's 1949-1958 averages of the wheat and barley yields per planted acre and of the acres normally devoted to the production of wheat and barley were calculated and are presented in Appendix A, Table I. These averages are 17.4 bushels per acre and 6,376,000 acres, respectively.<sup>1/</sup>

Using the symbols defined on page 38, the number of excess acres is determined in equation (4) below.

$$\begin{aligned}(4) \quad E &= T - \left(\frac{Q_s}{Y_w}\right) \\ E &= 6,376,000 - \left(\frac{71.6}{17.4}\right) \\ E &= 2,261,000 \text{ acres}\end{aligned}$$

Wheat production on these excess acres is determined in equation (5):

$$\begin{aligned}(5) \quad P &= EY_w \\ P &= 2,261,000 \times 17.4 \\ P &= 39.3 \text{ million bushels}\end{aligned}$$

---

<sup>1/</sup> This 10-year average yield should not be confused with the normal yield, which is used solely for determining the state marketing quota.

Now that the various quotas, the reduction on the excess acres, and the relevant prices have all been established, the gross income to Montana under Bill No. 1 can be determined. Table IV below, presents the total state revenue realized under the provisions of Bill No. 1.

TABLE IV. TOTAL MONTANA REVENUE UNDER BILL NO. 1 AT 1958 AND 1959 PRICES.

Type of Product	Number of Bushels (million)	1958 Price	1958 Revenue (thousand)	1959 Price	1959 Revenue (thousand)
Domestic Quota Wheat	37.1	\$2.22	\$82,362	\$2.21	\$81,991
Residual of the Marketing Quota	34.5	1.25	43,125	1.24	42,780
Excess Acres Wheat	39.3	1.16	<u>45,588</u>	1.06	<u>41,658</u>
Total Revenue			\$171,075		\$166,429

Each of the revenue calculations in Table IV will be counterparts under the other bills and variations of bills to be discussed. However, an additional calculation of total revenue under Bill No. 1 will be made. This calculation will be made for Bill No. 1 only. It is concerned with the revenue that would accrue if the price of wheat should be allowed to fall considerably below the 1959 corn-equivalent price of \$1.06 per bushel. It is not known if the price of wheat will be supported to protect the feed grain industry. Even if it is, the price of corn under the new corn program is apt to decline somewhat for a number of years. Just how great this decline will be, this writer cannot ascertain; however, it is felt that some lower price for wheat

should be applied to determine the total effect if the price of wheat drops much below a \$1.06 per bushel.

For this revenue calculation, a price of 75 cents per bushel will be applied to the wheat produced on the excess acres, and 1959 prices will be applied to the quota wheat. This 75 cents has simply been selected as a possible low, rather than attempt to calculate the lowest possible free market price with the dubious means available.

Table V presents this revenue calculation. Notice that the first two rows are the same as those in Table IV at 1959 prices.

TABLE V. TOTAL MONTANA REVENUE UNDER BILL NO. 1 WITH EXCESS WHEAT SELLING FOR 75 CENTS PER BUSHEL AND OTHER WHEAT AT 1959 PRICES.

Type of Product	Number of Bushels (million)	Price	Revenue (thousand)
Domestic Quota Wheat	37.1	\$2.21	\$81,991
Residual of the Marketing Quota	34.5	1.24	42,780
Excess Acres Wheat	39.3	.75	<u>29,475</u>
Total Revenue			\$154,246

Lowering the price for wheat produced on the excess acres from \$1.06 to 75 cents thus reduces the revenue from these acres by \$12,183,000. This is a reduction in total revenue of 7.3 percent while the price of the excess production was reduced 29.3 percent.

Bill No. 1, Variation 1

The only difference between Bill No. 1 and this first variation of it is that under the latter 75 million bushels will be deducted from the national marketing quota for any year in which the carryover exceeds 600 million bushels. Since the carryover for the marketing year beginning July 1, 1958 was 880.6 million bushels, the above deduction will apply.<sup>1/</sup> The national marketing quota under this variation is, therefore, 868 million bushels (943 - 75).

Since the national marketing quota is reduced, the state marketing quota is also lower. This quota is calculated in equation (6) below.

$$(6) \quad \frac{Q_s}{Q_n - 1\%} = \frac{BN}{\sum BN}$$
$$\frac{Q_s}{859.3} = \frac{126.6}{1,650.2}$$
$$Q_s = 65.9 \text{ million bushels}$$

Even though the state and national marketing quotas are reduced, the state domestic quota remains constant. This is because neither the national domestic quota nor the factors affecting its apportionment among the states have changed.<sup>2/</sup> This quota and the residual of the marketing

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<sup>1/</sup> United States Department of Agriculture; The Wheat Situation, Washington, D. C., Agricultural Marketing Service, June, 1959; p.6. This carryover has increased to 1,283 million bushels for July 1, 1959.

<sup>2/</sup> The constancy of the state domestic quota is maintained by the reduction in both the national and the state marketing quotas in the domestic quota equation.

quota are calculated in equations (7) and (8). Notice that the reduction in the residual is equal to the reduction in the state marketing quota.

$$(7) \quad \frac{D_s}{Q_s} = \frac{D_n}{Q_n}$$

$$\frac{D_s}{65.9} = \frac{489}{868}$$

$$D_s = 37.1 \text{ million bushels}$$

$$(8) \quad R = Q_s - D_s$$

$$R = 65.9 - 37.1$$

$$R = 28.8 \text{ million bushels}$$

Equations (9) and (10) present the calculation of the number of excess acres and the amount of wheat produced on them.

$$(9) \quad E = \left( T - \frac{Q_s}{Y_w} \right)$$

$$E = 6,376,000 - \left( \frac{65.9}{17.4} \right)$$

$$E = 2,588,000 \text{ acres}$$

$$(10) \quad P = E Y_w$$

$$P = 2,588,000 \times 17.4$$

$$P = 45.0 \text{ million bushels.}$$

The increase in the excess acres is due to the fewer acres needed to fill the state marketing quota in this case.

This completes the calculation of the relevant quotas and the production on the excess acres for Bill No. 1, Variation 1. Since the same prices are being used throughout, the state revenues accruing under this variation can now be calculated.

The revenue resulting from Bill No. 1, Variation 1, is presented in Table VI.

TABLE VI. TOTAL MONTANA REVENUE UNDER BILL NO. 1; VARIATION 1 AT 1958 AND 1959 PRICES.

Type of Product	Number of Bushels (million)	1958 Price	1958 Revenue (thousand)	1959 Price	1959 Revenue (thousand)
Domestic Quota Wheat	37.1	\$2.22	\$82,362	\$2.21	\$81,991
Residual of the Marketing Quota	28.8	1.25	36,000	1.24	35,712
Excess Acres Wheat	45.0	1.16	<u>52,200</u>	1.06	<u>47,700</u>
Total Revenue			\$170,562		\$165,403

Bill No. 1, Variation 2

Under this variation of Bill No. 1, the normal yields of the states are calculated on a 10-year basis. Since some of the states drew their highest normal yields from years prior to 1949, the "corresponding figure for all states" will be lower in this case.<sup>1/</sup> However, the figure determined by multiplying the state base acreage times its normal yield for Montana is not changed. This puts Montana in a relatively more favorable position as will be seen from the quotas calculated on page 51.

The national marketing quota under this variation is the same as that under Bill No. 1 (943 million bushels). But the state quota is

<sup>1/</sup> See Table II of the text or Appendix D.

higher because the "corresponding figure for all states" is lower while the figure for Montana remains constant.

$$(11) \quad \frac{Q_s}{Q_n - 1\%} = \frac{BN}{\Sigma BN}$$
$$\frac{Q_s}{933.6} = \frac{126.6}{1,628.8}$$
$$Q_s = 72.6 \text{ million bushels}$$

Even though the national domestic quota is unchanged, the state domestic quota does not remain constant this time. It changes because factors affecting the apportionment of the national quota -- the state marketing quotas -- have changed relatively among the states. Since Montana's marketing quota is higher in relation to the total, Montana gets a larger share of the national domestic quota. This can best be seen by referring to equation (12).

$$(12) \quad \frac{D_s}{Q_s} = \frac{D_n}{Q_n}$$
$$\frac{D_s}{72.6} = \frac{489}{943}$$
$$D_s = 37.6$$

The higher Montana marketing and domestic quotas are not inconsistent with the constant national quotas because some states will receive lower apportionments under this variation.

The residual of the marketing quota is determined in equation (13).

$$(13) \quad R = Q_s - D_s$$
$$R = 72.6 - 37.6$$
$$R = 35.0 \text{ million bushels}$$

The number of excess acres and the wheat production on them are calculated in equations (14) and (15).

$$(14) \quad E = T - \left( \frac{Q_s}{Y_w} \right)$$

$$E = 6,376,000 - \left( \frac{72.6}{17.4} \right)$$

$$E = 2,204,000 \text{ acres}$$

$$(15) \quad P = E Y_w$$

$$P = 2,204,000 \times 17.4$$

$$P = 38.3 \text{ million bushels}$$

The smaller number of excess acres in relation to those under Bill No. 1 is due to the larger state marketing quota to be filled.

The revenue resulting from Bill No. 1, Variation 2 is presented in Table VII.

TABLE VII. TOTAL MONTANA REVENUE UNDER BILL NO. 1, VARIATION 2 AT 1958 AND 1959 PRICES.

Type of Product	Number of Bushels (million)	1958 Price	1958 Revenue (thousand)	1959 Price	1959 Revenue (thousand)
Domestic Quota Wheat	37.6	\$2.22	\$83,472	\$2.21	\$83,096
Residual of the Marketing Quota	35.0	1.25	43,750	1.24	43,400
Excess Acres Wheat	38.0	1.16	<u>44,428</u>	1.06	<u>40,598</u>
Total Revenue			\$171,650		\$167,094

Bill No. 2

The provision of this bill regarding classes of wheat is an attempt to create a better balance between the types of wheat produced and the demand for them. The present imbalance between these factors is illustrated in Table VIII.

