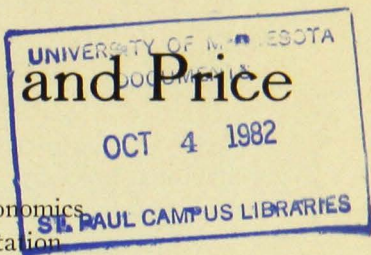


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Cost of Production and Price

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IT IS a matter of common observation that prices of farm products are frequently out of line with production costs. Prices of certain products may remain out of line with costs for considerable periods. This has led to various proposals for fixing farm prices, by legislative enactment, on the basis of cost of production. Proposals of the kind are especially numerous in a period of declining prices. Certain fundamental characteristics of farm costs account for the slow response of farm production to cost-of-production-price relationships and also make difficult the fixing of prices on a cost basis. These characteristics are discussed in this bulletin.

What Is Cost-of-Production?

By cost-of-production is usually meant the sum of money required to produce a commodity. This may be more accurately and precisely stated as the sum of money (1) that must be paid for the "efforts and sacrifices"¹ involved in making a commodity, or (2) that must be paid to overcome the "resistances"² to its production. This concept should be kept clearly in mind in considering the relationship between cost-of-production and price. The nature of the elements that make up the "efforts and sacrifices" or the "resistances" referred to is such that their money value varies widely among different producers and at different times. Cost-of-production thus defined should not be confused with so-called cost-of-production figures that include only direct cash outlays or that are computed on the basis of desired rates of remuneration

¹ Marshall, Alfred. Principles of Economics.

² Davenport, H. J. Economics of Enterprise.

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for the factors of production which would insure the producer a certain standard of living.

Farm Costs Contain Indirect or Non-Cash Items

A considerable part of the elements of cost in farm production do not involve a direct, current cash outlay. This is illustrated in Table 1 in which are shown data on the cost of producing wheat on a farm in Stevens County in 1932. These costs have been divided into two groups—"total costs" and "direct costs." In the first column is shown the value of each of the cost elements at current market rates. These market rates are the usual rates for the remuneration of these factors in farm production that in the long-run must be covered by the price received. Otherwise, the farmer will tend to shift to the production of some other commodity selling for a price that will bring such rates of return. In the second column are shown only those items that represent either direct cash outlay or the sacrifice of potential, direct cash income. Items representing sacrifices of potential cash income are shown in parentheses. For example, the total labor charge is shown in the first column. Only two hours of this labor were actually hired. The other 6½ hours were performed by the farmer himself. Only the amount that was paid for the two hours of hired labor is shown in the second column. Likewise, in case of horse work, the only part of the total charge shown in the second column is the current market value of the salable feed used by the horses. This represents a sacrifice of income rather than a direct cash outlay, and is in parentheses. For land owned, free of incumbrance, by the farmer, the only direct cost is the tax payment. Threshing and twine, on the other hand, represent direct cash outlay. Only 40 per cent of the total costs, as computed, represent either direct cash outlays or the sacrifice of direct cash income.

Table 1
Cost of Producing an Acre of Wheat, 1932

	Total costs	Direct costs
Man labor, 8½ hr. @ 15c.....	\$1.27	\$0.30
Horse work, 23½ hr. @ 7c.....	1.65	(0.65)
Seed, 1 bu. @ 72c.....	0.72	(0.72)
Twine, 3.2 lb. @ 7½c.....	0.24	0.24
Threshing, 17½ bu. @ 4c.....	0.70	0.70
Manure	1.60	(0.29)
Machinery	0.95	0.05
Land charge	2.50	0.91
Total	\$9.63	\$3.86
Yield per acre, bu.	17.5	17.5
Cost per bu.	\$0.55	\$0.22

