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An Analysis of Alternatives

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AGRICULTURAL POLICY FOR THE 1990s: AN ANALYSIS OF ALTERNATIVES

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Debate on the 1990 Farm Bill is much more focused and less contentious than it was in 1985. Five years ago policy makers were faced with mounting stocks and falling exports and severe financial stress in significant areas of the farm sector. The debate then ranged between large extremes. On the one hand, the Administration proposed to phase out the role of government in agriculture, thus allowing the market to allocate resources and provide income to farmers. On the other hand, the Harkin-Gephardt bill proposed to significantly increase the goverment's role by controlling production through mandatory quotas, thus raising domestic prices and divorcing the U.S. from the international market. Policy makers were then forced to choose between a more internationally competitive U.S. agriculture or a more inward-looking agriculture that abandons overseas markets, or some variation of the alternative extremes (Womack et al). They chose to gear U.S. agricultural policy much more toward the former but to have the government bear much of the financial risk associated with the transition. The Food Security Act of 1985 (FSA85) lowered loan rates, expanded export promotion programs, and offered goverment stocks to the market without raising prices. At the same time, however, farmers were afforded an income cushion as they moved toward a more market-oriented environment.

FSA85 has accomplished many of the goals outlined by policy makers and has been reviewed in a favorable light by many representing diverse agricultural interests. FSA85, however, is not without problems. The cost of FSA85 to taxpayers has been substantial and policy makers are suggesting that agricultural programs must cost less over the next five years. Second, the soybean industry in particular is concerned about the loss of over ten million acres of U.S. soybeans to South America in the 1980s, due in part, they say, to the inflexible nature of FSA85. Environmental groups have also expressed a concern about the rigidity of cropping patterns in FSA85 which have contributed to environmental degradation.

As a result of early discussions by policy makers to address the weaknesses of FSA85 while retaining its positive features, one theme of policy proposals in 1990 has been to refine rather than dismantle current policy. There remains considerable disagreement on how the refinement should occur, however. The Food and Agricultural Policy Research Institute has been asked by members of the respective agricultural committees in the House of Representatives and the Senate and by

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interested agricultural parties to evaluate several alternatives which reflect the "corners" of the 1990 farm bill debate to date.

In the empirical analysis which follows, five policy alternatives are described and evaluated relative to their differences with respect to a baseline scenario. The baseline is represented by a continuation of the current farm bill for the next five years. The five alternatives include the Administration's proposal (titled SUPERFLEX), a Soybean Marketing Loan ($5.50 ML), a proposal which equilibrates net returns across the major crop commodities (EQUILIBRATION), a program which increases flexibility of planting but without freezing deficiency payments (FLEX NO PAY), and a combination of Flex No Pay and $5.50 ML.

The empirical results presented in this paper are largely limited to the crops models. Because of the similarity of results from the various options, few significant differences in terms of impacts on the livestock sector were anticipated. Comprehensive analysis across all commodity models is time consuming and expensive. Later analyses will include quantification of impacts on livestock models as the options become more focused and as non-contender options are eliminated.

The FAPRI Policy Model

The FAPRI Policy Model in fact is a set of commodity and satellite models which are linked together to reflect the simultaneity of the price-quantity determination processes. This set includes livestock -- beef, pork, chicken, eggs, turkeys, and dairy -- and crops -- corn, barley, sorghum, oats, wheat, rice, cotton, soybeans, hay, and sugar commodities. Major attention is focused on domestic markets; however, international trade models which reflect the characteristics of importing and exporting countries and regions are also an important part of the evaluation process. Finally, farm income and government cost components complete the modeling efforts.

This paper is largely limited to empirical analysis. The interested reader can find documentation of the econometric models used for simulation in Taylor (1990).

The Policy Options

The analysis examines the impacts of five alternative policy proposals. The main features of each of the policy alternatives are summarized in Table 1 and briefly described below.

Baseline (Continuation of FSA85)

Target prices are frozen at 1990 levels and loan rates are determined by current formulas. Limited flexibility is provided by the 0-25 program, which allows farmers to plant oilseeds on up to 25 percent of their acreage base without affecting their future payment base. Acreage reduction programs are held at their 1990 levels for feedgrains, wheat and cotton and reduced for rice in 1991/92. The Conservation Reserve is assumed to reach 40 million acres by 1991. The European Community and Japan are assumed to hold commodity price supports at current levels, well above world prices, during the projection period.