As can be seen in Table VIII, stocks of some classes of wheat are rather low in relation to their normal disappearance. On the other hand, the carryover of other classes far exceeds their average disappearance. There seems little argument that something should be done to rectify this situation. Whether or not a domestic parity plan such as Bill No. 2 is the best way to accomplish this is beyond the scope of this paper to determine. Nevertheless, recognition of classes seems to be a logical approach to any new program. Thus, it is desirable to analyze the effects of this type of program under a domestic parity plan.

The provision for including wheat used for feed, seed, and industrial purposes is consistent with a plan that recognized classes of wheat. With marketings controlled by the size of the quotas, the price of feed wheat should decrease somewhat, allowing more of the soft wheats to be fed while the hard wheats move into the bread flour channels in response to the higher price they will command. The quotas established should reflect these demands.

TABLE VIII. WHEAT: ESTIMATED JULY 1, 1959 CARRYOVER BY CLASSES AND PERCENTAGE CARRYOVER IS OF AVERAGE DISAPPEARANCE.<sup>a/</sup>

Class	Estimated July 1, 1959 Carryover (million bushels)	1953-1957 Average Total Disappearance (million bushels)	1959 Carryover as a Percentage of Average Disappear- ance (percent)
Hard Red Winter	946.0	412.0	229.6
Soft Red Winter	16.0	193.0	8.3
Hard Red Spring	262.0	172.0	152.3
Durum	21.0	19.0	110.5
White	<u>38.0</u>	<u>166.0</u>	<u>22.9</u>
Total	1,283.0	962.0	133.4

<sup>a/</sup> Wheat Situation in Review, Hearings Before the Subcommittee on Wheat of the Committee of Agriculture, House of Representatives, Eighty-sixth Congress, First Session, Washington, D. C., United States Government Printing Office, 1959, p. 25.

Since these other uses for wheat are provided for in the quotas, the provision that only marketing quota wheat can be marketed for any purpose necessarily follows. This provision protects the feed grain industry.

This bill provides for separate national marketing quotas for each class of wheat. The classes that would normally be considered for quotas are Hard Red Winter, Soft Red Winter, Hard Red Spring, Durum, and White. In the language of the bill, the quota for each class for any marketing year shall be the number of bushels of that class of wheat that the Secretary determines will be (1) consumed as human food in the continental United States or outside by members of the Armed Forces,

(2) used for feed, seed, and industrial purposes in the continental United States, and (3) exported during such marketing year.

As stated in Part I, yield and acreage data by class and by state are not available. This makes it virtually impossible to calculate the normal yields for each class of wheat needed in the quota calculations. However, estimates of the normal yields and base acreages for Hard Red Winter and Hard Red Spring wheat have been made. Restricting the analysis to these two classes is not too serious. In 1949, all other classes of wheat composed only 1.3 percent of Montana's planted wheat acreage, and in 1954, this figure had decreased to 0.7 percent of the total.<sup>1/</sup> These small amounts of other wheat produced in Montana have been pro-rated to Hard Red Winter and Hard Red Spring. Consequently, Montana's total wheat quota will be essentially the same as if quotas had been calculated for each class.

Before calculating the state marketing quotas from these estimates, the method of estimation will be explained.

In estimating the normal yields, the total winter wheat average yield per harvested acre for each state was used to represent the Hard Red Winter wheat yields for the 27 states reporting wheat in this class. The overall spring wheat average yield per harvested acre was used to represent the Hard Red Spring wheat average yield for each of the 12

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<sup>1/</sup> S. C. Salmon, and L. P. Reitz, Distribution of the Varieties and Classes of Wheat in the United States in 1954, United States Department of Agriculture, Agricultural Handbook 108, Washington, D. C., United States Government Printing Office, 1957.

reporting states. For Montana, this procedure should result in quite an accurate estimate since such a large portion of the wheat grown in the state is of these two classes. For the rest of the states, this procedure could result in some error in the normal yield calculations. However, this error should not be large. Since several states are included in the calculation of the "corresponding figure for all states," any error in one would tend to be offset by an opposite error in another. For example, say a state had a significant yield advantage in Hard Red Winter wheat. Most of this state's wheat acreage would probably be devoted to the production of this crop. Thus, the dampening effect of a lower yielding class of winter wheat would only reduce the overall winter wheat average slightly. Nevertheless, using the overall winter wheat average to represent Hard Red Winter would still create a downward bias. On the other hand, say some other state had a significant yield advantage in Soft Red Winter wheat, but it reported enough of the lower yielding Hard Red Winter to be included in this study. Using the overall winter wheat average to represent Hard Red Winter would create an upward bias in this case. This would tend to offset the downward bias of the first state. Since the total of the figure determined by multiplying these normal yields by the base acreages of the respective states is the real concern of this study, with the exception of the figure for Montana, any individual errors that are counteracted are not particularly harmful. At any rate, it is felt that any error in the quotas for Montana due to these estimates is not large enough to be significant.

The estimates of the base acreages of the states were made as follows: The estimated percentage of the total planted wheat area in each state occupied by each class of wheat is available for 1949 and 1954.<sup>1/</sup> The average percentage over these two years for each state reporting Hard Red Winter and Hard Red Spring wheat was calculated for each of these two classes. This percentage by class was taken of the 1952-1953 average total acres planted to wheat in the respective states. The figure thus determined was used to represent the average number of acres planted to such class of wheat in each state during the 1952 and 1953 crop years.

The figure for Montana determined by multiplying the base acreage of each class of wheat times the normal yield for such class and the corresponding figure for all states are presented in Table IX.<sup>2/</sup>

The data necessary for calculating the various quotas under Bill No. 2 have been established. The procedure is the same as that used for Bill No. 1 except two of each type of quota must now be determined.

From Table I, the national marketing quota for Hard Red Winter wheat is 523 million bushels, and the quota for Hard Red Spring wheat is 185 million bushels.

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<sup>1/</sup> Ibid., The percentages used in the calculations were slightly reworked by the author. If the reported acreage of any class of wheat in any state was less than 1 percent of the total, it was divided evenly among the significant classes, and any remainder was added to the class with the highest percentage. This was done in order to be consistent with the procedure followed for Montana.

<sup>2/</sup> See Appendix D, Tables II and III for base acreage and normal yield by class and by state.

TABLE IX. PRODUCT OF THE MONTANA BASE ACREAGE TIMES ITS NORMAL YIELD FOR HARD RED WINTER AND HARD RED SPRING WHEAT AND THE CORRESPONDING FIGURE FOR ALL STATES.<sup>a/</sup>

Item	25-Year Basis (million bushels)		10-Year Basis (million bushels)	
	Hard Red Winter	Hard Red Spring	Hard Red Winter	Hard Red Spring
Montana Base Acreage Times Its Normal Yield	46.6	75.9	46.6	74.6
Corresponding Figure for All States	834.6	301.0	819.8	298.8

<sup>a/</sup> Taken from Appendix D, Tables II and III.

Since the normal yields under Bill No. 2 are determined on a 25-year basis, the two left hand columns of Table IX pertain in this case. The state marketing quota for Hard Red Winter wheat is calculated in equation (16), and that for Hard Red Spring wheat is shown in equation (17). In order to distinguish between the two classes without introducing several new symbols, either the equations, the symbols, or the figures pertaining to Hard Red Spring wheat will be marked with an asterisk.

$$(16) \frac{Q_s}{Q_n - 1\%} = \frac{BN}{\sum BN}$$

$$\frac{Q_s}{517.8} = \frac{46.6}{834.6}$$

$$Q_s = 28.9 \text{ million bushels}$$

$$(17)* \frac{Q_s}{Q_n - 1\%} = \frac{BN}{\sum BN}$$

$$\frac{Q_s}{183.2} = \frac{75.9}{301.0}$$

$$Q_s = 46.2 \text{ million bushels}$$

The state domestic quotas for both classes of wheat are calculated next, followed immediately by the calculation of the residual of the marketing quotas.

$$(18) \frac{D_s}{Q_s} = \frac{D_n}{Q_n}$$

$$\frac{D_s}{28.9} = \frac{253}{523}$$

$$D_s = 14.0 \text{ million bushels}$$

$$(19)* \frac{D_s}{Q_s} = \frac{D_n}{Q_n}$$

$$\frac{D_s}{46.2} = \frac{143}{185}$$

$$D_s = 35.7 \text{ million bushels}$$

$$(20) R = Q_s - D_s$$

$$R = 28.9 - 14.0$$

$$R = 14.9 \text{ million bushels}$$

$$(21)* R = Q_s - D_s$$

$$R = 46.2 - 35.7$$

$$R = 10.5 \text{ million bushels}$$

In calculating the number of excess acres, the acres needed to fill each of the marketing quotas are combined. Table I, Appendix A, presents the 1949-1958 average yields per planted acre for Hard Red Winter and Hard Red Spring wheat needed for this calculation.<sup>1/</sup> Actually, the yield of 21.1 bushels per acre for Hard Red Winter is the Montana yield for all winter wheat, and the yield of 15.4 bushels per acre for Hard Red Spring wheat is the Montana yield for all spring wheat other than Durum. However, since the two hard wheat classes account for about 99 percent of the total, these yields are representative of the classes.

The number of excess acres is calculated in equation (22).

$$(22) \quad E = T - \left( \frac{Q_s}{Y_w} + \frac{Q_{s*}}{Y_{w*}} \right)$$

$$E = 6,376,000 - \left( \frac{28.9}{21.1} + \frac{46.2}{15.4} \right)$$

$$E = 2,006,000 \text{ acres.}$$

Since under the provisions of Bill No. 2 only marketing quota wheat can be sold for use off the farm, the excess acres will be assumed to be used for the production of barley. This barley production is calculated below. The 1949-1958 Montana average barley yield per planted acre is 23.5.<sup>2/</sup>

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<sup>1/</sup> Net planted acres in the case of winter wheat. Net planted acreage is total seeded acreage less amount reseeded to spring wheat.

