A VARIABLE PRICE SUPPORT FARM PROGRAM: A TRANSITION TOOL TO A FREE MARKET

Wen-Yuan Huang, Bengt Hyberg, and Eduardo Segarra

Abstract

This paper analyzes a variable price support program (VPS) as an alternative to the current farm income support program. The VPS program can control U.S. agricultural production while protecting income of small farmers. The VPS is designed to alter farm level production decisions by reducing commodity support prices for each additional unit of production produced. This will serve to discourage excess aggregate production. The VPS program can be a mechanism to stabilize income of efficient small farms during the transition from the current farm programs to a free market environment. An illustrative study is used to target government program benefits to various farm-size groups.

Key words: variable price support, production control, farm program benefit, farm size.

The accumulation of excess agricultural commodity supplies, steadily rising government expenditures on farm income support programs, and a depressed farm economy characterize the United States' farm economy in the 1980s (FAPRI; Knutson *et al.*). Continuous technological innovation in U. S. agricultural production and an unstable export demand (USDA, 1987) could result in continued excess production and depressed farm prices. This could lead to continued financial stress for many farms and cause some rural communities to face increasing economic pressures.

Historically, the public has supported the farm sector by funding various agricultural programs. Although funding for these programs has increased substantially in recent years, many farmers, especially those on small farms, are still faced with financial hardship. This is because the current farm programs do not provide adequate income support to those small family farms most affected by a depressed agricultural economy. The small profit margins and production quantities associated with small farms result in meager benefits (Smith; Chantfort).

The burgeoning world production of agricultural commodities and rising agricultural support payments in the United States and the European Community suggest that current agricultural policies have led to an inefficient use of factors of production and a distorted distribution of wealth (Blandford; Runge; USDA, 1987). Both theory and past experience indicate that a free market within the agricultural sector would lead to a more efficient allocation of resources. This observation has led the members of the Organization of Economic Cooperation and Development (OECD) to consider domestic agricultural policies in the Uruguay Round of the Generalized Agreement on Tariffs and Trade (GATT) that will improve efficiency and equity. For example, the United States has called for an elimination of all agricultural subsidies and a movement toward a free market for agricultural production and distribution.

A difficulty associated with any policy change is the impact of the change on farmers who have made long-term plans and commitments based on current policy. Among the expected short-term effects of removing current commodity price and income support programs are reduced commodity production, lower output and input prices, diminished net farm income, lower consumer food expenditures, and the liquidation of highly leveraged and less efficient farms (Young *et al.*). In the long run, removal of price and income supports will lead to an adjustment in the agricultural sector that will result in a more competitive farm sector and a more efficient allocation of resources with lower production costs and higher returns on investments (Blandford).

While a more efficient and competitive agricultural sector is desirable, the shock resulting from such a sudden shift, especially on small farmers, will have to be addressed. Consequently, an interim policy that provides income support for individual farmers while commodity production adjusts to

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market demand is needed. This interim policy will soften the shock associated with the policy change while ultimately leading to benefits from the reintroduction of a competitive market to agriculture.

Given these considerations, an alternate agricultural income support program that could be used during the transition to a free market (i.e., a market unimpeded by government intervention) is discussed and analyzed in this paper. The program provides income stability for farms, while at the same time relaxing and then eliminating production controls. The program links the support price a farmer receives to the quantity of agricultural commodities produced. Farmers would not be told what or how much to produce, and farmers would have more flexibility in achieving an optimal allocation of their productive resources in response to the support price. The objectives of the program include: (1) controlling agricultural commodity production without directly imposing production restrictions on a farm and hence allowing farms to allocate their resources in an efficient manner, (2) providing income stability for family farms during the transition to a free market, and (3) limiting government expenditures.

The paper is divided into four sections. The first section describes the VPS program. The second section presents a mathematical estimation model that determines the support price schedule for each crop in order to meet a given set of national production goals. The third section presents an illustrative example that demonstrates the effects of the VPS on commodity production, government cost, farm income, and land use. The implications and conclusions are presented in the final section.

THE VARIABLE PRICE SUPPORT PROGRAM

The basic reasoning underlying the use of a VPS can be compared to the logic used in the increasing rate structure used by electrical power companies (or water authorities). While the utility rate schedule is designed to discourage excessive electricity (water) consumption, the VPS is designed to discourage excess production by farmers. While the utility companies are concerned with finding a price schedule that leads to the efficient utilization of its physical capacity (Tyndall; Billings and Agthe), the VPS is concerned with finding a price schedule that leads to a more efficient allocation of resources within the agricultural sector. Such an allocation would reduce the social welfare dead-weight loss associated with excess production under current agricultural policy.