Table 1. Key Program Assumptions of Alternative Policy Options

Policy Instrument/Option		Description
Base Acreage		
Baseline	-	Continuation of current base acreage system -- crop specific bases determined by planting history
Superflex	-	Normal crop acreage (NCA) system -- total farm acreage base, with crop specific bases maintained only for determining payments and idling under ARP
5.50 ML	-	Same as Baseline
Equilibration	-	Same as Superflex except that ARPs and program payments are tied to what is planted not to crop specific bases
Flex No Pay	-	Same as Superflex except that deficiency payments are only paid on program crop plantings
Flex No Pay With 5.50 ML	-	Same as Flex No Pay
Permitted Flexibility		
Baseline	-	Continuation of current 0-25 program for oilseeds, but no additional flexibility
Superflex	-	Farmers may plant any program crop or oilseed within their NCA; payments determined by historical bases
5.50 ML	-	Same as Baseline
Equilibration	-	Farmers may plant any program crop or oilseed within their NCA but must comply with set-aside requirements and must plant crop to receive deficiency payments; no 0-92 possible under this option
Flex No Pay	-	Same as Superflex but no deficiency payments on program crop area converted to alternate crops
Flex No Pay With 5.50 ML	-	Same as Flex No Pay

Table 1. Key Program Assumptions of Alternative Policy Options (continued)

Acreage Reduction Programs		
Baseline	-	Continuation of current programs
Superflex	-	Farmers may plant only program or industrial crops on ACR and forego deficiency payments on an acre-for-acre basis
5.50 ML	-	Same as Baseline
Equilibration	-	Set aside rates expressed as a proportion of planted acreage and not tied to crop specific bases; set aside rates equivalent to baseline ARP rates
Flex No Pay	-	Same as Baseline
Flex No Pay With 5.50 ML	-	Same as Baseline
Target Prices		
All Options Except Equilibration	-	Frozen at 1990 levels
Equilibration	-	Frozen at 1990 levels except the barley and oats targets are increased by 15 and 50 percent, respectively
Loan Rates		
Baseline	-	Continuation of current formulas
Superflex	-	Same as Baseline
5.50 ML	-	Recourse loan rate of 5.50/bu for soybeans
Equilibration	-	Nonrecourse loan rate of $6.22/bu for soybeans on 60 to 65 percent of production, depending on stock levels
Flex No Pay	-	Same as Baseline
Flex No Pay With 5.50 ML	-	Same as Flex No Pay with recourse loan rate of 5.50 per bushel for soybeans

Superflex (An Approximation of the Administration's Proposal)

Virtually all of the proposals in 1990 which suggest change from FSA85 opt for greater flexibility in the producer's decision to grow crops. A wide range of options have been proposed which allow varying degrees of planting flexibility. Among these is the Administration's proposal to permit wide flexibility of production with few restrictions. Within a normal crop acreage (NCA) system, producers are allowed to plant any combination of program crops and oilseeds and retain program benefits (FAPRI, 1990b). Deficiency payments are determined by historical bases (essentially fixed). ARPs are retained but producers may plant the program crop or approved industrial crops on their acreage conservation reserve (ACR) and forego deficiency payments on an acre-for-acre basis.

Under this option, producers would compare the market returns to (say) corn with market returns to soybeans to determine acreages to plant since corn deficiency payments are made regardless of which crop is planted (up to the limits imposed by ARP). Second, producers need to consider whether (and if so, how much) to plant program crops on the ACR by comparing market returns for these acres (using market price and actual yield) relative to what is given up in deficiency payments (deficiency payment times program yield).

5.50 Marketing Loan for Soybeans

Because of the concern about lost soybean export market share and the general lack of price protection to the soybean (and other oilseed) industry, an option to permit a marketing loan for soybeans has been suggested. Under this proposal, farmers can receive a nine-month loan at a predetermined price level which can be repaid at market prices. The loans must be repaid -- they are recourse loans -- with no government stock accumulations. In the analysis, it was assumed that producers would receive a 10 cent per bushel premium by redeeming their loans at prices below the season average plus the difference between the loan rate and the farm price (if below the loan rate). Farmers would then market their crop in a normal fashion and receive the farm price.