<sup>2/</sup> See Appendix A.

$$(23) P = EY_b$$

$$P = 2,006,000 \times 23.5$$

$$P = 47.1 \text{ million bushels}$$

The total revenue accruing to the Montana wheat industry under Bill No. 2 is calculated in Table X. Since the same support price is applied to both Hard Red Winter and Hard Red Spring wheat, their quotas are combined for purposes of calculating the revenue they bring.

TABLE X. TOTAL MONTANA REVENUE UNDER BILL NO. 2 AT 1958 AND 1959 PRICES.

Type of Product	Number of Bushels (million)	1958 Prices	1958 Revenue (thousand)	1958 Prices	1959 Revenue (thousand)
Domestic Quota Wheat	49.7	\$2.22	\$110,334	\$2.21	\$109,837
Residual of the Marketing Quota	25.4	1.25	31,750	1.24	31,496
Excess Acres Barley	47.1	.75	<u>35,325</u>	.59	<u>27,789</u>
Total Revenue			\$177,409		\$169,122

#### Bill No. 2, Variation 1

This variation of Bill No. 2 is the class-type counterpart of Variation 2 of Bill No. 1. Thus, the normal yield for each class of wheat for each state is the highest annual number of bushels of such class of wheat per acre harvested in such state during five consecutive years within the 10-year period immediately preceding the year in which the first apportionment under this bill is made. Again, only Hard Red Winter and Hard Red Spring wheat are included in the analysis.

The national marketing quotas of 253 million bushels for Hard Red Winter and 143 million bushels for Hard Red Spring are the same as they were under Bill No. 2.

The state marketing quotas for Hard Red Winter and Hard Red Spring are calculated below in equations (24) and (25) respectively.

$$(24) \quad \frac{Q_s}{Q_n - 1\%} = \frac{BN}{\sum BN}$$

$$\frac{Q_s}{517.8} = \frac{46.6}{819.8}$$

$$Q_s = 29.4 \text{ million bushels}$$

$$(25)* \quad \frac{Q_s}{Q_n - 1\%} = \frac{BN}{\sum BN}$$

$$\frac{Q_s}{183.2} = \frac{74.6}{298.8}$$

$$Q_s = 45.7 \text{ million bushels}$$

Since the increase of 0.5 million bushels in the marketing quota for Hard Red Winter over that determined for Bill No. 2 is exactly offset by a 0.5 million bushel decrease in the quota for Hard Red Spring wheat, the total state marketing quota remains the same. However, the domestic quotas calculated below will not total quite the same under this variation as they did previously. This is due to the effects of changes in the normal yields which result in relative changes in the state marketing quotas. These relative changes in the state marketing quotas in turn result in relative changes in the state domestic quotas.<sup>1/</sup>

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<sup>1/</sup> See Appendix D, Table II and Table III for the normal yield changes.

The domestic quotas for Montana are calculated below.

$$(26) \frac{D_s}{Q_s} = \frac{D_n}{Q_n}$$

$$\frac{D_s}{29.4} = \frac{253}{523}$$

$$D_s = 14.2 \text{ million bushels}$$

$$(27)* \frac{D_s}{Q_s} = \frac{D_n}{Q_n}$$

$$\frac{D_s}{45.7} = \frac{143}{185}$$

$$D_s = 35.3 \text{ million bushels}$$

The increase in the domestic quota for Montana's winter wheat class is due to the fact that its normal yield is the same for each time period while some of the other states must accept a lower normal yield under the 10-year limitation. On the other hand, Montana's spring wheat suffers a decrease in its normal yield under the 10-year provision. This accounts for the decrease in that domestic quota.

Without further comment, the residual of the marketing quota, the excess acres for each class of wheat, and the barley production on these acres are determined in the four equations to follow:

$$(28) R = Q_s - D_s$$

$$R = 29.4 - 14.2$$

$$R = 15.2 \text{ million bushels}$$

$$(29)* R = Q_s - D_s$$

$$R = 45.7 - 35.3$$

$$R = 10.4 \text{ million bushels}$$

$$(30) \quad E = T - \left( \frac{Q_s}{Y_w} + \frac{Q_{s*}}{Y_w^*} \right)$$

$$E = 6,376,000 - \left( \frac{29.4}{21.1} + \frac{45.7}{15.4} \right)$$

$$E = 2,015,000$$

$$(31) \quad P = EY_b$$

$$P = 2,015,000 \times 23.5$$

$$P = 47.4 \text{ million bushels}$$

The total revenue under this variation is calculated in Table XI. Again, the quotas for the two classes of wheat are totaled for purposes of calculating revenue.

TABLE XI. TOTAL MONTANA REVENUE UNDER BILL NO. 2, VARIATION 1 AT 1958 AND 1959 PRICES.

Type of Product	Number of Bushels (million)	1958 Price	1958 Revenue (thousand)	1959 Price	1959 Revenue (thousand)
Domestic Quota Wheat	49.5	\$2.22	\$109,890	\$2.21	\$109,395
Residual of the Marketing Quota	25.6	1.25	32,000	1.24	31,744
Excess Acres Barley	47.4	.75	<u>35,550</u>	.59	<u>27,966</u>
Total Revenue			\$177,440		\$169,105

#### Control Measures

This completes the quota, production, and income calculations under all the domestic parity plans outlined in Part III. Before summarizing the results, the revenue under two control measures will be calculated for purposes of comparison.

Since Bill No. 2 differs from Bill No. 1 both in the size of the national marketing quota and the treatment of the excess acres, the domestic parity programs such as Bill No. 1 cannot be adequately compared with the Bill No. 2 type of program. Consequently, a control measure for Bill No. 2 will be calculated on an All wheat basis.

The second control measure will be the revenue that would accrue under the present wheat program using the yield and price data applied to the domestic parity plans.

The control for Bill No. 2 will be calculated first. Since the various quotas under this control are largely incidental in that they are only needed for this revenue calculation, they will simply be determined in the usual order without any discussion concerning them. The various equations will be followed by the revenue calculations in Table XII.

$$(32) \frac{Q_s}{Q_n - 1\%} = \frac{BN}{\sum BN}$$
$$\frac{Q_s}{1,058.3} = \frac{126.6}{1,650.2}$$

$$Q_s = 81.2 \text{ million bushels}$$

$$(33) \frac{D_s}{Q_s} = \frac{D_n}{Q_n}$$

$$\frac{D_s}{81.2} = \frac{615}{1,069}$$

$$D_s = 46.7 \text{ million bushels}$$

$$(34) R = Q_s - D_s$$

$$R = 81.2 - 46.7$$

$$R = 34.5 \text{ million bushels}$$

$$(35) E = T - \left( \frac{Q_s}{Y_w} \right)$$

$$E = 6,376,000 - \left( \frac{81.2}{17.4} \right)$$

$$E = 1,709,000 \text{ acres}$$

$$(36) P = EY_b$$

$$P = 1,709,000 \times 23.5$$

$$P = 40.2 \text{ million bushels}$$

TABLE XII. TOTAL MONTANA REVENUE UNDER CONTROL MEASURE FOR BILL NO. 2 AT 1958 AND 1959 PRICES.

Type of Product	Number of Bushels (million)	1958 Price	1958 Revenue (thousand)	1959 Price	1959 Revenue (thousand)
Domestic Quota Wheat Residual of the Marketing Quota	46.7	\$2.22	\$103,674	\$2.21	\$103,207
Excess Acres Barley	34.5	1.25	43,125	1.24	42,780
	40.2	.75	<u>30,150</u>	.59	<u>23,718</u>
Total Revenue			\$179,949		\$169,705

The revenue under the present farm program is calculated next. The 1958 Montana wheat acreage allotment of 4,058,327 acres is used for this calculation because the 1958-1959 marketing year was used for the quota estimates.<sup>1/</sup> The prices used are the 1958 and 1959 Montana average supports for wheat and barley.<sup>2/</sup>

<sup>1/</sup> United States Department of Agriculture, The Wheat Situation, op.cit., June, 1959, p. 18, Table 7.

<sup>2/</sup> See Appendix B.

With an average yield of 17.4 bushels per harvested acre, Montana farmers should raise approximately 70.6 million bushels (4,058,000 times 17.4) on their allotted acres.

Using the usual figure of 6,376,000 acres for the acres normally devoted to the production of wheat and barley, about 2,318,000 acres (6,376,000 minus 4,058,000) should be available for barley production. On the average, these acres will produce 54.5 million bushels (2,318,000 times 23.5) of barley.

The revenue from the present wheat program at the 1958 and 1959 Montana average supports for wheat and barley is calculated in Table XIII.

TABLE XIII. TOTAL MONTANA REVENUE UNDER THE PRESENT FARM PROGRAM AT 1958 AND 1959 PRICES.

Type of Product	Number of Bushels (million)	1958 Price	1958 Revenue (thousand)	1959 Price	1959 Revenue (thousand)
Wheat	70.6	\$1.62	\$114,372	\$1.61	\$113,666
Barley	54.5	.75	<u>40,875</u>	.59	<u>32,155</u>
Total Revenue			\$155,247		\$145,821

## PART V

### SUMMARY AND CONCLUSIONS

#### Summary

The state and national marketing quotas, the state and national domestic quotas, and the total revenues resulting from each of the bills and the two control measures are summarized in Table XIV. In addition, the quotas from Bill No. 2 and its one variation are broken down into the separate quotas for Hard Red Winter and Hard Red Spring wheat in Table XV. The tables summarize the results of the analysis of Part IV in a more concise manner than can be done with words. Therefore, only the most significant results will be discussed.

As can be seen from the tables, many of the results are very close. These small differences must, of course, be accepted with caution. This is particularly true with regard to the revenue totals, because any rounding error in bushel calculations can be magnified through multiplication. For example, at 1958 prices, the revenue for Bill No. 2 is lower than that for its variation. On the other hand, at 1959 prices, this difference is reversed. This apparent contradiction is due to rounding error.

