THE ATTACK UPON POTATO FUTURES TRADING IN THE UNITED STATES*

INTRODUCTION

Commodity futures markets, which have had their fullest use and closest regulation in the United States, have recently come under renewed and sustained attack here. Futures markets throughout the world have operated in the face of numerous obstacles, mainly of governmental origin, in the period since World War II, during which many markets were closed or inoperative because of the necessity for temporary abandonment or modification of the pricing systems. (1).

Prior to this recent era of uneven resurgence of futures markets, their history, in this country and others, has been checkered with attempts at restrictive or prohibitory legislation, some of which were successful. In the United States, some 200 bills pertaining to futures trading were introduced in Congress between 1880 and 1920, many of them intending to prohibit it. In Germany futures trading was at one time prohibited in a law which was subsequently repealed (2). Most recently futures markets for particular commodities have come under attack here: onion futures trading was prohibited in 1958, in Public Law 85-839, and currently there are bills under consideration to prohibit futures trading in Irish potatoes.

The following letter, which appears in the record of hearings on a bill to prohibit futures trading in potatoes, reveals much of the nature of the attack upon that market, and of the earlier successful attack upon the onion futures market (3, pp. 45-46):

Harold E. Bryant
Maine Potato Council
Presque Isle, Maine

Dyk Bros. Co.
Grant, Mich., January 29, 1963

Dear Mr. Bryant: We received your letter relevant to eliminating futures trading of Maine potatoes. I will be happy to give you a few suggestions I feel will be helpful, maybe you already have done what we will suggest.

As to the sentiment of the growers, I would say at least 95 per cent are happy the futures trading on onions has been eliminated. I am thoroughly disgusted with many growers who supported the

* Much of the evidence contained herein was presented by the author to the Subcommittee on Agricultural Research and General Legislation of the Senate Agriculture Committee, September 30, 1963.
National Onion Association with finances and testimony in Washington at the hearing. I feel many were led to believe eliminating futures would be a cure-all for the onion industry, which it has not been, consequently many no longer are supporting us, at least in areas in Michigan, in which I am familiar. Its elimination has not been a cure-all, however, we do not have the wild fluctuations which played havoc with the cash market.

I would suggest that you put on a vigorous letter writing campaign to your Senators and Representatives in Washington. Have interested growers from every potato growing area in the United States do the same. Say in your own language why you want futures eliminated. You don't have to have a lot of big words. It is difficult to get some people to write a letter. If you have responsible men in various areas, have them write letters for different growers; change the wording a little and have the growers sign their names (or sign for them).

I believe the success of the onion industry was due largely to the number of growers who voiced their objections.

If you can get a hearing in Washington, get a large number of growers to testify. Congressmen will give a lot more consideration to testimony from a grower than a professional market speculator.

Keep on emphasizing that your product is grown by hard labor and sweat and it's your living, then along comes pressure groups who speculate with your product who have no other interest in the potato than to manipulate the market to get swings up or down to their own advantage, which disrupts an orderly market and brings confusion to growers and many times chaos. (Have figures to corroborate.)

Bring out the fact growers are confronted by concentration of chain buying power and a victim of the speculator who has no other interest than speculation in your commodity. (Have figures and statistics to corroborate.)

We hope these few suggestions may be of some help, it will be hard to fight, however I feel the potato growers have an excellent chance to end futures trading if they stand together. Solicit support from other vegetable growers. Keep emphasizing that paper trading on the exchange has an effect on price all out of proportion of the actual market.

Sincerely yours,

JOHN DYK.

The parenthetical admonition to “sign for them” betrays an elemental cynicism that may seem to place much of the attack beyond the reach of economic analysis. And if it be true — as well it may be — that “many were led to believe eliminating futures would be a cure-all” and that “congressmen will give a lot more consideration to testimony from a grower than a professional market speculator,” then evidence of market performance becomes superfluous, which may help to explain why so little valid economic evidence is found in the record of earlier or current hearings. Nevertheless, some allegations which can be classified as testable economic hypotheses, refutable in fact or in principle, do appear in the record; and one major statement incorporates figures and statistics, thereby following at least part of the injunction “Have figures and statistics to corroborate.”
The purpose of this article is to subject to economic analysis the allegations in the recent hearings on potato futures: to a large extent this necessarily results in exposure of fallacy, but to some extent it also provides support for the more invigorating conclusion that the futures market is a highly constructive force in the potato economy.

INFLUENCE UPON THE MAINE POTATO ECONOMY

The most influential testimony against the market may have been that of Mr. Douglas Bagnell (3, pp. 61-82), retired Deputy Administrator of the Commodity Exchange Authority. His testimony occupies a far larger part of the hearings record, and is more fully documented, than that of any other individual. His many years of experience as an investigational and enforcement officer with the CEA give added weight to his testimony by establishing a presumption of disinterested expertise.

The burden of Mr. Bagnell's argument is that Maine potato producers have suffered a striking deterioration in their competitive position during the period of heavy trading in the Maine potato futures contract on the New York Mercantile Exchange. This deterioration, calculated in terms of a comparison with Idaho, he estimates to have been "a financial disadvantage to Maine of an average of $15,366,900 per year over the 10-year period from 1951-52 to 1960-61." (3, p. 65). Mr. Bagnell offers no clue why or how futures trading produces such disastrous effects, nor does he ever assert in so many words that futures trading did so, conceding that "there are thousands of things . . . that affect the prices of any product" (3, p. 64), but he does present his estimates as "a clear indication that the people in Maine had some basis for their feeling concerning this deterioration in relationship" (3, p. 68) — namely, that futures trading caused it. The futures market thus emerges as the deus ex machina of his analysis.

