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CAUSES AND PROBABLE DURATION OF THE AGRICULTURAL DEPRESSION

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THIS MONTH ends the tenth year of the worst agricultural depression ever known in America, but there is not yet general agreement as to its nature and cause. In popular opinion, the depression is caused by the supply of farm products or the demand for them. This view is also held by most economists.

CAUSES OF THE DEPRESSION

Some persons have argued that there is no depression,[1] but the majority now recognize the fact. Those who believe the depression due to supply, commonly attribute it to:

1. High production caused by the war.[2]

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[1] Ashby, F. B.: An Aggregative Index of Farm Purchasing Power, Journal American Statistical Assn., Vol. XXIII, New Series, 161, pp. 49-54, March, 1928.

Friday, David: The Course of Agricultural Income During the Last Twenty-Five Years, American Economic Review, Vol. XIII, No. 1 Supplement, p. 156, March, 1923.

Johnson, Wm.: Figures Do Lie, Country Gentleman, Vol. LXXXVIII, No. 16, pp. 3-4, April 21, 1923.

McFall, R. J.: Economic Studies (Mimeographed) No. 10, p. 4, July 7, 1923.

The Great "Farm Depression" Myth, Standard Daily Trade Service, Vol. XXX, October 24, 1923, p. 215.

[2] Dowrie states: "In my judgment, the restrictive measures applied by the Federal Reserve System in 1920 were but a minor element in the whole situation. Agriculture, particularly the production of food products, was a greatly overextended industry. Not only had the whole farm area been extended, but the area of crops per farm had increased from 50 acres to 57 acres in the decade ending in 1919. The Agricultural Year Book for 1921 contains the following comment on this point: 'Our farmers are driving larger teams, using more efficient machinery, producing more per acre and per person than ever before. Each American farmer and farm laborer on the average is feeding nine people other than himself, in this country, and one more person living in foreign lands.' The writer in the Year Book further estimates that the productivity of the American farmer increased 15 per cent in the decade ending in 1921.

"My conclusions relative to the question as to whether the farmer was the victim of a deliberate deflation policy are: (1) That our banking policy was the occasion rather than the cause of the fall in the prices of agricultural products; (2) That the following are probably the principal factors ultimately responsible for the price deflation: (a) Over-stimulated agricultural production, arising out of abnormally high prices and our anxiety to win the war, including unwise colonization and attempts to farm unproductive lands. (b) Extraordinarily good crop conditions in 1920. (c) Extremely high production costs. (d) Dependence upon a hazardous export outlet. (e) Over-extended condition of farmers—heavy obligations, incurred for land and equipment on a peak price basis. (f) Failure to provide in 'fat' years for inevitable 'lean' ones to follow. (g) Investment of profits in land. (h) An overload of inexperienced and unbusinesslike farmers. (i) A very

2. Research and extension work resulting in scientific advances in the production of crops or animals.[3]

3. The use of machinery and other methods of increasing efficiency.[4]

4. Weak sellers in eastern Europe.[5]

5. The gasoline engine.[6]

Those who attempt to explain the depression on the demand side, attribute it to changes in:

1. American demand.[7]

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heavy increase in the ratio of farm taxes to farm income." Dowrie, Geo. W.: Did Deflation Ruin the Farmer and Would Inflation Save Him? Journal of Farm Economics, Vol. VII, No. 1, pp. 69 and 74, January, 1925.

[3] Nourse states: " . . . . I shall announce my thesis curtly at the start in the following terms: *The outlook for American agriculture is far from bright, the industry being faced by portentous technological changes while its organization and institutions are such as to make extremely difficult, indeed in large part impossible, a prompt and suitable adjustment to these circumstances.* Stated as a paradox, the outlook for agricultural production is so good that the outlook for agricultural prosperity is distinctly bad.

"I believe that the keynote of this problem on its technological side is to be found in the fact that we are only just now coming into the stage of effective and widespread application of scientific methods to the production of agricultural products as a whole." Nourse, E. G.: The Outlook for Agriculture, Journal of Farm Economics, Vol. IX, No. 1, pp. 21 and 23, January, 1927.

Black states: "So far as the 'depression' itself is concerned—the inflation-deflation episode—agriculture climbed out of the depths in 1922 and 1923 along with urban industry. But since then agricultural incomes have remained at virtually the same level. The year 1925 was better than has been any year since.

"The explanation of this has much less to do with inflation and deflation than with a number of fundamental changes that have occurred in the economic environment of agriculture. Most significant of these changes is the new trend toward larger agricultural production—essentially a world-wide movement—which set in probably before 1910. The opening of new areas on the frontier has played a smaller part in this expansion than have technical improvements in agricultural production, notably the introduction of gasoline power." Black, John D.: Agricultural Reform in the United States, p. 480, 1929.

Seligman states: "The actual depression of agriculture, moreover, is a world phenomenon. For each of the fundamental causes—increased acreage, higher productivity, diminished demand and general economic changes—is operative everywhere, although in different proportions. These fundamental causes, moreover, are only in part connected with the cataclysm of the War." Seligman, Edwin R. A.: The Economics of Farm Relief, A Survey of the Agricultural Problem, p. 24, 1929.

[4] See footnotes 2 and 3.

[5] Schmidt, S.: The Agricultural Depression in East Europe, with Special Reference to Poland. (See page 123 of this volume).

[6] King states: "It appears, then, that we are still justified in placing upon the gasoline engine a major responsibility for the continuance of the farm depression ushered in by the price deflation of 1920." King, W. I.: The Gasoline Engine and the Farmer's Income, Journal of Farm Economics, Vol. XI, No. 1, p. 72, January, 1929.

[7] Hansen says: "It is difficult to see that the low purchasing power of farm products in 1920-1922 can be attributed either to the European market or to overproduction. The explanation is to be found rather in the failure of *domestic de-*

2. Fundamental changes in demand.[8]

3. Changes in European buying power due to tariffs, reparation payments, and the like.[9]

Nearly all American economists attribute the depression to supply and demand.[10] The following statement by Edie agrees with

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mand. There was indeed a surplus that had to be disposed of in the foreign market, but the surplus was caused not by overproduction, but by the demand situation in the home market. Europe, in spite of the post-war situation, was able to absorb a much larger quantity of our products than before the war. It is true that an exceptionally low price was required to induce Europe to take these quantities, but it must not be forgotten that a correspondingly low price prevailed in the United States." Hansen adds the following footnote: "It is undoubtedly true, however, that the large crop of 1920 made a bad situation worse." Hansen, A. H.: The Effect of Price Fluctuations on Agriculture, The Journal of Political Economy, Vol. XXXIII, No. 2, p. 211, April, 1925.

[8] Dowrie quotes B. M. Anderson: "No one pulled prices down. They fell. . . . . It was not credit contraction but the collapse of the abnormal and unsound sources of demand." Journal of Farm Economics, Vol. VII, No. 1. p. 70, January, 1925. See also Seligman, reference 3.

[9] Sering says: "According to an incontrovertible economic law the purchasing power of the ultimate buyer determines the price of any given quantity of goods available for consumption. Among all peoples dependent on agricultural imports the German is the most impoverished. The German worker was then the ultimate buyer of grain and meat products, and the market was determined by his effective demand, which in turn was determined by how much of his small income he could spend for food." Sering, Max: International Price Movements and the Condition of Agriculture in Non-Tropical Countries, p. 26, 1927.

Thompson says: "Want and distress, to repeat, are widely prevalent today—even, in some measure, in this fortunate country of ours. To a certain extent, therefore, the situation in which the farmer finds himself today is due to a condition of underconsumption rather than to a condition of overproduction." Thompson, John G.: The Cityward Movement, Journal of Farm Economics, Vol. IV, No. 2, 75, April, 1922.

Taylor states: "In the main, the sudden collapse of the market for farm products can be said to be due to under-consumption rather than overproduction." Taylor, H. C.: The Adjustment of the Farm Business to Declining Price Levels, Journal of Farm Economics, Vol. III, No. 1, p. 3, January, 1921.

[10] Innumerable other references might be cited which explain the depression primarily on the basis of supply and demand. The following are a few of these:

Boyle, J. E.: Farm Relief, p. 238, 1928.

Carr, L. F.: America Challenged, 1929.

Carver, T. N: Journal of Farm Economics, Vol. IX, No. 1, p. 33, January, 1927.

Davis, J. S.: America's Agricultural Position and Policy, Harvard Business Review, pp. 146-149, January, 1928.

Journal Farm Economics, Vol. X, No. 1, p. 25-26, January, 1928.

Ely, R. T.: (Quoted by Dowrie) Journal of Farm Economics, Vol. VII, No. 1, p. 76, January, 1925.

Ezekiel, M. J. B.: (Page 73 of this volume).

Garlock, Fred L.: Journal of Farm Economics, Vol. VII, No. 1, pp. 79-83, January, 1925.

Grimes, W. E.: Our Shifting Agriculture, Journal of Farm Economics, Vol. IX, No. 3, pp. 333-339, July, 1927.

Haas, G. C.: Journal of Farm Economics, Vol. VI, No. 1, p. 60, January, 1924.

Hibbard, B. H.: The Farmers' Influence over Prices, Journal of Farm Economics, Vol. V, No. 1, pp. 13, 14, January, 1923.

my own observations as well as with the previous papers on this program. ". . . . the American economists whose views I have encountered for the most part think of a downward pressure in prices due to deficiency of gold as a matter of very remote and theoretical interest. In sharp contrast, the great concern in England is how to put a stop to the stubborn fall in gold prices, and how to hold in check during the immediate future the alarming demand for gold in excess of supply."[11]

Few economists, of whom I am one, believe that the depression is due primarily to the rise in the value of gold, which is gradually approaching its pre-war value.[12] There was an over-supply of most

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Holmes, C. L.: Readjustment in the Corn-belt, Journal of Farm Economics, Vol. VII, No. 2, pp. 233, 234, April, 1925.

Isely, C. C.: It is Languishing World Trade and Not Surplus, (Pamphlet) Board of Trade, Kansas City, Missouri.