Characteristics

The characteristics of the VPS program to be analyzed are:

(1) A schedule of declining support prices for each commodity in the program will be offered to participants. In this schedule, the support price is monotonically reduced for each additional unit of production forthcoming. As shown in Figure 1, the highest support price (IP_i) is associated with the production of the first unit (w_1) of a commodity

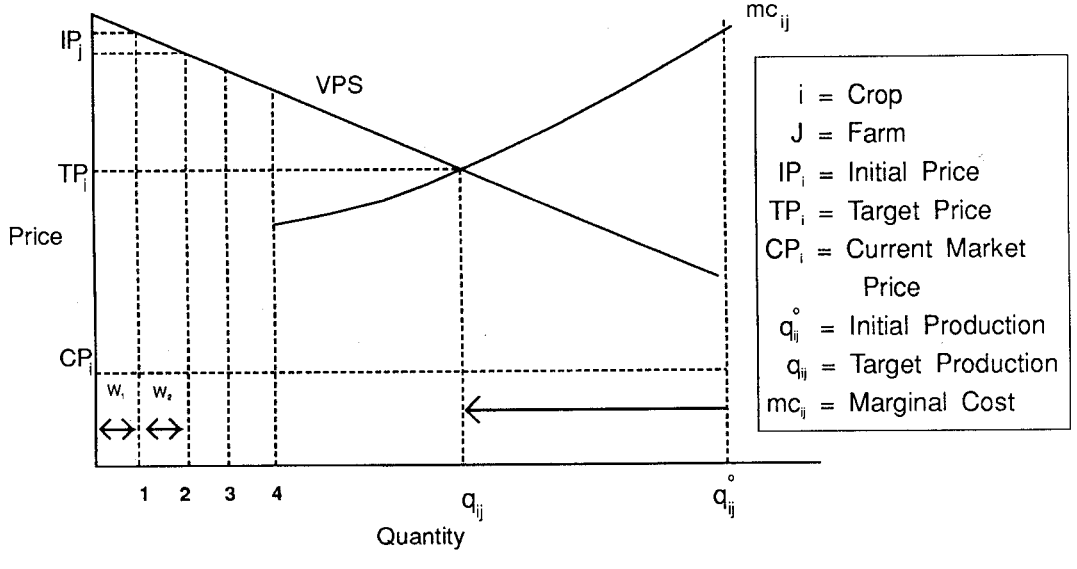

Figure 1. A Linear Declining Support Price to Reduce Crop Production From a Farm.

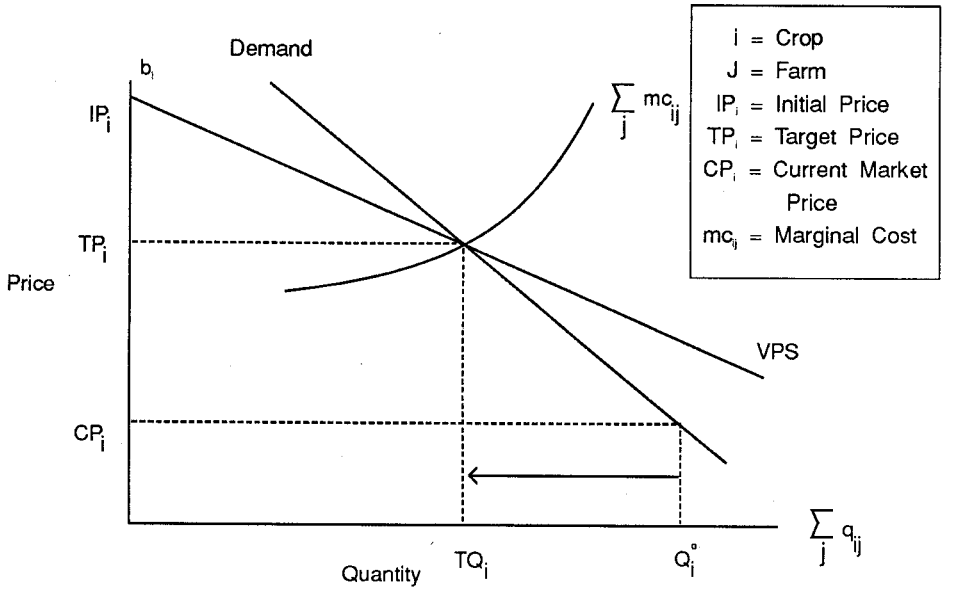

Figure 2. A Linear Declining Support Price to Reduce Aggregate Production From Q_i^O to TQ_i.

produced by each farm, the next highest support price will be paid for the next unit produced, etc. The support price for the last unit of production on most farms will be less than the estimated market price so that marginal production decisions will be made in response to market signals.

