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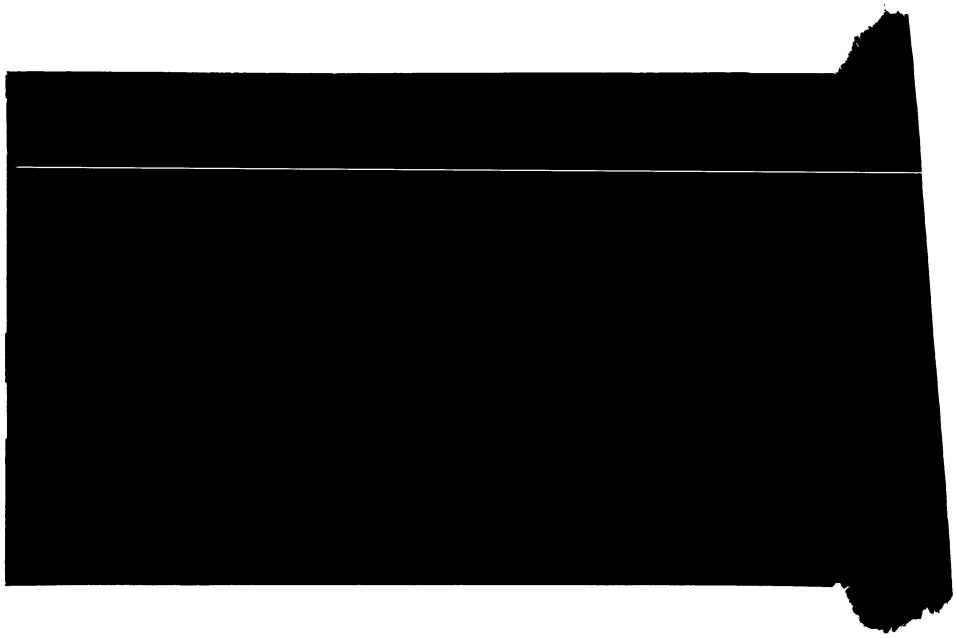

U. S. AGRICULTURAL POLICY:

INTERNAL AND EXTERNAL CONSEQUENCES

by

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The legislation governing price supports for the major U.S. commodities expires with the 1990 crops. Therefore Congress will be considering what changes to make in the new legislation. As the interest groups are lining up so far, the most notable feature of the scene is how little pressure there is for any substantial change. This is in marked contrast to the run-up to the 1985 Act. During 1985 a great deal of ferment existed in the academic, business, and grassroots farm communities about policy changes, and a wide range of policy options received serious Congressional attention. In this respect U.S. farm policy in 1989 looks far from being in disarray. It has the aspect of a highly ordered phalanx of interests each unwilling to jockey for fundamental changes which might dislodge it from a satisfactory post in the existing array.

Nonetheless, it is an unstable array for the longer term. Agricultural policy is more than ever out of step with economic policy in other sectors, and with less reason for the differences. Two main disturbers of the policy peace are looming: the GATT negotiations in Geneva and the budget-watchers in Congress. Before venturing further into prognostication, however, some factual and analytical preparation is in order. First, I will present a brief treatment of the economics of current commodity programs in their historical context. Second, I will review some recent estimates of the consequences of these programs, aimed chiefly at quantifying the gains and losses of different interest groups internally and the effects on world markets. Then we will be prepared for an assessment of the current state of agricultural policy and the future prospects.

Evolution of Farm Programs

U.S. farm policy is still operating in the shadow of the Great Depression (which in agriculture began just after World War I). It is difficult today to appreciate the sea-change in opinion about the role of government that occurred between 1900 and the 1930s. A book like L. H. Bailey's The State and the Farmer (1908) discussed agricultural education, development of new varieties, and other technical aspects of agriculture, but paid no attention at all to agricultural protection as we know it today. The topic was not even on the agenda for discussion. By 1930 President Hoover was proposing price support schemes and after the 1930s even market-oriented critics like T. W. Schultz, in Redirecting Farm Policies were proposing that the government set long-term "forward prices" rather than rely on commodity markets.

The idea that governmental intervention in commodity markets was led as if by an invisible hand to make matters arguably worse than under even the most chaotic markets gradually became (re)established after World War II, but the general climate of opinion among both the general public and agricultural economists still supports governmental regulation of farm commodity markets. (In a New York Times survey, November 1, 1987, 55 percent said federal spending to support agriculture should be increased and only 14 percent that it should be decreased.) Nonetheless, it has been recognized in Congress that intervention has to adjust to changing economic realities, and U.S. farm policy has been in almost continual adjustment and realignment.

The main adjustments required since World War II have been cuts in real price support levels as technical progress in the U.S. and abroad increased agricultural productivity and led to surplus production at pre-established

prices. However, these cuts were mostly accomplished by inflation reducing the real value of nominally fixed support levels. Nonetheless, at key decision points Congress did make cuts in the legislated support levels. Figures 1 to 4 show the time series of nominal and real support prices for corn, wheat, milk, and tobacco.

Over the 1950-89 period the support price changes in real terms have been as follows: corn, a 64 percent decline; wheat, a 61 percent decline; milk, a 35 percent decline; and tobacco, a 39 percent decline. Basically these declines have followed productivity gains which reduced the costs of producing the commodities. But the smaller declines for tobacco and milk reflect political strengths of these commodities, too. In the case of dairy a marked surge in real support occurred in the 1970s, when feed costs were rising and the dairy cooperatives established some of the nation's first and biggest PACs (political action committees) to funnel contributions to Congress. In the case of tobacco, there was a continuing resistance to cuts in support, until in the mid-1980s there appeared to be a sea-change in Congressional appreciation of this industry.

