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**PREDATORY VERSUS PRODUCTIVE GOVERNMENT:
THE CASE OF U.S. AGRICULTURAL POLICIES**

by

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PREDATORY VERSUS PRODUCTIVE GOVERNMENT: THE CASE OF U. S. AGRICULTURAL POLICIES[†]

Agricultural policy is a complex web of interventions covering output markets, input markets, trade, public good investments, renewable and exhaustible natural resources, regulation of externalities, education, and the marketing and distribution of food products. At the level of the Federal government, these interventions have resulted in enormous budgetary costs;¹ huge surpluses of farm products; major disputes with other countries; distorted international markets; and benefits to special interests that are often highly concentrated. The same programs, however, have been part of an agricultural sector whose productivity over much of the last century has been spectacular.

Do these massive governmental interventions correct for market imperfections, lower transaction costs, effectively regulate externalities, and enhance productivity? Or are these programs the result of manipulation by powerful commodity or agricultural interest groups actively engaged in rent seeking or directly unproductive activities (Buchanan and Tullock 1962; Krueger 1974; Bhagwati 1982)? In this latter perspective, agricultural interest groups are presumed to behave much like the proverbial 800-pound gorilla—they walk where they want; they stand where they want; they sit where they want; and they take what they want.

Even a superficial analysis of the wide cadre of agricultural policies demonstrates that struggles and conflicts naturally emerge between public and special interests. A conceptual formulation that attempts to explain or, for that matter, prescribe public policy emphasizing only one of these interests is doomed to fail. Frameworks that neglect political forces and the role of special interest groups will have little explanatory power. Similarly, models that presume the government has no autonomy or any interest in the size of the economic pie will also face serious limitations as explanatory, predictive, or prescriptive frameworks.

In the design and implementation of governmental policy, public and special interests are inseparable. The two sets of interest emerge hand in hand when governments engage in

redistributional or efficiency enhancement activities. In some instances, the public interest dominates special interests while, in other cases, redistributive transfers to politically powerful interest groups overwhelm the public interest. In still other cases, limited information and lack of transparency result in policy combinations that are designed to confuse those who bear the burden of the redistributive policies.

To resolve conflicts that arise among various interest groups, the U.S. government has often designed programs that appear incoherent, e.g., conservation (which requires the retirement of vulnerable acreage) and price supports based on historical acreage (a transfer mechanism that penalizes premature land retirement and creates incentives for overutilization of vulnerable acreage). These apparent incoherences, however, are the direct result of institutional arrangements that generate sufficient support for governmental action.

For U.S. agriculture, public and special interests have led to both the enhancement of allocative efficiency through "productive policies" and the transfer of wealth and income to special interests through "predatory policies." From an integrated political-economic perspective, these two activities can be examined in terms of PESTs (predatory, or special interest) and PERTs (productive, or public interest) policies. PEST policies, or political-economic-seeking transfers are meant to redistribute wealth from one social group to another and are not explicitly concerned with efficiency. In contrast, PERTs, or political-economic resource transactions, are intended to reduce transaction costs in the private sector by correcting market failures or providing public goods; at least in design, they are neutral with respect to distributional effects (Rausser 1982).

In this essay, we will argue that public policy in agriculture has been both "productive" and "predatory." In fact, a historical review of public policy in agriculture reveals not only tension between the PERT and PEST roles of the public sector but also some coordination between these two types of activities. As different interest groups access, influence, and pressure the political process, the government trades off PESTs and PERTs in its attempts to acquire balance and secure political power. The rational process generates a portfolio of

productive (PERT) and predatory (PEST) policies. In such a world, the challenge for economists is to design and advocate policies that are both economically productive and politically sustainable.

History of Agricultural Policies

Over much of the last century and a half, the agricultural sector has been one of the most innovative and productive sectors of the U.S. economy. A significant portion of this growth can be traced to the provision of public goods and governmental investments in infrastructure. State and Federal support of land-grant universities has had a positive influence on the level and quality of human capital. Transportation system investments, water resource developments, and land reclamation activities have all made significant contributions to economic growth. Pavelis (1985) has estimated that the Federal government, "... through direct construction or indirect cost sharing, has created up to 1975 about 45 percent of the value of all irrigation, drainage, and soil and water conservation facilities in the United States."

Federal programs for increasing growth in the agricultural sector actually began in the second half of the 19th century. The period from 1850 through the early 1900s witnessed the emergence of a number of important institutions aimed at lowering transaction costs in the private sector, e.g., the Morrill Act of 1862 (Federal land grants to each state to establish free public higher education through the Land Grant College system), the creation of the U.S. Department of Agriculture in 1862 (an executive-cabinet-level agency, focusing on research, regulation, and information generation), the Hatch Act of 1887 (a system of Agricultural Experiment Stations created by providing annual grants to each state for agricultural research), and the Smith-Lever Act of 1914 (the Cooperative Extension Service system of county agents). This early Federal government policy can largely be characterized as long-run institutional development. Here, the Federal government was supplying quasi public goods whose associated benefits and costs were widely dispersed.

The Cooperative Extension system of county agents, the American Farm Bureau (a generic, private, voluntary farm organization), and the U. S. Department of Agriculture (USDA) joined forces in promoting economic growth within the agricultural sector. The grassroots organization represented by the county agent extension system proved to be an effective mechanism for communicating new agricultural technologies and knowledge directly to farmers in a systematic fashion. This organization also became the conduit for communicating back to the USDA and the land-grant universities signals on farmers' problems requiring research. As the future unfolded, however, this organization also became an institution which helped sustain redistributive transfer policies.

A major resource promoting agricultural productivity has been the knowledge generated by public sector investments in research. This knowledge generation has repeatedly been shown to have significant influence on agricultural growth. Even so, the striking feature of agricultural research policies has been the overwhelming evidence of underinvestment. As Ruttan (1982) has shown, the rates of return to public good investments in agricultural research justify much higher levels of public research support.