The government cost of the marketing loan option is highly dependent on the loan rate and the season average farm price. The baseline average price (1991/92 - 1995/96) was $5.80 per bushel. A lower (higher) baseline average price would increase (decrease) government costs. Four alternative loan rates were considered -- $5.25, $5.50, $5.75 and $6.00 -- in FAPRI 1990. Only the results of the $5.50 option are presented in this paper.

Equilibration

The Equilibration option is designed so that farm programs are more equitable across commodities. The current base acreage system is replaced with the old NCA system and the ARP is replaced with a set aside program limited to commodities planted. Payments are based on actual plantings. It was assumed in this scenario that there would be no 0-92 program since that could not be implemented with a set aside style program. A soybean marketing loan of $6.22 per bushel is available for a portion (60-75 percent) of production. Target prices for oats and barley are

increased by 50 percent and 15 percent, respectively. ARP rates and other program provisions remain at baseline levels.

Flex No Pay

This option offers some of the flexibility of the Administration's proposal but forces producers to give up deficiency payments if they flex out of the program crop and forbids them from planting on their ACR. Future base, however, is protected if producers decide to flex. This option reduces government exposure to program costs while retaining the benefits from crop rotation. Another way to view this option is that it modifies and extends the current 0-25 program for oilseeds to a 0-100 program for all crops.

Flex No Pay with 5.50 Marketing Loan

This option combines the Flex No Pay and the 5.50 Marketing Loan options. Soybean producers who flex on program acres receive no deficiency payments but are protected by a marketing loan for soybean production.

Method of Analysis

In early 1990, FAPRI analysts conducted a 10 year baseline using a continuation of the policy parameters of FSA85 through 1999 (FAPRI, 1990a). The duration of FSA85 is five years and it is reasonable to expect the 1990 farm bill to run four to five years also. Thus the crop years 1991/92 through 1995/96 are included in the analysis of the baseline and the alternative policy proposals. The same macroeconomic parameters of the U.S. and the world are used in each scenario. In summary, these include real economic growth averaging 2.6 percent per year in the U.S. and about 3.5 percent per year for the world in aggregate (with variations from the mean between countries and regions), interest rates remaining stable in the 1990s near current levels, inflation holding below 5 percent per year, the dollar declining slightly in value against most major currencies, the budget deficit declining, and fuel prices increasing about with the rate of inflation.

The assumption of average weather and crop-growing conditions in every year of the projection period is made, implying that crop yields increase according to historical trends. In reality, periods of very favorable or unfavorable weather are quite likely. For example, wide-ranging droughts occurred in 1980, 1983, and 1988 (and to a lesser extent 1989) during the past decade alone. With substantially lower stock levels now than during the mid-1980s, markets would likely show sharply wider price variations in response to unfavorable weather conditions.

Complete details of the baseline and the alternative policies are available in FAPRI reports. Only the averages of selected variables over the five year period are discussed in this paper. Furthermore, because macroeconomic conditions and weather are likely to vary considerably from the assumed levels in this analysis, we recognize the futility of projecting absolute levels of variables with much confidence in their accuracy. However, we do have considerable confidence in the integrity of the structural models and believe that the information which relates to differences

or changes from the baseline associated with the policy alternative can be quite useful to policy makers. It is with that objective that we present the results below.

Results

The results of the baseline analysis for planted acreage and prices for four crops -- corn, soybeans, wheat, and cotton -- and several aggregates are presented in Table 2. Planted acreage for 15 crops is projected to average 266 million acres. Ten-commodity export volume is 143 million metric tons; the value of exports is projected to average $21.5 billion annually. Net returns over variable costs for the four crops plus sorghum, barley, oats, and rice and net CCC outlays are also reported to provide a broader picture of the policy and macroeconomic effects.

For the five year period 1991/92 through 1995/96, corn prices are projected to average slightly above $2.00 per bushel and soybeans to average $5.80 per bushel. During the period 1978/79-1984/85, soybeans averaged $6.55 per bushel whereas corn averaged $2.67 per bushel. Over the 1985/86-88/89 period, soybeans averages $5.77 and corn averaged $2.06 per bushel.For producers in the program during FSA85, however, corn returns were based on target prices substantially above the farm price. Soybean returns were lower relative to those of corn producers in the program and relative to the previous seven year period. Thus, the economic signal to corn belt producers was to plant more corn and less soybeans, which they did. A continuation of this response is observed over the projection period under the baseline policy. Net farm income holds in the mid $40 billion range for much of the period before declining slightly in the latter years. Net CCC outlays are projected to be above $10 billion through FY 1994 before moving slowly lower thereafter.