Jardine, Wm. M.: (Address) Before Annual Meeting of Illinois Agricultural Association, Champaign, Ill., January 21, 1926. (Mimeographed).

Lippincott, Isaac: What the Farmer Needs, 1928.

McMillen, Wheeler: Too Many Farmers, 1929.

Platt, F. C.: Is the Farmer Going Bankrupt? 1925.

Quick, Herbert: The Real Trouble with the Farmers, 1924.

Russell, H. L.: A Leaf from Business for the Relief of Agriculture, American Bankers Assn. Journal, pp. 861-864, June, 1927.

Spillman, W. J.: (Page 807 of this volume).

Stine, O. C.: Journal Farm Economics, Vol. IX, No. 1, p. 45, January, 1927.

Kelsey, R. W.: Farm Relief and Its Antecedents Handbook of Citizenship, Topical Supplements of Textbooks of American History and Government, No. 2, 1929.

Murphy, A. M.: The Agricultural Depression and Proposed Measures for Its Relief. (A dissertation.) Published by the Catholic University of America, Washington, D.C., 1926.

Wallace, H. C.: Our Debt and Duty to the Farmer, 1925.

[11] Edie, Lionel D.: An International Viewpoint on Commodity Prices—Long Decline in Prospect, the Annalist, Vol. 32, No. 826, p. 773-774, November 16, 1928.

[12] There seem to be few in America who consider the depression to be due primarily to monetary causes, but in Europe, Enfield, Lloyd, Cassell, Keynes, and others consider monetary causes as the major ones.

Enfield, R. R.: The Agricultural Crisis, 1920-1923, pp. 59, 69. (See also page 60 of this volume.)

Lloyd, E. M. H.: (See page 40 of this volume).

Warren, G. F. and Pearson, F. A.: The Agricultural Situation, 1924.

Journal of Farm Economics, p. 61, April, 1920; p. 28, January, 1924; p. 34, January, 1927; p. 1, January, 1928.

Prices of Farm Products in New York, Cornell University Agrl. Exp. Sta. Bul. 416, 1923.

Prices of Farm Products in the United States, United States Department of Agriculture, Bul. 999, 1921.

The Agricultural Depression, Quarterly Journal of Economics, Vol. XXXVIII, pp. 183-213, February, 1924.

Warren, G. F. and Pearson, F. A.: The Agricultural Situation, 1924.

———: Farm Economics, pp. 35, 80-81, 92-97, 131, 186-187, 218, 229-230, 282, 347, 603-618, 697, 810, 1026, 1178-1193, 1298-1299, 1330-1338.

farm products for a few years following 1920, but as indicated later in this paper, I believe that this is no longer an important factor in the depression.

Science enables one to predict what will happen under a given set of circumstances. How well the different theories enabled men to predict, gives some indication of the probability of the correctness of their theories.

It seems almost certain that so serious a thing as the agricultural depression would have been mentioned in the meetings of the American Economic Association, the American Farm Economic Association, and the American Statistical Association before it occurred, had it been foreseen. So far as I can find, few if any of those who now explain the agricultural depression on the basis of supply and demand are recorded as having anticipated the depression. Several of those who have used the monetary explanation did anticipate it.

WAS THE PRICE DECLINE ANTICIPATED?

During the days of inflation, a few economists predicted that money would return to its pre-war value, or that the course of prices would follow the experiences in the Civil War period.[13]

Edie, Lionel D.: An International Viewpoint on Commodity Prices—Long Decline in Prospect, The Annalist, Vol. 32, No. 826, pp. 773-774, Nov. 16, 1928.

———: Money, Bank Credit and Prices, pp. 81-92, 282, 1928.

The following references also give attention to monetary influences on price relationships.

The Agricultural Crisis and Its Causes. Report of the Joint Commission of Agricultural Inquiry, 67th Congress, Ist Session, House of Representatives, Report 408, 1921.

The Agricultural Problem in the United States. Published by National Industrial Conference Board, Inc., 1926.

The Condition of Agriculture in the United States and Measures for Its Improvement. Business Men's Commission on Agriculture, Published by the National Industrial Conference Board, Inc., and Chamber of Commerce of the United States of America, 1927.

[13] Warren, G. F.: Why Are Prices High? Extension Service News. Published by the New York State College of Agriculture at Cornell University, Vol. II, No. 2, p. 1, February, 1919.

"*The increase in the amount of currency accounts for the general rise in prices.*

"Figure 2 shows the wholesale prices of all commodities during this war and during the Civil War. In each case, the five-year average before the war is 100. It will be seen that prices rose at about the same rate as during the Civil War. In each case nearly all of the rise in prices took place in three years, and in each case prices doubled. After the Civil War, it was twelve years before the general price level reached the pre-war basis.

"It does not necessarily follow that prices will drop at the same rate following this war. The rate of drop in the general price level depends primarily on the

After the depression came, many of those who used the supply and demand explanation thought that the depression would be over in a few years. For a number of years, the writer made a practice of privately asking the leading economists in attendance at the meetings of the American Economic Association, the American Farm Economic Association, and the American Statistical Association what they expected the price level would be in one, five, ten, and twenty years in the future. The replies were recorded. By asking the same men year after year, it was found that nearly all believed that the price level of that date, slightly affected by the recent tendency, would be the future price level.

The very few whose opinions conformed to what has happened were those who used the monetary explanation.

SOME GENERAL CONSIDERATIONS

Before taking up my thesis, it is necessary to clear the ground of some extraneous material or at least to challenge it.

When farmers produced for home use only, a large crop was a blessing. The farmer then had all he could eat, and could allow some to rot. The same situation still holds for a home garden. If there is too much, the family eats the best; and may give away, feed, or sell some, or let it rot. But as farming becomes a business, the farmer's income is dependent on quantity sold times the price of his product. Generally, the total agricultural income for a bumper crop is less than for an average or poor crop. Therefore, such a crop is a misfortune to agriculture, but is a benefit to cities which receive a large food supply for a small payment.

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financial policy that is followed. Ordinarily, the period when currency of all kinds will be at its maximum would be expected to come a few months after the floating of the last government loan.

" * * * It is possible that the highest general price level has been passed, but it is also possible that it may not be reached until a few months after the floating of the last large loan. As the volume of currency is contracted, prices will fall. A rather rapid drop in prices such as occurred after the Civil War is to be expected, followed by a gradual lowering of prices."

The figure referred to shows wholesale prices in the Civil War period returning to below the pre-war basis and shows prices for the World War period up to 1919.

For a statement of the credit policy subsequent to this quotation and its effects, see footnote 22.

(See also paper read November 12, 1919, Journal of Farm Economics, Vol. 2, No. 2, pp. 61-69, April, 1920).

Mitchell, W. C.: Prices and Reconstruction, American Economic Review, Sup. Vol. X, No. 1, p. 154, March, 1920.

The Brookmire Economic Service evidently anticipated deflation. Brookmire's Forecaster, January 6, 1919; January 5, 1920; February 9, 1920; and February 23, 1920.

With specialized agriculture and a smaller percentage of the people on farms, the farmer is in business. He sells most of his products and buys most of his supplies, the same as other people do. Since a large production returns to agriculture less than a small production, the fluctuations due to weather and to cycles of over- and under-production are becoming increasingly serious. These fluctuations are comparable to the periods of high and low demand for labor resulting in unemployment in industry. The process of specialization which has made civilization possible has brought on two diseases—one in the city, and one in the country. The country disease results in periods of prosperity and depression for the farmers because of fluctuations in production. The city disease is unemployment because of fluctuations in the demand for labor. But these should not be confused with the sweeping fluctuations in the price of all commodities due to monetary considerations. When the whole price level is sweeping upward or downward, cycles are superimposed on the movement of the whole price structure. This may be compared with a tidal wave on which ordinary waves are superimposed.

There are very definite cycles of high and low production of livestock due to raising too many or too few animals. During the depression, we have had high and low production of cattle and two complete cycles for hogs and poultry. In a period of agricultural depression, these cycles are merely superimposed on the depression.

There seems to be a tendency for an agricultural cycle about a generation long in which persons leave farming, first too rapidly, and then not rapidly enough. There should, of course, be a net movement away from the farms, because of a steady increase in efficiency and because of the high birth rate on farms.

None of these things nor all of them combined were capable of making an agricultural depression that would have caused this topic to occupy a day and a half of the time of this Conference.

IS THERE A SURPLUS OF FOOD OR SHORTAGE OF GOLD?

American economists commonly use prices, acreages, and production which include cotton, and then begin at once to talk of the percentages thus derived in terms of possible stomach expansion as if these figures represented nothing but food.

Cotton should be excluded when food is being discussed. Cotton

prices do not follow food prices but go with industrial conditions. In the seven years, 1923 to 1929, cotton prices paid to farmers in the United States averaged 65 per cent above the five years before the war, whereas prices paid to farmers for food averaged only 43 per cent above pre-war.

This cotton price of 65 per cent above pre-war was much above the average of all wholesale prices, which were only 44 per cent above pre-war. Certainly this does not indicate that there was over-production of cotton in these seven years. These high prices for cotton resulted in a great expansion in the cotton acreage. The Department of Agriculture estimated the acreage of cotton for 1919 as 33,566,000 and for 1929 as 45,793,000, or an increase of 36 per cent in ten years.

The substitution of the tractor for horses is an important cause of the depression in some hay-producing areas but has, at the same time, been of benefit to farms in hay-consuming areas.

Dealing with the United States as a whole, the substitution of tractors for horses and mules has released about 6 per cent of the crop area for other purposes.[14]

If cotton is subtracted from the crop area, and if the pasture released is included, it is probable that the reduction in the number of horses has released an area equal to approximately 8 per cent of the area in crops other than cotton. A few economists attributed the depression to the horse feed released by the gasoline engine. This is, I believe, of more importance to American farmers than all other changes in supply and demand combined, but it is not the major cause of the depression.