Following the emphasis on public research, education, and extension support, legislation arose that focused on limited information and the undesirable levels of rural infrastructure. This legislation covered rural delivery of mail, soil conservation, agricultural credit, rural electrification, rural road building, and many other investments in the physical infrastructure of agriculture. These growth-promoting policies generated benefits that were not available to all citizens or even to all farms. There is little doubt that some laws were administered to create selective benefits for specific groups. Accordingly, most of this legislation led to the implementation of efficiency-improving policies whose costs were widely shared but whose benefits were concentrated. Around the turn of the century, other legislation regulating different aspects of agriculture had the purpose of lowering transaction costs, e.g., fertilizer and seed standards, weights, animal health, and food safety.

Over the years, health and food safety has steadily increased in importance, especially environmental pesticide policy. The origins of environmental pesticide policy can be traced to the Federal Insecticide Act of 1910, initially developed to protect farmers from fraudulent claims of insecticide salesmen (Bosso 1987). The argument can be made that this legislation was introduced to lower the transaction costs resulting from imperfect information. From these origins, 70 or so years later the agricultural regulatory portfolio of the U.S. Environmental Protection Agency (EPA) can be traced. Today, this environmental and health hazard regulatory portfolio includes surface water pollution; groundwater pollution; air pollution; worker exposure to agricultural chemical inputs; endangered species (exposure to the harmful effects of pesticides applied to the fields and crops in their habitat); and dietary risk (pesticide residues may remain in agricultural products that reach the consumer).

Although the initial legislation was justified on economic efficiency grounds, the policy that it spawned reflected political influence and power. Pesticide environmental policy of the 1950s and 1960s was firmly controlled by an agricultural chemical coalition comprised of the chemical industry, the USDA, and the U.S. congressional committees (Bosso 1987; Mitchell 1979; Macintyre 1987). In the political science literature, this coalition is referred to as the "Iron Triangle." As Wilson notes, however, most of these so-called coalitions "appear to be made of metal far more malleable than iron" (Wilson 1980, pp. 391). As public awareness began to increase, this coalition was challenged first by the Pesticide Control Amendment of 1954 that required any registered pesticide to have a tolerance level set by the U.S. Food and Drug Administration (FDA) for acceptable residues. A far more important event, however, was the passage in 1958 of the "Delaney Amendment" which states simply that no (food) additive shall be deemed safe if it is found to induce cancer when "ingested by man or animal." As expected, this Amendment was vigorously opposed by agricultural chemical interests but without success; the Delaney Amendment passed easily.

Until the publication of Carson's (1962) *Silent Spring*, most people knew the benefits of pesticides but very few had any knowledge of the possible environmental and health risks of

pesticide use (Perkins 1982). With the event of the thalidomide scare of 1962, the Carson message was the beneficiary of increased credibility. Slowly, a new breed of environmental activists emerged which turned to the court system to enforce the pesticide control laws that had been enacted. In 1969, the Environmental Defense Fund won a case against the use of DDT in the state of Wisconsin. As Bosso (1987) reported, this first state-level ban of DDT "sent shock waves throughout the community, the chemical industry, and government at all levels."

Shortly after the Nixon Administration's announcement in 1969 of its intent to phase out all nonessential uses of DDT within two years, the weakened agricultural chemical coalition of the 1960s was shattered. It lost its influence with the emergence in the early 1970s of an environmental interest group armed with a number of significant events, anecdotal evidence, and a responsive court system. These interest groups have expanded their portfolio to include the external effects of agriculture production on the nation's waters and wildlife habitats in addition to the quality of food supply. The environmental interest groups have helped usher in modern pesticide policies whose foundation includes the National Environmental Policy Act of 1969, the Clean Air Act of 1970, and the establishment of the U.S. Environmental Protection Agency (EPA) within the Executive Branch in 1970. In terms of the political economy, a new coalition has emerged which consists of the environmental interest group organizations, EPA, and members and committees of Congress without agricultural ties.

Another instance of public policy originally justified on economic efficiency and equity grounds is the case of western resource development. Initially, this development was viewed as promoting economic growth by turning "wastelands" into valuable agricultural soils. Because of the potential concentration of transfers resulting from these policies, the original Federal Reclamation Act of 1902 limited the size of those farms which could receive low-cost irrigation infrastructure and water to small-holder residents (160 acres per family member, or a maximum of 480 acres per household). The intent of the original legislation was to ensure

that water projects benefited smaller farms rather than powerful land interests such as railroads, oil companies, or land speculators. These water resource projects were designed to be self-financed and project beneficiaries were expected to repay construction costs over a 10-year period (Englebert and Scheuring 1982; Holmes 1979; Worster 1985).

As the future unfolded, political influence was exercised to alter the original provisions of the 1902 legislation. As a result of one farm crisis following another over the period from 1915 through 1930, the self-financing features were eliminated and reclamation construction funds were appropriated from the U.S. Treasury. Moreover, during the 1930s, through a series of congressional enactments, the scope of reclamation policy was expanded to include activities such as fish and wildlife habitat development, flood control, navigation, and hydroelectric power generation and distribution. By the 1940s, the original intent of the 1902 legislation, to promote small-scale farmer settlement of the arid West, was all but forgotten. The acreage limitation and residency provisions of the original legislation were never enforced. Once the court system was called upon to examine this lack of enforcement, the acreage limits were legislatively increased to 960 acres.²

The ambiguous public-interest versus self-interest legacy of Federal water policy can also be seen in other agricultural programs. By the 1920s and 1930s, farmers became one of the most well-organized economic interest groups, connected and represented by a national system of county agents, the American Farm Bureau, and the USDA. The agricultural depression of the 1920s, which foreshadowed the Great Depression, provided the stimulus for this network to be more cohesive and effective in enhancing farm productivity and in redistributing benefits to farmers. Farm interests during this period were able to legislatively avoid a number of governmental interventions with exemptions from antitrust, labor, and tax legislation. The Capper-Volstead Act of 1922 specifically exempted agricultural cooperatives from some features of the Sherman antitrust legislation, allowing farmers to join together to purchase inputs, to market their products, and even to agree on the amount of joint production. For much of this century, farmers were exempt from minimum wage legislation.

Further, after World War II, farmers were the major beneficiaries of the Bracero Program (temporary employment of Mexican aliens). In the case of special provisions in U.S. tax codes for agriculture, we find cash accounting and a many tax shelter incentives for investment in specific commodities.