The quota figures can be accepted with more confidence. Small rounding errors in these are not so likely to be magnified through multiplication as they are in revenue calculations. A good quota to watch is the state domestic quota. Changes in revenue will be positively correlated with changes in this quota. If the revenue totals

TABLE XIV. NATIONAL AND STATE MARKETING AND DOMESTIC QUOTAS AND TOTAL INCOME AT 1958 AND 1959  
PRICES UNDER ALL BILLS AND CONTROL MEASURES.

Item	Bill No. 1	Bill No. 1 75¢ Wheat	Bill No. 1 Var. 1	Bill No. 2 Var. 2	Bill No. 2	Bill No. 2 Var. 1	Bill No. 2 Control	Current Program Control
National Marketing Quota (million bushels)	943.0	943.0	868.0	943.0	708.0	708.0	1,069.0	---
National Domestic Quota (million bushels)	489.0	489.0	489.0	489.0	396.0	396.0	615.0	---
State Marketing Quota (million bushels)	71.6	71.6	65.9	72.6	75.1	75.1	81.2	---
State Domestic Quota (million bushels)	37.1	37.1	37.1	37.6	49.7	49.5	46.7	---
1958 Revenue (thousands)	\$171,075	---	\$170,562	\$171,650	\$177,409	\$177,440	\$179,949	\$155,247
1959 Revenue (thousands)	\$166,429	\$154,246	\$165,403	\$167,094	\$169,122	\$169,105	\$169,705	\$145,821

TABLE XV. NATIONAL AND STATE MARKETING AND DOMESTIC QUOTAS UNDER BILL NO. 2 AND ITS VARIATION FOR HARD RED WINTER AND HARD RED SPRING WHEAT.

Item	Bill No. 2			Bill No. 2, Variation 1		
	Hard Red Winter	Hard Red Spring	Total	Hard Red Winter	Hard Red Spring	Total
	Million Bushels					
National Marketing Quota	523.0	185.0	708.0	523.0	185.0	708.0
National Domestic Quota	253.0	143.0	396.0	253.0	143.0	396.0
State Marketing Quota	28.9	46.2	75.1	29.4	45.7	75.1
State Domestic Quota	14.0	35.7	49.7	14.2	35.3	49.5

from two or more plans of the same type, say Bill No. 1 and its variations are being compared, this relationship can be used to determine the proper direction of small revenue changes.

There are some significant differences in the total revenues. The domestic parity plan which produces the lowest total revenue, Bill No. 1, Variation 1 still brings about \$15,000,000 more revenue to Montana farmers than does the present program at 1958 prices. This difference is even greater at 1959 prices because of the lower barley supports. Even if the price of wheat from the excess acres drops as low as 75 cents a bushel, a program such as Bill No. 1 still brings more revenue than the present program at 1959 prices.

There is also a noteworthy difference between the total revenues from the Bill No. 1 type domestic parity plan, which treats wheat as one

commodity, and the type which recognizes classes of wheat. However, the higher total revenue under the class-type bill is due to the inclusion of wheat used for feed, seed, and industrial purposes in the national marketing quota. Notice that the state marketing and domestic quotas are also higher under Bill No. 2 than under Bill No. 1. The control for Bill No. 2 represents the plan which does not recognize classes of wheat. Since the revenue from this control is even slightly higher than that from the class-type bill, it appears that the difference in revenue between Bill No. 1 and Bill No. 2 is due entirely to the higher national marketing quota provided by the latter.

It does not make much difference to the Montana wheat industry as a whole which time period is selected for deriving the normal yields. Under the program which treats wheat as one commodity, there is a slight advantage for Montana under the 10-year provision, as can be seen by comparing the state marketing and domestic quotas. If the same normal yields were used over a period of years, as it appears they might be from reading the bills, this slight annual advantage could result in a significant total.<sup>1/</sup>

Under the class-type bill, the total state marketing and domestic quotas again indicate that it would make little difference to the Montana wheat industry as a whole which time period is selected. However, referring this time to Table XV, the individual marketing and domestic

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<sup>1/</sup> All the bills represented in this analysis state that the normal yield of the state shall be determined within the 10 (25) year period immediately preceding the year in which the first apportionment under the bill is made.

quotas for Hard Red Winter and Hard Red Spring show that the 10-year provision would better the position of Montana's winter wheat producers and worsen the position of its spring wheat producers in relation to one another and to wheat producers as a whole. This could not happen on a nation-wide basis, however. The national domestic quotas for both classes of wheat remain the same in either case. Therefore, though the apportionment between the states would be changed because of the 10-year limitation, the total apportionment for each class would remain the same. For example, the reduction in Montana's normal yield for Hard Red Spring wheat under the 10-year provision lowered the "corresponding figure for all states." This increased the quota for the states which did not suffer a normal yield decrease under this provision and lowered the quota for Montana.

One final point should be made in this summary. The results of Bill No. 1, Variation 1 point out that deductions from the national marketing quota for surplus disposal purposes, etc., do not reduce total revenue excessively. This is because such deductions do not affect the state domestic quota, which provides for the wheat that receives the highest price.

#### Conclusions

The results arrived at through this study are based on many assumptions. However, checks have been used whenever possible. Aside from the control programs for which revenues have been calculated, the same price, where applicable, and yield data have been applied

throughout. Thus, any future changes in these variables should affect all results in a similar manner.

Perhaps the most vulnerable of the assumptions are those made in drawing up the bills themselves. It would be pure folly to assume that any bill passed by Congress would be exactly like any one of the plans studied herein. However, as stated in Part I, it is believed that if and when a domestic parity plan becomes a reality, it will be similar in its essential characteristics to at least one of the plans studied in this work.

Accepting the assumptions made herein, the results of this analysis show the hypothesis set forth in Part I to be false. The incorporation and implementation of a domestic parity plan will increase, rather than decrease, the total revenue received by the Montana wheat industry compared to the revenue received under the present wheat program.

It is difficult to determine which of the two types of domestic parity plans is the most desirable. If the class-type plan must restrict the use of the excess acres to something other than wheat, this plan would tend to prolong the barley surplus problem. On the other hand, unrestricted use of the excess acres might result in the continuation of the wheat surplus problem. The number of excess acres for Montana seems to be about the same or slightly higher under the domestic parity plans studied than the approximately two million acres under the present program. The same would probably be true of other states.

In view of these possibilities, acreage restrictions may be desirable, at least during the initial years under a domestic parity program. On a per acre basis, the acreage restrictions under such a plan would not create the same hardship they do under the present program, since they would presumably prevent the production of only the lower priced wheat, or in the case of the class-type bill, the production of barley. This appears to be one of the advantages of a domestic parity plan. A given production or marketing restriction would not reduce farm incomes as much as it does under the present program.

The greater flexibility under the Bill No. 1 type plan would provide better conditions for possible adjustments between wheat and the feed grains. Whether or not such adjustments would result is beyond the scope of this study. However, the program which allows economic forces to bring about such adjustments, other things remaining equal, seems the most desirable.

The imbalance between the various classes of wheat mentioned earlier would seem to speak in favor of the class-type program. However, if the average market price should achieve a level somewhere above the support price at 60 percent of parity, the proper balance could be brought about by the pricing mechanism. It is the opinion of this writer that the present imbalance is the result of supports being higher than the market price combined with the lack of any provisions for classes of wheat. Such provisions should not be necessary

if the market price prevails. At any rate, a domestic parity plan can provide income support through the stabilization certificate idea without necessarily interfering with the allocative function of prices.

#### Further Research

It would seem desirable to extend this study to the farm level in order to determine the effects of a domestic parity plan on the Montana wheat farm. Among the main objectives of the study should be the determination of the effects of such a program on (1) the distribution of income between and among Montana wheat farms with regard to size, (2) the allocation of resources at the farm level, and (3) the freedom of the entrepreneur to make managerial decisions. Much of the machinery and many of the calculations provided by this analysis could be used in such a study.

In the course of this work, a need for more data with regard to the planted and harvested acreages, and the production of wheat by class and by state has been pointed out. Whether or not the cost of obtaining such data would be justified cannot be determined here. However, if class-type wheat programs are to be considered, such information will definitely be needed if accurate appraisals are to be made.

APPENDICES

APPENDIX A

TABLE I. 1949-1958 MONTANA AVERAGE YIELD PER PLANTED ACRES FOR ALL WHEAT, HARD RED WINTER WHEAT, HARD RED SPRING WHEAT, AND BARLEY, AND ACREAGE NORMALLY DEVOTED TO WHEAT AND BARLEY.<sup>a/</sup>

Item	1949-1958 Average Yield Per Net Planted Acre. <sup>d/</sup> (bushels)	1949-1958 Average Acreage Devoted To Wheat and Barley
All Wheat <sup>b/</sup>	17.4	5,324,000
Hard Red Winter Wheat <sup>b/</sup>	21.1	-----
Hard Red Spring Wheat <sup>b/</sup>	15.4	-----
Barley <sup>c/</sup>	23.5	<u>1,052,000</u>
Total Acreage		6,376,000

<sup>a/</sup> All averages calculated by the author from data in the work cited.

<sup>b/</sup> Wheat:  
1949-1958: Montana Department of Agriculture, Montana Agricultural Statistics, Helena, Montana, December, 1956, p. 97; 1956: Ibid., December, 1958, pp. 15, 32, and 36; 1957: Montana Department of Agriculture, Montana County Wheat Estimates, Preliminary 1957, Helena, Montana, April 15, 1958. 1958: Montana Department of Agriculture, Final Crop Estimates; Helena, Montana, December 1, 1958.

<sup>c/</sup> Barley:  
1949-1957: Montana Department of Agriculture, Montana Agricultural Statistics, op.cit., December, 1958, p. 98.

<sup>d/</sup> Net planted acreage is total planted acreage less amount reseeded to spring wheat.