The acreage of food and feed crops in the United States increased 14 per cent from 1909 to 1919. In this period population increased 21 per cent.[15]

In 1919, the acreage of food and feed crops was 319,037,000. In 1929, it was 314,633,000, or a decrease of 1 per cent. In this period population increased 16 per cent.[16]

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[14] Cavert, W. L.: The Horse Situation, Farm Economics, No. 61, p. 1175, October, 1929.

[15] Fourteenth Census of the United States, Vol. V, pp. 700-701. Minor vegetables are omitted as the figures for the two periods were not comparable.

[16] The 1929 acreages are for 38 crops from the United States Department of Agriculture Yearbook, 1930, p. 970, but omitting cotton, flaxseed, cloverseed, tobacco, broomcorn, hops, cane syrup and maple trees. If all crops except cotton and maple trees are included there is a decrease of 1 per cent. If cotton and all other crops

If the decrease in the acreage of food and feed crops of one per cent is deducted from the 8 per cent released by the substitution of tractors for horses and mules, we can say that the combined effect is equivalent to an increase of about 7 per cent, while population increased 16 per cent.

In 1920, the stores hoarded by the government began to be thrown on the market, the horse, beef and hog cycles were, by accident, coincidently at a peak, as three cycles of different lengths will inevitably be, occasionally. This peak would have occurred at about this time regardless of the war.

Even considering all of these factors combined, I believe that more than half of the depression was due to monetary causes.

Since then, we have had surpluses and shortages of almost every food crop, but the depression goes on.

To those who cite mechanization as a cause of the depression, I would like to call attention to the fact that efficiency in farming has no immediate effect on prices. It is only as the acreage or the yield per acre is changed that the supply is changed. More acres per man or larger farms do not cause a depression, unless total acreage or yield per acre is changed.

I want also to challenge the statement that the demand for food is as inelastic as is commonly supposed. Distributing charges are exceedingly inelastic so that retail prices are inelastic and the consumer does not get a chance to show what he would do if his prices fluctuated as farm prices do.

From 1890 to 1914, a 10 per cent increase in the total weight of hogs packed in the West (which includes most of the American production) resulted in a decrease of 2 per cent in the weighted retail price of lard, pork-chops, ham, and bacon.

From 1890 to 1922, an increase of 10 per cent in the receipts of cattle at Chicago, resulted in a 5 per cent decrease in the retail price of round steak in the United States.

From 1921 to 1925, an increase of 10 per cent in the production of potatoes in the United States resulted in a decreased retail price of 13 per cent in New York City. Prices in one New York City

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are included the increase from 1919 to 1929 is 3 per cent. Acreages for 1919 are from United States Department of Agriculture Yearbook, 1921, p. 770-771, except for crops not given on these pages, which are taken from the 1920 Census, Vol. V, pp. 701, 791 and 820. The census report includes only vegetables sold, hence the increase is a little less than the figures here used.

hotel were actually higher by 2 per cent in the years when potatoes were most abundant.[17]

Somehow the 10 per cent extra pork disappeared when retail prices dropped only 2 per cent and the beef disappeared when prices dropped 5 per cent. Conclusions on elasticity of the stomach from changes in farm prices are unreliable. Of course, farm prices fluctuated violently. The small changes in retail prices, of course, resulted in violent changes in farm prices.

For twenty years, following the Napoleonic Wars, Parliament had committees studying the situation. It presented hearings showing all the price changes and mental confusion to be just as at present. After twenty years, and volumes of published hearings, the House of Lords reported that it had not agreed on a report.[18]

Having at least challenged extraneous forces which so confuse as to make it impossible to discuss the subject, I will turn to my subject.

In popular opinion, low prices for food products indicate that something is wrong with the supply of food or the demand for it. But prices are a ratio of the value of gold to the value of another commodity. If John weighs twice as much as James, it does not follow that John is necessarily large, or James is necessarily small. If 60 pounds of wheat exchanges for only 23.22 grains of gold, it does not necessarily follow that wheat is abundant. Gold may be scarce. There is no way of arriving at a judgment that is worth a farthing unless some other comparison is made. If wheat has its usual exchange value when compared with the average of 550 other commodities, and if wheat and these 550 commodities have a low exchange value for gold, the logical conclusion is that gold is becoming more valuable.

What are the facts on the exchange values between food products and many kinds of commodities, not merely the one sacred commodity, gold? For the four years, 1921 to 1924, wholesale prices of the 550 commodities reported by the Bureau of Labor Statistics averaged 144 when pre-war is considered as 100 (table 1). Prices paid to farmers for food averaged only 125. The prices which farmers received were low compared with other wholesale

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[17] Warren, G. F. and Pearson, F. A.: Interrelationships of Supply and Price, Cornell Agrl. Exp. Sta. Bul. 466, pp. 106, 112, 113, March, 1928.

[18] Warren, G. F. and Pearson, F. A.: The Agricultural Situation, p. 252, 1924.

Table 1. Index Numbers of Prices in the United States*
(1910-1914=100)

Year	Wholesale prices of all commodities	Prices paid to farmers for food	Prices of food at retail	Cost of living	Cost of distributing food	Prices paid to farmers for cotton
1913	102	100	103	104	104	97
1914	99	105	106	104	105	85
1915	102	106	107	102	105	72
1916	125	117	117	112	110	109
1917	172	181	156	131	129	173
1918	192	200	180	160	159	238
1919	202	213	194	182	174	239
1920	226	207	207	212	202	259
1921	143	130	163	180	190	100
1922	141	121	150	168	175	152
1923	147	124	154	172	177	215
1924	143	126	153	170	180	216
1925	151	152	169	175	185	179
1926	146	154	174	176	192	122
1927	139	145	169	173	190	128
1928	143	149	170	171	190	150
1929	141	151	174	172	199	143
1930 (July only)	123	124	160	166	191	94

* Farm Economics No. 67, page 1329 and 1332, August, 1930.

prices. In this period, there was an over-production of food products relative to demand. This was a very important factor in the agricultural depression, but I do not believe that it was the major factor.

In the five years 1925-29 the wholesale prices of the 550 commodities averaged 144, whereas prices paid to farmers for food averaged 150. In July, 1930, after the drastic recent decline in prices and before the effects of the drought, wholesale prices of the 550 commodities averaged 123, and farm prices of food, 124.

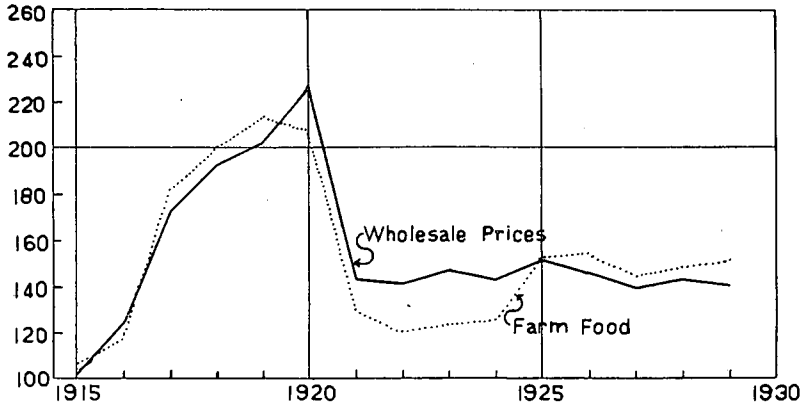

FIGURE 1. PRICES PAID TO FARMERS FOR FOOD AND WHOLESALE PRICES OF ALL COMMODITIES IN THE UNITED STATES
1910-14 = 100

Wholesale prices of food at the farm were higher than other wholesale prices from 1917 to 1919. From 1920 to 1924, food was below other wholesale prices. Apparently there was an oversupply of food. Since 1924, farm prices of food have been slightly higher than other wholesale prices. Apparently there is no longer a surplus of food.

If the supply of food products is high or the demand low, we must conclude that other commodities are in the same situation. To assume that all commodities are over-produced, and that only gold is stable, is like bringing the mountain to Mohammed.

In a period of financial deflation, producers' prices are always low compared with consumers' prices. Retail prices of food in the United States must, therefore, be compared with retail prices of other commodities, if we are to determine whether food is high or low. In the four years, 1921 to 1924, the retail price of food in the United States averaged 155, when pre-war is considered as 100.

The cost of living averaged 173. This indicates that food was relatively abundant.

In the five years, 1925-29, food at retail averaged 171 and the cost of living averaged 173. In 1929, food averaged 174 and the cost of living averaged 172.

Similar comparisons hold in England. Enfield states that in Great Britain, in 1929, agricultural prices (which in England are primarily food prices) were 44 per cent above pre-war. The average for all commodities was 35 per cent above pre-war.

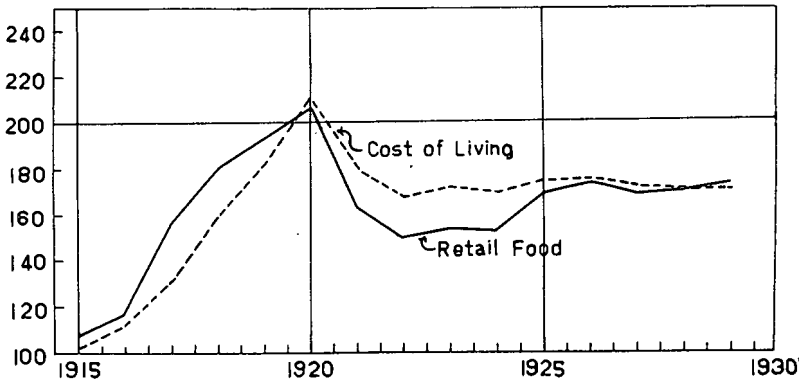

FIGURE 2. RETAIL PRICES OF FOOD AND THE COST OF LIVING IN THE UNITED STATES

1910-14 = 100

From 1915 to 1919, retail food prices were higher than the cost of living. From 1920 to 1924, food was much lower than other items in the cost of living, indicating that there was a relative surplus of food. Since 1924, food has been about as high as the cost of living. Apparently there is no longer a surplus of food.