(2) Participation is voluntary. The participants may be required to comply with resource conservation for the enhancement of environmental quality. They would have the option of receiving either program support prices or market prices, whichever is higher. The nonparticipants would have to sell on the open market.

(3) Only active farmers with crop base acreage and whose farm income provides more than one-half of household income would be eligible to participate in the program. The current crop base yield (or an estimated efficient yield) would be used to compute program payments to each individual farmer. Each farmer can grow any crop on his or her land.

(4) The right to receive support payments is associated with an individual farmer and is not transferable to other farmers or to future generations. This restriction is needed to ensure that the government benefits are not capitalized into a farm's land value.[1] Payments could be received only for commodities produced on the farm. Each participating farm would be allowed to expand or reduce cropland acres.

(5) The program would be designed to be phased out gradually within a fixed time period (say 5, 10, or 20 years) to allow participants adequate time to adjust to a free market environment or retire from farming. This adjustment period would give rural communities time to absorb economic changes and to adapt to technological progress in agriculture.

(6) Prior to each crop year, government economists would estimate the expected production (TQ_i) and the associated market equilibrium price for each commodity i (Figure 2). A declining farm-level support price schedule for all major crops would then be designed so that at a production equal to TQ_i, marginal production is determined by the market price, not the support price.[2] The price schedule would be set so that for a given sized farm, the marginal support price will be less than the anticipated market price. The relationships between the target production level TQ_i that is the sum of production over all farms, market equilibrium price that will be used as a target price (TP_i), current market price (CP_i), and the declining support price under a VPS program are illustrated in Figure 2. The

[1] If the benefits were capitalized into the value of the cropland, a barrier to entry into farming would be created. An in-depth discussion of targeting benefits to farmers can be found in Heady *et al.*

[2] One could attempt to control production using the VPS by setting the price schedule so that at TQ_i the target price equaled the expected market price. In this presentation, we assume that the target production level, TQ_i, and the market price can be estimated by using estimated demand and supply functions. We take the liberty of setting the target price, TP_i, equal to the market price.

current market price CP_i is lower than the target price TP_i because the current production level is assumed to be larger than the target production level. As production increases, the price decreases.

Shortcomings

Although conceptually the VPS program to be analyzed could be an alternative farm program to control production, some difficulties are associated with the acceptance and implementation of the program.

These include:

(1) The political acceptability of a major revision of commodity programs,

(2) The ability of government economists to forecast agricultural production accurately,

(3) The identification of full-time producers,

(4) The targeting of program benefits to existing producers only, and

(5) The determination of support prices that are acceptable to both small and large producers.

Some of those shortcomings are becoming less serious. Perhaps the most important change taking place is the growing political awareness of the need for a lessening of trade barriers by members of the Generalized Agreement for Tariffs and Trade (GATT). The GATT members are currently discussing reductions in agricultural supports. Some members have proposed interim support (decoupling) programs, in which financial support is provided for farmers while the agricultural sector undergoes the transition from current agricultural support systems to a free market.

In addition, the tools available for economic forecasts are constantly being improved. If an adequate information set is provided, predictions of agricultural production can be sufficiently accurate (Brandt; Just and Rausser) to permit the estimation of a price schedule that will not interfere with marginal production decisions.

The identification of full-time farmers and the targeting of benefits to these producers could be the most difficult problems associated with the implementation of a VPS program. The division of larger farms into smaller farms could undermine the intent of a VPS program, raising government costs and increasing agricultural production. These problems are not insurmountable. In 1987, Congress passed the Budget Reconciliation Act. This law limits the number of farming operations, owned by a person or legal entity, that are eligible to receive payments. In addition, the law requires individuals to be engaged actively in farming in order to be eligible (Lederer and Pollack). Similar legislation could be enacted to ensure adherence to the intent of a VPS program.

These observations suggest that a change from the current farm income support program could become a reality. If such a change takes place, the VPS program could be considered as a viable alternative.

DETERMINATION OF VPS SCHEDULES

In this section, the determination of VPS schedules is described. A number of simplifying assumptions are made to facilitate the discussion. In determining the VPS schedules, assume that each farm in the U.S. can be grouped by size into one of j classes. All farms in each size class are assumed to be homogeneous. The VPS schedule of each crop i for each farm in each size group j is defined as a function $P_i(a_i,q_{ij})$, where q_{ij} is the quantity of crop i produced by a farm in size class j and a_i is the parameter(s) of the price function, $P_i(a_i,q_{ij})$, to be estimated. The estimation procedure is composed of two parts. The first part involves the development of a farm-level decision model, which is used to simulate farm-level production in response to various VPS schedules. The second part involves the use of the farm decision model to estimate simultaneously the parameters a_i of the VPS schedules. These parameters define a set of support price schedules that would generate aggregate production levels that meet the target levels.