A large part of the farm labor supply is furnished by the farmer and members of his family. According to the Federal Census, only 57 per cent of the farmers of Minnesota reported hiring labor in 1929. The average amount of such labor reported was 126 days or a little more than four months per farm. If this is distributed over all farms in the state, it amounts to 71 days or less than 2½ months per farm. In most cases, the farmer also supplies a considerable part of the capital used in production. When prices fall and the income from a particular crop is insufficient to yield the usual market return on his labor and capital, the farmer has three alternatives: (1) He may shift his labor and capital to the production of some other crop that promises a larger return; (2) he may continue to produce the same crop as long as the price is sufficient to pay anything more than the direct costs; or (3) he may discontinue production. If there are more profitable crops to which he can shift readily, he will wisely choose the first alternative. If he cannot make such shifts, he is usually better off financially to choose the second. Seldom can he afford to elect the third course, unless he can find profitable employment for his labor and capital outside of agriculture.

To discontinue production merely robs the farmer and his family of a job and a use for their land, equipment, and livestock. The manufacturer, on the other hand, whose largest items of cost are wages, salaries, and raw materials, is much more likely to curtail production in periods of declining prices. He will reduce or discontinue his purchase of raw materials, lay off employees, pass up dividends, and await higher prices before resuming normal production. The farmer cannot discharge himself and his family, nor can he afford to allow his capital to remain idle as long as it can be made to earn even a meager return. This is a fundamental and significant difference between the responses of the farmer and the manufacturer to price declines. In periods of falling prices, the industrial worker suffers more from unemployment than from reduced rates of pay. The farmer, on the other hand, has even fuller employment during such periods since he attempts to substitute his own labor for other factors of production formerly purchased. He takes his major adjustment in the form of a reduced rate of return for his own services.

The fact that the farmer tends to maintain production in the face of lowered prices has led to widespread acceptance of the belief that farm production is generally overexpanded and that permanent curtailment of output is necessary. Some reduction of output may be advisable until accumulated stocks of certain products can be disposed of. However, the difficulty which now confronts agriculture arises in a large measure from the curtailment of activity in other lines rather than from

overproduction. Revival of production and employment in other lines consequently is needed if the agricultural situation is to be improved.

Fixed Investments in Farming Are Large

Most of the farmer's capital is tied up in relatively fixed investments, many of which have little alternative use. According to the 1930 Federal Census for Minnesota, the farmer's investment in real estate, implements and machinery, and livestock was distributed as follows: land, 55.7 per cent; buildings, 25.7 per cent; implements and machinery, 7.0 per cent; and livestock, 11.6 per cent. There is little use outside of agriculture for property of this type, and, except for the livestock, it cannot be liquidated readily. Regardless of what may be the cost of the fixed investments, once they are made, their value is determined largely by what they can be made to earn in agricultural production. A factory might be shifted from the production of wagons to automobiles and trucks at a comparatively small cost. A livery stable might be converted into a garage. An office building might be made to serve equally well a wide variety of industries and professions. But only a limited amount of farm land can be turned into golf courses, recreational fields, and other non-farming uses. Once a substantial farm building is erected, it can be used for little else than farm production. Its salvage value is small. Its original cost bears little relation to the price of the products to which it contributes. Other farmers, by low prices, may be discouraged from erecting similar buildings and thus eventually production may be curtailed sufficiently to enhance price, but that is a slow process. Many farm buildings last fifty years—more than the life-time of one generation of farmers. Most farm implements last from ten to fifteen years and their resale values, as compared with the purchase price, are usually low. The cost of machinery, therefore, has only a limited relation to price. The cost of land improvements, such as clearing and drainage, can affect the supply, and hence the price of the products of the land, only by discouraging other farmers from making similar investments. Such improvements may even decrease the value of the land for alternative non-farming uses.

Biological Nature of Farm Production Prevents Quick Shifts

Farm production deals with living processes, and the production cycle may involve a considerable period of time. In the illustration of wheat costs in Table 1, the price of wheat at seeding time was 55 cents. This coincides exactly with the cost as computed. By harvest time, the

price had fallen to 39 cents. The production process could not have been stopped after seeding to await a more favorable price situation. Nature's processes cannot be started and stopped at will like the assembling line in an automobile plant. The cost of harvesting the crop in the case cited was 14 cents a bushel, only 7 cents of which represented cash outlay. The individual farmer's loss would be less if he could get anything more than 14 cents, or even more than 7 cents, than if he abandoned the crop because the price was insufficient to pay all production costs.

