

Prospects for Agricultural Recovery

VIII. Who Pays for the Hog Reduction Program?

By GEOFFREY SHEPHERD

AGRICULTURAL EXPERIMENT STATION
IOWA STATE COLLEGE OF AGRICULTURE
AND MECHANIC ARTS

R. E. BUCHANAN, Director

AGRICULTURAL ECONOMICS SECTION



AMES, IOWA

W.C.
4-8-35

CONTENTS

Foreword	204
Introduction	205
The two chief problems	205
Who pays the hog processing tax?.....	206
The tax is not shifted to the consumer.....	209
The tax is shifted to the producer.....	211
The meaning of our findings	212
Participating and non-participating producers	212
Who bears the burden of reduced hog production?.....	213
Reduced hog production means greater total income.....	214
Effect of government slaughter of lightweight pigs in 1933	216
Effect of possible 20 percent reduction in hog production	217
Packers may increase their margins	218
Effect of program on contract signers and non-signers....	220
Summary	221

FOREWORD

THESE is uncertainty in the minds of many people as to who pays for the AAA corn-hog program. The question is not who pays the costs of administration; that is a comparatively unimportant matter. The question, or rather, series of questions, is, who actually pays the hog processing tax of \$2.25 per 100 pounds—the packer, the producer, or the consumer? And will a reduction in corn and hog production mean more total income for the corn-hog farmer, or less? If it will mean more income, from whom will the increased income be taken—from the packer and other distributors, or from the consumers? Or will it perhaps be taken from no one, but from a general increased production all-round resulting from the partial restoration of agriculture's purchasing power?

These questions are not easy to answer, and various conflicting opinions concerning them have been expressed. There is need for an unbiased, impartial treatment of the subject, which will draw attention to (1) the factors which are involved (2) a way of thinking through the relationships among these factors, and (3) a concrete and definite statement of the tentative conclusions which can be drawn on the basis of existing information. The present bulletin is an attempt to meet this need.¹

¹The bulletin is based upon a somewhat technical statistical analysis that was published in an article entitled, "The Incidence of the Cost of the AAA Corn-Hog Program" in the July, 1934, issue of the *Journal of Farm Economics*. The present bulletin presents the same material, but in less technical form.

Prospects for Agricultural Recovery

VIII. Who Pays for the Hog Reduction Program?²

By GEOFFREY SHEPHERD

The purpose of the AAA corn-hog reduction program is to increase the incomes of corn and hog farmers. To finance the program, the Federal Government has levied a processing tax which now amounts to \$2.25 per hundred pounds on hogs.³ This tax is collected from the packers when the hogs are slaughtered or processed.

The objective of the program is to increase the income of corn and hog farmers by reducing the production of corn and hogs. A substantial part of the foreign demand for United States' hog products has disappeared, apparently for some years to come. The AAA proposes to meet this reduction in demand by a reduction in supply. This reduction in supply is to be accomplished by the payment of "benefit payments" to those farmers who sign contracts specifying that they will reduce their hog production 25 percent and their own corn production between 20 and 30 percent.

THE TWO CHIEF PROBLEMS

The question as to who pays for this program, in the sense of who bears the burden of it, is not one question but two questions. First, who really pays the processing tax on hogs? And second, who suffers from the reduced production and therefore consumption of hogs? These are two separate questions; the

²The author is greatly indebted to Mr. Oris V. Wells, of the Production Control Section of the AAA, Mr. Frederic V. Waugh and Mr. Preston Richards of the Division of Statistical and Historical Research, and Mr. Gerald B. Thorne of the Corn and Hog Section of the AAA for the valuable suggestions which they contributed. He is also indebted to his colleagues at Iowa State College, to Mr. Keith Kirkpatrick who prepared all the statistical tables and graphs (many of which do not appear in this bulletin) and to Mr. Alvin Coons, who rewrote most of the original technical manuscript in everyday non-technical language.

³When the tax was first applied, on Nov. 5, 1933, it was relatively small, 50 cents per 100 lbs. Since then it has been increased step by step to its present figure, \$2.25. A tax of 5 cents a bushel is also levied on the small amount of corn that is processed in cornstarch, glucose and sugar factories.

corn-hog program cannot be judged by studying only one of them.

The present bulletin is divided into two major parts corresponding to these two major questions. The one part deals with the burden or incidence of the processing tax in the early stages of the program before a reduction in hog production has been effected, and the other deals with the burden of the reduction after it has been put into effect and begins to show up in reduced market receipts of hogs.