A Farm Production Decision Model

Assume that in response to a given VPS schedule, a farm in group j will determine its production level, q_{ij}, by maximizing its net farm income, NI_j. This can be expressed as:

$$(1)\quad NI_j = \sum_{i=1}^{I} \int_0^{q_{ij}} [\, P_i(\hat{a}_i, q_{ij}) - C_{ij}(q_{ij}) \,]\, dq_{ij},$$

where $C_{ij}(q_{ij})$ is a marginal cost function for the production of crop i at level q_{ij}, and $P_i(\hat{a}_i,q_{ij})$ is the VPS schedule for crop i. The price received for a unit of production is determined by the parameter $\hat{a}_i$ and quantity produced q_{ij}. The difference, $P_i(\hat{a}_i,q_{ij}) - C_{ij}(q_{ij})$, is the net income associated with crop i.

The quantity of a commodity i produced by a farm in group j is determined by the available cropland (A_j), the crop yield (Y_{ij}) of crop i, and the portion of cropland devoted to that commodity τ_{ij}. That is:

$$(2)\quad q_{ij} = \tau_{ij} Y_{ij} A_j.$$

Because the sum of the proportion of land in each farm devoted to producing the various crops cannot exceed 1, the following restriction is needed:

$$(3)\quad \sum_{i=1}^{I} \tau_{ij} \leq 1 \text{ for all } j.$$

Thus, given a VPS schedule $P_i(\hat{a}_i, q_{ij})$, where $\hat{a}_i$ is known, a farmer determines his production level q_{ij}, by maximizing objective function (1), subject to constraints (2) and (3).

The total quantity Q_i of crop i produced can be estimated by assuming that each farm in size group j has an identical production response to a given VPS schedule. That is:

$$(4)\quad Q_i = \sum_{j=1}^{J} N_j q_{ij} \text{ for all } i,$$

where N_j is the number of farms in size group j.

The government payment to a farm in size group j, (EX_j), under the VPS schedule can be calculated as:

$$(5)\quad EX_j = \sum_{i=1}^{I} \int_0^{q_{ij}} [\, P_i(\hat{a}_i, q_{ij}) - TP_i \,]\, dq_{ij},$$

where TP_i is expected target price. Total government cost, TEX, can then be calculated as the sum of the individual payments,

$$(6)\quad TEX = \sum_{j=1}^{J} N_j EX_j.$$

An Estimation Model for VPS Schedules

A procedure to estimate a_i, given expected aggregate national production, is described below. The procedure uses the farm production decision model and an iterative estimation method.

The first step is to choose an appropriate functional form for the VPS schedule. The functional form selected should have the properties necessary to channel government benefits to the targeted farm groups. Figure 3 displays some functions that could be used. A flat function (constant support price) will convey large benefits to large farms, while the other three functions presented, a concave declining, a linear (constant) declining, and a convex declining function, will direct more program benefits to small farms as compared with the flat function.

Once the form of the function $P_i(a_i, q_{ij})$ has been specified, a set of initial values of a_i is used as a starting point. The initial values used depend upon the function selected. For instance, the initial values of slopes to be estimated for the constant declining support price schedules are determined by the initial prices, equilibrium prices, and number of farms. The farm decision model is then employed to determine the production level, q_{ij}, of farms in each size class. Crop production is summed over all farms to get Q_i. The Q_i is then compared with the target production level TQ_i. If the difference, ($TQ_i - Q_i$), for each commodity is not significant (less than 1 percent of the previous value for each commodity), the final set