The dairy farmer in the fall of 1929, when the price of butter began a long continued decline, had on hand not only his milking herd but also heifer calves, yearlings, and two-year-olds. He could not turn a switch and stop production at that point. The only thing to do was to feed out his heifers, breed them, and add them to the milking herd. To do that meant a smaller loss than he would have incurred had he sold his stock. It takes years of breeding and selection to develop a high-producing herd. To sacrifice the progress of such years of effort would only be justified on the assumption that dairy production would continue unprofitable for years to come. Even in that case, he would have to find an alternative use for his labor and for his capital invested in buildings and equipment, or he might incur further loss.

Large Part of Farm Costs Are Fixed Items

A large share of the cash outlays in farming is for relatively fixed items such as taxes, interest and principal payments, and insurance. These call for a definite cash payment each year. When prices fall, the farmer is forced to produce more goods in order to have sufficient income to meet these fixed obligations. These charges change little with the volume of production and respond slowly, if at all, to changes in the general price level. This fact alone accounts for much of the farmer's inability to curtail production in response to declining prices.

Costs Vary Greatly from Farm to Farm

The cost of producing farm products varies widely among different producers, even in the same locality where weather, soil, and price conditions are fairly uniform. Some crop-cost figures obtained from a group of 24 farmers in Stevens County in 1932 illustrate this point. These are shown in Table 2.

These farms are all in the same county and fairly comparable in soil type. Similar differences in costs are found in all farm-cost studies. Some of these variations result from differences in the physical environment but a considerable part from variation in the degree of success

with which different farmers combine the cost elements. Differences in the share of these costs which represent direct cash outlay are also great. Some farmers hire no labor, whereas others may hire a major portion of it. Some farmers own their land and equipment free of indebtedness and no current cash outlay other than taxes is involved in its use. Others may pay cash rent for their land or may have mortgages on the land and equipment that necessitate interest and principal payments. These must be met currently, if the farmer is to continue in production. This variability of farm costs is one of the reasons why farmers do not respond uniformly to price changes.

Table 2
Variation in Production Costs, Stevens County, 1932*

	Unit	Cost per unit		
		Average	High	Low
Corn, husked	bu.	\$0.36	\$0.87	\$0.22
Oats	bu.	0.17	0.33	0.12
Barley	bu.	0.31	0.73	0.20
Wheat	bu.	0.57	1.02	0.36
Flax	bu.	1.11	2.94	0.57
Alfalfa	ton	7.08	16.44	3.90
Wild hay	ton	4.10	6.11	2.70
Corn fodder	ton	5.64	10.65	2.98
Corn silage	ton	2.00	3.68	1.34

* Salee, G. A., Pond, G. A., and Loreaux, R. H. Cost of Crop Production in Stevens County, 1932. Mimeographed Report No. 56, Div. of Agr. Econ., Minn. Agr. Expt. Sta.

Uncertainty as to Future Retards Adjustment

Much of the lag in the farmer's adjustments to price changes is due to his lack of information as to future prices. Even with the outlook information now available, it is impossible to judge the future accurately. Uncertainty as to future prices, both of farm products and of production goods, causes the farmer to make major adjustments slowly and cautiously. This is a very important factor in a business such as farming in which so large a part of the investment is relatively fixed. The price of dairy products ten or twenty or thirty years hence may be more important in determining the wisdom of an investment in a dairy barn than is the present price. The biological nature of farm production makes it necessary for the farmer to consider future rather than present prices. Few crops can be harvested in less than three months from seeding time, others may require six, eight, or ten months, and still others, such as tree fruits, may not complete their production cycle in less than fifty years. Livestock production likewise involves a period of waiting for returns from the investment. It is at least six months from the time the eggs are set till the pullets start to lay. The dairyman must

wait three years from the time he decides to increase his herd or to provide replacements until he can hope to have a heifer freshen into the herd. It is the price of dairy products three to ten years hence that determines the wisdom of his decision. This waiting period between seed time and harvest, fixed by nature and relatively inflexible, discourages prompt response in production to present prices. With the future uncertain, the farmer often prefers to continue his present production, even tho the price is insufficient to cover direct costs, in the hope that the existing situation is merely temporary and in fear lest by the time he can get some alternative product on the market prices may change so as to rob the product of its present advantage.