The 1980s held surprises in both the economics and politics of U.S. agriculture. The economic surprise was the complete turnaround in the U.S. (and world) market outlook from scarcity to surplus production. The political surprise was the political strength of agriculture, despite the emergence of competing interest groups of consumers and environmentalists in the 1970s and despite the long-term decline of the farm population to 2.5 percent of the U.S. total (as compared to 25 percent in the 1930s).

The maintained political strength of farm commodity groups became apparent in the late 1970s as dairy continued to be able to boost support

Table 1. Corn Support Prices

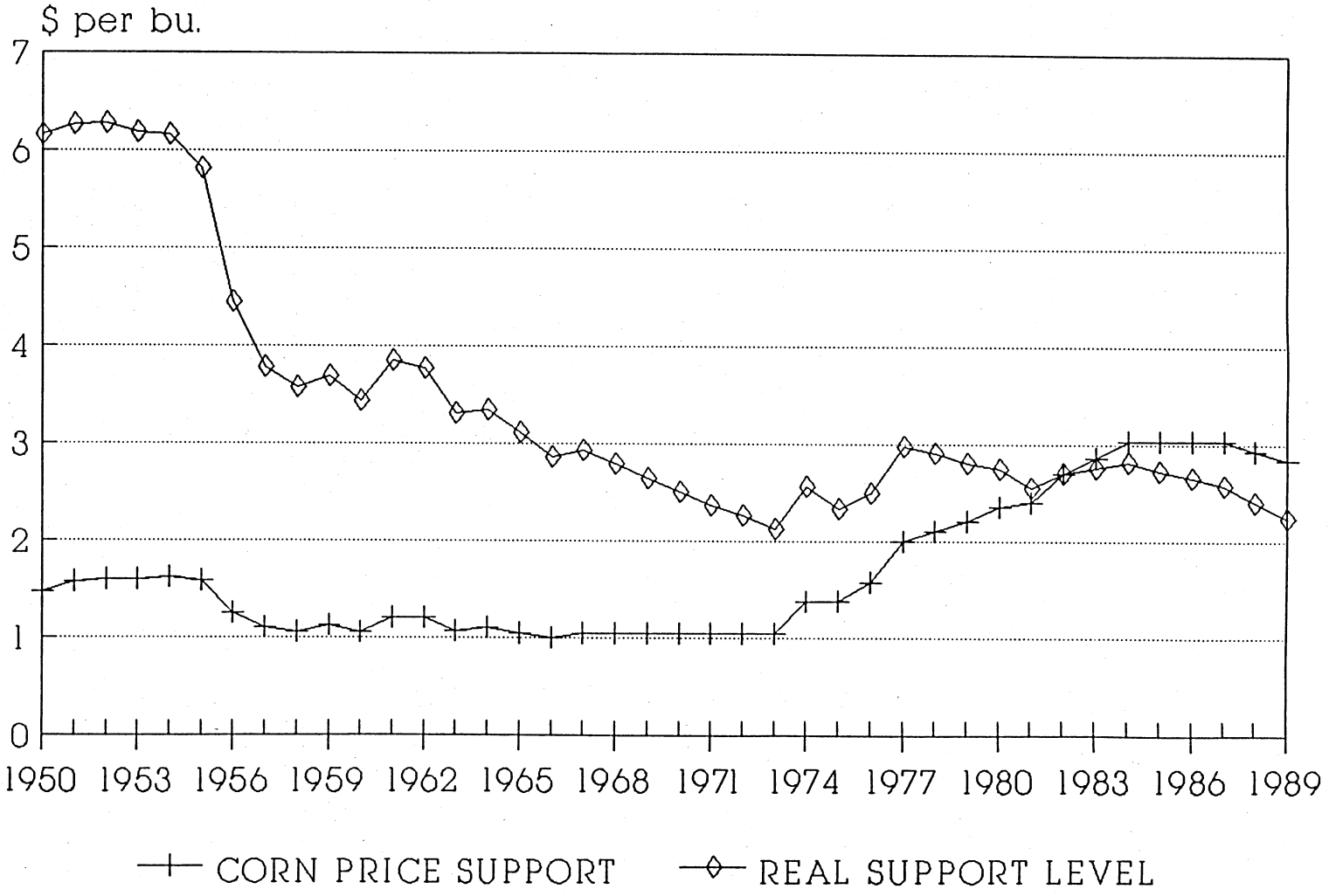


Table 2. Wheat Support Prices

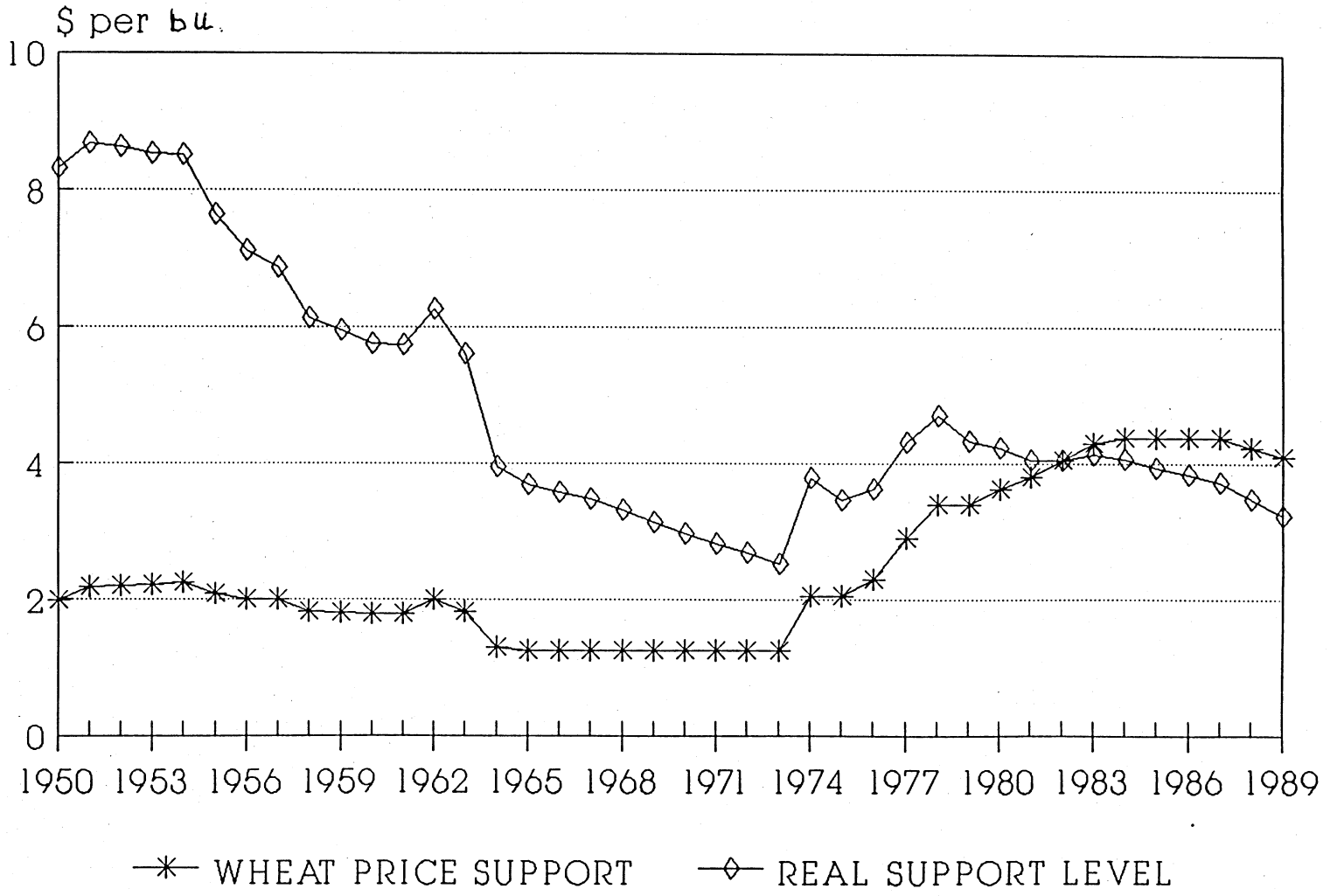


Table 3. Milk Support Prices