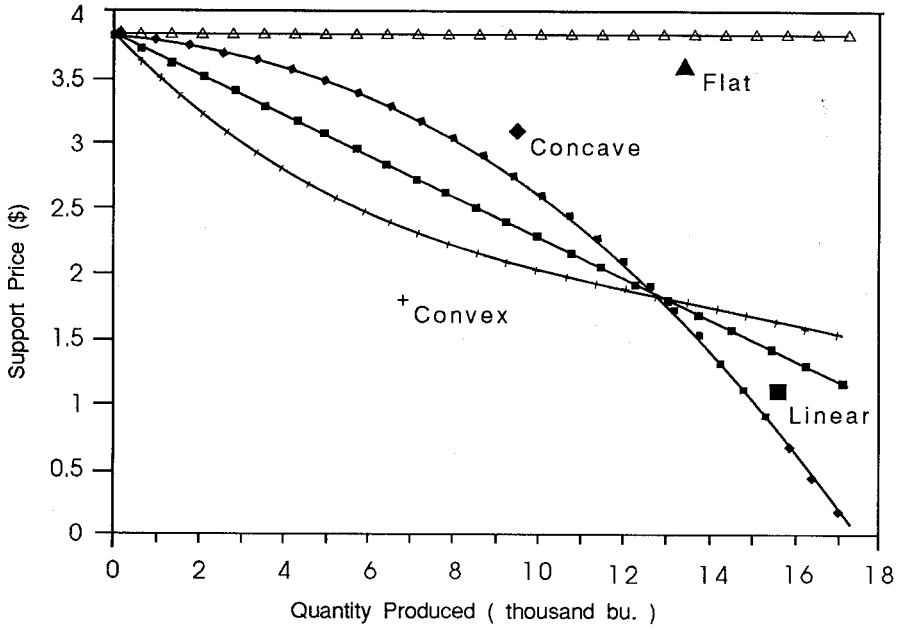

Figure 3. Four Possible VPS Schedules: Flat, Linear, Exponential Concave, and Exponential Convex.

Table 1. Number Of Farms, Acreage, Crop Yield, And Production Cost Per Farm-size Group In The U.S.

Farm Group J	Farm Size	Average Acreage (A_j)	Number of Farms (N_j) (x 1000)	Yield (Y_{ij})			Production Cost[a] (C_{ij})		
				corn	soybeans	wheat	corn	soybeans	wheat
	-----acres-----		Number	------bu------			------$/bu------		
1	100-139	120	67	101	28	34	1.87	3.99	3.19
2	140-179	160	69	102	30	33	1.84	3.91	3.12
3	180-219	200	50	102	30	35	1.80	3.82	3.06
4	220-259	240	48	104	31	34	1.76	3.73	2.98
5	260-499	280	161	107	27	34	1.72	3.64	2.91
6	500-999	750	97	110	31	34	1.68	3.57	2.86
7	1000-1999	1500	57	111	30	35	1.65	3.50	2.80
8	2000 and >	2500	32	110	28	33	1.65	3.50	2.80
Total			622						

[a] The production costs in Table 1 are derived from a 1982 base solution of the NRE LP model. (Huang *et al.*, 1987). These costs are assumed to be constant regardless of farm size from the study by Miller and Rodewald.

of parameters is considered found. Otherwise, the set of parameters, the $\hat{a}_i$'s, is adjusted. A new set of parameters is computed on the basis of the inverse relationship between $\hat{a}_i$ values and quantity produced. These parameters are then used in the farm production decision model for the next iteration. The iterative process continues until a suitable set of $\hat{a}_i$'s is found.

The estimation procedure outlined above can be extended to determine a support price schedule that will satisfy both a government farm program budget and a target production level. However, this procedure can become difficult to use as more constraints are added.

AN ILLUSTRATIVE EXAMPLE

To understand the features of the VPS program best, it is useful to conduct a simulation exercise. The example selected demonstrates that a VPS can be used to reduce surplus production accumulated under the Food Security Act of 1985 (FSA). Because the objective of this example is to illustrate general features of a VPS program in contrast with other programs, several simplifying assumptions are made to facilitate the exposition. The general conclusions obtained from the analysis should not be affected by the assumptions.

The 1982 census data (U.S. Department of Commerce) were used to estimate the number of farms and average crop yield of corn, soybeans, and wheat by size class. Table 1 delineates these data and provides the approximate number of farms producing corn, soybeans, and wheat in the U.S. The data in Table 1 illustrate the properties of the VPS programs. In the illustrative example presented, farms in the two smallest size classes[3] were not considered eligible for participation in the program because these farms are more likely to be operated by part-time farmers with off-farm income as the major income source. They would, therefore, not qualify for participation.

In this example, the VPS schedule, $P_i(a_i,q_{ij})$, was also assumed to be a linear function. Cost was also assumed linear, yielding a quadratic programming base model. The base model was solved using the Generalized Algebraic Modeling System, GAMS (Kendrick and Meeraus), to estimate the production response for all farms in each farm size for all crops. The production response was based on the assumption that all farms maximize their net returns. As noted previously, an iterative procedure was used to estimate the VPS function (schedule) and the associated production level for each of the three crops for each farm size.

[3] According to 1982 Census data, there are approximately 180 thousand farms in these two classes, which represent 22 percent of the total farms in the U.S. However, the production shares in the U.S. from these two classes are not significant: 6 percent for both corn and soybeans, respectively, and 4 percent for wheat.