A comparison between Maine and Idaho is hardly an appropriate way in which to assess Maine's competitive position, inasmuch as the two States grow different varieties — the Russet Burbank of Idaho being the Cadillac and Maine's Katahdin the Chevrolet, so to speak, of the potato world. Nevertheless, Mr. Bagnell's comparison is in a way instructive. He presents a comparison between the five-year period 1946-51 and the ensuing ten-year period as evidence of a decline in Maine's competitive position, yet in the five-year base period almost exactly half of Maine's potato sales were to the government, in contrast to 15 per cent of Idaho's sales. It is in no way surprising that Maine should subsequently lose a large fraction of its 1946-51 sales, for which no commercial demand existed, and it is hence inappropriate to speak in terms of deterioration from a competitive position when the starting point was wholly artificial. Any reasonable calculation of the price Maine could have obtained for the 158 million bushels of potatoes it sold to the government and the 164 million bushels it sold commercially during this base period would imply nothing short of ruin for its growers. No such calculation is undertaken here for the very reason that Maine would not have produced potatoes on any such scale
Chart 1. — Volume of Trading and Open Contracts in Potato Futures, N. Y. Mercantile Exchange, 1945-62*

*Data for annual average month-end open contracts, and annual total volume of trading from 12.
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without price supports, and hence virtually the entire contrast between these two periods must be attributed to the support program. The relevant data for the base period are shown in Table 1.

Table 1. — Sales to Government and Commercial Sales, Maine and Idaho, 1946-51

(Thousand bushels)

<table>
<thead>
<tr>
<th>Item</th>
<th>1946-7</th>
<th>1947-8</th>
<th>1948-9</th>
<th>1949-50</th>
<th>1950-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potato production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maine</td>
<td>78,402</td>
<td>65,100</td>
<td>75,075</td>
<td>70,380</td>
<td>63,360</td>
</tr>
<tr>
<td>Idaho</td>
<td>46,280</td>
<td>28,600</td>
<td>45,600</td>
<td>36,162</td>
<td>49,200</td>
</tr>
<tr>
<td>Sales to government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maine</td>
<td>35,888</td>
<td>14,310</td>
<td>42,706</td>
<td>29,765</td>
<td>34,966</td>
</tr>
<tr>
<td>Idaho</td>
<td>5,935</td>
<td>4</td>
<td>9,490</td>
<td>3,097</td>
<td>8,197</td>
</tr>
<tr>
<td>Commercial sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maine</td>
<td>36,539</td>
<td>45,681</td>
<td>26,022</td>
<td>33,500</td>
<td>22,329</td>
</tr>
<tr>
<td>Idaho</td>
<td>34,435</td>
<td>24,809</td>
<td>30,863</td>
<td>27,010</td>
<td>35,843</td>
</tr>
<tr>
<td>Commercial sales as per cent of total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maine</td>
<td>45</td>
<td>76</td>
<td>38</td>
<td>53</td>
<td>39</td>
</tr>
<tr>
<td>Idaho</td>
<td>85</td>
<td>100</td>
<td>76</td>
<td>90</td>
<td>81</td>
</tr>
</tbody>
</table>

*Sales to government from 4, all other data from 13.

There may nevertheless be merit in a broader comparison that can help to place the futures market in its proper perspective. Any consideration of the performance of the Maine potato economy under the influence of actively traded futures contracts requires, first, that the period of that influence be properly ascertained, and secondly that the immense impact of the government's support program be taken into account. I have very little disagreement with Mr. Bagnell on the first score; the period of possible futures trading influence should, I think, be defined as beginning only one year later than the year he chose. The annual volume of trading and average of open contracts both jumped to about their present levels in 1952-53, and these have since been well sustained (Chart 1).

The second proviso — which leads to conclusions very different from Mr. Bagnell's — is likewise not difficult to meet. The best single indication of the producers' intentions to grow potatoes for market, and of their competitive relationship with other producing areas, mutatis mutandis, is to be had from acres harvested.¹ This is shown in Chart 2, in which the longer

¹ In some respects planted acres might be a better index, but no matter for this analysis, as the year-to-year correspondence between planted and harvested acres, for both Maine and Idaho, is almost perfect. The harvested acres series is longer, which is a great advantage.
record has been broken down into its several phases. The first phase, 1909-1926 inclusive, was one of rather wide fluctuations in response to year-to-year price changes, around an average of 131 thousand acres, with no discernible trend. Prices in 1925 and 1926 were exceptionally high — higher than any previous two years other than in a war period — and this encouraged a rise in the level of acres harvested that could not quite be sustained, resulting in a gradual downward drift during the second phase, 1926-1942 inclusive. Of the price support phase that followed only a sketch can be given here. The response of Maine producers to prices equalling 90 per cent of parity was dramatic, with acreage remaining high even during 1947 and 1948, when allotments were sharply reduced. When the support level was reduced to 60 per cent in 1949 and 1950, however, Maine growers cut their acreages back sharply. This curtailment left their best acreages in production, yields rose abruptly, and even the 60 per cent support level proved effective for Maine, which sold more than half its potatoes to the government at this level. This sharp downward adjustment in acreage, together with the continued sharp decline in the first year (1951) when there were no supports, suggests anything but a healthy com-

2 A more complete analysis, by state groupings, of the response to price supports, and the determination of acreage allotments and state support levels, is found in 4.
petitive position for the Maine industry, after high price supports and before futures trading. Before considering the question of the effect that futures trading has had upon the most recent, and most stable phase, the pattern here may be summarized and compared with Idaho's. Where was the Maine potato industry headed in each of the non-price-support phases? Clearly nothing higher than its present acreage was ever indicated. In the first (1909-26) phase it was headed toward a lower level; in the second (1927-42) phase it was headed toward about the present level; and in the brief period after high level price supports were removed it looked headed toward disaster.

Chart 3. — Harvested Acres of Potatoes in Idaho, 1909-62*

*Data from 13.

Chart 3, showing Idaho's harvested acres, reveals a steadily upward trend; so much so that the deterioration in Maine's position relative to Idaho may be said to go back at least as far as 1909, long before the days of the futures market. Idaho producers, with alternative crops to turn to, did comply with the reduced acreage allotments of 1947 and 1948, as Maine producers did not, hence Idaho's acreage response to price supports is
limited to four years, instead of the six years shown for Maine. The contrasting response to a reduced support level, and to the absence of supports, is also interesting. Idaho producers did not reduce their acreage, in 1949, 1950, and 1951, from the level of the two previous years, whereas Maine producers reduced their acreages by about one third between these periods. In other words, Maine's competitive relationship to Idaho worsened abruptly after price supports were reduced or removed and before the futures market became active.