MALADJUSTMENTS WITHIN THE PRICE STRUCTURE CAUSED BY DEFLATION

Whenever prices fall, regardless of the cause, producers' prices are thrown out of line with wages, with retail prices and with the cost of living. This makes it necessary for all producers to pay wages that are high compared with the price of the product which the producer has to sell. The laborers have a cost of living that is high compared with wholesale prices of the products of labor, but not high compared with wages.

Whenever prices rise, wages rise less rapidly. Whenever prices fall, wages fall less rapidly. Centuries ago, there were many

instances of rising and falling prices and these were always accompanied by lagging wages, when going up and when coming down. Labor is not a commodity. Its pay is influenced by innumerable forces that do not influence commodity prices. If a man employs two men and can pay only one-half as much wages as formerly he does not drop wages one-half. He drops one workman altogether and may possibly reduce the other's wages slightly. No such thing as this occurs with commodities.

Over a long period of time the buying power of wages rises approximately in proportion to the rise in the physical volume of

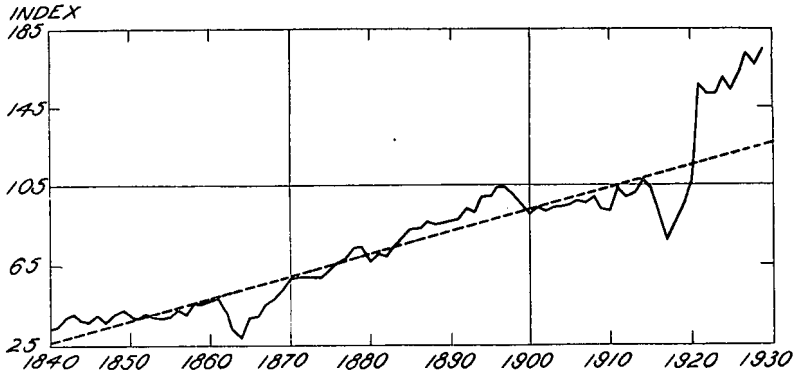

FIGURE 3. PURCHASING POWER OF WAGES IN THE UNITED STATES
1910-14 = 100

The purchasing power of wages doubled in about 60 years before the war, but its upward trend is decidedly affected by inflation and deflation. When prices rose in each war period, wages rose less rapidly, and therefore the purchasing power of wages declined. When prices fell in 1920, wages continued to rise and the buying power of wages went as far above the trend line as it had been below it.

production per capita. If financial inflation occurs, prices rise more rapidly than wages, and the rise in the buying power of wages is checked, or may be reduced. In a period of deflation, prices fall more rapidly than wages, and the buying power of wages is suddenly increased much more rapidly than the output of goods per capita.

If 1790 prices are called 100, wholesale prices in England in 1810 had risen to 188, but wages rose to only 169 (table 2). Twenty-one years later, prices had fallen to an index of 92, but wages were 143. Prices were cut in half, but wages declined only 15 per cent.

Table 2. Index Numbers of Wholesale Prices and Wages

England, Napoleonic War Period 1790 = 100			*United States, Civil War Period 1856–60 = 100*			*United States, World War Period 1910–1914 = 100*		
Year	*Wholesale prices*[1]	*Wages*[2]	*Year*	*Wholesale prices*[3]	*Wages*[4]	*Year*	*Wholesale prices*[5]	*Wages*[6]
1790	100	100	1860	94	99	1914	99	101
1795	134	114	1861	92	102	1915	102	104
1800	160	129	1862	109	105	1916	125	116
1805	155	144	1863	152	112	1917	172	132
1810	188	169	1864	193	128	1918	192	164
1816	125	160	1865	172	148	1919	202	190
1820	121	151	1866	175	156	1920	226	227
1824	106	156	1867	157	161	1921	143	207
1831	92	143	1868	153	166	1922	141	202
1840	102	139	1869	141	168	1923	147	220
1845	87	138	1870	130	171	1924	143	223
1850	77	142	1871	129	173	1925	151	228
1855	101	161	1872	131	176	1926	146	234
1860	99	161	1873	130	176	1927	139	236
			1874	125	171	1928	143	237
			1875	119	171	1929	141	242
			1876	108	163	1930 (July)	123	230
			1877	100	156			
			1878	92	153			
			1879	89	151			
			1880	99	153			

[1] Warren, G. F. and Pearson, F. A.: The Agricultural Situation, p. 263, 1924.
[2] Wood, G. H.: The Course of Average Wages Between 1790 and 1860, The Economic Journal, Vol. IX, No. 36, p. 591, December, 1899.
[3] Warren, G. F. and Pearson, F. A.: Farm Economics, No. 45, p. 698, June, 1927.
[4] Index Numbers of Wages per Hour, 1840–1926. Monthly Labor Review, Vol. XXVI, No. 2, p. 332, February, 1928.
[5] Farm Economics, No. 67, p. 1329, August, 1930.

Similarly, following the Civil War in the United States, prices declined more than one-half from 1864 to 1879, but wages in 1879 were actually higher than in 1864. The peak in wages came in 1873. From this peak to 1879, wages declined only 14 per cent.

In the United States, in the World War period, prices reached a peak in 1920, but wages did not reach the peak until nine years later, just as they did following the Civil War, and although prices have declined nearly one-half, wages are higher than in 1920.

As a consequence of the lag in wages, distributing charges

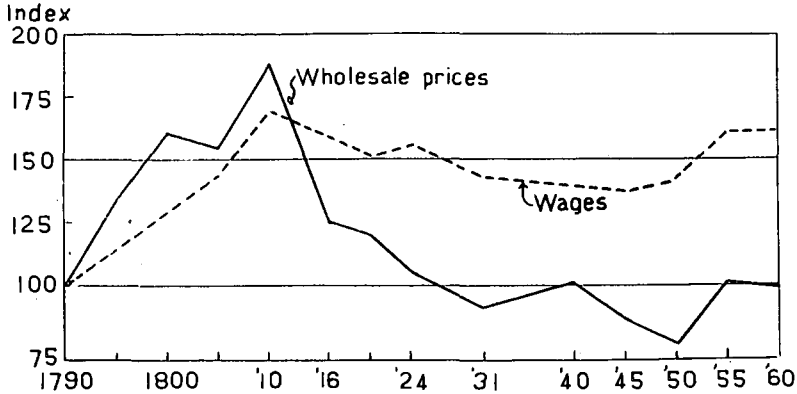

FIGURE 4. WHOLESALE PRICES AND WAGES IN ENGLAND
1790 = 100

When prices rose, wages rose less rapidly. Prices declined one-half from 1810 to 1831 but wages fell only 15 per cent. In 1845, wages began to rise. Apparently wages and prices were then in equilibrium due to the increased output per capita in the previous 50 years.

decline slowly and so leave consumers' prices high relative to producers' prices.

Table 3 shows that in the United States in 1917, food at retail prices was 56 per cent above pre-war, when the cost of living

Table 3. Cost of Living, Retail Prices of Food, Cost of Distribution, and Prices Paid to Farmers for Food in the United States
(From table 1)

	1910–1914	1917	1922	1929	1930 (July)
Cost of living	100	131	168	172	166
Retail prices of food	100	156	150	174	160
Prices paid to farmers for food	100	181	121	151	124
Cost of distribution	100	129	175	199	191

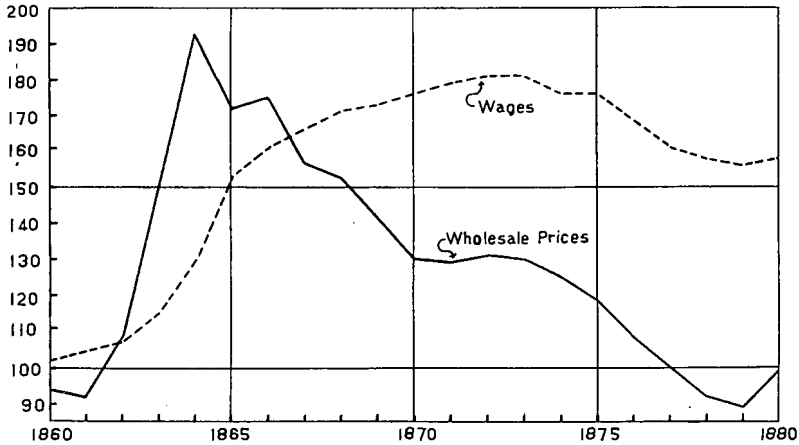

FIGURE 5. WHOLESALE PRICES AND WAGES IN THE UNITED STATES IN THE CIVIL WAR PERIOD
1856-60 = 100

When prices rose, wages rose less rapidly. Prices began to decline in 1864, but wages did not reach a peak until 9 years later. By 1879, prices had declined one-half, but wages fell only 14 per cent. By 1880, prices and wages appear to have been in equilibrium due to the increased output per capita. Wages then began to rise.

averaged only 31 per cent above. I have never heard an economist question the conclusion that food was either scarce or that demand was high.

In 1922, the retail index for food was 150 and the cost of living

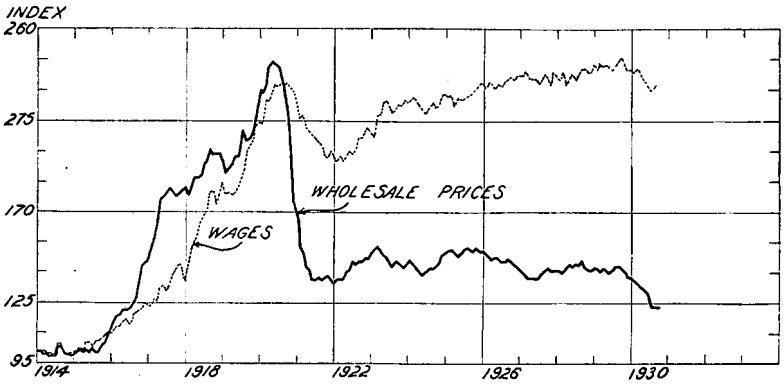

FIGURE 6. WHOLESALE PRICES AND WAGES IN THE UNITED STATES IN THE WORLD WAR PERIOD
1910-14 = 100

Prices fell in 1920, but wages continued to rise for 9 years just as they did following the Civil War. Little decline has occurred.

was 168. Again, I have never heard an economist question the statement that food was either abundant or demand was low.