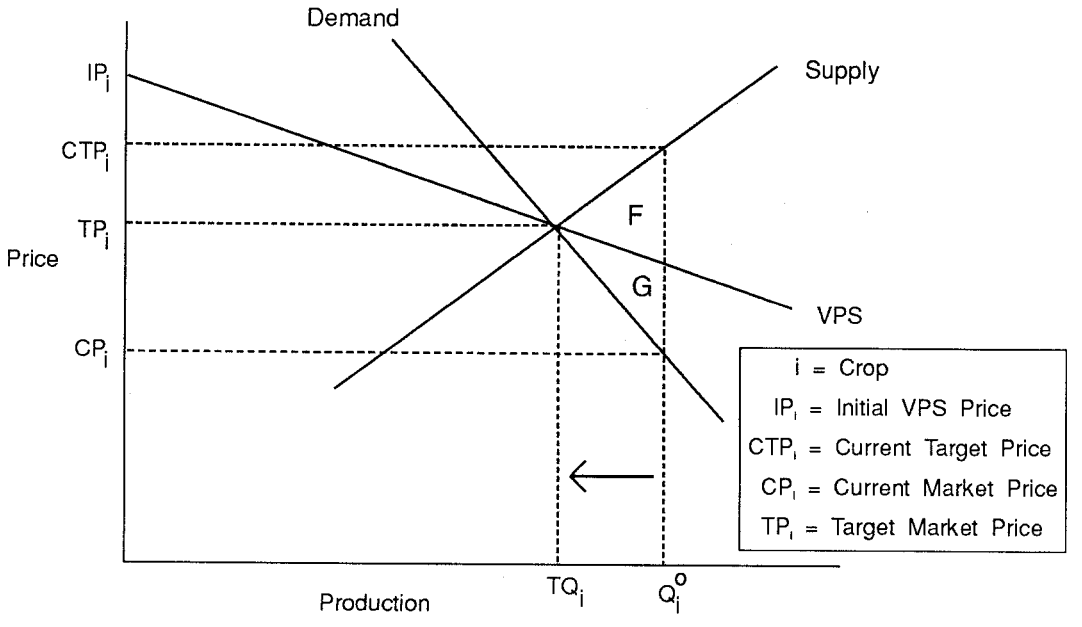

Figure 4. Production Reduction Under a VPS Program.

Using VPS to Reduce Surplus Production

The current farm program (FSA) uses a combination of flat loan rates, target prices, and acreage set-aside requirements to support farm income and influence commodity production.[4] The conceptual relationship between the VPS and the FSA is shown in Figure 4.

To highlight the differences between the VPS and current programs, it was necessary to build a conceptual FSA model because the data necessary for the construction of a model that accurately reflects the effect of the FSA on different farm-size groups were not available. To build the FSA model, we used constant target (initial) price as the VPS schedule, that is $P_i(a_i,q_{ij})$ = constant k_i for all j, in the base model. Consequently, this model was a linear programming model, and it was used to estimate production response from each farm-size group. The model used 1986 production levels (Q_i^o), market prices (CP_i), and current target prices (CTP_i). Additional acreage constraints were added to ensure that all farms met set-aside requirements.

To build a farm decision model for a VPS program, the equilibrium production level and the price for each crop under the absence of the FSA for 1986 were estimated. Demand and supply equations were estimated for each crop using constant elasticity functions, the 1986 production level, and 1986 prices.[5] Each pair of demand and supply functions was then solved to obtain the equilibrium production and price. The estimated equilibrium production and price were used as the target production level, (TQ_i), and the target market price, TP_i, as shown in Figure 4.

The base model with a constant declining VPS schedule was built to determine the initial price, IP_i, and the slope a_i. A set of IP_i and a_i was obtained for each crop. The criterion used in building this VPS schedule was that net farm income of the smallest sized farms must be at least twice as large as the net income received under the FSA. Because there were two parameters to be estimated, the esti-

[4] Under the 1985 Food Security Act, farmers cannot increase yield on acreage bases for program payment. In reality, farmers often have actual crop yield greater than allowable base yield.

[5] The demand and supply elasticities used were: -.33 and .32, respectively, for corn, -.27 and .75 for soybeans, and -.22 and .48 for wheat (Green and Price; Lowry *et al.*; Helmberger and Akinyosoye; Lee and Helmberger). These elasticities were used to construct supply and demand functions of those three crops. The computed 1986 equilibrium production and prices are 7.3 billion bushels and $2.11 per bushel for corn, 2.01 billion bushels and $4.68 per bushel for soybeans, and 1.90 billion bushels and $2.85 per bushel for wheat.