The objective of this bulletin is to determine who really pays for the corn-hog reduction program—who really bears the burden of the tax and of the reduced production of hogs. This objective cannot be fully attained, because of the limitations of the data available, the small amount of research done, and the many angles from which the whole subject must be considered to get a complete picture. The bulletin, therefore, is only a preliminary report. It will simply point out the factors that need to be considered, and outline broad and tentative answers; it will indicate the lines along which further research is needed before complete and exhaustive answers can be given.

WHO PAYS THE HOG PROCESSING TAX?

The first question is, who really pays the hog processing tax?

On the surface, it looks as if the packers were "paying the tax." But a great many people are not so sure. The tax is paid over by the packers, it is true, but the burden of the tax does not necessarily fall on the packers. The thrifty American housewife, who figuratively represents the consumers of the country, watches her meat bill suspiciously to see if the packers are not passing the burden on to her in the form of higher prices for meat; while the farmer in the Corn Belt, with an eye on the depressed livestock market, inquires if he is not the one who really pays the tax.

Let us consider the packers first. Do they pay the tax out of their own operating margins? (An operating margin is the difference between the price paid for 100 pounds of live hog and the amount received from the products obtained from them.)

The answer to this question is fairly easy to find. Figure 1 provides a background for it; the chart shows packers' mar-

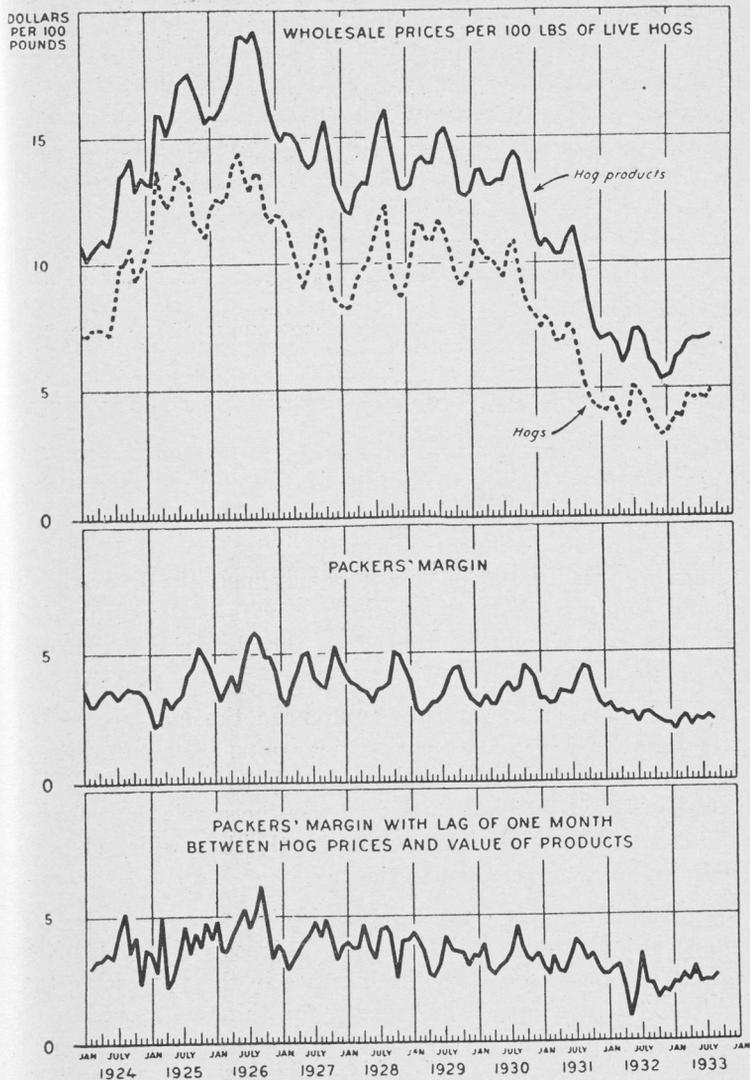


Fig. 1. Packer's Margins at Chicago.

gins since Jan. 1, 1924.⁴ It shows what they paid for hogs per 100 pounds and what they received for the products of 100

⁴This figure is taken from an article by F. V. Waugh, "Margins in Marketing," *Journal of Farm Economics*, April, 1934, p. 240.