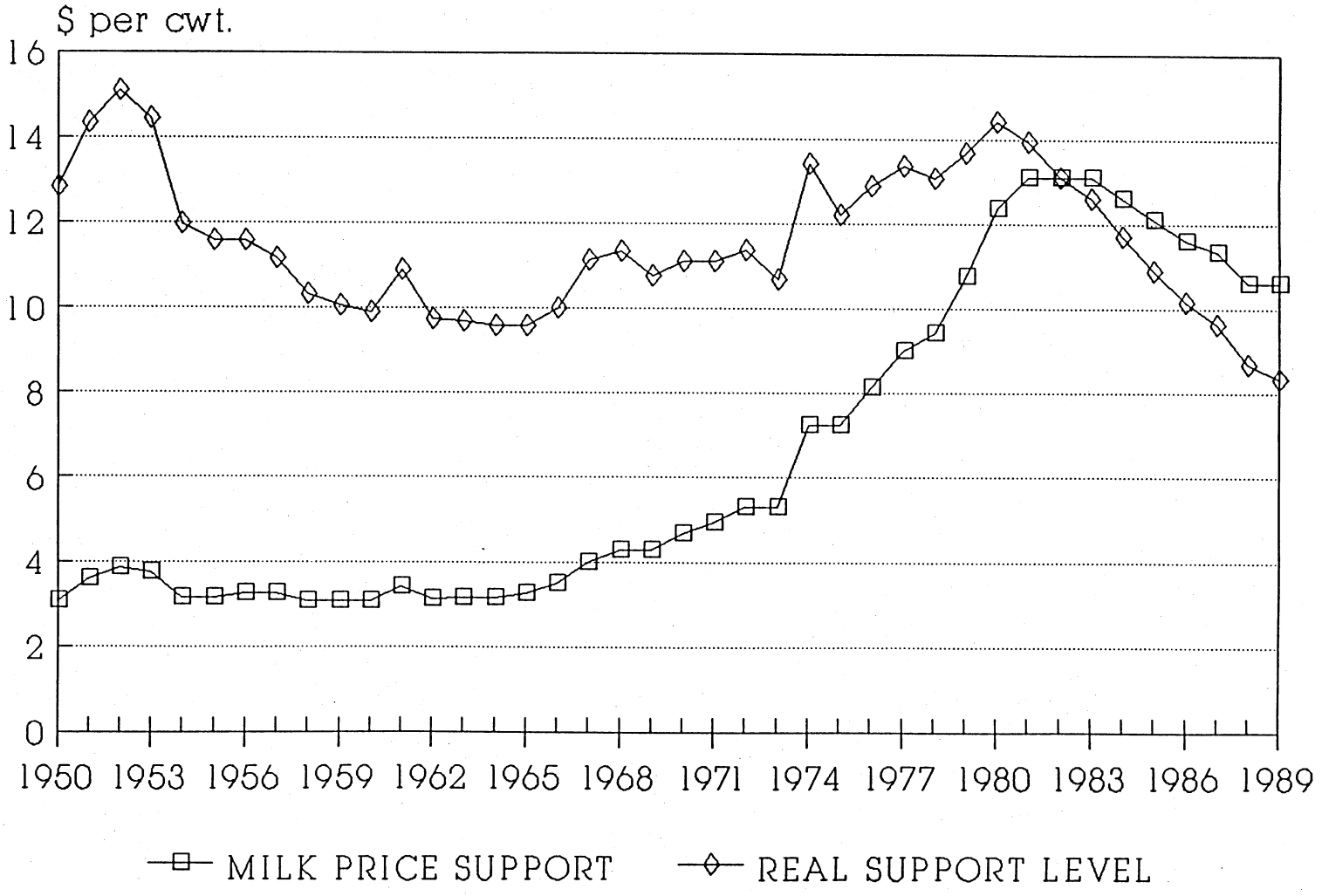
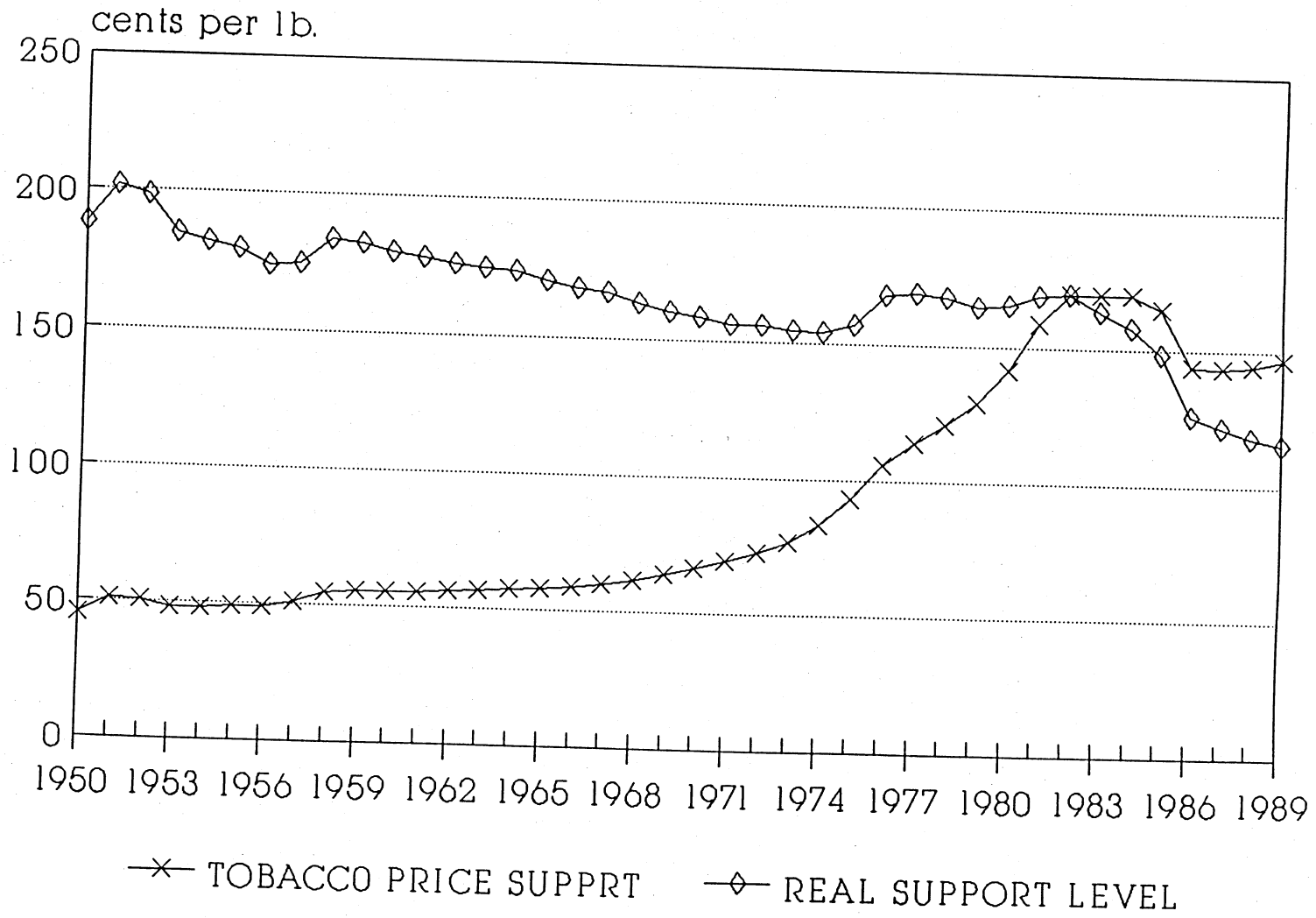


Figure 4. Tobacco Support Prices



prices and, more importantly, the grain producers were able to maintain support prices near the boom-year levels of the 1970s. The willingness of Congress to enact these support levels and of the Carter and Reagan Administrations to accept them in 1977 and 1981 was abetted by a widespread agreement among economists and others interested in agriculture that any commodity price declines would only be temporary and that the longer-term trend in prices had turned positive in the 1970s (see D. G. Johnson, 1985, for a contemporary critique of scarcity projections).

Change in the policy picture is apparent in the debate on and provisions of the two principal agricultural laws of the 1980s, the Agriculture and Food Act of 1981 and the Food Security Act of 1985. The 1981 Act established target prices and loan rates for the grains and cotton at continuing high levels over a four-year period even though signs of market weakness were already apparent. By 1982 government stocks had grown so large that in 1983 the largest acreage reduction program in history was introduced as a one-time supply reducing measure. A major drought helped further to bring a short-term respite from surpluses. But by 1985, abetted by large U.S. production and weakening export demand as the dollar had risen (by 40 percent since 1980 in real terms against the G-7 countries), CCC stocks had again accumulated to pre-1983 levels (Table 1). It was by then clear that no scarcity scenario was going to emerge to make the 1981 Act support prices economically viable.