Superflex

With much more flexible planting provisions, producers can respond to the economic incentives of the market without a reduction in base acreage or loss of deficiency payments. As a result, more acreage is planted to soybeans, wheat, and cotton, less to corn (Table 2). Program participation is projected to increase to historic highs since the restrictions on participant planting decisions are minimal. Even with ARPs in place under this option, total idled area under government programs falls because producers are permitted to (and do) plant their ACR (and forfeit some deficiency payments).

The area planted to 15 principal crops rises (by almost 2 million acres) under Superflex relative to the baseline but less than the decline in idled acreage. Regionally, soybean acreage increases in the corn belt at the expense of corn. However, the downward pressure on soybean prices causes soybean acreage in the Southeast and the Delta areas to decline as marginal land is removed from production. Some acreage shifts to cotton, causing that price to fall as well.

Net returns above variable costs are about $400 million lower for eight crops relative to the baseline, due primarily to lower soybean prices. Net CCC outlays increase modestly ($400 million annually) as deficiency payments increase with lower prices. For more details, see FAPRI (1990b).

Table 2. Comparison of Alternative Policy Options on Selected Variables, 1991/92-1995/96 Average

Variable	Baseline	Program Option				
		Superflex	5.50 ML	Equilibration	Flex No Pay	FNP + 5.50 ML
		Absolute Change from Baseline				
Acreage Planted (million acres)						
Corn	73.7	-1.5	-0.3	0.1	-0.2	-0.5
Soybeans	57.2	1.7	0.5	1.8	0.2	0.8
Wheat	78.3	1.4	0.0	0.6	0.1	0.1
Cotton	12.2	1.0	0.0	0.1	0.1	0.1
15 Crops[a]	266.3	1.9	0.1	4.6	0.0	0.2
Prices (dollars per bushel)						
Corn	2.05	0.13	0.02	-0.08	0.02	0.04
Soybeans	5.80	-0.70	-0.14	-0.56	-0.05	-0.21
Wheat	3.34	-0.10	0.00	-0.12	-0.01	-0.01
Cotton (cents per pound)	61.86	-3.87	0.09	-0.62	-0.45	-0.35
Ten-Commodity Exports[b]						
Volume (million metric tons)	142.94	0.19	-0.16	2.36	-0.15	-0.29
Value (billion dollars)	21.49	-0.15	-0.03	-0.64	-0.04	-0.03
Eight Crop Net Returns Above Variable Costs (billion dollars)[c]	26.98	-0.41	-0.09	0.00	-0.08	-0.18
Net CCC Outlays (billion dollars)[d]	10.01	0.43	0.06	3.37	-0.16	-0.01

[a]These include corn, soybeans, wheat, cotton, oats, barley, sorghum, rice, sugar, sunflowers, peanuts, edible beans, tobacco, rye, and flaxseed.
[b]These include corn, wheat, oats, barley, sorghum, rice, soybeans, soybean meal, and soybean oil.
[c]These include corn, soybeans, wheat, cotton, oats, barley, sorghum, and rice.
[d]Fiscal years 1992-1996. Excludes about $2 billion annual cost of conservation reserve program.

5.50 Marketing Loan

Under this option, a relatively small (.5 million) increase in soybean acreage replaces a smaller decline in corn plantings. At higher marketing loan rates (e.g., $5.75 or $6.00), soybean acreage picks up considerable momentum as acreage in the Delta and the Southeast respond in a non-linear response path. Changes in corn and soybean prices are also relatively small under the 5.50 loan. Virtually no change is seen in export volume or value, net returns, or government costs.

Program costs are highly dependent on the baseline market price ($5.80) since the marketing loan rates are fixed for each scenario. Lower baseline soybean prices would result in higher costs. More variable (rather than the assumed average) weather would also affect program costs. As the marketing loan rate is raised to $5.75 or $6.00, government costs increase by $1.0 billion and $2.4 billion annually, respectively, above the baseline. For more details, see FAPRI (1990d).