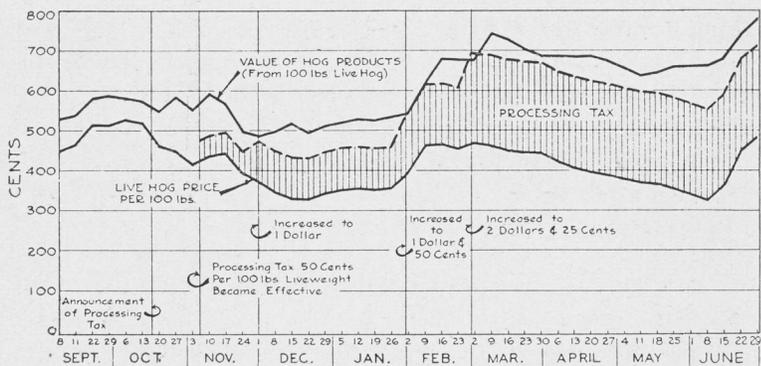


Fig. 2. Packers' margins at Chicago. September, 1933, to May, 1934.

pounds of hog—meats, lard, tannage, etc. It shows that the margin has been slowly declining since 1926. It also shows that there is a seasonal fluctuation in the margin, although most of the fluctuation disappears when the price of hogs is lagged one month; that is, the packer may purchase the live hog in January, but the products are not ready for sale until later, and the margin should be figured on that basis, if hog prices vary in the meantime.

The secretary of agriculture announced the hog processing tax in October, 1933. The packers' margins from the time of that announcement to the present are shown in fig. 2.⁵ This chart shows that whenever the tax was increased the packers suffered a loss for a few days; but shortly they widened their margin by an amount equal to the tax.

On the whole, then, the margin between the price the packer paid for hogs and the price he received for his hog products has increased with the increase in the processing tax levied on the packers. The margin for the two most recent months, May and June, 1934, is \$2.30 wider than for the months preceding the imposition of any tax in the fall of 1933. The increase in the margin is therefore practically identical with the amount of the processing tax. One thing, then, is evident. The packers are not bearing the burden of the tax directly by

⁵"Agricultural Adjustment." Report of Administration of the AAA, May, 1933, to February, 1934. AAA, 1934, p. 245. Recent data direct from Gerald B. Thorne; originally from C. A. Burmeister.

taking it out of their operating margins. They are simply widening their margin by an amount equal to the tax, thereby either passing the tax on to the consumer or else back to the producer, or a measure of both.

Which way is the packer passing the tax—forward to the consumer in the form of higher prices for meat,⁶ or backward to the producer in the form of lower prices for hogs?

THE TAX IS NOT SHIFTED TO THE CONSUMER

To find out whether or not the processing tax has been passed on to the consumer in the early stages of the corn-hog program before hog supplies are reduced, it is not enough to study just the retail prices to see if they have increased since October, 1933. Industrial conditions have improved since then, and retail pork product prices would have risen in any case; purchasing power has increased, and people are bidding higher for meat.

The question can be answered, however (although the answer is only preliminary, pending further research), by examining the market figures which show the nature of the demand for pork—that is, the amount of money people are willing to pay for pork before they will pass it up at the meat counter and choose cheaper meats or meat substitutes. For simplicity, the question will be discussed first without taking into account the effect of the Federal Government's purchases of lightweight pigs in the late summer of 1933. The effect of those purchases will then be brought in later.

What is "the nature of the demand for pork" mentioned in the preceding paragraph? We all know that when the production of pork is high, the price falls; and when the production is low and there is a scarcity of pork, the price rises. But how much does the price rise and fall?

The statistics covering the years from 1921 to 1933 show that the relation between pork production and pork prices is one to one. That is, an increase of 10 percent in the production

⁶Throughout this bulletin the discussion centers on packers' margins, with little reference to other distributive margins (for example, those of the retailer). There are two reasons for this. The processing tax is levied on the packer, not on the retailer; the packer is, therefore, most directly affected. And it is likely that retailers' margins will remain substantially unaffected by the program.

of pork causes a decrease of 10 percent in the price of pork. Similarly, a decrease of 10 percent in production causes an increase of 10 percent in price. This is illustrated in diagrammatic form in fig. 3, which shows the consumer's demand curve for pork.

This demand curve shows that if packers attempt to pass on the tax by raising prices to the consumers, the consumers will simply buy less pork. When it becomes evident to the housewife that too great a portion of her budget is going for pork she will pass it up at the meat counter and substitute other foods. As

more and more pork remains unsold, excess supplies will pile up in storage and, to get rid of this excess, the packers will be forced to lower the price.⁷ Packers (or any other producers or processors) can set the quantity they wish to sell, but the public then sets the price at which it will take that quantity; or packers can set the price at which they will sell, but the public then sets the quantity it will take at that price. Any attempt to raise prices simply results in unsalable surpluses accumulating until the pressure of those surpluses brings the price down again to a figure that will move all the product into consumption.⁸

⁷In fact, since a large proportion of pork products is fresh pork (which cannot be stored) it is the *threat* of unsalable supplies rather than the actual pressure of actual surpluses, that brings or rather keeps the price down.