Consequently, the 1985 Act cut market support prices drastically, with provisions that permitted market prices to remain as low as necessary for as long as necessary to preclude any unwanted governmental accumulation of stocks. However, the target prices which establish producer price guarantees (shown in Figures 1 and 2) were essentially maintained at 1981 Act levels.

Table 1. Government-owned inventories

Year[a]	Cheese	Corn	Wheat	Cotton	Value of all commodities
	million pounds	---million bushels--		thousand bales	(million $)
1950	78	399	271	98	1,926
1960	0	1,471	1,133	5,028	6,079
1970	4	215	283	2,077	1,594
1975	5	0	0	0	402
1976	5	0	0	0	634
1977	95	1	34	0	1,104
1978	35	77	50	0	1,186
1979	5	100	50	0	1,237
1980	244	254	203	0	2,802
1981	644	248	191	0	3,779
1982	945	429	185	0	5,507
1983	1,097	1,230	376	1	10,597
1984	918	296	419	0	6,664
1985	882	477	557	0	8,309
1986	819	1,265	987	874	13,848
1987					29,600
1988					15,800

[a] Quantities as of December 31.

Source: Agricultural Statistics (except 1987 and 1988 totals, from the New York Times)

The resulting large spread between target and market prices, the difference between which was covered by "deficiency" payments, caused budgetary outlays in the neighborhood of $20 billion per year. This in turn led to acreage diversion in 1986 and 1987 that rivaled the scale of the 1983 program. Thus ended the era of farm commodity scarcity, and the Reagan Administration's hopes to phase down governmental intervention in U.S. agriculture. In terms of budgetary costs, government stock levels, and acreage idled the Reagan years saw more massive farm programs than any preceding President's, including the New Deal programs.

Anatomy of Current Policies

While the overall picture sketched in the preceding section gives the general thrust of events in the 1980s, considerable variation occurred in both policy and markets for particular commodities. Therefore, the internal and external consequences of U.S. policy will be presented for each of the major commodities separately before aggregating to overall results. Indeed, much of the disarray in U.S. policy arises from inconsistencies across commodities (the most important aspect of which is that about half of U.S. agricultural output gets no significant support).

Target-price Crops

The most important set of programs in terms of both U.S. budgetary costs and in international impact are those for the grains. For wheat, corn, grain sorghum, oats, and rice (as well as the principal fiber commodity, cotton) these programs have a common structure. The main elements are set by three policy instruments, as follows.

1. The "loan rate", or market support price, is the price at which the

Commodity Credit Corporation accepts grain as collateral for loans to farmers, which the farmers need not pay back. The CCC ends up acquiring the commodity, hence removing sufficient quantities from the market to prevent the market price from falling much below the loan-rate level for any sustained period such as a marketing year. Since no significant U.S. border distortions exist for the main exported crops, supporting the U.S. price means supporting price at all other locations around the world in which the domestic market price is not insulated from world markets. This characteristic led some economists to say during the early 1990s when CCC stocks were growing rapidly that the U.S. was bearing the burden of worldwide price supports by having CCC loan rates set too high. In the 1985 farm bill, loan rates were sharply reduced for all the major commodities. The effect on world price was seen most dramatically in rice and cotton, where all effective market price support ceased in 1986. Rice and cotton prices at U.S. border and other international locations fell by as much as 50 percent within a few months.

2. The "target" price provides price insurance by making payments to farmers to supplement market receipts. The payments are roughly sufficient to guarantee producers the target price -- "roughly" because the payments are based on U.S. average prices, not on each producer's actual price, and farmers have to hold acreage idle in order to qualify for payments. When target prices were introduced in their present form, in 1973, they were below market prices. The rice legislation of 1975 established a target price above the market price, but like the 1973 Act made payments only on long established base acreage so that payments would not create a direct production incentive (no subsidy at the margin). The Food and Agricultural Act of 1977, however, made the fateful change of basing payments on current production, and with a

target level already above the market price for wheat, grain sorghum, and barley. By 1982 target prices were above market prices for all the covered crops. The target price consequently turned into a production incentive price which tended to increase CCC stock buildup at the loan rates. When loan rates are cut, such excess supplies depress world prices.

3. Acreage controls: Payments made to farmers for not growing crops were a mainstay of 1950s programs (the "Soil Bank") and evolved into the "set-aside" and voluntary (paid) diversion programs of the 1960s. Set-asides were phased out in the mid-1990s, but in 1977 were reinstated for wheat, in response to accumulating CCC stocks. Set-asides require farmers to idle a fraction, typically 10-20 percent, of an average base in order to qualify for target prices and CCC loans. In 1978, paid diversion programs were reestablished. These are essentially offers by the government to rent a farmer's land, which is then left idle. As compared to set-aside this approach is much preferable to farmers.