Table 2. Estimated VPS Schedules And Constant Target Prices Under FSA.

Commodity	Estimated VPS Schedule ($/bu.)	Constant Target Price Under FSA ($/bu.)
Corn	3.65 - 0.00016 q_{1j}	3.03
Soybeans	4.69 - 0.00013 q_{2j}	4.77
Wheat	4.55 - 0.0031 q_{3j}	4.34

mation process became somewhat difficult. To simplify the estimation, only the slope a_i was varied to obtain the target production TQ_i, and the slope and TQ_i was allowed to determine the intercept (initial price).[6]

Results

The estimated VPS schedules are shown in Table 2. Table 3 shows net farm income, marginal land values, and marginal price supports by farm-size group under both the FSA and VPS programs. In this example a constant declining VPS price schedule was used for each commodity to remove program production incentives beyond the market equilibrium level, TQ_i, and to discourage excess production. Figure 4 demonstrates how a VPS program would reduce production from Q_i^p, under the FSA, to TQ_i. At this point, market equilibrium prices determine marginal production. When the market moves from a surplus situation to an equilibrium condition, society gains (F+G), which is the social welfare dead-weight loss caused by the surplus.

The net farm income received by an individual farm in each group also was significantly different for the FSA and VPS programs. As shown in Table 3, the net farm income for a farm in group 1 was twice as large under the VPS program as under the FSA. In contrast, a farm in the largest group (8) received net income of $14,000 under the VPS, while receiving $132,000 under the FSA. The total government payments to farmers were estimated to be $7 billion under the VPS program, compared with $17 billion under the FSA. It should be noted that estimated government payments were larger than the $14 billion reported (U.S. Bureau of the Census) for all crops in 1986. This result is due to the use of the simplifying assumption that all crop production in 1986 received deficiency payments.

The FSA in this study assumed that each farm idled some proportion of its cropland acreage. About 37 percent of cropland was idled in each farm-size group under the FSA. Consequently the marginal land values are zero for all groups. Under the VPS program, however, the small and moderately sized farms (in farm-size groups from 1 to 5) fully used their cropland, while farms in farm-size groups from 6 to 8 only used 73, 37, and 25 percent of their cropland, respectively. The marginal land values decline as farm size increases.

The production response from each group also differs significantly between FSA and VPS programs. For example, while the total production of corn under VPS was reduced by 11 percent from the production level under the FSA, a large production increase in small farms was indicated. This result implies that while we reduce the production surplus of corn under the VPS program, the production from

Table 3. Some Results Of Using A Variable Price Support (VPS) Program To Reduce Surplus Under The Current Farm Program (FSA) For 1986.

Farm-Size Group	Net Income		Marginal Land Value		Marginal Support Prices Under VPS			Crop Production					
								Corn		Soybeans		Wheat	
	FSA	VPS	FSA	VPS	Corn	Soybeans	Wheat	FSA	VPS	FSA	VPS	FSA	VPS
	($1000)		($/acre)		($/bu.)			(1000 bu.)					
1	4	11	0	44	2.91	4.69	4.23	2.8	9.1	0.7	0.0	0.8	1.0
2	8	11	0	34	2.06	4.69	3.91	3.8	9.9	1.0	0.0	1.0	2.0
3	10	13	0	24	1.99	4.60	3.73	4.8	10.0	1.3	0.7	1.3	2.6
4	11	14	0	23	1.95	4.47	3.66	5.8	11.0	1.6	1.7	1.5	2.9
5	13	14	0	22	1.88	4.41	3.52	7.0	11.0	1.6	2.1	1.8	3.3
6	39	14	0	0	1.68	3.57	2.86	19.0	13.0	4.9	8.6	4.8	5.4
7	81	14	0	0	1.65	3.50	2.81	39.0	13.0	9.5	9.1	9.9	5.6
8	132	14	0	0	1.65	3.50	2.86	64.0	13.0	15.0	9.1	16.0	5.6

[6] It should be noted that the estimated price schedules are just one combination of many possible schedules that can achieve objectives of surplus reduction and income support to a small farm.

small farms is not restricted as under the FSA program.

SOME IMPLICATIONS OF A VPS PROGRAM

We have demonstrated that a VPS program could be used efficiently to reduce the production surpluses that arise under the current farm program (FSA). In this section, some of the long-term implications of a VPS program for income stabilization, international trade, farm structure, and natural resource conservation are discussed.