In 1929, the index for food at retail was 174 and for the cost of living, 172. What is the conclusion as to supply of and demand for food?

In 1917, prices paid to farmers for food stood at 181. Was this or the retail price of 156 the measure of the shortage of food?

In 1929, the retail price of food was higher than in 1917, but the farm index instead of being 181 was 151. Although retail prices had risen 18 points, farm prices declined 30 points.

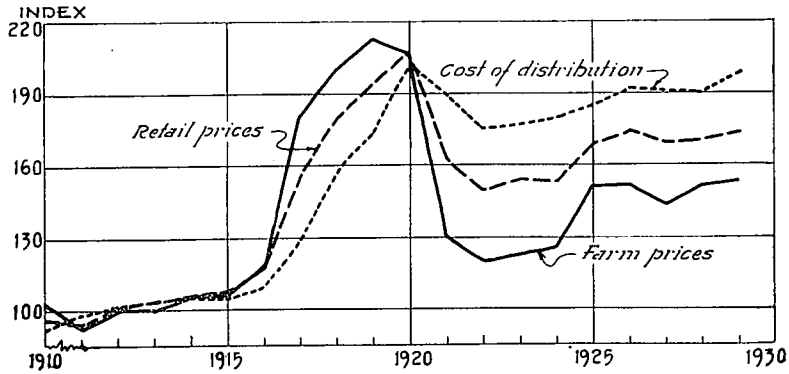

FIGURE 7. FARM PRICES OF FOOD PRODUCTS IN THE UNITED STATES, RETAIL PRICES OF THE SAME FOODS, AND THE COST OF DISTRIBUTION

1910-14 = 100

From 1915 to 1919, costs of distribution rose less rapidly than retail prices, hence farm prices rose more rapidly than retail prices. Since 1920, costs of distribution have remained high so that farm prices are unusually low compared with retail prices. In July, 1930, retail prices were higher than in 1917, but prices paid to farmers for the same food products dropped from an index of 181 to 124.

How can these be explained on the basis of supply of food and demand for it? They can instantly be explained by saying that in 1917 retail prices had risen 56 per cent, but that owing to inflation and the accompanying lag in wages, distributing charges were low so that the farmer got most of the increase in retail prices and received 81 per cent above his pre-war prices; and that in 1929, retail prices had risen, but owing to deflation and the consequent lag in wages and other costs of distribution, the cost of distributing food was so high that prices paid to the farmer had declined 30 points, even though retail prices of the same

food has risen 18 points. With a decided rise in retail prices, farm prices fell enough to change farm prosperity to depression.

This maladjustment within the price structure is the major trouble from a declining price level. It leaves prices to farmers and other producers low relative to wages, to retail prices, and to the cost of living. Debts and even taxes are minor in importance.

Since the charges for distribution become receipts for persons living in cities, a declining price level results in an enormous transfer of wealth from country to city. City persons must spend this extra income. A large share of it goes for better housing conditions. This results in a building boom in cities, while buildings in the country deteriorate. Such a building boom accompanied the declining prices in England following the Napoleonic Wars. A similar boom followed the Civil War in America. A world-wide building boom in cities has accompanied the present agricultural depression. A building boom cannot go on forever. When it is overdone, reaction occurs. Following the Civil War, the reaction came in 1873, nine years after deflation began. Following the World War, the reaction came nine years after deflation began.[19]

Declining prices put an enormous premium on efficiency in the use of labor. Many producing enterprises are so situated that it is impossible to make the necessary increase, and numerous business failures occur.

A period of falling prices results in violent price fluctuations. There may be periods of feverish activity, but there must also be periods of business depression and severe unemployment.

Now that society is so complicated that practically everyone buys most of his necessities, the inevitable discrepancies within the price structure when prices fall are of overwhelming importance. It is time that economists cease to think of debts as being of major importance, when prices fall, and give attention to the resulting maladjustment in the price structure. Farmers who were not in debt have experienced a severe depression. If debts were all the trouble, the problem would be solved by foreclosure and consequent sale to a new farmer at a low price.

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[19] Warren, G. F.: Relation of Cheap Food to the Building Boom, Farm Economics, No. 9, p. 80, November, 1923.

Warren, G. F. and Pearson, F. A.: The Agricultural Situation, p. 272, 1924.

———: Prices of Building Materials, Farm Economics, No. 42, pp. 611-612, February, 1927.

The failure of taxes to decline with falling prices is also far more important than the debt question. Farm taxes have followed wages, because taxes are spent for wages and teachers' salaries.

A declining price level must always result in a severe agricultural depression even if there are no debts and no taxes, and even if there is a shortage of farm products.

There are innumerable reasons why agriculture is injured more severely than industry by a declining price level. It is a biological industry and cannot close and open as can a factory.

The factory closes for a time and throws much of the burden on unemployed laborers. Farming is a family industry and closing down means the abandonment of home as well as occupation. It has a very slow turnover.

Farmers buy mostly at retail and sell at wholesale. Other producers of basic commodities generally buy their raw materials at wholesale prices so that they buy and sell at low prices. But the farmer sells at low prices and buys at high ones.

Nearly all distributing charges both for buying and selling are receipts to persons in cities and towns. Therefore, the farmer is in a region that gets none of the high charges as income to the region.

The best way to bring discussion of causes to a tangible basis is to reduce the discussion to figures. Estimates for the United States indicate that in 1921 at least half of the trouble was due to monetary causes such as lag in interest payments, lag in taxes, and lag in distributing charges.

The increase in farm indebtedness in the United States from 1910 to 1920 was $3,166,000,000. At the average interest rate of 6.1 per cent, this called for an increase of $193,000,000 per year in interest, in addition to payments on principal.[20] Probably about three-fourths of this was on farms of food producers, or about $145,000,000.

The increase in tax payments by farmers was estimated at $471,000,000. Probably about three-fourths of this was on farms of food producers, or $353,000,000.

In 1921, had farm prices of food had their usual relationship to retail prices (see table 1), the farmers would have received

[20] Warren, G. F.: Journal of Farm Economics, Vol. X, No. 1, p. 7, January, 1928.

about $1,760,000,000 more than their receipts actually were. This is far more important than debts or taxes.

In the same year, had food been as high as the average cost of living index, farmers would have received an additional $1,170,000,000 (table 4).

Table 4. Approximate Losses to Food Producers in the United States in Millions of Dollars*

	1921	1926	July, 1929
Over-production—Discrepancy between retail prices of food and other items in the cost of living	$1,170+	$ 400	0
Monetary results:			
Increased interest payments	145	145	145−
Increased tax payments	353	353	353
Discrepancy between farm and retail price index numbers for food	1,760	1,080	1,000+

* Warren, G. F. and Pearson, F. A.: The Agricultural Depression, Farm Economics, No. 42, Feb. 1927, pp. 603–611.

This figure understates the effect of over-production. The cost of living index includes food and therefore other products would be higher than the average. How much of this higher price for other things was due to supply and how much to lag in price decline, when sudden deflation occurred, it is not possible to state. If the whole decline in the cost of living is attributed to food surplus, this figure would be still less than the sum of the other factors listed. This source of error ceased to exist when retail prices of food and the cost of living became about equal, as they have been for five years.

In 1929, the prices of food at retail were higher than the cost of living, but the discrepancy between farm and retail prices continued. With the recent violent decline in prices of all kinds of commodities, distributing charges are again lagging, and in July, 1930, food at retail was bringing 60 per cent above pre-war prices, but farmers were receiving only 24 per cent above pre-war prices for it.

Prices of food at retail are now as high as other items in the cost of living in England and in the United States. Prices paid to farmers for food are as high as other wholesale prices. It is, therefore, difficult to see how over-production of food or low

demand can now be called important factors in the situation. *The most important factor now is discrepancy between farm and retail prices. Taxes are next in importance. Interest payments are distinctly secondary, but very important.*

For about five years, following the deflation of 1920, there was undoubtedly an over-supply of food. At the present time, I see no evidence that there is an over-supply. There are indications of an over-supply of some things, and an under-supply of other things. But prices of food at the farm, at wholesale, or at retail do not indicate that food is more abundant than other commodities.

The overwhelmingly important cause of the agricultural depression is falling prices and consequent maladjustment between farm and retail prices. An agricultural depression is an inevitable result of a decline in the general price level.[21]

Scientific research, agricultural extension teaching, the use of

[21] Had inflation occurred with stabilization thereafter, no serious agricultural depression would have occurred. Had no inflation occurred, but the price level been cut in half, a serious agricultural depression would have resulted.

Since it was almost certain that gold would return to its pre-war value, the cause of the depression may be pushed one step farther back by saying that inflation was the cause for deflation. The inflation during the war was serious enough, but farmers and others anticipated that prices would fall after the war. It was the inflation of 1919-1920 that caused the most trouble.

The Report of the Joint Commission of Agricultural Inquiry gives a judicial presentation of this.

"The Treasury Department was unwilling to undertake the flotation of the Victory loan at a rate of interest comparable with commercial rates on account of the possible effect which that action would have upon existing issues of private securities and its possible effect in requiring the refunding of the issues of Government bonds already floated.

"The discount policy of the Federal reserve banks was again subordinated to the Treasury policy in securing its credit requirements, although at this time the tendency toward expansion, speculation, and extravagance was beginning to be apparent.

"This was clearly the time for a policy of advancing the discount rates of the Federal reserve banks with a view of curtailing the expansion, speculation, and extravagance which was then beginning.

"It is the opinion of the commission that a policy of restriction of loans and discounts by advances in the discount rates of the Federal reserve banks could and should have been adopted in the early part of 1919, notwithstanding the difficulties which the Treasury Department anticipated in floating the Victory loan if such a policy were adopted.

"It is also the opinion of the commission that had this policy been adopted in the early part of 1919 much of the expansion, speculation, and extravagance which characterized the postwar period could have been avoided.