Comparison With Other States

A better comparison than that with Idaho was partially drawn in the House hearings, and a still better one can be drawn here. There were presented some price data purporting to show a decline in Maine's competitive relationship to Michigan as well as Idaho. It is unnecessary to carry this comparison back any farther than was done there to show that, in fact, Maine's relationship to Michigan has improved markedly (Table 2).

Table 2. - Value of Commercial Sales of Potatoes from Maine and Michigan, 1946-61*

<table>
<thead>
<tr>
<th>Period</th>
<th>Maine</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1946-47 through 1950-51</td>
<td>39,189</td>
<td>9461</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1951-52 through 1960-61</td>
<td>53,529</td>
<td>9636</td>
</tr>
</tbody>
</table>

*Total sales from 13, less sales to government where applicable from 4.

A still broader comparison for the assessment of Maine's competitive position is between Maine and all of the other late crop producers. Maine's reliance upon its natural soil and climate advantage in the production of an all purpose potato, in contrast to the production of a preferred variety on irrigated land in Idaho, suggests that Maine's competitive position be viewed in this larger context which at least includes areas whose production is comparable to Maine's, although in some respects Maine is an almost unique producing region. Table 3 shows that Maine has fared very well.

Table 3. - Value of Commercial Sales of Potatoes from Maine and All Other Late Crop Producing States, 1946-61*

<table>
<thead>
<tr>
<th>Period</th>
<th>Maine</th>
<th>All Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1946-47 through 1950-51</td>
<td>39,189</td>
<td>218,591</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1951-52 through 1960-61</td>
<td>53,529</td>
<td>195,543</td>
</tr>
</tbody>
</table>

*See note for Table 2.
The New Acreage Pattern In Maine

The most important contribution that the futures market has made to the Maine potato economy is the introduction of acreage stability. Potato producers have been plagued historically by acreage variations which came in response to high or low prices, and which in turn induced price variations in a self-perpetuating cycle. This problem, which was analyzed in (4), has been universally attributed to the tendency to base production plans on past prices, in the absence of any reliable mechanism for the formulation of forward prices. The pattern shown in Chart 2, for the 12-year futures market period, reflects the fact that growers now have a reliable mechanism for the formulation of forward prices. Many growers hedge their planned production in futures contracts, thereby obtaining the fullest and most direct advantage of the market; but the larger number of growers who do not hedge nevertheless have a reliable forward price to guide their production intentions. The futures market has already facilitated a substantial reduction in year-to-year acreage fluctuations below what these had been, and would have continued to be, in response to recent prices. The more the market is used, both directly and indirectly, the greater will be such reduction, with a consequent improvement in price stability. (See Appendix.)

Benefits to Speculators and Hedgers

Elsewhere in the hearings are numerous assertions, in various phrasings, that the futures market operates to the benefit of the speculator and to the detriment of the hedger.

"These practices leave the farmer at the mercy of the gambler" (3, p. 52).

"The farmer was being taken for a lamb which was sure of losing his fleece" (3, p. 52).

"In theory futures trading can be used as a hedge and it is right in principle. And I am sorry to say it does not work that way in practice" (3, p. 55).

"I believe it is supported to a high percentage by large speculators who can manipulate prices to suit their own purposes" (3, p. 18).

"The only ones to benefit from these transactions were the speculators" (3, p. 5).

"The market was always made by the gamblers and speculators who were mostly speculators out to make an easy buck at the expense of the grower" (3, p. 47).

These and the many other expressions of opinion that the speculator gains and the hedger loses may be compared with the computed financial results of trading, by classes of trader. The evidence is summarized in Table 4, showing annual financial results of futures trading for the various classes.
TABLE 4—FINANCIAL RESULTS OF POTATO FUTURES TRADING, BY CLASSES OF TRADERS, 1952-62

<table>
<thead>
<tr>
<th>Years</th>
<th>Small Traders (not specified whether hedgers or speculators)</th>
<th>Large speculators</th>
<th>Large hedgers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Dollars)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1952-53</td>
<td>-1,219,165</td>
<td>263,511</td>
<td>935,654</td>
</tr>
<tr>
<td>1953-54</td>
<td>- 123,544</td>
<td>- 35,077</td>
<td>158,621</td>
</tr>
<tr>
<td>1954-55</td>
<td>- 479,135</td>
<td>277,974</td>
<td>201,161</td>
</tr>
<tr>
<td>1955-56</td>
<td>799,676</td>
<td>352,144</td>
<td>-1,151,820</td>
</tr>
<tr>
<td>1956-57</td>
<td>- 410,794</td>
<td>- 126,893</td>
<td>537,687</td>
</tr>
<tr>
<td>1957-58</td>
<td>764,419</td>
<td>276,976</td>
<td>487,443</td>
</tr>
<tr>
<td>1958-59</td>
<td>- 246,369</td>
<td>50,018</td>
<td>196,351</td>
</tr>
<tr>
<td>1959-60</td>
<td>386,483</td>
<td>811,820</td>
<td>-1,198,303</td>
</tr>
<tr>
<td>1960-61</td>
<td>- 921,900</td>
<td>164,516</td>
<td>757,384</td>
</tr>
<tr>
<td>Total</td>
<td>-3,594,827</td>
<td>1,848,994</td>
<td>1,745,833</td>
</tr>
</tbody>
</table>

*Author’s computation as described in text; based on 12.

of traders, as computed from official data. The computations were done as follows:

1. For every semimonthly interval (consisting of about 11 trading days, on the average) throughout the ten-year period, a weighted average price change in all futures was calculated. Each price change was weighted by the open contracts in that future at the beginning of that interval.

2. The average net position (long or short) for each class of trader during each interval was calculated by averaging the net positions at the beginning and end of the interval.

3. The financial results, for each class of trader for each semimonthly interval, were computed by multiplying the average net position during the interval by the price change over the interval.

Certain aspects of the results require brief elaboration. The financial gains to hedgers, and the losses to small speculators, are understated in these figures, for the reason that the nonreporting group consists of some small hedgers, whose positions would always be net short, like those of the large hedgers. The remainder of this category are small speculators whose losses would be correspondingly increased after allowing for gains to the hedgers.