⁸Mr. Frederick V. Waugh, of the Bureau of Agricultural Economics, at Washington, commented in a letter to the author just before this bulletin went to press, "I think it might be well to point out somewhere in this section that these conclusions are verified by a study of market data. For example, the retail price of pork products in November, December and January was almost exactly in line with the prices we would ordinarily expect considering the volume of sales of pork products and consumer incomes."

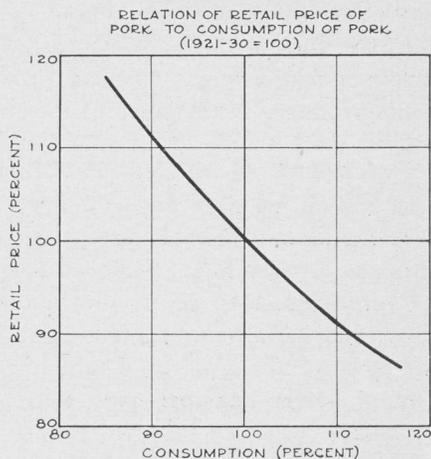


Fig. 3. Relation of retail price of pork to consumption of pork, 1921-33.

In the first stages of the corn-hog program, therefore, before hog production is reduced, it is evident (1) that the packers are not absorbing the tax, and (2) that they are not passing it on to the consumer. There is only one place left during this stage of the game where the effect of the tax can show up, and that is the market price that the farmer receives for his hogs. In the first stages of the corn-hog program before hog production is reduced, this open market price is depressed by approximately the full amount of the tax.

THE TAX IS SHIFTED TO THE PRODUCER

The question now arises, why does the packer, who acts as the go-between for the consumer and producer, with apparently the opportunity to pass the processing tax either or both ways, pass it only to the farmers, in the form of lower hog prices?

We have already observed why the tax cannot be put on the consumer. The consumer will immediately buy less pork, and the threat of unsold supplies will bring the price down again. And this works fast. The only time involved is the time it takes the family shopper to change her mind from purchasing pork to purchasing beef, mutton, eggs or other foods.

With the farmer, however, the situation is different. The length of time involved becomes an important factor. Production is not so much a matter of changing one's mind as it is of altering actual, physical numbers of live hogs. Even when the farmer makes up his mind to cut down production, his crop is usually determined for a year in advance by the hogs already in the feedlot and the sows already bred. In this situation, until hog production is reduced, the producer bears the full amount of the processing tax or any other increase in the costs of distribution.

Were it not for the fact that the Federal Government purchased and slaughtered 6 million young pigs late last summer, hog producers would be sending a full run of hogs to market for almost a year after the tax was first applied. And during that time the market price of hogs would be depressed by approximately \$2.25 per 100 pounds, the full amount of the tax. In that sense, then, the burden of the tax falls on hog producers as a group because the market price of their hogs is depressed;

though it must be remembered that the purpose of the tax is to provide funds for benefit payments to hog producers, and that these funds are flowing back to the hog producers, approximately offsetting the burden of the tax. During the early stages of the program, then, before hog production is reduced, the Federal Government is simply taking money out of the hog farmer's pocket with one hand and putting it back in another pocket with the other.

THE MEANING OF OUR FINDINGS

Let us now sit back for a moment and think out what our findings in this first section of the bulletin mean. Remember that we are considering only one of the two major questions involved, namely, the question as to who pays the processing tax. We have found that before hog production is reduced, the packer is not paying the tax; and we have also found that the consumer is not paying the tax either. Broadly speaking, so far, packers have no cause for complaint, and neither do consumers. The farmers are paying the tax themselves; the tax comes out of one overalls' pocket, and goes back into another pocket in the form of benefit payments for reducing hog production.

Does the program, then, mean simply that nothing is happening except that farmers and the AAA are going through a good deal of unnecessary motions and getting nowhere? It does not. For by going through these motions in cooperation with the AAA, farmers are preparing to bring about something that individually they could not accomplish without 10 or 20 years of hardship and suffering—a substantial reduction of corn and hog production. The effects of this reduction will be considered in the next major section.

PARTICIPATING AND NON-PARTICIPATING PRODUCERS

Before we proceed to that discussion, however, we need to consider one further point. We have just seen that the effect of the tax, during the early stages of the program, is to lower the price of hogs. How is the burden of this lower price distributed among the farmers themselves?

The open market price of hogs is depressed approximately \$2.25 per 100 pounds, the full amount of the tax. Those hog

farmers who have signed corn-hog contracts are reimbursed by the receipt of the benefit payments, which roughly offset the effect of the lower price of hogs.⁹ But those who have not signed contracts receive no benefit payments. They simply net about \$2.25 per 100 pounds less for their hogs than their contract-signing neighbors.