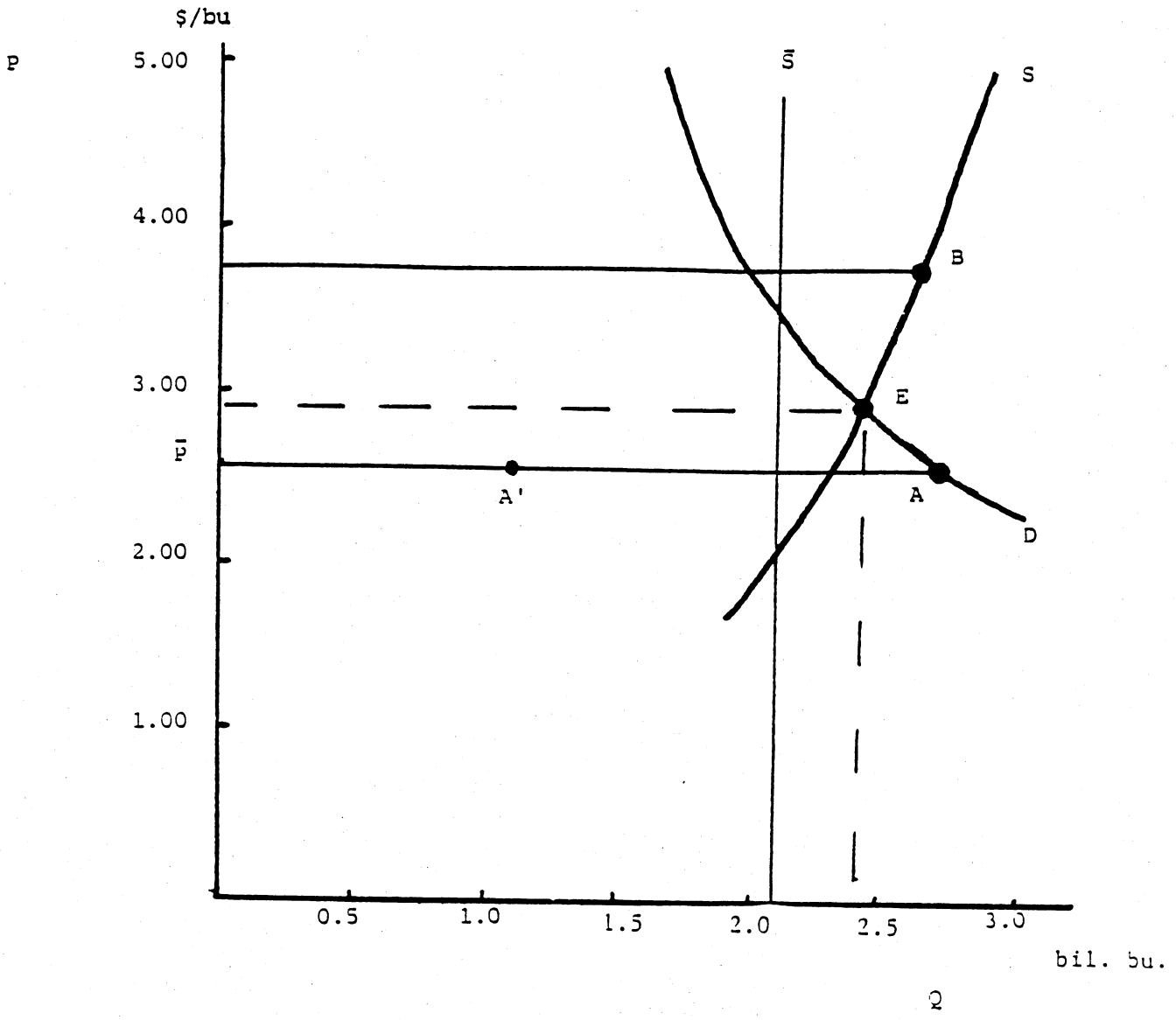
The scale of acreage diversion was substantially expanded under the Acreage Reduction Programs (ARP) of the 1980s, especially in 1983-87 when payment-in-kind (PIK) programs used CCC stocks quite generously to achieve the dual goals of reducing production and government-held stocks simultaneously. In 1983 and again in 1987 and 1988 about 20 percent of the cropland base for the main supported commodities was idled under ARPs, a larger percentage than at any time in the Depression-era programs of the 1930s or the "Soil Bank" of the 1950s. The world market effects of ARPs are the opposite of target prices -- indeed the two policy instruments could be tuned to have offsetting output effects so that net world supplies would be neither increased or decreased by the overall program.

A supply-demand depiction of how these program elements fit together for wheat is shown in Figure 5. The data pertain to the June 1987 to May 1988 marketing year. The average farm-level market price was $2.57 per bushel ($94 per tonne), which was above the $2.28 loan rate. The CCC was not acquiring wheat and indeed was dispersing stocks through PIK payments, EEP bonuses, and auctions. Consequently, domestic use of 1.1 billion bushels and 1.6 billion bushels of exports can be identified with points on the domestic and total (domestic plus export) demand curves for wheat, as shown by point A' and A in Figure 5.

On the supply side, the key program instrument is the 27.5 percent ARP requirement. With 83 percent of wheat enrolled in the program and 30 percent slippage (output decreasing less than acreage) the implication is that 1987 output was reduced by .275•.83•.7 = .16 or 16 percent below output with no program constraints. Since output was 2105 million bushels in 1987, with yield about normal (on trend), the implied no-program quantity is 2105/.84 = 2506 million bushels. In addition some land in the Cropland Reserve Program (CRP) land came out of wheat production. The USDA estimates 4.4 million acres of wheat land in the CRP in 1987. Assuming this land had an average wheat yield of one-half the U.S. average yield, we have another 85 million no-program bushels for a total of 2590 million bushels that would have been produced in 1987 if acreage restraints had not existed.

What price would have been required to induce this output? There is no single price which provides the right answer. Non-participants respond to the market price, and so do participants in current acreage and yield decisions. But the incentive price for participating, which drew producers into ARPs, is higher. On a U.S. average basis we can estimate the appropriate price at

Figure 5 1987 Wheat Program



which to locate the 2506 million no-program output by assuming that it is this average incentive price that made 2105 million bushels the chosen output given the program parameters. The average incentive price is the return per bushel received by a participant who had average yield and production costs.