These estimates of financial results for hedgers are more reliable than those for speculators, because hedging positions change less frequently, and therefore price changes over intervals of approximately 11 trading days come closer to their actual results. There can be no doubt, from this evidence, of one important conclusion: Hedgers profited directly from their actual futures trading during this decade, and all other traders, in the aggregate, incurred losses. The immediate significance of this conclusion is that it destroys the myth of speculative advantage relative to hedgers on this market. In addition to the more important benefits that accrue to the potato industry from the functioning of this market, a net transfer of funds from the rest of the
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Economy to the potato economy has been affected here. This is not too surprising, as it simply means that the potato economy does a better job of potato price forecasting than does the rest of the economy. Nor do these results differ greatly from those which are found on some other futures markets. The results are surprising only to those who retain a mistaken image of futures markets as gambling dens in which the city slicker takes advantage of the country bumpkin.

HEDGING CAPACITY OF THE MARKET

A somewhat more sophisticated element of the attack first acknowledges that the market has been useful as a hedging medium, then goes on to assert "the utter impossibility of that market to absorb any substantial portion of the quantity that would be sold if a majority of the producers endeavored to use it" (3, p. 37). This argument was developed at length twice in the hearings. One opponent of the market argued as follows:

These figures show that as of March 1, 1962, the eight eastern States had storage stocks of 53,340 carlots and the total open contracts were 6,355 carlots, indicating that 11.9 per cent of the March 1 stocks could have been hedged. If an attempt had been made to hedge even 50 per cent of the March 1, 1962 stocks, which of course have been reduced greatly since harvest, it would have been necessary to have short hedging contracts of more than 26,000 carlots instead of 6,000 . . . If the farmers had followed the advice to hedge at about the time of planting, we might assume that they wanted to sell one-half or more of the total anticipated production which would have meant short futures contracts of some 67,000 carlots. If the volume of business and open contracts on the New York Mercantile Exchange were expanded to anything remotely approaching the figures necessary for such generalized hedging, that market would unquestionably be in an utterly chaotic condition. Anyone who knows futures trading knows that the price would fall under such pressure and that price gyrations would be completely uncontrollable with some 10 or 20 times as many misinformed amateur speculators churning around in the market (3, p. 37).

Elsewhere the argument was developed in cross-examination of a witness who used and favored the futures market:

Mr. McIntire, Representative from Maine.
Now, if 400 farmers out of 2,500 in this industry in Maine decided that that was the day they wanted to sell, what would happen to the price?
Mr. Findlen. Now, you are asking me a question that would have to be answered by a professional in the trading field.
Mr. McIntire. Oh, no it wouldn't either. You know full well what would happen.
Mr. Findlen. No, I don't. I am serious when I say that.
Mr. McIntire. Well, isn't the relationship of the stability of that price tied to the number of sell orders that goes in on the board? And the greater volume of sell as against buy would have a tendency to weaken the price structure, would it not?
Mr. Findlen. You put that very squarely. But I still say somebody that knows a lot about the number of trades made in each day, the volume of trading, that is. If I said what would happen, I don't know, because I don't know how much volume of trading there is. . . .

Mr. Findlen. But if there also were ample buyers to buy that on the board, speculatively, then it wouldn't necessarily drive it down. It might go up instead.

Mr. McIntire. If you had more buyers than sellers.

Mr. Findlen. If there were ample buyers there to take the number of cars that are being traded, the price would go up with those people selling.

Mr. McIntire. But the normal reaction on the trading floor is that if they are flooded with sell orders, the market surely isn't going to go up.

Mr. Findlen. If they are flooded. But we are talking about whether there are ample trades being made in each day.

Mr. McIntire. Yes, the extent to which an individual, or the thinking of an individual, serves to cover.

Mr. McIntire. But if the total potato industry in Maine were attempting to use such a cover, it just couldn't work out. Neither could it in the cash market. If everybody was offering to sell in the spot market it wouldn't protect there, because it would weaken that market (3, pp. 120-121).

Another opponent of the market said:

I have a few grower clients who have used the mercantile exchange quite successfully in hedging. However I realize that if all of my clients or, more particularly if all the growers in the State attempted to do the same thing, that the market would change to the extent that it would provide no hedge (3, p. 50).

This repeated assertion of the incapacity of the market to absorb additional hedging without severe price depression is effectively refuted in the record of this market, as well as in the history of other futures markets. How is it, one may ask, that a number of futures markets have grown to the point where virtually all commercial stocks are hedged, and open interest typically exceeds commercial stocks? And how does the potato futures market compare, at its present stage of the development of hedging use, with other markets that must have passed through the same stage? How did the potato futures market absorb the threefold increase in hedging use in 1952 and the twofold increase in 1961? If this argument had been made in 1951, when at a much lower level of market use it would have had much greater plausibility, the sharp increase in hedging use in 1952 would have been deemed disastrous, yet, far from having a depressing effect upon prices, this hedging was accomplished at price levels more favorable to the hedger than in any other year. The reporting speculators, large traders who exercise good and flexible judgments in futures markets, are frequently found trading with the hedgers on the potato market — a sign that there is ample potential to absorb additional hedging at prices realistically related to supply and demand. The potato futures market has not only accommodated hedging at
a net advantage to the hedger, but it has developed rapidly without passing through the phase in which hedgers need to support it. The postwar development of the soybean futures market, which is today our largest and most useful commodity market, was achieved only at some early sacrifice on the part of hedgers. For a period of about five years from 1948 to 1953, hedging was done at a substantial price sacrifice in soybean futures. The average cost of hedging, in terms of price change against the hedger's position, was about 9 cents a bushel. Since that time, as the trade developed, the much larger market has sustained a much larger hedging load with no price sacrifice. The remarkable situation in potato futures is that now, at a phase comparable to the earlier development in soybeans, the market has developed ahead of hedging use and continues to display unused capacity for additional hedging. The evidence of price behavior in potato futures suggests that this market can absorb very substantial amounts of additional hedging. In fact the historical evidence from the major futures markets suggests that the more hedging comes to a market, the better the market is for hedgers. Markets which never developed sufficient speculation have been the poorest hedging markets. The defunct futures markets for the mill byproducts, bran and shorts, illustrate this principle cogently. They died out because insufficient speculation was attracted to provide hedging at a reasonable cost (5). The evidence is clear that the potato futures market is exceptionally viable.