Representative examples of legislation originally justified as productivity-enhancing ways of correcting market failures but that ended up with strong elements of rent seeking include policies regarding farm credit and soil conservation. Farm credit legislation set up a system of farmer-owned cooperative banks, organized into 12 regional districts guaranteed by the Federal government and composed of Federal land banks (long-term debt) and production credit associations (short-term debt), and a bank for cooperatives. This legislation was justified in some circles by market failures which led to less than an optimal amount of credit being offered to the agricultural sector. It was argued, quite correctly, that the government created a market failure through banking laws that prohibited the emergence of national banks; state banks simply could not easily diversify the regional components of agricultural lending risk. Adverse selection is also believed to exist in rural credit markets due to heterogeneous endowments of farmers' abilities which are unknown to bankers or investors. These and other alleged market failure arguments were used to justify the public-interest desirability of government sponsorship of the Farm Credit System.

Since the Farm Credit System lending was also restricted to the agricultural sector, these institutions did not adequately address the problem of diversification. As the years unfolded, it became clear that these institutions had an inherent conflict of interest. The stockholders were also the borrowers. Stock equity in these institutions could not be freely traded; in fact, it could be redeemed only by paying off loans. Furthermore, since dividends were not paid, the most effective means for transferring any residual was by charging below-market rates of interest. Once interest rates rose dramatically in the early 1980s, the Farm Credit System faced many of the same problems that plagued the U.S. savings and loan industry, especially on their longer debt portfolio. Accordingly, farm credit interest rates rose

above market rates. More efficient farmers slowly exited the system, terminating their stockholder interest as they paid off their loans. Farmers who could not secure credit from other sources remained in the system.

In large part due to these structural problems, the Farm Credit System suffered losses of over \$2 billion per year in 1985 and 1986. Even as the losses mounted, however, lobbyists spent millions of dollars arguing for system subsidies; and the Federal government bailed out the farm credit system in 1988. Whether the Farm Credit System had originally aimed at a market failure or not, it had developed its own political momentum for taxpayer transfers to the farm sector and the institutions created by the original 1914 legislation.

A striking example of masking special interests by references to the public interest emerged with the passage of the Soil Conservation and Domestic Allotment Act of 1936. The dust bowl of the 1930s, dramatized by John Steinbeck's *The Grapes of Wrath*, left the general public with the perception that soil conservation was a serious social problem. The 1936 legislation marked the beginning of a long history of policies aimed both at commodity supply management and soil conservation. Specifically, the Act enabled farmers to receive soil conservation payments for reducing "soil-depleting" crops which, unsurprisingly, were also surplus crops. The focus on conservation emanated from concern about preserving and sustaining agricultural lands for future generations; "soil mining" and erosion; and "soil runoff" externalities were viewed as contrary to the public interest.³

The Agricultural Act of 1956 continued the linking of commodity supply management with soil conservation policy. The program which arose from this Act was divided into two parts: a conservation reserve and an acreage reserve. The objective of the acreage reserve was to reduce the amount of land planted to the so-called program crops: wheat, cotton, corn, tobacco, peanuts, and rice. All farmers were eligible to participate in the conservation reserve, which allowed conversions of whole farms from cropland to soil-conserving uses. This program eventually enrolled nearly 30 million acres in the 1960s, moving marginal cropland into permanent pasture, timber, or recreational uses under contracts for a maximum

of 10 years. It served the objectives of encouraging long-term adjustment of land and labor to nonfarm uses, soil conservation, and, to some degree, output management. However, almost all of the land in this conservation reserve returned to production during the 1973-1975 boom.

In 1985, conditions were once again ripe for combining conservation and supply management. Farm production was generating enormous surpluses, and the environmental lobby was increasingly more effective. As a result, under the 1985 Food Security Act, the conservation reserve program reduced acreage bases of corn, wheat, and cotton by 1.1 percent, 2.5 percent, and 8.2 percent, respectively, from 1985/86 to 1987/88 (Tweeten 1989). As of 1990, approximately 34 million acres have been enrolled in the 1985 conservation reserve program

A number of important lessons have emerged from the evolution of commodity and soil conservation policies since the 1930s. First, potential opposition can be generated for supply control policies when they are masked by conservation policies that protect future generations and promote environmental quality (e.g., the Soil Conservation and Domestic Allotment Act of 1936, the Agricultural Act of 1956, and the Food Security Act of 1985). These joint schemes achieve the greatest political success during times of depressed markets. In rapidly expanding markets, public compensation for the implementation of conservation practices does not generate sufficient political support. Furthermore, the combining of commodity and resource policies is far more difficult if institutional investments are not undertaken to establish an implementing organization, viz., the soil conservation districts and/or the county agricultural adjustment committees (which, in 1981, were relabeled the agricultural stabilization and conservation committees). These institutional arrangements provide an effective organization through which local farmers and the Federal government can join forces to implement soil conservation practices.

Redistribution to the Agricultural Sector

To this point, the discussion has emphasized policies that, even if they were sometimes manipulated for purposes of redistributing income to the farm sector, were justified to some degree by market imperfections. However, there are a variety of other agricultural programs which primarily serve to redistribute income to the farm sector. The long history of these redistributive agricultural policies began in explosive fashion with the passage of the Agricultural Adjustment Acts of 1933, which has been revised. After a clarification of the U.S. constitution by the Supreme Court, the initial legislation was restructured to admit voluntary farmer participation and has continued to be revised every four years or so.

These redistributive programs implemented "coupled" or, equivalently, nonneutral transfer schemes which linked government support directly to the amount produced. Since these programs were tied to specific commodities, they led to farm political interest groups becoming more specialized. As a result, the generic farmer organizations began to lose influence. Direct economic benefits or losses were created by these programs for particular groups which, in turn, generated significant incentives for active political involvement in setting specific levels of commodity policy instruments. In effect, these groups became the primary vehicle for political expression of farmer interests (Lowi 1965). Similarly, beginning in the 1930s and through the postwar years, the USDA was transformed from an organization that focused largely on research and education to a more conventional government agency, managing programs which provide direct economic benefits to specific interests.