APPENDIX B

CALCULATION OF THE WHEAT AND BARLEY PRICES USED IN THE STUDY

Wheat Prices<sup>1/</sup>

The 1958 Montana average price support for wheat is calculated as a weighted average of the announced 1958 wheat price support for selected Montana counties. The 1954-1957 average production of the counties chosen is used in weighting the support price for each county.<sup>2/</sup> Selection of the counties was based on their location and their normal wheat and barley production. The 1954-1957 average production of wheat and barley and the 1958 support price data for the selected counties are presented in Table I.

Letting (X) equal the 1954-1957 average production and (Y) equal the 1958 announced support price for each of the selected counties, the 1958 Montana weighted average support price is calculated in equation(1) below.

$$(1) \text{ Montana Average Wheat Support} = \frac{\sum XY}{\sum X}$$

$$\text{Montana Average Wheat Support} = \frac{38,681,318.25}{25,906,675.00}$$

$$\text{Montana Average Wheat Support} = \$1.62$$

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<sup>1/</sup> Protein premiums and quality discounts have been ignored for purposes of this analysis.

<sup>2/</sup> 1958 production was not included because such data by counties was not readily available.

The \$1.62 calculated in equation (1) is based on a national average support price for wheat of \$1.82, which is 75 percent of the 1958 parity price of \$2.42 per bushel.<sup>1/</sup> Since the difference between the national average and the Montana average support rates is 20 cents, parity to Montana wheat producers is \$2.22 per bushel ( $2.42 - .20$ ).<sup>2/</sup> At a support rate of 60 percent of parity, the 1958 national average support rate would be \$1.45. Thus, support at this level to Montana producers is \$1.25 ( $1.45 - .20$ ).

Although the 1959 wheat price support is still based on a parity price of \$2.42 (announced April 30, 1958), the "advance" minimum national average support for 1959 is \$1.81 per bushel (announced May 1, 1958).<sup>3/</sup> This lower support is due to an allowance of 1 cent per bushel to complete the transition from old to new parity. Thus for 1959, Montana parity is \$2.21, and support at 60 percent of parity is \$1.24.

The corn-equivalent price for wheat is based on the new corn program which provides a minimum national average price support for corn at 90 percent of the average price during the three preceding calendar years.<sup>4/</sup> This average for the calendar years 1955-1957 is \$1.34 per

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<sup>1/</sup> United States Department of Agriculture, The Wheat Situation, Washington, D. C., Agricultural Marketing Service, August, 1958, p. 17.

<sup>2/</sup> Freight and handling charges account for the difference between the national and the Montana support prices.

<sup>3/</sup> United States Department of Agriculture, The Wheat Situation, op.cit., p. 25, footnote four.

<sup>4/</sup> United States Department of Agriculture, The Feed Situation, Washington, D. C., Agricultural Marketing Service, April, 1959, p. 9.

bushel.<sup>1/</sup> Ninety percent of this figure is \$1.21 per bushel. "Since wheat has an estimated average feeding value of 105 percent of that of corn on an equal weight basis, equivalence in feeding value is reached when a 56-pound bushel of corn sells for 89 per cent of the price of a 60-pound bushel of wheat."<sup>2/</sup> On this basis, the national average corn-equivalent price of wheat is equal to \$1.21 divided by .89 or \$1.36. Deducting the usual 20 cents, the Montana corn-equivalent price for 1958 is \$1.16.

The announced minimum national average support for the 1959 corn crop is \$1.12 per bushel.<sup>3/</sup> A figure of \$1.26 is obtained by dividing this price by .89. Again deducting the 20 cents discount, the 1959 corn-equivalent price of wheat for Montana is \$1.06 per bushel.

#### Barley Prices

The 1958 Montana average price support for barley is calculated as a weighted average of the support price for selected counties in exactly the same manner as the wheat support was derived. The same counties are used for both calculations. The barley production and price support data are found in Table I.

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<sup>1/</sup> Ibid., October, 1958, p. 34, Table 19.

<sup>2/</sup> Helen C. Farnsworth, Multiple Pricing of American Wheat, Present System vs. Two-Price Plan, Stanford, California, Stanford University, Food Research Institute, 1958, p. 28, footnote 11.

<sup>3/</sup> United States Department of Agriculture, The Feed Situation, op.cit., April, 1959, p. 9.

APPENDIX B

TABLE I. 1958 SUPPORT PRICES AND THE 1954-1957 AVERAGE PRODUCTION OF WHEAT AND BARLEY IN SELECTED MONTANA COUNTIES.<sup>a/</sup>

County	Wheat		Barley	
	1954-1957 <sup>b/</sup> Average Production (bushel)	1958 <sup>c/</sup> County Support	1954-1957 <sup>d/</sup> Average Production (bushel)	1958 <sup>e/</sup> County Support
Flathead	861,950	\$1.56	554,475	\$.79
Chouteau	10,210,275	1.60	3,879,200	.75
Valley	4,235,550	1.68	1,053,975	.76
Fergus	3,802,950	1.60	1,639,150	.75
Gallatin	1,755,000	1.60	1,215,625	.75
Yellowstone	2,069,625	1.60	991,750	.74
Fallon	971,325	1.73	324,425	.80

<sup>a/</sup> Averages calculated by the author.

<sup>b/</sup> Wheat:  
1954-1955: Montana Department of Agriculture, Montana Agricultural Statistics, Helena, Montana, December, 1956, pp. 89-96; 1956-1957: Ibid., December, 1958, pp. 32-37.

<sup>c/</sup> United States Department of Agriculture, 1958-Crop Wheat Price Support Regulations, 1958 C. C. C. Grain Price Support Bulletin 1, Supplement 2, Wheat, Washington, D. C., United States Government Printing Office (Reprinted from Federal Register of July 31, 1958, 23 F. R. 5764), 1958, p. 4.

<sup>d/</sup> Barley:  
Montana Department of Agriculture, Montana Agricultural Statistics, op.cit., December, 1958, pp. 70-97.

<sup>e/</sup> United States Department of Agriculture, 1958-Crop Barley Price Support Regulations, 1958 C. C. C. Grain Price Support Bulletin 1, Supplement 1, Barley, Washington, D. C., United States Government Printing Office (Reprint from Federal Register of May 22, 1958, 23 F. R. 3492), 1958, p. 5.

Again letting (X) equal the 1954-1957 average production and (Y) equal the 1958 announced support price for each of the counties, the 1958 Montana weighted average support price for barley is calculated in equation (2) below.

$$(2) \text{ Montana Average Barley Support} = \frac{\sum XY}{\sum X}$$

$$\text{Montana Average Barley Support} = \frac{7,296,472.5}{9,676,600.0}$$

$$\text{Montana Average Barley Support} = 75 \text{ cents}$$

Thus from equation (2), the Montana average support price for barley for 1958 is 75 cents per bushel. This price is based on a national average support price of 93 cents per bushel.<sup>1/</sup> Therefore, the Montana barley support is 18 cents below the national average.

The announced national average barley support for 1959 is 77 cents per bushel.<sup>2/</sup> Based on the above calculated difference between the Montana and the national average support prices of 18 cents, the 1959 Montana average support is 59 cents per bushel.

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<sup>1/</sup> Ibid., p. 10., Table 5.

<sup>2/</sup> Ibid.

APPENDIX C

The costs per bushel of producing wheat and barley in Montana are derived as weighted averages of the costs per acre of producing each of these commodities in three areas of the state.<sup>1/</sup> The areas covered by the cost data are the Triangle, South Central, and Northeast portions of Montana.

As can be seen in Figure 1, these three areas present a good deal of the commercial wheat producing area of the state. This is further illustrated by the total acres planted to wheat and barley in these three areas in 1955, as indicated in Table I and II of this Appendix, in relation to the totals for the entire state. The total acreage planted to wheat in Montana in 1955 was 4,747,000 and that of barley was 1,404,000.<sup>2/</sup> Thus, the areas used cover about 87 percent of the total wheat acreage and 85 percent of the total barley acreage for that year.

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<sup>1/</sup> The cost per acre of producing wheat and barley in these areas were obtained from unpublished data compiled by LeRoy Rude of the United States Department of Agriculture, Agricultural Research Service, Bozeman, Montana.

<sup>2/</sup> Montana Department of Agriculture, Montana Agricultural Statistics, Helena, Montana, December, 1956, p. 97 and p. 41.