The calculation of returns from participating is as follows:

	Per acre	Per bushel
Yield	38 bu.	
Revenue from .725 acres planted	$120.67	$3.18
Saved variable costs on .275 acres diverted (Gardner 1988)	$16.50	0.43
Returns for participating farmers	$137.17	$3.61

Since $3.61 is higher than the $2.57 that producers received in 1987 at the farm-level market price, it pays to participate. Still, 13 percent of base acreage was on nonparticipating farms. As an approximation, take .13(2.60) + .87(3.61) = $3.45 as the appropriate price on the restricted supply curve caused by ARP provisions, yielding point B in Figure 5, where P = 3.45 and Q = 2590 million bushels.

In order to estimate what price and output would be without the wheat program, we need the remainder of these curves, or at least enough to find the supply-demand intersection. The most straightforward way to proceed is to use estimates of supply and demand elasticities from econometric studies of the wheat market. This is equivalent to assuming that the supply and demand functions have constant elasticities over the relevant range (e.g., between point A and the no-program equilibrium point). Using -.7 as the total demand elasticity and 0.3 as supply elasticity, point E is obtained as the no-program

equilibrium. Output at point E exceeds $\bar{S}$ -- that is, the 1987 wheat program reduced wheat output and thus had a price supporting effect. On the other hand, the effect of CCC stock release, which permitted U.S. domestic and export sales in 1987 to exceed production by about 600 million bushels (16 million tonnes), was to depress world prices. The appropriate way to view point E is as the equilibrium that 1987 supply-demand conditions would imply once government stocks had been eliminated.

The accuracy of point E depends on having located A and B properly, and having the correct elasticities. The location of A and B could be inaccurate because of failure to estimate parameters such as slippage or the producers' incentive price accurately. Even if accurate, the points pertain to 1987, so the estimate of gains and losses will provide information about the difference the wheat program makes under 1987 conditions. Other years give quite different results, especially because export demand is volatile. Moreover, the elasticities may be wrong and if so point E is incorrectly placed even if points A and B are correct.

The preceding discussion indicates, if nothing else, what a tricky business it is to estimate the world price effects of U.S. farm programs. Overall, it is clear that U.S. policy has depressed the world prices over short-term periods when CCC stocks were released and has supported world prices when stocks were accumulated. The more fundamental supply-demand question is whether the output-expanding effects of target prices and the (much smaller) input subsidies on farm credit and irrigation water have been more than offset by acreage diversion efforts.

Other commodities

The program for tobacco is simpler in that it relies primarily on a single instrument, marketing quotas, for the two principal tobacco types, burley and flue-cured, which are blended to make cigarettes. The quota levels are set each year to generate a market-clearing price near a legislated support level. As Figure 4 shows the support level has been declining in the 1980s. Governmental purchases maintain the market prices if supply exceeds demand at the support level. However, since 1982 the tobacco program has been a "no-net cost" activity in that assessments on producers are made to cover the expense of buying up and reselling surplus tobacco. So the tobacco program is financed almost entirely by the buyers of tobacco through the higher market prices that marketing quotas cause.

The program for peanuts has marketing quotas similar to tobacco, but the quotas apply only to quantities needed for domestic consumption. Peanuts above this quantity can be sold at a secondary market price primarily for exported peanuts and peanut products, which has been about one-third of the quota-peanut price in the last half of the 1980s. Such a large spread between prices in two markets for the same commodity creates incentives for arbitrage (imports of exported peanuts or peanut products) that border protection is required to control.

The dairy price support program is also relatively straightforward, with the main policy instrument being CCC purchases of butter, cheese, and powdered milk at support prices which generate a legislated minimum price for raw milk. The large stocks of these commodities that were generated by the mid-1980s support levels resulted in two short-term measures to reduce output as well as automatic cuts in support prices when projected CCC stock accumulation exceeds

5 billion pounds of milk annually. The output reducing measures were: (1) contracted reductions in output of 5 to 20 percent per participating farmer in 1985-86, with payments of $335 million in FY 1985 and $630 million in FY 1986; (2) a contracted buyout of dairy herds in 1986-87, with payments of $489 million in FY 1986, $587 million in FY 1987, and $296 million in FY 1988. Dairy production seems to have been reduced by 2 to 3 percent by these programs (GAO, 1989). Surplus stocks were also disposed of using domestic free distribution of cheese to low-income and elderly people. This distribution program illustrates how quickly interest groups can form in that when CCC stocks were used up in 1989, Congress added legislation for the CCC to buy more cheese in order to continue the program.

The sugar program is focused on yet another policy instrument, a controlled import level. The quantity of imports is regulated so as to achieve a legislated price for U.S. raw sugar. As the demand for sugar has decreased because of the development and popularization of sugar substitutes (both noncaloric, like aspartame, and caloric, like high fructose corn syrup) it has been necessary to cut back the import level regularly. U.S. sugar imports have declined from 5 million tons in 1975 to about 1 million tons annually in 1988 and 1989. But the U.S. raw price has been maintained at about 18 cents per pound. The costs are borne by sugar consumers, and are in the billions of dollars. The exact cost depends on the price that consumers would pay without the program, which is the world price of sugar. This price has varied between 3 cents and 13 cents per pound in 1986-89, so the consumer's cost can be made to vary by a factor of 3, between 15 cents and 5 cents per pound, depending on what world price is used. Moreover, U.S. policy itself significantly affects the world price (see Millmoe, 1989).

Other programs, for example, the Wool Act, the Meat Import Act, and marketing orders for fruits and vegetables, are quite different in structure and complicate the picture considerably. Moreover, other commodities -- hogs, poultry, forage, most fruits and vegetables -- have no price supports. The whole policy menu thus gives a strong flavor of disarray from an economic viewpoint.

Consequences of U.S. Policies, 1984-89

The consequences of policies can be approximated by comparing internal prices with world trading (border) prices, but this is problematical for the United States because it is large enough to influence world prices and because the production control programs involve social costs that price comparisons cannot capture. Preliminary results are available for a series of studies by the U.S. Department of Agriculture's Economic Research Service that estimate the supply-demand situation that would have existed in 1984-89 in the absence of CCC purchases, acreage diversion, and deficiency payments. For details, see Lin and Gardner (1989).