Initially, the major policy instruments for redistributing income to the farm sector were price supports and public storage. Price supports were implemented through nonresource government loans to farmers, and collateralized by the commodity within the specified period of the loan. If market price fell below the loan rate (price support), the government took ownership of the collateral; if not, the farmer could be expected to pay off the government loan and redeem the commodity. Of course, these two instruments (price support and public storage) were naturally tied: since price supports were generally set well above market

equilibrium prices, storage of the surplus was a necessary by-product.⁴ Price support incentives combined with large increases in farm productivity—resulting, in part, from the public investment in research—quite naturally led to huge surpluses.

With the commodity redistributive policies come, of course, deadweight losses and contractions in economic growth. The range for these losses have been estimated for many commodities on numerous occasions. Neglecting the waste generated from rent-seeking behavior, an indication of the range of these deadweight loss estimates for selected commodities is reported in Table 1 for a representative year over the period, 1985-1988. The stylized facts emerging from such analyses (not only for the United States but other countries as well) can be briefly summarized as follows: the redistribution of income to agriculture is greater the richer or the more industrialized the country; the higher the cost of production; the fewer the number of farmers, absolutely and relative to the total population; the more price inelastic the supply or demand function; the lower the portion of total consumer budget spent on food; and the “smaller” the exporting country or the “larger” the importing country (Rausser and de Gorter 1989). In general, the accumulated evidence is that the commodity specific policies instituted in the United States and other developed countries have created significant distortions.

There are many margins for adjusting behavior both within production of a commodity as well as across commodities, the effects of which seem to continually surprise both policymakers and interest groups. In fact, U.S. agriculture policy has shown again and again that no mix of policy instruments has been able to cover all the side effects. Since the 1930s, this phenomenon has resulted in a piecemeal proliferation of policy instruments that address the side effects of excess production. On the supply side, this proliferation includes the land controls and land conservation mentioned earlier, along with production quotas, and other tools; on the demand side it includes export subsidies and enhancements, concessional foreign sales and food grants, and food stamps. Unfortunately, each additional policy

Table 1

**Range of Annual Domestic Welfare Gains and Losses from Support Programs
Under the 1985 Food Security Act, 1985-1988**

Crop	Consumer Loss	Producer Gain	Taxpayer Cost ^a	Net Loss
billions of dollars				
Wheat	0.10-0.44	2.25-3.60	3.24-4.70	1.09-1.54
Corn	0.34-1.10	3.97-10.90	4.89-10.50	1.26-0.70
Cotton	0.18-0.22	1.06-1.60	0.92-2.10	0.04-0.72
Peanuts	0.02-0.42	0.15-0.40	0 ^b	(0.13)-0.02
Dairy	1.60-3.10	1.30-2.40	1.00-1.84	1.30-2.54
Sugar ^c				
Case I	1.80-2.50	1.50-1.70	0 ^b	0.30-0.70
Case II	1.10-1.80	1.00-1.40	0 ^b	0.10-0.40
Tobacco	0.19-0.23	0.32-0.40	0.01-0.02	(0.12)-(0.15) ^d

^aIncludes Commodity Credit Corporation expenses after cost recovery.

^bThese programs are run at no net cost to the government.

^cCase I assumes U.S. policies do not affect world sugar prices. Case II takes into account the fact that U.S. policies reduce world sugar prices. The value of sugar import restrictions to those exporters who have access to the U.S. market (that is, value of quota rents) is \$250 million.

^dThe tobacco program is estimated to have a positive net domestic welfare gain. This is because of the large value of U.S. exports allowing domestic producers to extract surplus from foreign consumers.

Source: Computed estimates from unpublished U.S. Department of Agriculture data.

instrument brought unanticipated side effects that required still additional mechanisms for containing the expanding capacity for commodity production.

Sometimes the side effects seem so obvious that policymakers can only have missed them through sheer myopia. For example, the initial voluntary acreage reduction programs focused on compliance requirements *for a particular commodity*, neglecting the fact that farmers might substitute and grow other crops. In addition, it was sometimes possible for the party that had demanded the original crop to substitute and use the new crop the farmer was growing (Brandow 1977), as in the case where farmers might substitute between corn, soybeans, oats, and sorghum. Of course, if too many restrictions on substitution are placed on farmers, they will choose not to participate.

To understand how farmers can respond to coupled voluntary programs, it is important to understand the mechanics of the income transfers. For some years, the major vehicle for these transfers has been "deficiency payments." The government sets a target price for a number of commodities. Target prices are set well above market prices which, of course, encourages high program participation. The deficiency payment rate is computed as the difference between the target price (set by law) and the higher of the price support or the average market price received over the first five months of the marketing year. The payment base is determined by the land base and "program yield" (based on the individual's or counties' past yields) adjusted for any acreage production programs.⁵

Each farmer participating in the program has a payment base, determined by the land base (essentially how much land they have dedicated to the crop in the past) and "program yield" (based on the individual's or counties' past yields). To receive the deficiency payments, participating farmers must either allocate land to a crop in the program or to conservation uses dictated by USDA. Moreover, until 1990, the enabling legislation has generally required farmers to forego present and future program benefits if they harvest crops other than the program crop for which they have a "land base." This feature was intended to prevent a farmer from collecting Federal subsidies for not growing one crop, while growing

another. It also has the effect of coupling income transfers to the planting and harvesting of program crops.

Thus, the amount of deficiency payments to farmers is influenced by four potentially different channels: target prices, price supports, the land resource base, and productivity. Each of these four components provides incentives for augmenting output on the utilized land base. Over the years, more flexibility has slowly been introduced and the amount transferred has become increasingly less dependent on the actions, current and past, of farmers. For example, until the 1986 market year, the expected program yield was determined as a moving average of a farmer's past yields. One provision of legislation in 1985, however, was to assign unalterable program yields. Thus, a farmer could no longer strategically influence this variable.

The degree of coupling caused by price supports was also dramatically reduced with the 1985 legislation. The Secretary of Agriculture was given discretion in the case of feedgrains and wheat to lower the price support up to 20 percent below the basic loan rate. For soybeans, the loan rate can be lowered no more than 5 percent. For cotton and rice, the effective loan rate is set at world market prices. As a result, cotton and rice farmers participating in government programs could first pledge their output as collateral for a loan at the basic rate and, at maturity, repay the loan at the prevailing world market price if it is lower than the basic rate.