"The commission also believes that had such a policy been adopted in 1919 the difficulties, hardships, and losses which occurred in 1920-1921 as a resulr of the process of deflation and liquidation would have been diminished.

"No action in the direction of restriction of expansion, inflation, and speculation by increases in discount rates was taken by the Federal reserve banks or the Federal Reserve Board until December, 1919, when slight advances were made in discount

improved machinery, greater output per man, are not the causes of the agricultural depression, but are the major ways in which the severity of the depression is being met.

IS THE DEPRESSION WORLD WIDE?

Those who say that the depression has been world-wide and due to world supply and demand must explain the fact that while the currency was still being inflated in France, that country was fixing prices of food to hold them down although there was a severe depression in England and America. Also they must explain the fact that in France where stabilization occurred rather than deflation, there is little agricultural depression.

Denmark deflated one year later than the United States, then inflated and deflated again. Her farmers had prosperity in the first year of the American depression, then had a depression which was followed by prosperity when inflation occurred, which was in turn followed by depression.[22]

It is also interesting to note that, in general, farmers who retail their products have had a prosperous ten-year period, also that regions near cities have had little or no depression. Southeastern New York and Southern New England have, as a whole, had a very prosperous period in the past ten years. Banks have had almost no foreclosures on farms in this territory. Whenever and wherever the farmer receives a price that shows a percentage increase above his pre-war price as high as the percentage increase in retail prices above pre-war retail prices, the region is prosperous.

HOW LONG WILL THE DEPRESSION LAST?

How long will the depression last?[23] Since the most important cause of the depression is price disparity brought about by deflation, it is to be expected that the depression will last as long

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rates, followed in January by more radical advances and by further increases during the remainder of 1920.

"In the meantime there began and continued a period of expansion, extravagance, and speculation, the like of which has never before been seen in this country or perhaps in the world."

Credit. Report of the Joint Commission of Agricultural Inquiry, 67th Congress, 1st Session, House of Representatives, Report 408, Part II, page 12, 1921.

[22] Warren, G. F. and Pearson, F. A.: Farm Economics, No. 44, p. 667-8, April, 1927.

[23] See footnote No. 13.

Edie, Lionel D.: An International Viewpoint of Commodity Prices—Long Decline in Prospect, The Annalist, Vol. 32, No. 826, p. 773, November 16, 1928.

as deflation continues, and for a number of years thereafter. If deflation should discontinue now, the increased efficiency in farming, and in handling products, and the infinite number of adjustments in other prices might be expected to end the agricultural depression in ten years or possibly less. I believe, however, that prices will continue to decline to the pre-war level and probably will go below that level. When the decline stops, a number of years will be necessary to overcome the agricultural depression.

The depression will probably last several years after rapid deflation ends. This depends on how violently agriculture is being curtailed at the time when deflation ends, and on the weather. If

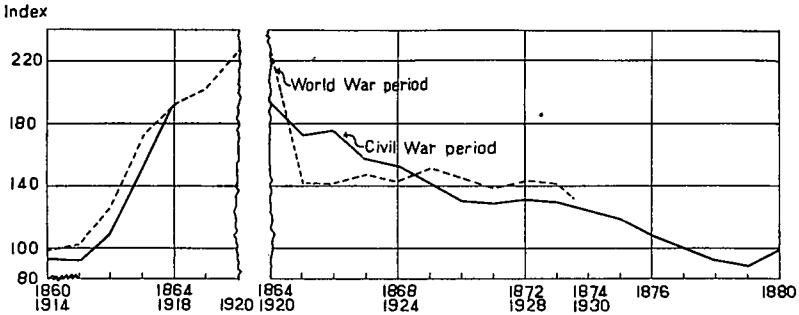

FIGURE 8. WHOLESALE PRICES, WORLD WAR AND CIVIL WAR PERIODS
In each case, 5 years before the war = 100

The writer expects prices to continue to follow the Civil War experience, or in other words expects prices to fall below the pre-war level.

it is somewhere near ready to end and a very severe drought should occur, this would turn the tide.

My guess is that wholesale prices will fall below pre-war, that is, gold will become more valuable than it was before the war, just as occurred after the Napoleonic Wars and after the Civil War. When it becomes valuable enough, it will be hunted for with vigor, and, in time, possibly enough will be found to raise prices.

In a period of depression, not all the years are bad years for all farmers. But good years are not so good as normal and bad ones are very bad. Several times in the past ten years, good times in some farming regions have led to the conclusion that the depression was over.

Young, A. A.: Downward Price Trend Probable, Due to Hoarding of Gold by Central Banks, The Annalist, Vol. 33, No. 835, p. 96, January 18, 1929.

Warren, G. F. and Pearson, F. A.: The Agricultural Situation, pp. 254-264.

RELATION OF DIAGNOSIS TO REMEDIES

Some persons say it is immaterial whether the correct explanation is monetary, or supply and demand, but a correct diagnosis is absolutely essential. If the problem is over-supply, then reduced production is a complete and satisfactory solution and when it is attained, conditions will be ideal.

If there is no over-production of food, but merely a maladjustment between farm and retail prices, then if production is reduced to a point where farmers prosper, food will be higher than other items in the cost of living, and we will have another period of agitation concerning the high cost of living, and socialistic agitation in cities.

If the trouble is over-supply, production should be the point of attack. If it is high distributing charges, these must be the point of attack, (unless the currency is stabilized.)

If the trouble is over-production, the charge that scientific research work and extension work are to blame may be true, in part, but if the depression is due to monetary causes and if a reduced production is to bring on another period of high-cost-of-living, then scientific research should be pushed with vigor so as to reduce farm costs and be ready to meet any situation that may arise.

If my diagnosis is correct, the individual American farmer should anticipate a still lower price level, except for commodities that are already below pre-war prices. These will probably rise and later fall again. He should be careful about long-time debts, except for things that are below pre-war prices. He must reduce costs of production by the following and many other means: He should not buy land nor work land that does not produce a high output per hour of labor. He should rapidly substitute machinery for human labor. Even more important, he should make labor-saving plans of operation. He should have a business large enough fully to employ all his time and that of his labor. He should obtain high crop yields per acre by use of fertilizers which are cheap, and by discontinuing to operate land that does not give high yields. There are some apparent exceptions. For example, the combine enables a man to produce a large output of wheat per man in regions with low yields, but even here high yields per acre for the region are of unusual importance.

From the public standpoint, this is the time to push research work, extension work, and college teaching on the sciences of pro-

duction and farm management, in order to reduce costs and also be prepared to meet the period of high costs of living which will come after the agricultural depression is over.

But this is preeminently a time for business research on distribution. This is the most important single item that remains out of adjustment when deflation occurs. Great increases in efficiency in distribution are occurring, but they are not taking place rapidly enough. The whole distributing machinery should be studied and decidedly revised.

The study of cooperative marketing should be pushed. The primary need in such work is studies just like farm management on how to manage cooperatives and other businesses. These principles having been learned, they should be taught.

If the government wishes to aid farmers, it should encourage cooperative buying even more than it encourages cooperative selling, for the greatest price discrepancy is between wholesale and retail prices. Farmers buy at retail. There is a great spread between these prices and wholesale prices of the same commodities. Most of the selling cooperatives take products from the farm to wholesale markets. The spread here is much less, as this is the spread between two wholesale prices. The very fact that the spread on farm purchases is so high is the reason why so many concerns desire to see that cooperative buying is excluded from the credit acts. It is also important that selling cooperatives examine the possibility of reaching nearer to the consumer before selling. Thus far the mistake has been made of thinking that the major function of a cooperative is to hold products for some hoped-for rise in price.

The Farm Board began by lending to cooperatives to enable them to hold cotton and wheat. In a period of financial deflation, holding is unusually hazardous and is not likely to be successful except when prices are distinctly below the general price level. But efforts to reduce the costs of distribution offer great chances for profitable results.

This is the time to obtain sound legislation on land utilization, taxation, rural electrification and the like. I think it is wise to spend very little time worrying about a surplus as such, and spend a large amount of time on sound, long-time policy. This has at all times been the policy of the department with which I am connected. Whether or not it has been a wise policy, time will tell.

The agricultural economist should be ready with facts in advance of public interest. He should foresee the coming interest so that he can work in a quiet, scientific manner, assembling and publishing necessary data. Policies may differ. It is the function of the agricultural economist to furnish definite, scientific facts which will be accepted by all groups so that departure in policy will be from accepted facts rather than in controversy about the facts. But before he can know on what problems to work, he must know whether the disease is over-production, or deflation. The subjects on which different experiment stations are doing research work show how important this diagnosis is.

From the international viewpoint, pressure of Europe to sell and low consumption in Europe will in time correct themselves, but the adjustment will be delayed if gold continues to rise in value. These are debtor countries. Falling prices make the debts hard to pay. The world would be better off if the international debts were all written off. Most of them will probably never be collected.

Also, if depression is the disease, we will give attention to money in the hope of sometime inventing a stable measure of value. Great improvements could be made at any time if the money illusion did not exist.

When the public finds that tariffs, export bounties, credit, and so forth, will not cure the depression, probably it will turn to money, as it did in 1896. There is then danger that the movement will be to a currency less stable than gold. What is needed is a currency more stable than gold. If this diagnosis is correct, it is time now to educate the public on money. When the question becomes political, it will be too late for real study.

We now have stable measures of length and weight which are rather recent in the history of mankind. We are inventing all manner of new measures concerning radio, aëroplanes and the like. We are also adding new measures in farm management such as work units, production indexes, labor earnings, and so forth, but we have not yet invented a stable measure of value. No man and no group is to be blamed for this situation any more than we blame individuals for not having found a cure for cancer. Scientific progress has scarcely begun. Some day, we will know the cause of cancer and remedies for it. Some day, agricultural economists will be able to agree on the causes of the agricultural depression. Then we may begin to find remedies.