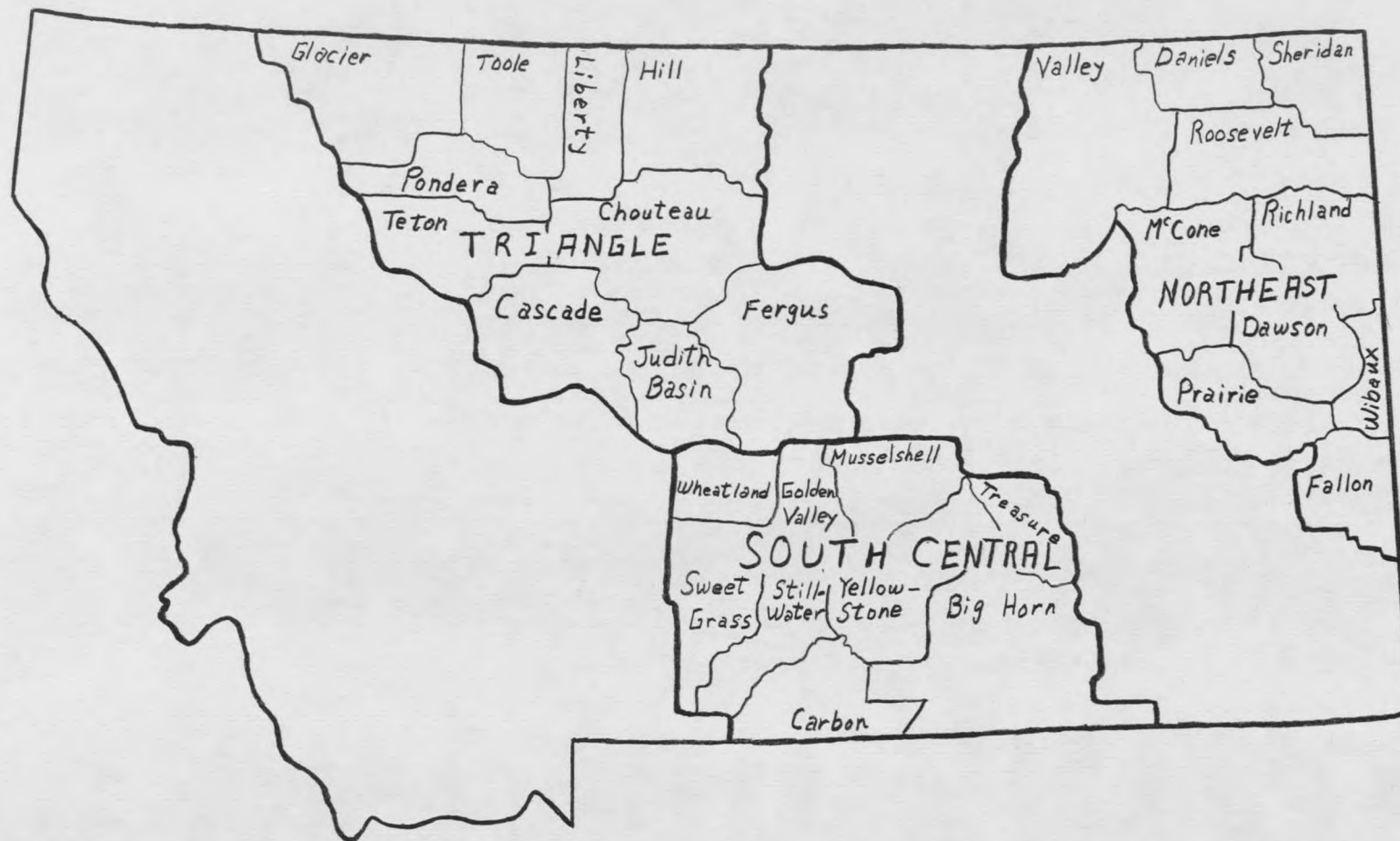


Figure 1. The Triangle, South Central, and Northeast Areas of Montana from Which the Wheat and Barley Cost of Production Data Was Taken.

The cost data used for this study were those compiled for an 830-acre farm at 1958 prices.<sup>1/</sup> The items used in compiling the costs were (1) cash expenses, (2) seed, and (3) depreciation. This compilation excludes the returns to land, labor, and management. However, since the relationship between the costs of producing wheat and barley is the determining factor in an iso-cost -- iso-revenue analysis, this omission should not impair the results.

The costs on this 830-acre farm of producing wheat and barley in each of the three areas were weighted with the respective wheat and barley acreage planted in such area in 1955.<sup>2/</sup> Tables I and II illustrate this weighting process.

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<sup>1/</sup> The data for the 830-acre farm were selected in preference to cost data which were also available for 400, 1,200, and 1,700 acre farms. This selection was made because it was felt that the 830-acre size farm was the most representative. Ideally, an average of the costs weighted by the total acres in each of these three size groups should have been taken, but the necessary data were not available.

<sup>2/</sup> The year 1955 was chosen because it was an allotment year, and because it is the latest year for which revised estimates of net planted acreage were readily available.

TABLE I. CALCULATION OF THE WEIGHTED AVERAGE OF THE COST PER ACRE OF PRODUCING WHEAT IN MONTANA

Region	Wheat Acres <sup>a/</sup> Net Planted 1955	Cost Per Acre <sup>b/</sup>	Cross Product
Triangle	2,053,900	x \$6.72	
South Central	329,100	x 6.37	
Northeast	<u>730,500</u>	x 6.02	
Accumulative Total	4,113,500		26,316,185
Weighted Average = \$26,316,185 ÷ 4,113,500			
Weighted Average = \$6.40 per acre			

<sup>a/</sup> Montana Department of Agriculture, Montana Agricultural Statistics, Helena, Montana, December, 1956, pp. 89-96.

<sup>b/</sup> The cost data compiled for wheat were actually for winter wheat in the Triangle and South Central areas and for spring wheat in the Northeast. However, because of the predominance of these types of wheat in the respective areas, this is not considered to seriously impair the validity of using these figures as representative of the cost of producing all wheat in these areas.

The cost per bushel of producing wheat is calculated by dividing the cost per acre of \$6.40 by the states average wheat yield of 17.4 bushels per harvested acre.<sup>1/</sup> The cost thus calculated is 37 cents per barley.

<sup>1/</sup> See Appendix A

TABLE II. CALCULATION OF THE WEIGHTED AVERAGE OF THE COST PER ACRE OF PRODUCING BARLEY IN MONTANA.

Region	Barley Acres <sup>a/</sup> Planted 1955		Cost Per Acre	Cross Product
Triangle	654,800	x	\$6.31	
South Central	121,400	x	6.03	
Northeast	<u>420,000</u>	x	5.65	
Accumulative Total 1,196,200				7,236,830
Weighted Average = $\$7,236,830 \div 1,196,200$				
Weighted Average = \$6.05 per acre				

<sup>a/</sup> Montana Department of Agriculture, Montana Agricultural Statistics  
Helena, Montana, December, 1958, pp. 70-97.

The cost per bushel of producing barley is \$6.05 divided by 25.3 bushels per harvest acre.<sup>1/</sup> This results in a cost of 24 cents per bushels.

These per bushel costs perhaps seem very low. However, it must be remembered that the returns to land, labor, and management are not included.

<sup>1/</sup> Ibid.

APPENDIX D

TABLE I. ALL WHEAT: BASE ACREAGE,<sup>a/</sup> NORMAL YIELD,<sup>b/</sup> AND THEIR PRODUCT, BY STATES.

State	Base <sup>c/</sup> Acreage (thou.)	Normal <sup>d/</sup> Yield (25 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)	Normal <sup>d/</sup> Yield (10 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)
Alabama	20.0	21.0	420.0	21.0	420.0
Arizona	25.0	31.0	775.0	31.0	775.0
Arkansas	79.0	22.8	1,801.2	22.8	1,801.2
California	664.5	21.2	14,087.4	21.2	14,087.4
Colorado	3,919.5	20.2	79,173.9	16.9	66,239.5
Delaware	57.5	26.0	1,495.0	26.0	1,495.0
Georgia	156.5	19.0	2,973.5	19.0	2,973.5
Idaho	1,769.0	33.0	58,377.0	33.0	58,377.0
Illinois	1,999.0	30.5	60,969.5	30.5	60,969.5
Indiana	1,601.5	29.5	47,244.2	29.5	47,244.2
Iowa	165.0	26.9	4,438.5	26.9	4,438.5
Kansas	14,691.5	18.9	277,669.4	18.9	277,669.4
Kentucky	373.5	22.9	8,553.2	22.9	8,553.2
Maryland	276.0	25.3	6,982.8	25.3	6,982.8
Michigan	1,481.0	31.2	46,207.2	31.2	46,207.2
Minnesota	1,123.0	22.2	24,930.6	22.2	24,930.6
Mississippi	42.0	27.2	1,142.4	26.1	1,096.2
Missouri	1,611.0	28.7	46,235.7	28.7	46,235.7
Montana	6,207.5	20.4	126,633.0	20.4	126,633.0
Nebraska	4,542.0	24.8	112,641.6	24.8	112,641.6
Nevada	19.5	32.6	635.7	32.6	635.7
New Jersey	107.0	30.4	3,252.8	30.4	3,252.8
New Mexico	640.0	12.8	8,192.0	12.4	7,936.0
New York	467.5	32.3	15,100.2	32.3	15,100.2
North Carolina	444.5	22.2	9,867.9	22.2	9,867.9
North Dakota	502.5	17.3	181,693.2	16.7	175,391.8
Ohio	2,341.0	27.2	63,675.2	27.2	63,675.2
Oklahoma	6,708.0	15.6	104,644.8	15.6	104,644.8

<sup>a/</sup> See footnote at end of table.

<sup>b/</sup> See footnote at end of table.

<sup>c/</sup> See footnote at end of table.

<sup>d/</sup> See footnote at end of table.

TABLE I. (Continued)

State	Base <sup>c/</sup> Acreage (thou.)	Normal <sup>d/</sup> Yield (25 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)	Normal <sup>d/</sup> Yield (10 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)
Oregon	1,242.5	31.4	39,014.5	31.4	39,014.5
Pennsylvania	877.5	27.4	24,043.5	27.4	24,043.5
South Carolina	202.0	20.2	4,080.4	20.2	4,080.4
South Dakota	3,943.5	15.1	59,411.0	15.1	59,411.0
Tennessee	299.0	19.3	5,770.7	19.3	5,770.7
Texas	5,411.0	13.6	73,589.6	13.6	73,589.6
Utah	464.0	24.1	11,182.4	20.7	9,604.8
Virginia	386.0	24.5	9,457.0	24.5	9,457.0
Washington	3,074.0	32.8	100,827.2	32.8	100,827.2
West Virginia	68.5	24.0	1,644.0	24.0	1,644.0
Wisconsin	74.0	27.1	2,005.4	27.1	2,055.4
Wyoming	462.0	20.2	9,332.4	19.6	9,055.2
Total			1,650,171.0		1,628,778.3

a/ The base acreage for any state is the annual average of the acres planted to wheat in such state during the 1952 and 1953 crop years.

b/ The normal yield of a state is calculated as the highest annual average yield per harvested acre during five consecutive years (1) within the last 25 years (1934-1958) and (2) within the last 10 years (1949-1958).

c/ Acreage Data: 1952: United States Department of Agriculture, Crop Production, Washington, D. C., Agricultural Marketing Service, Annual Summary, 1953; 1953: Ibid., Annual Summary, 1954.

d/ Yield Data: 1934-1943: United States Department of Agriculture, Wheat Acreage Yield, and Production by States, 1866-1943, Statistical Bulletin No. 1958, Washington, D. C.; United States Government Printing Office, February, 1955 pp. 2-26; 1944-1949: United States Department of Agriculture, Crop Production Revised Estimates 1944-1949, Acreage, Yield, and Production of Principal Field Crops by States, Statistical Bulletin No. 108, Washington, D. C., United States Government Printing Office, March, 1952, pp. 7-8; 1950-1958: United States Department of Agriculture, Crop Production, Annual Summaries.