In the case of land base, current actions can still influence how a farmer's base is computed. A producer of a program crop has an assigned "base" acreage of that crop, which is derived from a 5-year moving average of plantings of that crop on the farm. As a result, it is often optimal for a producer not to participate in a program for a time and to increase his computed land base, in anticipation of higher future subsidies. Available evidence reveals that producers with a low land base generally choose not to participate in the program, whereas those with a high land base choose to participate.⁶

The trend toward lowering entry barriers to production of program crops and the degree of coupling at the margin was continued in the 1990 farm legislation. In comparison to previous legislation, the flexibility provisions allow market signals to play a more significant role in guiding production decisions. These provisions permit 15 percent of the land base (not eligible for payments) to be planted to any program, any oil seed, any industrial or experimental, or any other nonprogram crop, except for fruits and vegetables.⁷ In addition to the 15 percent "normal flex" provision, farmers are also allowed the option of an additional 10 percent flexibility. Subsidy payments are also lost on these acres as well as the 15 percent "normal" flex acres; but for both the "normal flex" and "optional flex" acres, the land base is protected. Prior to 1990, the allocation of land to any nonprogram or other program crops would have reduced by an equivalent amount that acreage that would enter the 5-year moving average process for determining land base.

That portion of the actual land base that is idled can be decided by each producer, and each producer will rationally idle the least-productive land that he controls (whether as an owner or a renter). This factor (plus the existence of nonparticipants) means that a program which seeks to reduce acreage by a given amount normally reduces output by a substantially smaller percentage. This phenomenon has been referred to in the literature as "slippage." Different estimates of the amount of slippage range from 30 percent to as high as 60 percent (Norton 1986; Tweeten 1989; Love and Foster 1990; Ericksen 1986).

Given the possibilities for manipulating output patterns, it should be clear that predicting government agricultural spending is highly uncertain. Since the target price is set by the legislation, the major sources of uncertainty are the support price, the land base, and the participation rate. Prior to 1986, the level of productivity used in the computation of deficiency payments was also uncertain over the planning horizon following each revision in the basic Agricultural Adjustment Acts of the 1930s. Because of the uncertainties, it is not surprising that the OMB and the USDA frequently generate point forecasts for government expenditures which are widely off the mark. What is perhaps more startling, however, is

that, compared to other budgetary predictions, agricultural expenditures are forecast with very high errors and have been systematically downward biased over the last few decades. To be sure, there are incentives for underestimating the expected treasury costs in those areas where the exposure is highly variable and the transfer recipients are distinctly more powerful and better informed than those who share the burden for the transfers (i.e., taxpayers, consumers).

In an attempt to control government spending, as well as to address goals of distributional equity, deficiency payments are limited to \$50,000 per farm while loan deficiency payments (based on the difference between the basic loan rate and the Secretary of Agriculture's announced loan rate) were limited to \$200,000 for the 1987 crop. Over the years, however, many loopholes have allowed these payment limitations to be exceeded. The loose definition of a "person" has fostered overlapping partnerships and other methods of farm ownership that qualify for multiple payment limits. Accordingly, the number of "farmers" in program-eligible commodities has increased over the last decade, while the number of farmers producing commodities ineligible for subsidies has declined.

Despite these attempted limitations, the distribution of program benefits continues to be viewed by many as inequitable. For the 1988 crop year, farms with sales above \$100,000 received 57.6 percent of the direct government payments. As shown in Table 2, the cumulative distribution of government payments reveals concentration among the largest farming operations, with the average payment to all farmers having annual sales exceeding \$500,000 per year at approximately \$40,000. Since many large farms do not produce commodities eligible for government programs (approximately 25 percent of all farmland in the United States is eligible for government crop programs), participating farms receive considerably more than this figure. In fact, eligible farms in 1988 with sales above \$500,000 received almost \$900,000 as an average payment.

Unfortunately, many of the inputs used in agricultural production are joint, producing valuable as well as undesirable outputs (Rausser 1974; Rausser and Lapan 1979).

Table 2

Distribution of All Government Payments by Farm Class, 1988 (all farms)

Farm Class ^a	Number of Farms	Average Payment	Total Payments to Class	Total Payments	Total Farms in Class
<u>dollars</u>	<u>thousands of dollars</u>	<u>dollars</u>	<u>millions of dollars</u>	<u>percentage</u>	
<10,000	1,051	559	588	4.1	47.8
10,000-19,999	270	2,368	640	4.4	12.3
20,000-39,999	253	5,821	1,472	10.2	11.5
40,000-99,999	300	11,461	3,444	23.8	13.7
100,000-249,999	220	21,452	4,714	32.6	10.0
250,000-499,999	67	32,484	2,188	15.1	3.1
500,000>	35	40,874	1,435	9.9	1.6
Total	2,195	6,597	14,481	100.0	100.0

^aAnnual sales.

Source: "Economic Indicators of the Farm Sector: National Financial Summary, 1989."

USDA, ERS, ECIFS 902, Table 30, p. 46.

Encouraging agricultural production through coupled transfer schemes while requiring some land be idled leads to excessive utilization of basic inputs. Residuals of excessive fertilizer and pesticide applications combine with excess water and are transported into various water sources. Toxic salts accumulate in agricultural land. Burning crop residues may result in air pollution. These examples serve to illustrate the joint input feature of land, water, pesticides, etc., leading to multiple products—some subset of which results in the degradation of environmental resources.

Essentially, the land that is allocated to production of program crops is combined with more pesticides and fertilizers than would otherwise be the case. Since farmers can receive subsidies only on that land that is part of the farmer's program crop base, a disincentive is created for rotating crops. Because crop rotation is a nonchemical technique for pest control, the coupled transfer programs aggravate pesticide pollution by encouraging the substitution of chemical for nonchemical pest control. While the empirical evidence on these effects is often local, national estimates have been made for soil erosion rates from different types of farms. For example, Reichelderfer (1985) has estimated an erosion rate of 9.2 tons per acre per year as the average for nonparticipating (in government programs) farms while for all farms that do participate and are recipients of nonneutral transfers, the average erosion rate is 14.7 tons per acre per year. This difference between participating and nonparticipating farms is highly significant.⁸

Given the relationship between coupled transfers and the determined land base, acreage that is suitable for the program crops becomes more valuable. These subsidized land values encourage farmers to allocate available land to program commodity production. In some instances, this has included land that is steeply sloped and thus highly erodible, as well as wetlands that provide important wildlife habitat. Hence, coupled transfers based on land use have created incentives for farmers to use land in ways that often increase adverse environmental impacts. These concerns helped motivate the conservation reserve program of the 1985 legislation and the planning flexibility provisions of the 1990 farm legislation. These

most recent farm bills have established a trend toward reducing the linkages between agricultural subsidies and farmers' production and land-use decisions. This has also reduced the potential adverse environmental spillovers, and has slowly begun to reduce the entry barriers that exist in the production of various commodities.