Table 2 shows estimated output effects of the United States unilaterally removing its target price, loan rate, and acreage control programs under 1987 conditions. For the grains, soybeans, cotton, and tobacco output is greater with no programs. The main reason is that acreage controls in 1987 outweighed the incentives for increased production caused by target-price protection. Milk, sugar, and peanut output is less with no program. For these commodities the production incentives of support prices dominate. Meat animal production is largely unaffected. An overall index of output, constructed by weighting each commodity's production by its share of the value of the total, is 3.7

Table 2. Effects of eliminating farm commodity programs on production: 1987

Commodity	Unit	Production with program	Production with no program	% change due to ending program
Wheat	mil. bu.	2,108	2,570	+21.9
Corn	do.	7,064	7,350	+4.0
Soybeans	do.	2,008	2,087	+3.9
Cotton	mil. bale	14.8	16.1	+8.8
Rice	mil. cwt.	129.6	155.0	+19.6
Tobacco	bil. lbs.	1.2	2.02	+68.3
Sugar	1,000 tons	7,185	6,573	-9.5
Peanuts	mil. lbs.	3,619	2,618	-27.7
Potatoes	mil. cwt.	385.5	389.5	+1.0
Dairy	bil. lbs.	140.3	134.2	-4.5
Beef	do.	23.4	23.4	0.0
Pork	do.	15.6	15.7	+0.6
Broilers	do.	16.1	16.0	-0.6

percent higher in the no-program scenario. This implies that on an overall basis U.S. policy is world-price increasing, not decreasing as is sometimes asserted.

With respect to prices the commodity programs increase producer prices for all commodities, and generally increase prices paid by consumers, also. However, in 1986-87 consumer prices for the grains were reduced as loan rates were cut and CCC stocks disbursed. Because the lower prices in 1986-87 were only made possible by stock accumulation before 1986, it is misleading to look at 1987 effects in isolation. Table 3 shows estimates of gains and losses for different interest groups using 1985-87 averages. Overall, producers gain $12.8 billion annually at the cost of $17.8 billion to domestic consumers and taxpayers.

The losses to people outside the United States are estimated to be $1.0 billion. This loss occurs because the commodities considered, except for sugar, are net exports of the United States. Therefore, when U.S. farm programs increase commodity prices in world markets, foreign sellers gain but foreign buyers lose more.

Deadweight losses. The difference between the $12.8 billion producer gain and $18.8 cost (including foreign losses) caused by the U.S. farm programs is a $6 billion worldwide deadweight loss of these programs. This loss measures the real income given up in order to undertake U.S. agricultural protection. Apart from uncertainties in elasticities and other parameters necessary to make these estimates, several reasons have been put forth why the $6 billion dollar figure is incomplete or misleading.

First, the administrative costs of the programs are omitted. It is difficult to separate out the U.S. Department of Agriculture and other

Table 3. Annual average gains and losses from farm commodity programs: 1984-87 crop years

Commodity	Buyers					Net domestic effect
	Producers	Domestic	Foreign	Total	Taxpayers	
	billion dollars					
Wheat	3.2	-0.4	-0.4	-0.8	-3.6	-0.7
Corn	4.2	-0.4	-0.1	-0.5	-6.7	-2.9
Soybeans	0.41	-0.48	-0.30	-0.78	--	-0.07
Cotton	1.18	-0.20	-0.08	-0.28	-1.02	-0.04
Rice	0.43	0.02	0.02	0.04	-0.76	-0.29
Tobacco	0.36[a]	-0.21	-0.11	-0.32	-0.02	0.14
Sugar	0.61	-0.78	n.a.	n.a.	--	-0.17
Peanuts	0.77[b]	-0.41	n.a.	n.a.	--	0.36
Potatoes	0.12	-0.12	0	-0.12	--	-0.01
Dairy	1.44	-0.99	0	-0.99	-1.67	-1.22
All program commodities	12.8	-4.0	-1.0	-5.0	-13.8	-5.0

[a] Includes gains to quota owners of $0.45 billion and losses to producers of $0.09 billion.
[b] Includes gains to producers of $0.34 billion and gains to quota owners of $0.43 billion.

agencies' budgets that constitute these costs, but they include at least the payroll of the Agricultural Stabilization and Conservation Service, which is about $0.5 billion annually.

Second, farmers expend some effort trying to comply at minimal cost with program provisions or to make themselves eligible for payments. For example, some intricate contracting arrangements have been undertaken so that farmers can obtain two, three, or even ten times the 1985 Act's ostensible limitation of $50,000 per farm in deficiency payments. The costs of this maneuvering are part of the deadweight losses from current programs. However, no quantification of them is available.

Third, an agricultural information and influence industry has arisen centered in Washington, D.C., in which each commodity group has to hire lobbyists and expend its own time in obtaining the best political results possible for itself. Many millions of dollars are spent in this way, but again the data for even a rough estimate are not available.

Fourth, there are long-run resource allocation effects of programs which may be important sources of economic mischief. Price supports, especially when combined with disaster programs that constitute free output insurance and credit programs which approximate free insurance against bankruptcy, provide a safety net sufficient to prevent people who aren't managerially or temperamentally suited to farming from moving to an occupation that fits them better. In the long term this is no favor either to the particular farmers in trouble or to the health of the farm sector.

More generally, the programs encourage undue risk-taking in less productive ventures and discourage management approaches that would make farmers and the farm sector more resilient and competitive in world commodity

markets. These losses are also not quantifiable but may well be the most important of all.

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