Income Stability

The VPS program could provide a minimum income support for farmers. When commodity prices decline unexpectedly, the price received for the initial unit of production is protected, thereby protecting farm income. By setting the marginal support price below the expected market price, large producers will be encouraged to sell a sizable portion of their production on the open market rather than turn it over to the government. This introduction of market forces into the agricultural sector will lead to more efficient production decisions at the margin. When demand rises, idled farmland could be freely brought back into production in response to rising market prices because the VPS program does not impose production restrictions. The VPS therefore permits the agricultural sector to respond to market forces while protecting the farmers against unexpected drops in commodity demand.

The VPS should be considered a transitory program to a free market. The program could eliminate a portion of the income instability that would be associated with the adjustment resulting from an abrupt change from a commodity support program to a free market system. Over a period of time, farmers would need either to increase their efficiency or to retire, but income stability would be provided for their transition to a free market.

International Trade

An increasing number of agricultural trade disagreements and rapidly rising government agricultural support payments have lead the OECD nations to call for a lessening of trade-distorting agricultural policies. Trade-distorting policies include domestic price supports and the measures used to dispose of agricultural surpluses in international trade that result from price supports. A VPS program could contribute significantly to the reduction of trade-distorting policy because it would provide a free market environment where marginal national production would respond solely to market forces.

While no clear agreements have been reached on which domestic policies would be acceptable to all nations, "decoupled" payments have been discussed as a non-trade-distorting policy.[7] However, a truly decoupled income support system has not been seen as acceptable by many participants in agricultural trade negotiations. One suggestion that addresses some concerns about decoupled payments has been the Production Entitlement Guarantees (PEG) program (Blandford).

A PEG program permits each nation to provide support payments for a limited prespecified amount of agricultural production. A VPS program is comparable to a PEG program because the quantity of production receiving support payments is estimated when the price schedule is determined. In addition, however, a VPS program provides more flexibility than a PEG program because it provides negotiators with the ability to set total government payments to producers as well as the quantity of agricultural production receiving payments. A VPS program also recognizes the fact that a primary objective of many domestic agricultural policies is farm income support. By using a VPS program, domestic agricultural policies (as noted above) can be designed that target support payments to small farms requiring income assistance.

Farm Structure

The VPS program could provide the government with a policy tool to promote a change in farm structure and induce increased production efficiency. This objective could be obtained by designing a VPS program to provide market signals to farmers by allowing them to respond to prevailing market prices. Inefficient farmers who rely on government payments to continue operations would be able to observe the market conditions and make adjustments to become more efficient and competitive. Increased efficiency could be obtained by changing the size of agricultural operations, reducing the use of inputs, or producing a different set of commodities. Because transfers of VPS benefits are not permitted either between farms or generations, and because the program has a limited duration, inefficient farmers will have to adjust their farm operations or leave farming.

[7] Decoupled income support payments are government payments to agricultural producers that are not linked to agricultural production. Under a decoupled support system, producers would receive a government income support payment regardless of their decision to grow crops. Actual production decisions would be based upon prevailing or expected market conditions.

Resource Conservation

Government agricultural and environmental programs have frequently had conflicting effects. Target prices and loan rates above the prevailing market price have encouraged agricultural production on increasingly marginal land, while at the same time conservation programs have tried to reduce erosion and to improve water quality. The FSA and Water Quality Act (WQA) (U.S. Congress) were designed to eliminate a number of these conflicts. The FSA reduced loan rates and target prices, fixed program yields, and established penalties for expanding production into erosive or environmentally sensitive areas, while the WQA provided states with the regulatory authority to limit agricultural practices.

A VPS program would be consistent with the continued elimination of conflicts between agricultural and environmental programs. The use of a constant program yield would remove the incentive for small farms to increase crop yields through the heavy application of agricultural chemicals and lead to a reduction in the use of these agents. During the duration of the program, producers would no longer receive deficiency payments. This would reduce the incentive for larger producers to maintain production on marginal cropland. After the VPS program ends, government payment incentives for production on marginal cropland would end for all farmers. As cropland leaves agriculture, producers could be encouraged to place the land into conserving uses by providing assistance with land conversion and maintenance costs. Programs of this nature, such as the Conservation Reserve Program (USDA 1987), already exist and are amenable to a VPS program.

CONCLUSIONS

This paper analyzes a VPS farm program as an alternative to the current farm income support program. The VPS program could provide a means for the government to provide a transition to a free market environment, reduce trade-distorting agricultural policies, increase economic efficiency in the agricultural sector, distribute the program benefits to smaller, more financially troubled farms, reduce excess commodity production, stabilize income, and limit government expenditures on farm programs. While a VPS farm program provides an alternative to current farm programs, some practical problems would have to be addressed prior to the implementation of a VPS program. This paper provides the basis for a discussion that can be used by producers, consumers, and government officials to examine the potential of a VPS program as an alternative agricultural policy.

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