DISCUSSION OF THE CAUSES OF THE AGRICULTURAL DEPRESSION

Professor Sering.—I shall confine myself strictly to the question as to whether or not the present depression of agriculture and industry has been caused by a rise in the value of gold and of money. There is no doubt but that no inductive proof has ever been given for this assumption. On the contrary, there are important facts which are not in accordance with this assumption:

1. The amount of money in circulation and of deposits in all banks, nearly tripled in the United States from 1914 to 1929.[1] Money in circulation and deposits rose from 22.03 to 60.15 billions of dollars. A shrinkage of demand for goods due to monetary reasons could be said to exist only if the banks had actually given less credit than was necessary, at given prices, in relation to the increase in the volume of production. But during the same period, 1914 to 1929, the volume of production in the United States was not much more than doubled.

2. It has been said that the gold is concentrated in the banks of the United States and the Bank of France, and that this gold is to a very large degree sterilized and especially is it not sufficiently used in international trade. Certainly such a concentration has its dangers. However, the percentage of gold which covers the amount of circulating medium in the United States was less in 1929 than in 1914; namely, 7.2 per cent against 8.9 per cent. Concerning the use of gold in international trade, it must be kept in mind that since 1913 the Federal Reserve Banks of the United States have been permitted to accept bills of exchange. The bills of exchange accepted by the great American banks are the principal means of making international payments and of supplying short-time credits to Europe. In Europe, the same bills of exchange are used in a manner similar to gold for covering the notes, for instance, of the German Reichsbank. In this way, the accepted bills of exchange take the place of gold lying in the banks of the United States.

3. Of course, a substantial decline of prices is not possible without a corresponding diminution of money in circulation. However, the causes of a price movement cannot be derived by the use of this necessary correlation. As a matter of fact, the decline of prices in 1929 and 1930 was the prior event. Subsequently the banks recalled their loans or did not renew them. It was only in this way that the amount of money in circulation was diminished. The causal relation was therefore the reverse of that given by the monetary theorists.

[1] Money in Circulation and Deposits in all Banks in the United States, 1914-1929. (BILLIONS OF DOLLARS)

	1914	1924	1929
Money in circulation	3.46	5.05	4.86
Deposits of all banks	18.57	45.83	55.29
Total	22.03	50.88	60.15

The above are some of the reasons why I cannot agree with those gentlemen who consider the restricted amount of money in circulation and the restricted amount of short-time credit, to be the principal causes of the present depression of prices. However, I am speaking only of the present depression. As to the future, I am in accordance with Mr. Ashby's fine article in the New York Times concerning the duty of the central banks to keep stabilized as much as possible, the value of the medium of exchange.

In general, I think that the change in the value of gold and money should be taken into consideration only after all other causes of the depression have been fully considered. The papers which we have been privileged to hear during this conference give sufficient explanation for the present depression. It was of great interest to me that Professor Warren was led by his studies to the opinion that one of the chief reasons for the depression of prices paid producers is to be found in the enormously increased costs of distribution, and that this rise was the consequence of the raised level of wages, which has followed every great war. This is perfectly in accordance with the experience which we have had in Germany. But of course, other reasons must be sought for the drastic decline of prices during the last two years.

I can also completely agree with Professor Warren that increased taxes have had a great deal to do with the depression. But there is a great difference between the United States and Europe in this regard. In the United States the taxes are destined to be used for purposes which increase the producing power of the country. Direct taxes are used principally for roads and schools. Such uses are an expression of the high standard of living in this country. A man who has not his own automobile considers himself as a proletarian. For this reason, the limit of profitableness in farming is on a very high level. In Germany we do not so much need the motorization of travel between country and city because Germany is only about four-sevenths of the size of Texas and 65,000,000 people live within this small area. The whole mode of life is much more localized, and, generally, we do not think that a style of living, such as is found in the United States, is a necessary condition of happiness. Nevertheless, the taxes which the farmer has to pay in Germany are about three times as high per acre as are taxes in the United States. I am the general reporter for a broad agricultural research project which has been carried on for three years in our country in accordance with a special law, and the above figures represent averages based on a large number of farms where accounts are kept. Now, of course, it must be kept in mind that land values are higher in Germany and that crop yields are higher than in the United States, but on the other hand, we are hard put by the fact that our taxes are used principally for consumptive or unproductive purposes. Here is one of the chief reasons why purchasing power in Germany is so much lower than in the United States. That is the point which I stressed in my paper read before the Conference, as a reason for the relatively low level of international prices for high grade or "semi-luxury" farm products such as butter, cheese, fruits, poultry and so forth. However, I do not want to re-

peat myself and I can only assure you that I have not said one word in my paper which I cannot prove.

Dr. Baker—May I ask Dr. Warren when the drop in the general commodity index of prices occurred. I note that the figures are the same for the period 1924-1928 as for the period 1921-1924, each being 144, but that the figure for 1929 is only 126. Doubtless the decline began before 1929. I ask this question because the rapid increase in agricultural production continued until 1926, and from 1922 to 1926 over-production appears to be a dominant factor in accounting for low prices of farm products. But in 1927 production declined, and since that date the continued low level of prices of farm products may be explained in large part by the monetary situation. It would be interesting to know whether the change in the general commodity index of prices took place about that time.

Dr. Warren—The rapid drop in the general commodity price index did not begin until the latter part of 1929. In July, 1929 the index was 143, but in July this year it was 123.

Dr. L. C. Gray—I would be the last to imply that the influence of so-called deflation has not been an element in the agricultural depression of the past decade. From my point of view, however, I do not believe in stressing it as the sole factor and largely ignoring the influence of maladjustment in the equation of supply and demand, whether with reference to agricultural products as a whole or with reference to particular lines of production.

I think the influence of deflation and of the lags in adjustment to which Professor Warren calls attention were especially notable just after the drastic decline in 1920-21. The necessity of meeting obligations incurred during the period of inflated capital values in the face of a greatly reduced level of prices, and particularly a level which has continued lower than that of non-agricultural products, has been an especial source of difficulty to many thousands of farmers. This source of distress has been especially emphasized by the tendency for taxes of farm real estate, not only to remain on the high level reached during the period of inflation but also to increase notably during the decade.

With due respect to these elements of disadvantage, they do not explain satisfactorily all of the phenomena of the depression. In the first place, after the extreme decline of prices in 1920-21, the downward trend of the curve of farm prices has not been extreme enough to be mainly responsible in itself for the persistent discrepancy in the prices of farm products and the prices of other commodities. I except, of course, the extensive decrease of the present year, which is a recent manifestation and does not account for the persistence of the depression during the past 10 years. Granting that agricultural prices have remained lower than the prices of non-agricultural commodities considered as a group, it is necessary to explain why farmers have continued to accept this lower level instead of making readjustments through supply to such an extent that the disparity would be removed. This lack of adjustment in my judgment cannot be explained merely in terms of a slight decline in the trend of agricultural prices or of general prices during the period. It is necessary to direct

attention also to some of the major changes in the equation of supply and demand during the decade, such as the great expansion of wheat and cotton growing in semi-arid areas; drastic changes in domestic consumption, including the reduction in demand for feed due to the substitution of tractors for horses; modifications in foreign demand for agricultural products resulting from the development of self-sufficing policies in European countries; the influence of trade policies in America and elsewhere; the tendency for land policies and various forms of agricultural subsidies in many countries of the world, to stimulate agricultural expansion or to retard contraction, and the economic and social inertia which retard the contraction of agricultural production in many of the older areas where agriculture has become unprofitable.

No doubt there are still many farmers on the land who purchased their land and contracted their obligations at the high level of capital values which prevailed at the peak of inflation, but in general, agriculture is not now an attractive occupation even for those entering it afresh and able to take advantage of the greatly reduced costs of agricultural land and improvements. Land values for the nation as a whole have fallen more than the level of general commodity prices or the level of farm commodity prices, yet there are few parts of the country where there is an inclination for young people born on the farm or for bankers and business men to look upon farming as a promising occupation. For these reasons, therefore, I am not disposed to lay as much stress on deflation as does Professor Warren, although recognizing it as a notable influence in bringing about agricultural depression and contributing to its persistence.

Mr. Jensen—I take it that certain figures relating to Danish conditions might be of interest with respect to the question as to the relationship between monetary disturbances and agricultural prosperity and depression. In other countries different causes have of course contributed to agricultural depression, but there can be no doubt that in Denmark the major cause of the agricultural depression experienced, especially in the years 1925-27, is to be found in the monetary disturbances during and following the World War. Had it not been for these disturbances the condition of agriculture would at no time have been so adverse as to justify the use of the term crisis.

During the war we had inflation in Denmark as did almost all other countries in the world. The inflation immediately following the war was allowed to go somewhat further in Denmark than in the United States or England. In order to get back to the gold basis, it was necessary, therefore, to go through a more severe period of deflation later on. While the deflation in the United States took place in 1920-21, it was not before 1925 that deflation was carried through in Denmark. To be sure some deflation set in during the period 1920-22, but it was not carried through. As a matter of fact, quite the opposite occurred. In 1923, inflation again took place. Not before 1924 was a definite policy of deflation embarked upon. In 1925 there was a strong deflation helped along by outside speculation anticipating what was coming. We thus had years of alternating inflation and deflation. How did agriculture fare through these years?

The Bureau of Farm Management (Det Landokonomiske Driftsbureau) has published certain figures showing the percentage return on the capital invested in agriculture (table 1).

When deflation set in during 1921, no return was made on the capital invested in agriculture, but when inflation was again allowed to get under way in 1923, good returns were again made at the very time when American agriculture was in the midst of a depression. When deflation was finally started, and in 1925 began to proceed rapidly, carrying the crown back to par in practically one year (increasing its value by one-third), a violent agricultural crisis set in and agriculture did not make a return on its investment for more than two years.

Table 1. Percentage Return on the Capital Invested in Agriculture in Denmark, 1916-17 to 1928-29

Year	*Percentage return on capital**
1916–17	7.3
1917–18	6.8
1918–19	8.3
1919–20	7.4
1920–21	5.8
1921–22	0.9
1922–23	4.5
1923–24	6.1
1924–25	6.4
1925–26	1.2
1926–27	1.1
1927–28	1.8
1928–29	6.2

* Percentage return on the market value of land, buildings and other means of production. The figures as given present a too favorable picture since the "physical plant" is revalued each year and the capital investment figure was written down after 1925.