Other Side Effects

Since the United States is a large country on the world market for some commodities, its price supports and accumulation of stocks can conceivably result in short-run favorable consequences for all exporters of the commodity in question. Specifically, if the internal price supports are so high as to effectively eliminate the export market as a relevant alternative to U.S. production, all the benefits accrue to other exporting countries in the short run. Over much of the post-World War II period, the United States has behaved as a residual supplier on world markets of many major commodities, especially the food grains, cotton, and the feed grains.

To the extent that various policies, e.g., protection against import competition (such as quotas in the United States and variable levies in Europe), price support programs, coupled subsidy transfers, and quotas of domestic marketing all induce greater production, however, world prices will be depressed. This is particularly evident when the U.S. government sells unwanted stocks on world market at less than the domestic price (through the Export Enhancement Program), makes concessional sales, or simply donates the food as aid (through PL480). These potential effects have been examined in a number of empirical analyses (Tyers and Anderson 1986; Roningen and Dixit 1989; Zietz and Valdéz 1986). For example, Roningen and Dixit estimate that eliminating U.S. agricultural policies would increase world dairy product prices by 23.5 percent, sugar by 22.8 percent, coarse grain by 11.6 percent, wheat by 10.6 percent, rice by 2.9 percent, ruminant meats by 3.8 percent, and nonruminant meats by 3 percent. This would lead to corresponding costs for consumers and benefits for producers in the rest of the world.

One justification often expressed in support of price floors and public storage programs in the United States and in other industrialized countries is that they stabilize what would otherwise be an unacceptable domestic volatility in basic commodity prices, at least over the very short run. Ironically, these same policies amplify rather than dampen commodity price fluctuations on international markets. On glaring example of this phenomenon is the world sugar market. The European Community (EC) and the United States have both accepted increasing market distortions and have not adjusted their policies to changing economic conditions. These policies have been estimated to have increased price instability in the residual world market for sugar by approximately 25 percent (World Bank 1986 World Development Report, 1986). Moreover, because the United States has been dominant in the world sugar trade, the imposition of import quotas has lowered world sugar prices. Not surprisingly, EC and U.S. sugar policies have also placed significant burdens of adjustment on many developing countries. The World Bank's 1986 World Development Report has estimated that sugar policies of industrialized countries cost developing countries about \$7.4 billion in lost export revenues during 1983 and reduced their real incomes by about \$2.1 billion. In the case of world wheat prices, Schiff (1985) has estimated that the variability could be reduced by 48 percent if all countries were to end their subsidization of wheat. Tyers and Anderson (1986), using a model simulating policy reform in more than a half dozen commodity markets, have calculated that liberalization of agricultural policies of industrialized countries would substantially reduce the international price variability of major temperate-zone commodities: wheat by 33 percent, coarse grains by 10 percent, rice by 19 percent; sugar by 15 percent, and dairy products by 56 percent.

The inflexible settings of price supports and target prices in the early 1980s followed the favorable economic decade of the 1970s. The coupled transfer policies augmented the degree of overexpansion within the U.S. agricultural sector, making the sector especially vulnerable to the unanticipated interest rate, exchange rate, and growth rate scenarios of the early 1980s (Rausser et al 1986). Associated with these unintended side effects of inflexible transfer

schemes is the "mining of the soil" that many farmers engaged in during the 1980s in order to survive financial stress (Foster and Rausser 1991). Similar mining of the soil occurred to generate the production history that would serve to enhance a farmer's position with respect to future coupled transfers.

Partially because of the nature of the coupled transfers, one production record after another was broken during normal weather years of the 1980s. In 1983, commodity-specific certificates were offered in lieu of cash transfers and became a means for releasing public stocks held in the farmer-owned reserve. This farmer-owned reserve (established by the 1977 legislation) was designed as a means of keeping public stocks off private markets until prices rose sufficiently that farmers would be motivated to sell their stocks or still higher prices where the government would force their release. In 1986, generic commodity certificates were introduced in place of commodity specific certificates up to the level of available stocks.

Accounting for PESTs and PERTs

One measure of the degree of government intervention across commodity groups can be represented as a "producer subsidy equivalent" (PSE), the ratio of the total value of all public sector assistance to total farmer receipts. As shown in Table 3, the degree of government intervention is most dramatic for products where demand is inelastic, e.g., sugar, milk, rice, and wheat. Feed grains have an intermediate level of support while sectors with more elastic demands, such as soybeans and red meats, have the lowest level of support.⁹

The decomposition of the public sector assistance into productive (PERT) and predatory (PEST) forms of government policy is also reported in Table 3. The productive category includes all expenditures by the public sector that are expected to lower transaction costs and enhance the rate of economic growth, e.g., public-good expenditures, information and marketing services, grades and standards inspections, crop insurance, public research, extension, etc. For the PEST category, all redistributive transfers from other segments of the

Table 3

**Productive Versus Predatory Policy Interventions in U.S. Agriculture,
1982-1986 Average**

	Policy Interventions					
	Total Producer Subsidy Equivalents		Productive		Predatory	
	Percentage Unit Value	Dollars per Ton	Dollars per Ton	Percentage Producer Subsidy Equivalent	Dollars per Ton	Percentage Producer Subsidy Equivalent
Sugar	77.4	221.0	17.5	7.9	203.5	92.1
Milk	53.9	152.0	11.8	7.8	140.2	92.2
Rice	45.0	145.0	9.4	6.4	135.6	93.6
Wheat	36.5	57.0	7.7	13.5	49.3	86.5
Sorghum	31.5	36.4	5.3	14.5	31.1	85.5
Barley	28.8	32.0	6.7	20.9	25.3	79.1
Corn	27.1	31.5	5.6	17.7	25.9	82.3
Oats	7.6	7.3	4.5	61.6	2.8	38.4
Soybeans	8.5	18.0	13.4	74.3	4.6	25.7
Beef	8.7	175.3	97.7	55.5	78.1	44.5
Poultry	8.3	82.0	53.3	65.0	28.7	35.0
Pork	5.8	85.4	67.6	82.5	17.8	17.6
Average	24.6	86.9	25.1	35.6	61.8	64.4

Source: U.S. Department of Agriculture, "Estimates of Producer and Consumer Equivalents: Government Intervention in Agriculture." Economic Research Service, ATAD Staff Report No. AGES 880127, April, 1988.

economy to agricultural producers, e.g., deficiency payments, price supports, storage subsidies, subsidized credit, etc., are incorporated.