The data presented in Table 4 speak directly to this point. Unused hedging capacity is represented in the fact that buyers of futures contracts have characteristically paid too high a price, representing excess demand for long positions in the futures market. Consequently the larger speculators have had to move to the hedger's side of the market in order to seek their profits, as they find speculative demand too great and hedging demand too weak at prevailing prices. Of the 240 semimonthly intervals from which the results in Table 4 are drawn, large speculators were on the side of the hedgers 68 times. During those 68 intervals, large speculators had financial gains averaging $11,671 per interval, compared to an average gain of $6,136 for the remaining 172 intervals. In other words, even when they moved over to take advantage of excess hedging capacity, they made their best profits, indicative of still greater capacity to absorb hedging. And the most recent major increase in hedging, when it more than doubled in 1961-62, was absorbed at prices very favorable to hedgers.

COSTS AND COMPLICATIONS OF HEDGING

The hearings record also includes testimony to the effect that hedging is too complicated, and too costly, to be undertaken by the ordinary grower (3, p. 26). In this section are shown the results and costs of three simple illustrative hedging programs, each within the ken of the ordinary potato grower, as well as some additional evidence regarding the hedging capacity of the market.
The futures market has been active since 1952; therefore each of the hedging programs is applied here for eleven years (1952-62). The results are shown in terms of actual prices on certain typical dates, but this in no way limits the results, which would be entirely comparable if other dates had been selected. The dates which are focused upon in the analysis are April 15, October 15, and February 28 of each crop year; but I have made the same computations for alternative dates, with results that do not differ appreciably from those to be shown.

Each hedging program takes a 100 acre grower, attributes to him the state average yields, and computes his financial results hedged and unhedged. Since it is the same typical grower, following the same cultural practices and merchandising his potatoes in the same way in either case, the only result which is measured is that of the hedging program.

Growing Season Hedge

The first type of hedging program to be measured is that covering the growing season. The underlying basis for this kind of program is that the price of potato futures at planting time is much more stable from year to year than the price at harvest time, and will average out at about the same level over the years. As is seen in Chart 4, however, there has been an even

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**Chart 4. — Prices of November Potato Futures on April 15 and October 15, 1952-62**

*Data from 12.*
THE ATTACK UPON POTATO FUTURES TRADING IN THE U.S.  111

stronger basis than this for such a program, for not only has the price at planting time been much more stable, but it has averaged 13¢ higher than the harvest time price, more than covering the costs of hedging. (Commission fees and interest on margin money comes to somewhat less than half of this 13¢ advantage.) All that the grower would need to do is to sell futures contracts at planting time (say, about mid-April, but the results are the same for the entire period between mid-April and mid-May) and buy them back when his potatoes are harvested and sold: (mid-October).

The difference in price, moreover, does not measure the full advantage of this program, because there is a greater difference in income before taxes, and a still greater difference in income after taxes. Yield fluctuations are such that the grower does not get the full advantage of the high prices that occur occasionally in an unhedged operation, since these tend to come during a year of relatively low yields. This effect is reflected in Chart 5, which

CHART 5. — GROSS RECEIPTS FROM 100 ACRES OF POTATOES IN MAINE, OCTOBER 15 SALE, HEDGED AND UNHEDGED, 1952-62*

shows the gross receipts from potato sales, hedged and unhedged. The 76¢ freight cost between Maine and New York has been subtracted from the price, and the price multiplied by the state average yield on 100 acres of potatoes to obtain these results. The grower would sell his actual potatoes at the same price in either case, and for convenience this is taken to be the

*Author's computation as described in text; based on 12 and 13.
futures price less 76¢. No matter what the actual price received, however, the contrast would remain the same. The grower would have had gross receipts averaging 8 per cent higher if he was hedged, although the average price, unweighted by yields, was only 6 per cent higher under the hedging program.

No quantitative measurement of the advantages of income stability is undertaken, but its advantage from a tax standpoint alone is considerable, and varies with individual circumstances.

Storage Season Hedge

Most growers of 100 acres in Maine have storage facilities available, and therefore do not normally sell their potatoes at harvest time. For them, the growing season hedge just described is desirable, but it is not enough—they also require a storage season hedge. All that such a grower needs to do, in order to obtain an even greater benefit from the futures market, is to sell a November future on April 15 and buy it back on October 15 (as above), then sell a March future which he buys back at the end of February when he sells his potatoes. (Obviously this storage period hedge could be in

Chart 6. — Profits (or Losses) From 100 Acres of Potatoes in Maine, February 28 Sale, Hedged and Unhedged after Costs (Including Hedging Costs) and Before Taxes, 1952-62*

*Author’s computation as described in text; based on 12 and 13.
another future, or distributed among several futures, with similar results, but we show the results for only a simple and typical case.)

Not only has such a grower protected his income during the growing season, but with his second hedge he protects whatever carrying charges are reflected in futures prices to cover his cost of storage. The March future has averaged 43¢ higher than the November future on October 15 for these eleven years, which has been the assured average return for storing potatoes until late February. But once again, not only has the hedger benefited in this way, but he has benefited, relative to the unhedged grower, in the tendency to profit from his futures position. Whereas the November future was 13¢ higher on April 15 than it was on October 15, during these eleven years, the March future was 34¢ higher on October 15 than it was on February 28. Thus the more typical Maine grower, who stores potatoes, has had much more benefit from hedging than the grower who sells at harvest time.

This benefit has been computed to take hedging costs, as well as production and handling costs, into account. Calculated on the basis of $375 per acre to produce and handle potatoes for late February sale, and $25 per acre for the cost of the two hedges, the net income before taxes for this grower, hedged and unhedged, is shown in Chart 6.