The tax, therefore, acts as a penalty upon the farmer who does not participate in the program, offset by whatever advantage it may be to him to be free to maintain or expand his previous production. If the percentage sign-up is small, the tax will be small and the penalty not great. If the sign-up is high (as it gives promise of being) the tax will be high (as it is) and the penalty severe. In addition, if the price of hogs is low to begin with (as it has been) the depressing effect of the tax will drive hog prices so low that hog producers will be almost compelled to join the plan and receive the benefit payments. Those observers who object to the program as a whole will probably regard these features of the program as objectionable coercion; those who approve of the program will no doubt regard these same features as strong points, since they are likely to lead to a large sign-up, and in addition insure that the chief benefits of the plan will be restricted to those who participate.

WHO BEARS THE BURDEN OF REDUCED HOG PRODUCTION?

The question as to who really pays the hog processing tax is one thing. The question as to who is affected most by the proposed reduction of hog production is another—and it requires more involved analysis. It is not just a question of changes in price per hundred pounds received by the producer for hogs, nor of margin per hundred pounds taken by the packer, nor of price per pound paid by the consumer for pork. It becomes instead of a matter of *price times quantity*, a question of total

⁹This is the situation for the average corn-hog farmer, who raises corn as well as hogs. The case is somewhat different for farmers who raise very little or no corn but a large number of hogs, and also for farmers who raise a very few or no hogs but a large quantity of corn. For a full discussion of their situation, see Iowa Agricultural Experiment Station Bulletin 312, "Estimating Advantages of the Corn-Hog Plan to the Individual Farm," by John A. Hopkins, Jr.

volume of hog income received by hog producers, of total volume of margin taken by packers, and total volume of money paid by consumers for pork. For example, if a farmer raises 10 bushels of potatoes one season and receives a dollar per bushel, and the next season raises 20 bushels but receives only 50 cents per bushel, his income in both instances cannot be considered in the light of prices alone; both price and quantity have to be taken into account.

This question, who bears the burden of the reduced hog production (and therefore reduced consumption) is the subject of the second major section of this bulletin. In this second major section, the first sub-question to be dealt with is this: What is the effect of reduced hog production upon the total income of hog farmers? We all know that reducing hog production will increase the price of hogs per 100 pounds; the question is, will it increase the price of hogs more or less than enough to offset the reduction? If hog production is reduced 10 percent, farmers will get less money than before. But if price rises more than 10 percent, they will get more money than before.

REDUCED HOG PRODUCTION MEANS GREATER TOTAL INCOME

The answer to the question, does reduced hog production mean greater total income, is to be found in fig. 4. This chart shows the effect of variations in annual hog supplies upon the price of hogs.

This chart is different from fig. 3 shown earlier. Figure 3 shows the *retail prices* paid by *consumers* for different quantities of *pork*. Figure 4 shows the prices paid by *packers* for different quantities of *live* hogs. The two curves show different things.

This chart, fig. 4, shows that (during the period of years covered by the data) an increase of 10 percent in the supply of hogs depressed the prices about 20 percent; and conversely, a decrease in supply of 10 percent raised prices about 20 percent.

This means that if farmers had raised only 90 percent of their average production, prices would have risen 20 percent—and the price of 100 pounds of hog would have risen to 120 percent of average. By multiplying 90 by 120 (amount, in

percentage of average, times price in percentage of average), we get 10,800 or 108 percent of the amount farmers would have received for an average supply of hogs. That is, hog producers

RELATION OF U.S. HOGS SLAUGHTERED TO
WEIGHTED FARM PRICE OF HOGS PER 100 LBS
(1921-1931 = 100)

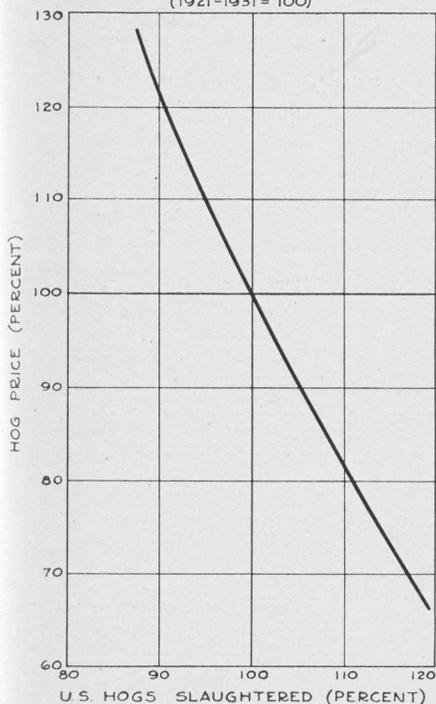


Fig. 4. This chart shows the relation of hog production in the United States to the farm price of hogs per hundred pounds (1921 to 1933).

would have received 8 percent more money for their small 90 percent sized crop than they would have received for an average crop.