Exact Costs Are Difficult to Compute

Most of the factors of production used in farming contribute to more than one line of production. The same labor force may be distributed over all lines of production. The same power supply contributes to the production of all crops and livestock. The same tillage machinery is used to prepare the seedbed for all crops. The same harvesting machinery serves all grain crops. The same hauling equipment is used for transporting all farm products. Various crops are grown on the same land. One crop may contribute to the production of another. Livestock may convert into marketable products certain crops or crop products that would not otherwise be salable. One class of livestock may use the by-products of another. To drop one of these crops or one class of livestock might handicap the production of another. The farm business is so complicated that to disturb one element may reflect unfavorably on the returns from all others.

Furthermore, the joint nature of farm costs makes it difficult to compute exact and significant costs for each farm product. For example, if costs are allocated to the corn and oat crops on the basis of labor and materials used for each, charged at the same rates, the corn crop may appear profitable and the oat crop unprofitable. On the other hand, all the machinery used in preparing the seedbed for corn would be needed even if no oats were grown. Again, the acreage of corn is limited by the amount of power and labor available. The work on oats may be done at a time when corn does not need attention and hence may provide fuller employment for this labor at little or no extra expense. The maintenance of corn yields may necessitate a rotation including a legume hay or pasture crop. Furthermore, these legumes may be needed to supplement the corn in a feeding system that offers the most profitable use of the corn crop. Oats may be seeded with the legume as a companion crop and thus bring in some additional return from the land the

year the legume is seeded. Even tho a uniform allocation of costs may show that the cost of oat production exceeds the price, the net income of the farm as a whole may be enhanced by including some oats in the rotation. It is, of course, possible that some crops, such as barley or flax, might be substituted for the oats and add more to the income of the farm than would oats. These joint costs are characteristic of farm production. They are extremely hard to measure, and make it especially difficult to compute production costs that may be used safely in cost-price comparisons.

Individual Farm Adjustments Are Too Small to Affect Market

Costs affect prices only as they affect supply. There were 185,255 individual farm units in Minnesota in 1930. The average size was 167 acres. Thirty per cent of these farms were less than 100 acres in size, 66 per cent less than 175 acres, and only 2 per cent exceeded 500 acres. Most of them produced a variety of products. The output of the average farm is too small by itself to have any appreciable effect on the market. Hence the individual farmer lacks the incentive felt by many large manufacturers to curtail production in order to maintain prices.

Summary

This enumeration of the characteristics of farm costs and the problems involved in their computation is by no means complete. The facts presented should, however, be sufficient to explain why farm production responds so slowly to cost-of-production-price relationships. They show also some of the difficulties involved in attempting to arrive at cost figures that might serve satisfactorily as a basis for price-fixing. There are many joint costs that cannot be allocated satisfactorily and accurately to specific products but that are essential to the operation of the farm. Many of the important cost elements do not involve a direct cash outlay. Their significance as cost elements, i.e., as "resistances to production," vary between different producers and at different times. Some of them have a direct alternative use value which may serve as a basis for a cost charge, but others, such as the part-time labor of women or of children attending school, may have no such alternative employment and hence no basis for inclusion in the cost statement. Furthermore, costs are highly variable between farms, between different sections of a state, and between states. It is, therefore, extremely difficult, if not impossible, to compute the cost of producing any single product as a basis for price-fixing that will reflect accurately and generally the "resistances" to the production of that product.