Note that the products with inelastic demands (sugar, milk, and rice) receive a lower proportion of their public support in the form of productive policies, while the products with elastic demand (soybeans and meats) receive a higher proportion of their support in the form of productive policies. The data is consistent with the view that coupled predatory policies are higher in sectors whose demand is inelastic and whose supply is very responsive to policies and lower in sectors with highly elastic demand and low supply elasticities. For some products that do not appear in Table 3, e.g., specialty perennial crops whose demand is highly elastic, but whose productivity and supply response is low, coupled predatory policies do not generally exist. Instead, for these speciality crops, producer organizations tax their members to finance the provision of local public goods (de Gorter, Nielson, and Rausser 1992).

For the case of public good investments and predatory coupled transfers, it has been shown that, if a productivity-enhancing policy harms producers because of highly inelastic demand and responsive supply, but producers have more political clout than other interest groups, the amount of public-good investment will be inadequate (de Gorter, Nielson, and Rausser 1992). However, the political obstruction to public-good investments can be countered with coupled subsidies, thus leading to less underinvestment in public goods than would otherwise be the case. In a political economic context, a world of predatory subsidies may lead to greater investment in productive policies than a world without such subsidies. In effect, since productive policies may harm members of special interest groups, compensation through predatory subsidies may offer a means of making the pursuit of the public interest politically viable (Rausser and Foster 1991). Treated as a separable activity, predatory subsidies appear as inefficient, rent-seeking-based policies. However, when combined with productive policies, especially in a world of heterogeneous producers, coupled predatory subsidies can result in misalignment of incentives among members of formerly political

powerful interest groups and thus less opposition to the to the implementation of a public good policy (Foster and Rauser 1992).

Models that consider different configurations of supply-and-demand parameters, productivity, and the relative political power of producer groups can find that productive policies are either over- or undersupplied. The interesting issue is whether transfers that may seem only predatory at first glance may actually be politically necessary if society is to more closely approach the optimal configuration of productive policies. To be sure, PEST policies can be aimed at offsetting the redistributive consequences of productivity-enhancing policies.

Political influence also operates through the public sector by frequently slowing down the redistribution of income generated by changing market conditions. Accordingly, markets with highly inelastic demand-and-supply conditions as well as rapidly changing technologies are those markets which generate rapidly fluctuating incomes and thus a demand for public sector "stabilization." In a world of limited knowledge of how economic systems operate, producer-interest groups have successfully argued that "price stabilization" programs are in the public interest. In this instance, interests who share the burden of financing such programs are led to believe that such policies are PERTs. The attributes of such policies are used to mask what ever predatory phenomena may be taking place. The use of PERT-like public policies to mask predatory transfers is a frequently observed policy mix in agricultural sectors throughout the world, e.g., conservation and commodity subsidies, food security and self-sufficiency, instability and subsidized public storage, and so on.

The Search for Politically Robust Reform

The challenge for economists in agricultural policy, as in other areas, is to identify policy reforms that make economic sense and are politically robust. In the past, the best the economic literature has been able to offer in the design of democratic decision-making frameworks is to separate the processes for each of the two types of policies: PERTs and

PESTs. Long ago, Wicksell (1896) recognized the distinction between these types of policies and argued for organizing government so that the provision of the two types of policies would be decided by separate and qualitatively different processes. Mueller (1989), in his recent survey of the literature, outlines the conceptual and practical advantages of considering the two types of policies separately.

However, whatever the issues of analytical convenience, it is now being recognized that political and economic forces must be jointly considered in matters of both design and implementation of public policies (Rausser 1982). Much recent investigation has been devoted to theoretical and empirical models of public sector decision making in an attempt to accomplish this task. Readers interested in these issues from a general perspective might begin with Becker (1983, 1985); Peltzman (1976); and Zusman (1976). Those interested in applications to agricultural policy in particular might begin with Gardner (1987), Rausser and de Gorter (1989), Foster and Rausser (1992), and de Gorter, Nielson, and Rausser (1992). The purpose of the latter models is to explore ways in which PERT and PEST policies are simultaneously determined.

One especially interesting result of this work has been to emphasize that, just as the many margins for adjustment can make it difficult to enact programs which limit the redistributive effects of farm policy, they can also weaken the coalitions for rent-seeking policies. In a dynamic setting, the unintended side effects of policy often result in a proliferation of policy instruments, each attempting to control a different margin of action. This proliferation process may appear to be piecemeal and haphazard, but it often turns out that the process is welfare improving. To the extent that a piecemeal policy may reduce the distortionary effects of an existing policy, the second policy in combination with the first may obviously result in greater efficiencies. Moreover, disagreements over unintended side-effects become initial conditions for the next round of legislation structuring U. S. government intervention in agriculture, making coalitions more malleable.

Economists have only begun to scratch the surface of the problem of developing operational frameworks for blending productive and rent-seeking policies. In general, work in this area must recognize that these two types of policies go hand in hand; frequently, predatory policies are offered as compensation to those that are harmed as a result of the implementation of productive policies. Just as frequently, productive, or what may only appear to be PERT policies are structured to mask the redistributive mechanisms put in place by PEST policies.