The relation between hog supplies and hog prices shown in fig. 4 may have changed somewhat during the current depression. The preliminary research embodied in fig. 4 indicates, however, that if any change has occurred it has been slight. If further research confirms this finding, and shows that the curve has remained substantially as it was before the depression (except for its obvious downward shift) then the percentage effect of a reduction in the production of hogs upon the gross hog income of hog producers should be roughly the same now as before the depression. We have just seen that when hog production is reduced 10 percent, gross income rises 8 percent. If hog production is cut 15 percent, gross income would rise 10.5 percent. If it is cut 20 percent, the gross income might rise 12 percent, although this is conjectural; we have not had a reduction as great as 20 percent since the war, so we are not sure what its effect would be. Further reductions would probably begin to exercise a progressively smaller upward influence on gross income.

We have just seen that a reduction of 15 or 20 percent, and possibly more, increases gross income considerably. It is further evident that it increases net income, or profits, more than it increases gross income. For it costs less to raise a small crop of hogs than it does to raise an average or large crop; not less per hog, but less total cost. A reduction in production, therefore, not only results in greater total income but also in lower total cost. Profits therefore increase more rapidly than total income increases.

EFFECT OF GOVERNMENT SLAUGHTER OF LIGHT-WEIGHT PIGS IN 1933

We are now in a position to discuss the effect of the Federal Government's purchases of lightweight hogs in 1933.

These purchases amounted to 6,200,000 head, equivalent to about 15 percent of a normal winter's run of hogs. One might think, therefore, that the removal of this number of hogs from the winter market of early 1934 would raise the price of hogs 30 percent.¹⁰

This estimate, however, is almost certainly too high. When packers buy hogs in the winter, they take into account not only the supplies available then, but also the supplies likely to be available later on in the summer when their surplus pork will be coming out of storage. That is, one should estimate the percentage that 6,200,000 head of hogs constitutes of a normal run of hogs, not just during the winter months, but during the 9 or 10 winter and following spring and summer months. This percentage would be 10 or 12, rather than the 15 given above.¹¹ Furthermore, many of the lightweight pigs were runts and would not have developed into good hogs if they had grown to maturity. This would bring the percentage reduction down closer to 10 than to 12, and this would raise the price 20 percent rather than 30 percent.

¹⁰This is the estimate made in "Agricultural Adjustment. A report of Administration of the Agricultural Adjustment Act, May, 1933, to February, 1934." U.S.D.A. 1934, p. 253.

¹¹FitzGerald in his "Corn and Hogs Under the AAA," p. 102, estimates that "the emergency (hog buying) campaign should reduce 1933-34 federally inspected slaughter by 9 percent," that is, 9 percent of a 12 months' run of hogs.

From January, 1934, to the end of June, 1934, hog prices at Chicago have averaged about \$4 per hundred pounds. It is evident that they would have been lower than this if the Federal Government's 1933 pig slaughtering program had not removed 10 percent of the supply of hogs. The price of \$4 per 100 pounds is the price for the 90 percent supply. That is, the price of \$4 is 20 percent higher than it would have been for a full run of hogs; it represents 120 percent of the price that would have existed if a full run of hogs had been coming to market. The price, then, would have been $\frac{100}{120}$ of \$4 or \$3.33, instead of \$4. The Government's 1933 pig slaughter therefore raised the price of hogs during the early part of 1934 by about 65 cents per 100 pounds.¹²

EFFECT OF POSSIBLE 20 PERCENT REDUCTION IN HOG PRODUCTION

Let us now consider the prospects for the coming winter of 1934-35 and thereafter.

When this study was begun, it was expected that 1934-35 hog supplies would be reduced perhaps 15 or 20 percent by the AAA corn-hog program. The June, 1934, pig survey, which has just been issued, indicates that the 1934 spring and fall pig crops taken together are likely to be 31 percent smaller than last year. This reduction resulted from the drouth as well as the AAA program.

The reduction in market receipts will probably not be as great as the reduction in pig crop, for market receipts include old breeding stock as well as new crop hogs. Furthermore, the scarcity and higher price of hogs will probably cause them to be fed to heavier weights. If market receipts of hogs, in tonnage, is reduced 20 percent, hog producers as a group would receive roughly $80 \times 140 = 11,200$, or 12 percent more for that smaller crop than for an average crop.