APPENDIX D

TABLE II. HARD RED WINTER WHEAT: BASE ACREAGE, NORMAL YIELD, AND THEIR PRODUCT, BY STATES.

State	Base <sup>a/</sup> Acreage (thou.)	Normal <sup>b/</sup> Yield (25 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)	Normal <sup>b/</sup> Yield (10 Years) (bu.)	Base Acreage, Times Nor- mal Yield (thou. bu.)
Arizona	5.0	31.0	155.0	31.0	155.0
Arkansas	5.0	22.8	114.0	22.8	114.0
Colorado	3,692.2	20.2	74,582.4	17.0	62,767.4
Idaho	753.6	29.0	21,854.4	29.0	21,854.4
Illinois	1,067.5	30.5	32,558.8	30.5	32,558.8
Indiana	64.1	29.5	1,891.0	29.5	1,891.0
Iowa	144.9	27.3	3,955.8	27.3	3,955.8
Kansas	14,619.5	18.9	276,308.6	18.9	276,308.6
Kentucky	9.7	22.9	222.1	22.9	222.1
Michigan	22.2	31.2	692.6	31.2	692.6
Minnesota	58.4	23.5	1,372.4	23.5	1,372.4
Missouri	824.8	28.7	23,671.8	28.7	23,671.8
Montana	1,893.3	24.6	46,575.2	24.6	46,575.2
Nebraska	4,487.5	24.9	111,738.8	24.9	111,738.8
Nevada	1.2	31.4	37.7	31.4	37.7
New Jersey	1.2	30.4	36.5	30.4	36.5
New Mexico	615.7	13.4	8,250.4	11.8	7,265.3
Oklahoma	6,708.0	15.6	104,644.8	15.6	104,644.8
Oregon	54.6	31.8	1,736.3	31.8	1,736.3
Pennsylvania	15.8	27.4	432.9	27.4	432.9
South Dakota	428.9	21.8	9,350.0	21.8	9,350.0
Tennessee	3.9	19.3	75.3	19.3	75.3
Texas	5,183.7	13.6	70,498.3	13.6	70,498.3

<sup>a/</sup> See footnote at end of table.

<sup>b/</sup> See footnote at end of table.

TABLE II. (Continued)

State	Base <sup>a/</sup> Acreage (thou.)	Normal <sup>b/</sup> Yield (25 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)	Normal <sup>b/</sup> Yield (10 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)
Utah	342.4	21.2	7,258.9	16.7	5,718.1
Washington	854.6	33.4	28,543.6	33.4	28,543.6
Wisconsin	4.6	27.8	127.9	27.8	127.9
Wyoming	376.1	21.1	7,935.7	19.8	7,446.8
Total			834,621.2		819,791.4

a/ Acreage Data: The average of the 1949 and 1954 percent of the total wheat acreage that was planted to Hard Red Winter wheat was calculated. (Percentage Data: S. C. Salmon and L. P. Reitz, Distribution of the Varieties and Classes of Wheat in the United States in 1954, Agriculture Handbook 108, Washington, D. C., United States Government Printing Office, 1957, pp. 84-86, Table 12.) This percentage was taken of the base acreage for each state, as presented in Table I of this Appendix, to represent the 1952-1953 average acreage planted to Hard Red Winter wheat.

b/ Yield Data: 1934-1943: United States Department of Agriculture, Wheat Acreage, Yield, and Production by States 1866-1943, Statistical Bulletin No. 158, Washington, D. C., United States Government Printing Office, February, 1955, pp. 28-48; 1944-1949: United States Department of Agriculture, Crop Production Revised Estimates, 1944-1949, Acreage, Yield, and Production of Principal Field Crops by States, Statistical Bulletin No. 108, Washington, D. C., United States Government Printing Office, March, 1952, pp. 9-10; 1950-1958: United States Department of Agriculture, Crop Production, 1950-1958, Washington, D. C., Agricultural Marketing Service, Annual Summaries.

APPENDIX D

TABLE III. HARD RED SPRING WHEAT: NORMAL YIELD, BASE ACREAGE, AND THEIR PRODUCT, BY STATES.

State	Base <sup>a/</sup> Acreage (thou.)	Normal <sup>b/</sup> Yield (25 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)	Normal <sup>b/</sup> Yield (10 Years) (bu.)	Base Acreage Times Nor- mal Yield (thou. bu.)
Colorado	227.3	19.9	4,523.3	19.6	4,445.1
Idaho	107.9	38.3	4,132.6	38.3	4,132.6
Iowa	18.5	22.9	423.6	22.9	423.6
Minnesota	1,007.3	22.3	22,462.8	22.3	22,462.8
Montana	4,314.2	17.6	75,929.9	17.3	74,635.7
Nebraska	54.5	16.6	904.7	13.5	735.8
New Mexico	24.3	16.5	401.0	16.5	401.0
North Dakota	8,086.9	17.0	137,477.3	17.0	137,477.3
Oregon	23.6	29.0	684.4	29.0	684.4
South Dakota	3,293.2	13.9	45,775.5	13.7	45,116.8
Wisconsin	52.9	26.5	1,401.8	26.5	1,401.8
Wyoming	376.1	18.2	6,845.0	18.2	6,845.0
Total			300,961.9		298,761.9

<sup>a/</sup> Acreage Data: The base acreage of Hard Red Spring wheat for each of the above states was calculated in the same manner as described for Hard Red Winter wheat in Table II of this Appendix.

<sup>b/</sup> Yield Data: 1934-1943: United States Department of Agriculture, Wheat Acreage, Yield, and Production by States, 1866-1943, Statistical Bulletin No. 158, Washington, D. C., United States Government Printing Office, February, 1955, pp. 51-63; 1944-1949: United States Department of Agriculture, Crop Production, Revised Estimates, 1944-1949, Acreage, Yield, and Production of Principal Field Crops by States, Statistical Bulletin No. 108, Washington, D. C., United States Government Printing Office, March, 1952, p. 11; 1950-1958: United States Department of Agriculture, Crop Production, Washington, D. C., Agricultural Marketing Service, Annual Summaries.

APPENDIX E

The domestic parity plans considered herein are "condensed" in the sense that only factors relevant to this analysis, or those necessary for an understanding of the operation of the programs are included.<sup>1/</sup> The bills are merely presented here. All discussion concerning them is found in the text.

Bill No. 1

Section 1. National Marketing Quota

Not later than May 15 of each calendar year, the Secretary of Agriculture shall proclaim a national marketing quota which shall be in effect with respect to the marketing of wheat during the marketing year beginning on July 1 of the next succeeding calendar year. The national marketing quota for any marketing year shall be equal to the number of bushels of wheat he determines will be consumed as human food in the continental United States or outside the continental United States by member of the Armed Forces during such marketing year and the number of bushels which will be exported during such marketing year.

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<sup>1/</sup> The bills presented herein are a synthesis of three bills referred to the committee on Agriculture (or Agriculture and Forestry) during the first session of the Eighty-sixth Congress. The bills cited are (1) Wheat Stabilization Act of 1959, H. R. 4716, introduced by Representative Johnson, February 18, 1959, (2) Wheat Income Improvement Act of 1959, H. R. 4991, introduced by Representative Burdick, February 25, 1959, (3) Wheat Stabilization Act of 1959, S. 1140, introduced by Senator Carlson and others, February 19, 1959. Though not marked, much of the language of the original bills has been quoted directly.

Section 2 Apportionment of the National Marketing Quota

(a) Apportionment of the national quota among the states:

The national marketing quota for wheat, less a reserve of not more than 1 percent thereof to be apportioned as provided by this subsection, shall be apportioned by the Secretary among the states which presently receive acreage allotments in such manner that the quota of any state will bear the same ratio to the national marketing quota as a figure determined by multiplying the base acreage of such state by its normal yield bears to the corresponding figure for all states.

The base acreage of a state shall be the average number of acres planted to wheat in such state for the 1952 and 1953 crops.

The normal yield of the state shall be the highest annual average number of bushels of wheat per acre harvested in such state during five consecutive years within the 25-year period immediately preceding the year in which the first such apportionment is made.

Not more than the 1 percent reserve set aside from the national marketing quota shall be used to make allotments to counties, in addition to the county allotments made in subsection (b) of this section, on the basis of the relative needs of counties for additional allotment because of reclamation and other new areas coming into production after 1953 and to make other equitable adjustments.

(b) Apportionment of the state quota among the counties:

The state marketing quota for wheat, less a reserve of not more than 2 percent thereof for apportionment as provided in subsection (b) of this

section, shall be apportioned by the Secretary among the counties in the state in such manner that the quota of any county will bear the same ratio to the state quota as a figure determined by multiplying the base acreage of such county by its normal yield bears to the corresponding figure for all of the counties in such state.

The base acreage of a county shall be the average number of acres planted to wheat in such county for the 1952 and 1953 crops.

The normal yield of a county shall be the highest annual average number of bushels of wheat per acre harvested in such county during five consecutive years within the 25-year period immediately preceding the year for which the first such apportionment is made.

(c) Apportionment of the county quota among the individual farms:

The county quota shall be apportioned by the Secretary, through local committees, among the farms within the county on which wheat has been planted during any one of the three marketing years immediately preceding the marketing year in which the allotment is made and on which wheat was planted for the 1952 and 1953 crops, in such manner that the quota of any farm shall bear the same ratio to the county quota as a figure determined by multiplying the base acreage of such farm by its normal yield bears to a corresponding figure for all of the farms in such county entitled to receive a farm marketing quota for wheat.