Selective Hedge

The third hedging program considered here is a slight extension of the second. The grower who stores potatoes can very easily see his storage returns reflected in futures prices and, if he pleases, hedge selectively instead of routinely. It was pointed out that the average difference, on October 15, between the November and March future prices, was 43¢. This difference, which the grower can look upon simply as a return for storage, ranged from a low of 21¢ to a high of 93¢. When it is high it obviously behooves him to protect it in a hedge; when it is low he may deem it not worth protecting, and prefer not hedging his stored potatoes. He may elect some figure which he considers a reasonable reward for storing potatoes, hedging if this difference is reached and not hedging otherwise. The final computation here was made in terms of a 40¢ figure to cover storage from harvest to late February. Four times this figure was not reached in the November-March futures price difference, so the grower would not have hedged; seven times it was exceeded, so he would have hedged. The unhedged grower would still have had the same net returns as shown in Chart 6, of course, namely, $513 per year for 100 acres of potatoes. The hedged grower who hedged during the growing season every year, and during the storage season seven years out of eleven, would have had net returns averaging $9841 per year.

Late Season Sales

One aspect of the foregoing hedging results has a bearing upon two other arguments which have been made in hearings on this bill. One of these has been to the effect that the futures market forces or entices Maine growers to
hold their potatoes in storage, when they should sell them in a steady flow throughout the marketing season. The other is that the market would suffer depressed prices if additional hedging were undertaken.

Maine growers have tended to store their potatoes for later and later sale (6). This has been accomplished at no sacrifice in the late season vs. early season price; and an increasingly large proportion of the hedging of potatoes has been done during the storage season as distinct from the growing season. The open interest at the end of February, relative to that at the end of October, has risen considerably over the eleven-year period of active futures trading, at the same time that total open interest has been rising. For the period 1952-57 the open interest at the end of February averaged 65 per cent of that at the end of October in the same crop year; for the 1957-62 period this percentage was 132. The hedging opportunity that exists during the storage season has clearly been taken by more and more growers, yet the advantage of this hedge has not diminished. The market has demonstrated a growing capacity for hedging, not only on an annual basis, as was brought out above (pp. 107-8), but on a seasonal basis as well. Yet this shift toward later season sales by Maine producers has not forced a decline in late season potato prices relative to early season prices. Instead of “abandoning early season markets” as the Secretary of Agriculture characterized it in his letter to the Chairman of the House Committee on Agriculture (3, p. 2), it looks more as if Maine producers have been economically attracted to late season markets, and have used the futures market increasingly to protect this move.

The threefold conclusion is that (1) hedged growers have been much better off than unhedged growers for both early and late season sales, (2) unhedged Maine growers who have sold their potatoes late in the season have been better off than those who have sold early, and (3) the relative advantage to the hedged grower has been greater for late season sale.

THE THEORIES OF THE AMERICAN FARM BUREAU FEDERATION

The opponents of the futures market have presented futures trading as a complicated arrangement which can be defended “in theory” but does not work out “in practice,” yet they have displayed no reluctance to advance certain unsupported theoretical propositions. Two elements of the attack which fall in this category concern the so-called “perishability” of the commodity in question and the alleged narrowness of the contract specifications. Both arguments appear opportunist in origin. It cannot have been an easy thing for the American Farm Bureau Federation, with its self-proclaimed dedication to free markets, to find reasons for an opposition to the onion and potato markets arising from its internal political processes. It is inconceivable that the localized opposition to potato futures trading which dictates the attitude of the Farm Bureau at the national level should have been initially formulated in terms of perishability and narrowness of contract. But the Washington office, confronted by the political fact of opposition to
futures trading at the state level, chose to represent official policy as being based upon these theoretical considerations (3, pp. 86-89).

The perishability argument was handed to all who cared to use it by the subcommittee which in 1956 called itself the “House Special Subcommittee on Futures Trading in Perishable Agricultural Commodities.” The issue of perishability has understandably been emphasized in all subsequent hearings, yet its relevance has never been shown by those who oppose the markets. Potatoes are of course more perishable than wheat and more storable than strawberries. The degree in which potatoes are storable or perishable has relevance to futures trading in two respects. First, the futures delivery months must fall within the period when deliverable potatoes are normally held in commercial storage, to assure availability of deliverable supplies. The normal storage period for Maine potatoes extends from harvest (September-October) into the following July, whereas the delivery months extend from November to May, falling well within the storage season. (Indeed, many believe that a contract for June delivery should be added because the use of sprout inhibitors has extended the storage season markedly in recent years.) From the standpoint of futures trading, then, it is clear that potatoes are not only a storable, but a stored commodity.

The other relevant consideration is that potatoes cost more to store than does wheat, for example, and potatoes cannot be economically stored from one autumn harvest period to the next. This means that, while storage can and does lessen the price change from month to month within the crop year, it cannot effectively diminish the price change from one major crop to the next. In the case of wheat, the carryover from one crop year to the next diminishes this price change as well. This difference accentuates the necessity and importance of futures trading in potatoes in two ways. The supply and demand balance during the storage season is more precarious, because carryover is not feasible, and therefore a futures market is needed to relate consumption to existing supplies. Secondly, since storage cannot diminish year-to-year price changes, this must be accomplished so far as possible through production planning, which should be geared to price prospects instead of past and current prices. The futures market encourages production planning in terms of price prospects, and indeed affords the realization of those prospects through hedging (see above, pp. 110-11). The theory that perishability precludes successful futures trading in potatoes must confront the facts that (1) it is possible to own futures contracts only during the storage season, (2) most futures contracts represent (on one side) potatoes actually in storage, and (3) that which storage cannot do for potato pricing can be and is done by gearing production plans to the futures market.