¹²The effect of the government's subsequent purchases of pork for relief purposes is difficult to determine. It undoubtedly increased the price of hogs to some extent, because the pork went to unemployed and other people who would have eaten less pork if they had had to buy it themselves. How much less, however, is not known. In any case, the relief buying is not an integral part of the AAA program. For these reasons, its effect is not discussed here.

Where would this extra 12 percent of money come from? It must come either from the packers and other distributors, or from the consumers.

At first glance it would seem that it could not come from the packers. Figure 2 shows that their net margin remained roughly constant throughout the period from September, 1933, to the end of May, 1934; if the packers were able to preserve their margin then, they will probably continue to preserve it in the future. Other distributor's margins are not likely to change either.

One would suppose, then, that the extra farm income would come from the consumers. Yet fig. 3 has shown, earlier in this article, that the consumer's demand for retail pork is more elastic than that for live hogs as shown in fig. 4; so that when pork supplies are reduced 20 percent, consumers will pay only 20 percent more (not 40 percent, like the buyers of live hogs do as shown in fig. 4). That is, consumers pay more per pound, but only enough more to offset the smaller number of pounds they buy. They do not pay any more total money for a small amount of pork products than they do for a large amount.

The extra money received by farmers for a small crop of hogs, therefore, cannot come from consumers. One might think, then, that consumers will not feel any ill effects of the corn-hog program. But this is not correct. Consumers will not be paying out more money for pork, it is true; but they will be getting 20 percent less pork for their money than before. Presumably they will have to spend more money for all foods than before, because they will have to buy larger quantity of other foods to make up for the 20 percent less pork they will buy if hog production is reduced 20 percent.

PACKERS MAY INCREASE THEIR MARGINS

This might seem to indicate that the extra 12 percent income received by hog farmers will come out of the packers, after all; not because they pay it out of their margins, but because their volume will have been reduced say 20 percent, so that their previous margin per 100 pounds, multiplied by their reduced volume, will bring them in only 80 percent of their previous total income.

This at once raises a question. Will the packers be content simply to retain their previous margin per hundred pounds when supplies of hogs are reduced and their total volume of business is cut 20 percent? Will they not naturally seek to increase their margin per hundred pounds, enough to offset the reduced volume? They would not need to increase their margin a full 20 percent, because they handle other products besides pork, and not all of their costs are fixed. But a large proportion of their costs are fixed, and they would probably attempt to increase their margins somewhat.

It is almost certain, however, that packers all over the country would not suffer a uniform 20 percent decrease in volume. They would all fight to maintain their volume, and those who were most advantageously situated would fight more effectively than the others. Some packers might be able to continue getting as many hogs as before, so that the effect of the total reduction would be concentrated upon the other packers. The eventual result might be that margins would be little if any wider than before.

What about the margins taken by other middlemen—for example, by retailers? These margins bulk considerably larger than those of the packers. In all probability, these margins will remain unaffected by the reduction in volume. These middlemen handle many other products besides pork, and a reduction in pork volume would be only a small item in their total income. In any case it probably would be largely offset by increases in the volume of other foods. The same thing is true of the margins taken by transportation agencies. And in any case, transportation margins are notoriously sluggish, changing very slowly if at all, over periods of many years.

We may summarize, then, by saying that (1) consumers will be paying as much money for the reduced pork supply as before, and that (2) packer's and other margins per pound will remain substantially unchanged, so that the total margin or total income of packers and other handlers will be reduced, and therefore (3) farmers' incomes will be increased by an amount equal to the decreased income received by packers and other handlers of pork.

Packers will probably consider this an unwarranted transfer

of income from themselves to hog farmers. Farmers will probably point out, in reply, that they (the farmers) have borne much more of the decline in consumer expenditures for pork since 1929 than the packers have (fig. 1 in the first part of this bulletin shows that this reply would be correct) and that a transfer of some income from packers to farmers now would only partially redress the balance. They could further claim that a partial restoration of agriculture's purchasing power, even though it be at the expense of other groups, is likely to speed up recovery for all groups; though here they would be on more controversial ground.

EFFECT OF PROGRAM ON CONTRACT SIGNERS AND NON-SIGNERS

The final question is the differential effect of the program upon contract signers and non-signers.

Those who sign the contract and reduce production 25 percent will receive a benefit payment of \$5 per head on the remaining 75 percent of their hogs. This is equivalent to receiving about \$2.25 per 100 pounds (the amount of the hog processing tax) on the hogs they continue to produce; it is also equivalent to \$15 per head for the hogs they do not raise. And \$15 per head is equivalent, at average weights (230 pounds per hog), to about \$6.50 per hundred pounds.