Agriculture operates largely on borrowed capital and the turn-over of capital is slow. After a period of deflation the farmers' debts, contracted at a high price level, must be paid off with more valuable money. Many other factors enter, as for example, the slow adjustment of taxes and prices of agricultural supplies to the new and lower price level for agricultural products. However, the figures speak for themselves. I would prefer not to make further comment but leave it to you to draw your own conclusions.

Dr. King—I think it is possible that too much emphasis has been placed upon the effects of deflation *per se,* and too little upon the maladjustments that arise from inequalities in the rate of fall of the different elements of costs and of prices. Depression has been presumed to exist in agriculture as a general phenomenon. In point of fact, it is very unequal in its incidence. Farmers in some sections of my own area have felt it severely—others hardly at all. Again, agricultural wages have risen, even where profits have fallen.

It is by no means clear that general deflation, if it should affect the prices of all services and commodities in the same proportion would have of necessity any direct connection with depressed conditions. A lag between costs and returns may give rise to accounting losses, but not necessarily to real losses, since the purchasing power of money has risen in the meantime. But is it not rather the fact that during deflation, wages and other costs may fall less rapidly than prices? That explains the marked effects of deflation upon the real incomes of farming. Mortgages and loans also become more burdensome. But not all farmers, and not all types of farming suffer equally in these respects. It would be wrong, too, in maintaining a general theory of the effects of deflation, to ignore other causes operating at the same time. Machinery and easier transport each will have contributed to the difficulties of the farmers in the eastern consuming countries, and aided the agricultural development and prosperity of the countries of the West. Bad seasons may be a very real element in the farming situation, as in the late '70's and early '80's in England, and there will be other factors too. Probably less exception would be taken to the general principle enunciated by Mr. Enfield if deflation were considered, not as something predisposing to depression in itself, but as something which gives rise to maladjustments which may be very serious where industry and trade are based upon credit and dependent upon paid labor.

Professor von Dietze—I shall try to answer some of the questions Dr. Warren has raised, but I want to say first that the different opinions in regard to the influence of monetary changes upon agricultural and industrial conditions are quite familiar to us. In Germany the economists disagree on this question just as violently as they do in England and in America. The monetary theory seems to lose ground with us, however, and as for myself, I am inclined to share Professor Sering's point of view.

There can be no doubt but that monetary influences upon the agricultural situation have been important in former times, and I suppose that Professor Sering would also admit that. A more or less important part of the depression from 1875 to 1900 is to be attributed to monetary causes, and this holds true perhaps to even a greater degree for the depressions following the Napoleonic Wars and the World War, at least so far as the years 1920 to 1922 are concerned. But we are by no means certain as to the degree of influence exerted by this factor. And even assuming that its influence was very considerable in the past, there is still room left for very sincere doubt as to whether the monetary factor has been of the same importance in the depression of 1928-30 as in former times. Even the interesting figures given us showing returns on capital invested in agriculture in Denmark, cannot prove anything with regard to the new international depression through which we have been passing since 1928.

As to the causes of the recent depression, I cannot see sufficient reason to ascribe them to monetary factors, and in any case, such an explanation will not cover the point. It seems to me quite logical to assume that distress and bankruptcies may be caused by a rise in the value of gold. But if you admit only monetary influences as causes of the depression, you cannot

explain why farmers cannot be found who are willing to take over the land after the burden of debts has been lowered, or even cancelled, through foreclosure. The monetary theory will never be able to cover this problem which has been presented to us in many excellent papers. It cannot explain how the utilization of submarginal land has become a problem of the greatest importance.

Professor Jutila—The present agricultural depression is not the result of any one factor. There are many factors which differ in different countries. In those countries in which great changes in the value of money have occurred, monetary causes have been of great importance. Rising tariff walls have also been a cause. Countries which formerly did not produce enough of certain products to meet home requirements have raised their tariff walls, and are now producing behind these walls, not only enough to meet their own needs, but in some cases they are actually producing a surplus which has been disposed of by "dumping" it on the world's markets.

It is also necessary to keep in mind that certain lines of production have been yielding good returns at the same time that production along other lines has resulted in losses. For example, dairymen have been relatively well off during the same period in which grain producers have been passing through a severe depression.

Due to the mechanization and general increased efficiency of agriculture, and to the fact that population is increasing somewhat more slowly than heretofore, fewer persons are required in the agricultural industry. This means that there are a number of submarginal farmers who ought to be transferred into a line of activity other than farming. We can say that this sort of depression always exists in agriculture.

The more important causes of the world crisis in agriculture are, in my opinion, as follows:

1. The rising value of gold.
2. The rapid mechanization of agriculture, and the greatly improved means of transportation.
3. High tariff walls.
4. The ever increasing burden of taxes on farmers.

Professor Ashby—In effect Dr. Warren stated that increase in production per man is not the cause of agricultural depression but the remedy for it. There is not and cannot be any single cause entirely responsible for such a depression as we are now experiencing. But increase in efficiency and increase in production by reason of this increase, is one of the causes. In so far as Dr. Warren's statement is true, and just so far as there has been an increase in production per man and in general efficiency, the remedy should have become a preventive. The increase in production per man should have countered the tendency to depression, and kept conditions stable. It certainly has not done this. Dr. Warren may answer that the increase in production per man did not proceed far enough or fast enough. But having in mind American figures for estimates of increase in production per man one could scarcely accept this argument.

Now, in part Dr. Warren says that depression is due to monetary causes

—to disparity between the supply of goods and services, and the supply of circulating media available for exchanging goods and services. Increase in efficiency can only lead to potential increase in the supply of goods, and, in this case, of foodstuffs. The increase in production itself brings this increase in supplies. An increase in supplies of goods and services has the same effect on the price level as an equivalent decrease in the supply of "money" or circulating media. But Dr. Warren would put more goods on the market and thus cure the depression!

Further, it is worth while noting that Dr. Warren has mentioned that the level of prices of agricultural products has been lower than the general level of commodity prices. This disparity indicates that agricultural products have been in over-supply. The over-supply is due to increase in production which has been largely due to increase in efficiency.

But the most important point to notice is that unless effective demand rises with the level of efficiency, we can only raise efficiency while maintaining a stable price-level, or parity of agricultural with other prices, by reducing the number of persons engaged in production.

We know, and Dr. Warren knows quite well for New York State, that we do not reduce the number of persons engaged as rapidly as we increase efficiency. All of us know that agriculture in progressive regions carries redundant persons. This is the meaning of submarginal land and submarginal farmers, for when we talk of submarginal land we also mean the submarginal farmers who farm it. These submarginal farmers continue their production when it is no longer needed and they suffer and society suffers.

But supposing we said that we could reduce the number of persons engaged when we raise efficiency—supposing 10 per cent leave and look for jobs elsewhere at this moment—are we then to say that because these men have gone out of the industry there is no agricultural depression? If we are to call ourselves economists we must go farther, for agricultural economics is a social science. We have to ask ourselves what becomes of these men and how their interests are protected. There is no sound reason why they should suffer when society makes progress and begins to get the benefits of improvements in production.

Increase in efficiency may be "the way out" for the individual, but it can never provide a wholly sufficient way out for the whole group which is concerned with the effects of depression.

Mr. Enfield—With reference to the remarks of Professor Sering and Dr. Nourse, the intrinsic difficulties of interpreting the facts of agricultural history are very great unless the monetary factors are taken fully into account. There are many examples in the post-war period which cannot be adequately explained on the grounds of supply and demand alone.

In the case of the period at the end of the nineteenth century referred to by Professor Sering and Dr. Nourse, the same difficulties present themselves. The fall in commodity prices from 1873 onwards was attributed to intensification of production, building of railroads, improvement of ocean transportation, and so forth. But this intensification of production had been going on for twenty years before 1873, and during those years

prices had been *rising*. How was it that intensification of production in the first period was consistent with rising prices while in the second it *caused* falling prices? The difficulty in interpreting these facts was readily overcome if the monetary changes which took place about 1873 and afterwards were taken into account, namely, the spread of the gold standard to silver standard countries and elsewhere.

Again, the agricultural depression at that time was experienced by a large number of countries. However, there were two important exceptions, India and the Argentine. How was it that the depression felt by other countries was escaped by these two? What was the factor common to the depressed countries and not shared by India and the Argentine? The common factor was that the depressed countries had their currency upon a gold basis. India had a silver currency, and the Argentine a paper currency.

Dr. Warren—Distributing charges lag for the same reason that taxes remain high, i.e., because wages decline very little when prices fall one-half.

Increased efficiency will gradually occur, but it takes years to reduce distributing charges. The unusual activity in the reorganization of the retail business at the present time is due to the high charges. A decline in the price level such as occurred in 1920 must inevitably result in ten to fifteen years of agricultural depression because it takes that long to readjust agriculture and distributing charges. I have enumerated a few of the reasons why agriculture cannot adjust quickly.

The real remedy for the depression is, as I have indicated, a stable measure of value, but lacking this, the farmer has only three alternatives: increase efficiency so that an hour's labor will produce what an hour's time is worth, reduce his standard of living, or discontinue operation.

I will repeat that it is only acres times yield per acre that affects supply. If fewer men farm the acres, it does not mean increased supply.

I think the world has nothing to fear from increased efficiency. That is the way to a higher standard of living. It does require that many persons change their occupations. There is often pain in making the change, but those who change usually profit by it, particularly if they will make the change promptly. There would be no automobiles if some one had not changed his occupation. The old blacksmith who resisted the change, suffered, but the one who promptly became a garage man, prospered.

We have obtained records of the new occupations of several hundred farmers who have left farms in the abandoned farm areas. The most numerous group is farming on better land. Innumerable other occupations are included. There is little doubt but that the majority of these are much better off. It would be next to impossible to get any considerable percentage of them to buy a farm and return to the poor areas. For their own good they resist movement too strenuously.