The other major argument is that the futures contract, which calls for delivery of Maine potatoes, is too narrow. The best answer to that is that it is used successfully, by growers and merchandisers and processors of not just Maine potatoes, but of other potatoes as well. There are two considerations in the writing of any futures contract which are superficially conflicting, but which have been reconciled in any successful futures market. One
consideration is that the contract must be very specific and unambiguous in describing a highly standardized form of the commodity. The other is that it must be useful to a wide segment of the commodity trade in question. When the prices of many other descriptions and varieties of the commodity move in close sympathy with the standardized version, as is the case with potatoes, these two considerations are easily reconciled. It is undesirable to fragment trading into a number of different contracts when one will serve the purpose. Historically, the market for barley futures died out because its users found that they could obtain a cheaper and altogether satisfactory hedge in corn futures. Most late crop potatoes, especially the all-purpose varieties, are much more like the types grown in Maine than barley is like corn. History records numerous instances in which additional contracts were provided which were not needed, and hence not used. It also records instances in which contracts were broadened to permit delivery of several grades or varieties with the consequence that their use was discouraged. The Long Island potato contract is a case of the first sort. Two relevant instances of the second sort had to do with wheat at Kansas City and coffee at New York. When Kansas City broadened its contract to permit soft as well as hard wheat deliveries it very nearly went out of business because the usefulness of the contract to hedgers was impaired (7). It quickly went back to a hard wheat contract, which is well used; and added a separate soft wheat contract, which is not used. The New York Coffee and Sugar Exchange added a so-called "Universal" contract a few years ago, permitting deliveries of both mild and robust coffees, but this contract attracted no trade. Moving in the other direction, toward a closer specification of a representative grade, has ordinarily been the path toward greater usefulness. Minneapolis recently added a protein specification to its wheat futures contract, for example, with beneficial results to the trade and the exchange.

The Maine potato is a broadly representative and well-defined commodity, in which the major requirements for a useful futures contract are found. It is to be hoped that the potential usefulness of such a contract to producers and merchants in other areas will become increasingly recognized. So far its major benefit has been to the very Maine potato industry from which the greater part of the opposition to it comes.

The remaining arguments used by the Farm Bureau are equally unfounded. They asserted that the relative lack of processing of potatoes made them unsuitable for futures trading, again ignoring the fact that growing and storage—no less than processing—are time consuming functions fraught with price risks, and failing to cite any reason, much less any evidence, why the fact that a commodity is processed should qualify it for futures trading. Most of the hedging of wheat and cotton, historically the two greatest futures markets, has always been merchant hedging as distinguished from processor hedging. The last complete survey of the cotton futures markets, in which accounts were classified into merchant and processor hedging, showed, for the New York Cotton Exchange, merchant hedgers holding 3,302,200 bales vs. processor hedgers holding 730,800 bales; and for the
New Orleans Exchange, merchant hedgers holding 1,147,450 bales vs. processor hedgers holding 30,050 bales (8). Processors thus held 15 per cent of the hedging contracts in cotton futures, whereas potato processors held 24 per cent of the hedging contracts in potatoes on October 28, 1960, the most recent date for which this breakdown is available (9). Moreover, potato growers do a larger proportion of the hedging than do growers of any other crop.

The fourth and final Farm Bureau theory was that

'Potato futures price movements which cannot be justified by supply and demand factors and which are the result of speculation have a serious effect on the orderly marketing of potatoes. From the potato producer's point of view, the type of future price movement which delays cash purchases, or creates cash market instability, contributes nothing to orderly marketing. (3, p. 88).

This is presented without any evidence of such movements, and without mentioning the obvious corollary that exactly the same thing can be said of spot price movements in the absence of any futures market.

The four Farm Bureau theories of the unworkability of futures trading in potatoes, like the theory that a bumblebee cannot fly because his wings are too small, are disproved in everyday performance. It is regrettable that such flimsy theorizing has been used to rationalize a departure from the affirmation "Farm Bureau is a believer in the market price system" (3, p. 88).

CONCLUDING OBSERVATIONS

In view of the evidence that the potato futures market is a useful institution, it is not easy to explain the persistent barrage of unsupported arguments against it. The U. S. Department of Agriculture has taken only a vague and shifting position in the controversy, despite the fact that its Commodity Exchange Authority regulates this market and has studied it intensively. The antagonism of many growers appears antithetical to their self interest. The opposition has been concentrated in the region best served by the market. The farm organization that would have been thought most likely to defend the market, in principle, has attacked it with theories. There has been virtually no organized support for the market by producer or consumer organizations, research or study groups, or professional and political defenders of free enterprise.

There are too many paradoxes here to allow any simple explanation. Politics and misunderstanding figure prominently in the controversy, but I think that apathy in some quarters has lent much avoidable confusion to it. Economists and agricultural economists have oversimplified and neglected futures trading to the point that there is too little evidence of its contribution, and too little known of the evidence that exists. I fear that a rather prevalent attitude was reflected in a question put to me by one economist who, upon ascertaining that I was engaged in research concerning futures
markets, asked whether I had discovered the perfect hedge. The perfect hedge is of concern to gardeners; economists are far more interested in perfect competition, which is closely approximated on some futures markets. It is as pricing mechanisms that such markets deserve most attention, but it is as insurance mechanisms that they have received most attention. The hedging function is of great importance, but it is oversimplified in the risk transfer stereotype (10), and this in turn leads to oversimplification of futures trading because it is forgotten that hedgers are there engaged in price determination which they must do in any case. Hence the implication that the student of such markets is searching for the perfect hedge; when the real quest is for better, more orderly, more competitive marketing.

Economists are not the only group responsible for improving the understanding of competitive marketing, of course, nor the only group that has neglected this part of the study. The commodity exchanges and the commission firms, as well as other member firms, have shared our failure to convey a basic understanding and appreciation of futures markets.

As to the disaffection of various groups that have opposed these markets, various explanations suggest themselves. No one likes to lose his bargaining advantage to a competitive market, which helps to explain why so many potato dealers object to futures trading. The growers themselves may have been misled to some extent by dealers, but this hardly suffices to explain why a majority of the Maine growers apparently oppose futures trading. Many growers have endured economic hardship since price supports were removed, and it seems likely that the futures market, as a relatively poorly understood part of their economy, is a convenient if inappropriate place to put the blame. The hedging analysis shown earlier suggests very strongly that non-users of the market have fared poorly relative to users, which may dispose them to blame the market instead of their own failure to use it. It would not be the first time in the history of human events that a group displayed reluctance to accept the blame for its own failures, or reasoned that its neighbors' relative advantage was the source of its own disadvantage. Many of us, when we fail to participate in change, tend to oppose the change in principle.