Those who do not sign up will receive the same open market price for hogs as those who do sign up; but they will receive no benefit payments. The use of specific figures will make this part of the question concrete. Suppose that the farm price for hogs, had there been no AAA program, would average \$4 per hundred during 1934. A 20 percent reduction in total hog production would raise this price 40 percent, or \$1.60, to \$5.60. If this reduction had been accompanied by the imposition of a processing tax of \$2 per hundred (which is perhaps about what the actual tax will average) the farm price would be reduced from \$5.60 to \$3.60.

The non-signer, therefore, will receive \$3.60 per hundred pounds, whereas if there had been no program at all he would have received \$4. He will be thus somewhat worse off than before, in absolute terms. And in relative terms, he will be considerably worse off than his neighbors who have signed con-

tracts. For his neighbors will be receiving the same market price for their hogs as he, but will be producing only 75 percent as many hogs, and will be receiving \$6.50 per hundred pounds, clear, *for the hogs they do not raise*. This is considerably more than the non-signer receives, gross, for the hogs he raises. And it is certainly much more than he can ever hope to *clear* from the last 25 percent of his hogs.

The penalizing effect on the non-signer is severe if the general level of hog prices is low. If the level is high, however, the penalizing effect will be partly offset by the non-signers' freedom to expand his hog production and take advantage of the high hog prices. It is evident, however, that hog prices would have to go very high—over \$10, for illustration—before this effect would be very great.¹³

SUMMARY

It appears, then, that in the early stages of the AAA program before hog production is reduced, the burden of the processing tax on hogs is not being borne by the packer, nor passed on to the consumer, but is being passed back to the producer in the form of lower market prices for hogs. The market price of hogs during the first part of 1934 would have been depressed by approximately \$2.25, the full amount of the tax, had not the 1933 Federal Government slaughter of lightweight pigs reduced supplies somewhat. This reduction in supplies offset part, perhaps 65 cents, of the full depressing effect of the tax. The net reduction in hog prices, then, was probably about \$1.60.

After hog production is reduced, the situation changes. If hog production is reduced 20 percent by the AAA program, consumers will then pay about 20 percent more per pound of retail pork products. Since their demand curve for pork has an elasticity of unity, their total outlay for pork products will remain roughly constant. Their outlay for all food will be increased, however, since they will need to buy more of other foods to make up for the 20 percent less pork they buy. Producers of other foods will, therefore, benefit to some extent.

¹³For a full discussion of this question, see Iowa Agricultural Experiment Station Bulletin 312, "Estimating Advantages of the Corn-Hog Plan to the Individual Farm," by John A. Hopkins, Jr.

Farmers should receive larger total returns from their small production, since the packer demand curve for hogs has a slope of about $-.5$, which is less than unity. This extra income cannot come from pork consumers, as has just been shown. It must come from the packers, because of their reduced volume of slaughter and consequently smaller total income from slaughtering hogs. Packers may increase their margins to offset their reduced volume, but since their total costs will be reduced on account of their smaller volume, the percentage increase in their margin should be substantially less than the percentage reduction in their volume. To that extent, the gross hog income to hog farmers as a group, reduced by the tax but increased by the benefit payments, should be greater than before. The increase in the profits of hog farmers as a group (or the decrease in their losses) will be still greater than the increase in their income, since their total costs will have been lowered because they will be producing fewer hogs; their gross income will be greater, their total costs will be less, and their net profits should be greater than before.

Within the farming group, those who have not signed contracts to reduce hog production will receive the same open market prices for hogs as those who have signed up, but will receive no benefit payments. Whether their gross income will be greater or less than if they signed up will depend upon the extent to which they expand their hog production without incurring sharply increased unit costs, and upon the extent to which hog prices rise substantially above present levels.

It seems, then, that (a) as far as the incidence of the processing tax is concerned, farmers "pay the processing tax" themselves, in the sense that the price they receive for hogs is \$2.25 per hundred lower than if no tax were being applied; but they are reimbursed by benefit payments from the Federal Government arising from the collection of the tax: (b) consumers will not pay the processing tax, but will bear a large part of the incidence of the effect of the reduction in hog production; they will receive, say, 20 percent less pork while paying out as much money as they used to pay for a full amount of pork; and (c) packers will take a smaller total volume of margin from the "consumer's pork dollar" than before, even though their

margin per pound may be increased, because of the reduced volume of pork they will handle. As a result, therefore, it appears that farmers will receive more gross money income, for raising fewer hogs, than before the program was put into effect; and their profits should be substantially increased.