The base acreage of a farm shall be the average number of acres planted to wheat on such farm for the 1952 and 1953 crops, with adjustments for abnormal weather conditions during such years and for the

effects of diversion of acreage under previous soil conservation programs.

The normal yield of a farm shall be the average annual yield of such farm for the 10 years immediately preceding the year for which the apportionment is made, as determined by the county committee.

Not more than the 2 percent reserve set aside from the state marketing quota shall be used for apportionment to farms on which wheat has not been planted during any of the three marketing years immediately preceding the marketing year in which the allotment is made or on which wheat was not planted for the 1952 and 1953 crops or for making adjustments for abnormal weather conditions existing during the 1952 and 1953 crop years.

### Section 3

### Marketing of Wheat

Beginning with the first day of the first marketing year for which this marketing quota and stabilization certificate program is in effect, no person engaged in the processing of wheat into food products composed wholly or partly of wheat shall market any such product for domestic food consumption or export, and no person shall export unprocessed wheat, unless such person has in possession evidence satisfactory to the Secretary that such wheat is either (1) marketing quota wheat, (2) imported wheat, (3) wheat sold by the Commodity Credit Corporation, or (4) wheat which was marketed by the producer thereof prior to the beginning of the first marketing year for which this program is in effect.





pay to the exporter an amount equal to the value of the certificates for the quantity of wheat so exported in the food product.

Section 7 Price Support

Whenever this bill is in effect, the Secretary of Agriculture, through the Commodity Credit Corporation, is directed to make available to cooperating producers through loans, purchases, and other operations, price support for wheat at a level not less than 60 percent of parity. Price support shall not be made available to any producer for any marketing year with respect to wheat in excess of the farm marketing quota of such producer for such year.

Bill No. 1, Variation 1

Bill No. 1 Variation 1 shall read exactly the same as Bill No. 1 except paragraph one of section 1 is changed to read as follows:

"The national marketing quota for any marketing year shall be equal to the number of bushels of wheat he determines will be consumed as human food in the continental United States or outside the continental United States by members of the Armed Forces during such marketing year and the number of bushels which will be exported during such marketing year, less 75 million bushels in any year in which the carryover exceeds 600 million bushels."

Bill No. 2, Variation 2

Bill No. 1, Variation 2 shall read the same as Bill No. 1 except for the following changes:

1. Paragraph three of section 2 (a) shall be changed to read as follows: "The normal yield of a state shall be the highest annual average number of bushels of wheat per acre harvested in such state during five consecutive years within the 10-year period immediately preceding the year in which the first such apportionment is made."

2. Paragraph three of section 2 (b) shall be changed to read as follows: "The normal yield of a county shall be the highest annual average number of bushels of wheat per acre harvested in such county during five consecutive years within the 10-year period immediately preceding the year for which the first such apportionment is made."

Bill No. 2

Section 1 National Marketing Quota

Not later than May 15 of each calendar year, the Secretary of Agriculture shall proclaim a national marketing quota for each class of wheat which shall be in effect with respect to the marketing of such class of wheat during the marketing year beginning on July 1 of the next succeeding calendar year. The national marketing quota for any class of wheat for any marketing year shall be equal to the number of bushels of that class of wheat he determines will be consumed as human food in the continental United States or outside the continental United States by members of the Armed Forces during such marketing year; the number of bushels of each class that will be used for feed, seed, and industrial purposes in the continental United States; and

the number of bushels of each class which will be exported during such marketing year.

Section 2 Apportionment of the National Marketing Quota

(a) Apportion of the national quota among the states:

The national marketing quota for each class of wheat, less a reserve of not more than 1 percent thereof to be apportioned as provided by this subsection, shall be apportioned by the Secretary among the states which presently receive acreage allotments in such manner that the quota of any state for each class of wheat grown in such state will bear the same ratio to the national marketing quota for such class as a figure determined by multiplying the base acreage of each class of wheat of such state by its normal yield bears to the corresponding figure for all states receiving an allotment.

The base acreage of each class of wheat grown in a state shall be the average number of acres planted to such class of wheat in such state for the 1952 and 1953 crops.

The normal yield of a state of any class of wheat shall be the highest annual average number of bushels of such class of wheat per acre harvested in such state during five consecutive years within the 25-year period immediately preceding the year in which the first such apportionment is made.

Not more than the 1 percent reserve set aside from the national marketing quota for each class of wheat shall be used to make allotments to counties, in addition to the county allotments made in

subsection (b) of this section, on the basis of the relative needs of counties for additional allotment because of reclamation and other new areas coming into production after 1953, and to make other equitable adjustments.

(b) Apportionment of the state quota among the counties:

The state marketing quota for each class of wheat, less a reserve of not more than 2 percent thereof for apportionment as provided in subsection (c) of this section, shall be apportioned by the Secretary among the counties in the state in such manner that the quota of any county will bear the same ratio to the state quota as a figure determined by multiplying the base acreage of such class of wheat of such county by the normal yield of such class of wheat bears to the corresponding figure for all of the counties in such state.

The base acreage of each class of wheat grown in a county shall be the average number of acres planted to such class of wheat in such county for the 1952 and 1953 crops.

The normal yield of a county shall be the highest annual average number of bushels of such class of wheat per acre harvested in such county during five consecutive years within the 25-year period immediately preceding the year for which the first such apportionment is made.

(c) Apportionment of the county quota among the individual farms:

The county quota for each class of wheat shall be apportioned by the Secretary, through local committees, among the farms within the county on which such class of wheat has been planted during any one of the

three marketing years immediately preceding the marketing year in which the allotment is made and on which such class of wheat was planted for the 1952 and 1953 crops, in such manner that the quota of any farm shall bear the same ratio to the county quota as a figure determined by multiplying the base acreage of such class of wheat of such farm by its normal yield bears to a corresponding figure for all of the farms in such county entitled to receive a farm marketing quota for wheat.

The base acreage of any class of wheat grown on a farm shall be the average number of acres planted to such class of wheat on such farm for the 1952 and 1953 crops, with adjustments for abnormal weather conditions during such years and for the effects of diversion of acreage under previous soil conservation programs.

The normal yield of each class of wheat grown on a farm shall be the average annual yield of such class of wheat of such farm for the 10 years immediately preceding the year for which the apportionment is made, as determined by the county committee.

Not more than the 2 percent reserve set aside from the state marketing quota for each class of wheat shall be used for apportionment to farms on which such class of wheat has not been planted during any of the three marketing years immediately preceding the marketing year in which the allotment is made or on which such class of wheat are not planted for the 1952 and 1953 crops, or for making adjustments for abnormal weather conditions existing during the 1952 and 1953 crop years.

Section 3

Marketing of Wheat

Beginning with the first day of the first marketing year for which this marketing quota and stabilization certificate program is in effect, no person engaged in the processing of any class of wheat into food products composed wholly or partly of such class of wheat shall market any such product for domestic food consumption or export, and no person shall export unprocessed wheat of any class, unless such person has in his possession evidence satisfactory to the Secretary that such class of wheat is either (1) marketing quota wheat, (2) imported wheat, (3) wheat sold by the Commodity Credit Corporation, or (4) wheat which was marketed by the producer thereof prior to the beginning of the first marketing year for which this program is in effect.

Only marketing quota wheat of any class may be used, marketed or transferred for use off the farm where produced. The Secretary shall confiscate all wheat other than marketing quota wheat that he discovers in possession other than that of the farmer who produced it.

Section 4

Domestic Quota

A domestic quota for each class of wheat for each marketing year shall be proclaimed by the Secretary. Such domestic quota for each class of wheat shall be that number of bushels of such class of wheat which the Secretary determines will be consumed as human food and used for feed, seed, and industrial purposes in the continental United States and outside the continental United States by the Armed Forces.

Section 5                      Stabilization Certificates

Stabilization certificates for each class of wheat for each marketing year shall be issued by the Secretary for each farm to which a farm marketing quota for such class of wheat has been assigned.

The certificates issued for any class of wheat for any farm shall be in an amount which bears the same ratio to the farm marketing quota for such class of wheat for the year as the domestic food quota for such class of wheat bears to the national marketing quota for such class of wheat for such year.

The value of any stabilization certificate for each class of wheat shall be equal to the estimated parity price for such class of wheat minus the expected average market price of such class of wheat for such year multiplied by the number of bushels of such class of wheat with respect to which it is issued. The estimated parity and the expected average market price for each class of wheat shall be estimated by the Secretary prior to the issuance of the certificates.

The Secretary is authorized and directed through the Commodity Credit Corporation to buy and sell stabilization certificates issued for any marketing year at the value proclaimed for that year. For purposes of facilitating the purchase and sale of certificates, the Secretary may establish and operate a pool or pools, and he may also authorize public and private agencies to act as his agents, either directly or through the pool or pools. Certificates shall be valid to cover sales and importation of products made during the marketing year



and other operations, price support for such class of wheat a level not less than 60 percent of parity for such class of wheat. Price support for any class of wheat shall not be made available to any producer of such class of wheat for any marketing year with respect to wheat in excess of the marketing quota of such producer for such class of wheat for such year.

Bill No. 2, Variation 1

Bill No. 2, Variation 1 shall read the same as Bill No. 2 except for the following changes:

1. Paragraph three of section 2 (a) shall be changed to read as follows: "The normal yield of a State of any class of wheat shall be the highest annual average number of bushels of such class of wheat per acre harvested in such State during five consecutive years within the 10-year period immediately preceding the year in which the first such apportionment is made."

2. Paragraph three of section 2 (b) shall be changed to read as follows: "The normal yield of a county shall be the highest annual average number of bushels of such class of wheat per acre harvested in such county during five consecutive years within the 10-year period immediately preceding the year for which the first such apportionment is made."

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