It is also true that the available economic evidence has not determined the positions taken by participants in the controversy. Economists in the U.S. Department of Agriculture have done some excellent work in this area—certainly sufficient to justify a defense of the market—but the Department has not taken its position from economic analysis. Similarly, the Farm Bureau's position has surely not been taken from its economists or top national officers. Finally, the Congress does not necessarily base its conclusions upon the economic evidence; indeed, as Working points out, (2) it chose arguments over evidence in the onion futures hearings, and will be forced to choose between argument and evidence again. The fact that so much more argument than evidence appears in the hearings record may help to explain the Congressional posture to date.
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APPENDIX

Estimated Acreage Response For Maine

While it is not possible to say just what the acreage pattern in Maine would have been in the absence of the futures market, it nevertheless possible to formulate a reasonable estimate of this pattern, based upon some recent work by Simmons and others in the U.S. Department of Agriculture. In their 1962 economic study of the potato industry (11) are found some estimates of the earlier and more recent supply and price relationships which are highly suggestive of the change that the futures market has introduced. It is particularly noteworthy that their supply analysis (11, Appendix B) shows a pronounced acreage response to price in the previous year for nearly all geographic subdivisions; and shows such a response in Maine for the period 1931-41, but no such response for the period 1952-60. The equation for Maine during 1931-41 is.

(a) \[ A_t = 0.384 + 16.680 P_{t-1} + 0.836 A_{t-1} \]
\[ (3.815) \quad (.196) \]

in which \( A_t \) is acreage planted in the current year, \( P_{t-1} \) is deflated price in the previous year, and \( A_{t-1} \) is acreage planted the year before. The equation for Maine during 1952-60 is

(b) \[ A_t = 123.685 + 3.030 P_{t-1} + 0.100 A_{t-1} \]
\[ (2.381) \quad (.111) \]

The regression coefficients, and their standard errors (in parentheses), indicate a significant acreage response in the first period, but not in the second. Acreage planted has remained nearly constant in the latter period, and such small deviations as have occurred have not been explainable in terms of price in the prior year. This is of course the desired and expected result of futures trading.

Elsewhere in their study they analyze price in terms of a number of variables (11, pp. 79-83) and obtain an excellent fit for an equation

(c) \[ P = -0.726 -0.304QM -0.518QE-M + 0.015D + 1.139MM + 0.022Q-E \]

relating Maine's season average price to production in Maine, production in other eastern late crop states, disposable income, quantities withheld under Maine marketing orders, and production in other than eastern late crop states. Thus they provide, in their supply and price equations, a device for estimating what the production and price levels would be under different supply response patterns.

Since their price analysis expresses all variables in first differences, whereas a better fit was obtained for the supply response in the actual observations, a seriatim estimate of price and supply response is influenced considerably by the choice of a starting point. In order to provide a fair test of the difference between the old supply response pattern and the one induced by futures trading, I have made all calculations starting from the average price and acreage of the 1952-62 period. Starting from these averages, I have estimated the results for 1952-62 from the three equations shown above, using actual yield figures, actual production in other regions, and all other variables in the equations at their actual levels. In other words, we start from a deflated price of $1.06 per bushel and an acreage of 145,000 (which are the 1952-62 averages for Maine); estimate the acreage for 1952 on the basis of the old and new supply response equations, (a) and (b); multiply this by the actual 1952 yield to obtain 1952 production, and estimate the price of that quantity from equation (c). This price is plugged back into equations

\[ I am Indebted to Will Simmons and Howard Ries of the Economic and Statistical Analysis Division, U.S. Department of Agriculture, Economic Research Service, for providing the basic data from which their estimates were made. \]
(a) and (b) and the same procedure followed for 1953, 1954, ... 1962. Both
the old and new response patterns yield unrealistically high prices in this routine,
but what is more relevant is the contrast between the two, in terms of both level
and variability. These are shown in Table 5, where it can be seen that the new

Table 5 — Price and Production in Maine under Old and New Supply
Response Patterns, 1952-62

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (acres)</th>
<th>Production (1000 cwt.)</th>
<th>Price ($/cwt.)</th>
<th>Crop value ($1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base year (1952-62 average)</td>
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<td>39,090</td>
<td>1.77</td>
<td>69,189</td>
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<tr>
<td>1952</td>
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<td>3.80</td>
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<td>154,618</td>
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<td>2.85</td>
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<table>
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<th>Year</th>
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<th>Production (1000 cwt.)</th>
<th>Price ($/cwt.)</th>
<th>Crop value ($1,000)</th>
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<tr>
<td>Base year (1952-62 average)</td>
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<tr>
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<td>144,748</td>
<td>39,950</td>
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</table>

*Author's computation as described in text; based on 11 and 13.

acreage response pattern is much better for the Maine producer than the old pattern in which he responded to last year's price in planning this year's production. Since the equation (b) for the new response pattern is a poor fit, it might be argued that a better procedure is to compare the actual figures for the recent period with the estimates of the old supply response for the same period. In order to make this comparison, it would be necessary to start with 1954 instead of 1952, for the reason that the diversions through the marketing order started in 1954, and are therefore really a shift variable at that time. Otherwise the estimated prices would be shifted to too high a level in 1954, and since equation (c) is in first differences, they would never shift down again, and the comparison would be distorted. The same thing occurs in the previous procedure, of course, but there it affects both estimates alike. The major difficulty, however, in comparing actual with estimated, is that the estimated results show several years of lower production.
and lower price, which, since everything else is supposed to be held constant, is a nonsense result.

Prices of Maine potatoes are still greatly affected by production in other regions, as well as by yield variations in Maine. Insofar as yields are subject to the influence of weather, improved markets offer no escape from this variable; but there is ample scope for improvement in the supply response of other producing regions. The more they use the futures market the more improvement will occur in their supply response; meanwhile the producers in Maine are the chief beneficiaries of the futures market.

CITATIONS

1 International Chamber of Commerce, "Legal Obstacles to the Operation of Futures Markets" Document 221/31, April 18, 1956.


13 U. S. Dept. Agr., Bureau of Agricultural Economics, Potatoes (Statistical Bulletin 122, March 1953); revised and continued by the Agricultural Marketing Service in Potatoes and Sweet Potatoes (Statistical Bulletins 190, August 1956 and 291 August 1961; and annual summaries).