Equilibration

Acreage planted under this option increases the most of the options analyzed due in large part to the elimination of the 0-92 program. Fifteen crops planted acreage increases almost 2 percent. Changing to an NCA system allows some acreage shifts to occur and is expected to result in better crop rotation. This flexibility option does increase soybean plantings in the Delta and Southeast due to the higher soybean support rate. Increased production raises export volume by almost 2 percent but lowers export values as prices for all crop commodities decline (Table 2). However, the increase in target prices for oats and barley and a support price for soybeans offsets declines in net returns to other crops and causes the production of oats, barley, and soybeans to increase significantly in response to the higher support levels. This is accomplished, however, at a cost of almost $3.4 billion per year above the $10 billion annual baseline CCC budget. This cost can be reduced to baseline levels by increasing ARP rates by 2.5 to 3.0 percentage points. For more details, see FAPRI (1990c).

Flex No Pay

A strategy designed to offer producers greater flexibility but with reduced program benefits is the Flex No Pay option. This strategy is not as lucrative as the Administration's proposal but does allow producers flexibility to follow market signals. Under this option, soybean producers increase plantings by an average of 0.2 million acres annually with improved crop rotations (Table 2). Producers flex out of corn program acreage into soybeans. As a result, soybean prices fall $.05 per bushel and corn prices rise $.02 per bushel. Total acreage planted for 15 crops is virtually unchanged. Export volume and value is similar to the baseline levels. Net returns decline marginally from the baseline with the lower soybean, wheat, and cotton prices. Net CCC outlays fall by $157 million per year reflecting savings from the feed grain program lower deficiency payments. For more details, see FAPRI (1990e).

Flex No Pay with 5.50 Marketing Loan

In order to provide some protection to the soybean industry, the Flex No Pay option was modified to include a marketing loan for soybeans at $5.50 per bushel. A recourse loan for soybeans would be repaid at the prevailing market price.

Additional (to the Flex No Pay program acres) non-program corn acres shift to soybeans. Soybean acreage is 0.8 million acres higher annually than the baseline average (Table 2) with prices driven $.21 per bushel lower. Corn price increases 4 cents per bushel with lower production. Acreage planted across the 15 principal crops is similar to the baseline. Total net returns to eight crops decline $180 million, less than one percent, from the baseline. The soybean price decline is cushioned by the $5.50 support level. Average annual net CCC outlays move to 10 million dollars lower than the baseline as soybean loan payments more than offset corn deficiency payment savings. Because of the loan support, costs could rise with better than average weather. For more details, see FAPRI (1990e).

Conclusions

The recognition that FSA85 has resulted in undesirable rigidities in planting decisions has focused attention on flexibility. The loss of soybean acreage to South America has also caused policy makers to consider greater price support for that industry.

Superflex, our term for a variation of the Administration's proposal, provides increased planting flexibility with benefits to corn and soybean farmers. However, economic stress in the Southeastern and Delta regions and to those producers who do not have sufficient program acres to benefit from the plan may render it less attractive for some regions than other proposals.

A soybean marketing loan, designed to encourage soybean production with floor price protection, appears to be nearly budget neutral (relative to the baseline) at or below $5.50 per bushel. At $5.75 and $6.00, the program annually costs $1 billion and $2.4 billion more, respectively, than the baseline. The program could also become costly if events develop in such a manner that soybean prices in the future are weaker than projected in the baseline.

Equilibration is designed to allow producers to respond to equitable returns across commodities. Production and export volumes rise the most among the policy options analyzed. However, at a cost of $3.4 billion per year more than the baseline, this proposal may not receive much Congressional support at a time when the federal budget deficit needs to be trimmed, unless increased ARP rates or reduced target prices are set to bring costs down.

The Flex No Pay option offers some of the flexibility of the Administration's proposal but without the associated losses to nonprogram participants and Southeastern producers. Only when a soybean marketing loan is added, however, is it likely to encourage much additional acreage into soybean production.

In addition to these general themes, numerous scenarios incorporating further minor changes have been evaluated. The level of refinement in the policy design process in 1990 in essence exceeds the ability of the models to evaluate. The model projection errors are undoubtedly larger than some of the differences reported across scenarios. However, the analysis does provide policy makers with a sense of direction and magnitude of change which will hopefully improve the decision making process.

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