Operational prescription must recognize not only the economics of various policies, but also how the distribution of political power will affect the sequence of policy steps. Differences in the distribution of political power will often be critical in reforming policies to be more productive and less predatory (Rausser and Zusman, 1992). There will be situations where the political timing may be especially ripe, perhaps because of an economic crisis caused by outside factors, to change the institutional structure of agricultural programs. This was certainly true in the mid-1980s when macroeconomic and international phenomena helped spawn a crisis in the U.S. agricultural sector. In the midst of this crisis, political entrepreneurship emerged which led to some governmental autonomy in the design of the 1985 Food Security Act as well as the subsequent 1990 Farm Act. The lowering of economic barriers and the enhanced planning flexibility introduced by these two pieces of legislation cannot be explained by the Stigler, Pelzman, or Becker formulations of governmental intervention and regulation.

Opportunities for restructuring the tradeoff between the *public* and *special* interests policies have often appeared greatest during times of economic crises. However, the sustainability of the restructured tradeoffs and the new mix of productive and predatory policies has been shown time and time again to depend critically upon changes in the underlying institutional configuration. One excellent example of institutional changes that may alter the level and distribution of political power in the case of U.S. agricultural policy may arise from the current GATT negotiations. In the Uruguay Round of the GATT

negotiations, it was accepted early by all parties that distortionary trade policies in agriculture exist to rationalize internal country policies; thus, both sets of policies should be included in the negotiations. Accordingly, a number of proposals have been tabled in Geneva for reducing internal country coupled PEST policies and substituting PERT policies (Rausser 1992). In the case of the U.S. government, this substitution process has been proposed to occur over a 10-year adjustment period. This means, of course, that the interest-group configuration after the completion of the GATT negotiations could be dramatically different than the political landscape that has existed over much of the prior 50 or so years. The coalition of interest groups that are likely to determine whether a GATT agricultural code is accepted or rejected will not be dominated by the same interests that have prevailed in past debates over farm legislation. If the GATT agreement is accepted by the U.S. Congress, the executive branch will, no doubt, lean on the external code to mandate reforms of the current domestic agricultural policy.

Footnotes

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¹Between 1981 and 1985, the federal government spent about \$60 billion on farm-price and income-support programs. In 1986 alone, the actual cost of Commodity Credit Corporation activities to support the agricultural sector was \$25.9 billion. Other programs also support agricultural production in rural America. In 1986, the outlays for these programs amounted to approximately \$14 billion, of which the largest single item was the Farmer Home Administration outlay at \$7.3 billion. Again in fiscal year 1986, the value of commodities exported under PL480 (both Titles I and II) amounted to \$1.4 billion, \$2.5 billion of export guarantees were provided, and the export enhancement program that subsidizes U.S. agricultural sales abroad cost the U.S. government nearly \$0.75 billion. In the domestic market, food assistance programs cost \$18.6 billion in fiscal year 1986; the bulk of this expenditure supported the Food Stamp Program and the Women, Infants and Children Feeding Program. Finally, as a result of special legislation in December, 1987, the U.S. government assumed a contingent liability for the Farm Credit System (composed of the Federal Loan Bank, the Production Credit Association, and the Bank for Cooperatives) of \$4 billion. In 1989, the outlays of the Commodity Credit Corporation fell to \$10.6 billion.

²The major implementing agency for the western water resource development has been the Federal Bureau of Reclamation. The water supplied by this Bureau at heavily subsidized rates to agriculture explains why the irrigation of just two California crops, alfalfa and cotton, takes as much water as is annually allocated to to the State's entire population of 30 million.

³The U.S. Department of Agriculture has estimated that some 2 to 3 billion tons of soil are lost to erosion in the United States each year. Contrary to many popular press reports, this level of erosion is not ruining American farmland. This is simply because topsoil is a renewable resource; it can be replaced by organic matter from crop residues. As a result, the rate of net loss of topsoil in the United States is, in fact, very small. The pollution effects of soil erosion are a different matter; these impacts arise as offsite effects of wind and water erosion. Wind erosion contributes to particulate air pollution and has been estimated to cost \$4 billion or more in annual damages in the Western United States, while erosion caused by water runoff has been a major contributor to water pollution resulting in damages estimated to range from \$5 billion to \$18 billion annually (Economic Report of the President, 1990).

⁴This was implemented through a non-resource loan program where the loan rate became, in effect, the price support.

⁵Specifically, for those who participate, the expected deficiency payment for a particular crop, c ,

$$E(d_{ct}) = [P_{ct}^T - \text{Max}(P_{ct}^S, E(P_{ct}))](1 - \omega_{ct})L_{ct}Y_{ct}$$

where P_{ct}^T is the target price; P_{ct}^S , the support price; $E(P_{ct})$, the expected average price received by farmers; ω_{ct} , the percentage of land base required to be idled; L_{ct} , the land base in period t ; and Y_{ct} , the program yield per unit of the land base. To receive the deficiency payments, participating farmers must allocate land to the program crop, c , or conserving uses dictated by USDA. Moreover, until recently, farmers were forced to forego present and future program benefits if they harvest crops other than the program crop for which they have a "land base." This feature, of course, coupled the transfers to the planting and harvesting of program crops.

⁶The land base for each producer is established at the county office of the Agricultural Stabilization and Conservation Service (ASCS). The ASCS is the administrative agency

within the U.S. Department of Agriculture that has responsibility for implementation of the deficiency payments. It has an office in each state and 3,000 county offices nationwide. In addition to several thousand employees, a local committee of three persons (usually producers) handles local appeals of decisions and other administrative matters. County offices assign each local producer a program yield as well as a land base.

⁷The latter barrier to entry is a reflection of the political influence of California fruit and vegetable growers.

⁸Due to the complex measurement problem that arises in the monitoring and estimating environmental bads, Pigorian taxes based on marginal damages are impractical (Rausser and Howitt, 1975). As a result, both measurement or information policies must be put in place with environmental standards, taxes, or control policies (Hochman and Zilberman 1979, Rausser and Lapan 1979).

⁹For a survey of own-price elasticity estimates, see de Gorter, Nielson, and Rausser (1992). At the farm level, the most demand-inelastic commodities are sugar, milk, and rice; those commodities with intermediate degrees of demand-price inelasticity are wheat, sorghum, barley, corn, and oats; and finally, those that have the least degree of inelasticity and, in some instances, elastic demand functions have been estimated, include soybeans, beef, poultry, and pork.

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