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Impacts of the 1996 Farm Bill Including Ad Hoc Additions[1,2]

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JAAE Abstract

Whether the next farm bill is a slightly modified extension of the 1996 Farm Bill or is significantly different from the current bill will hinge on how the 1996 Farm Bill is perceived to have performed. With no supply management provisions in the 1996 Farm Bill, the crop markets have not shown a capacity to self-correct by reducing the quantity supplied and increasing the quantity demanded in response to relatively large declines in crop prices.

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Impacts of the 1996 Farm Bill Including Ad Hoc Additions

The 1996 Farm Bill set a new course for U.S. agricultural policy. The U.S. has gone from farm programs that governed crop supplies, prices and incomes—and only had been changed around the edges for over sixty years—to a hands-off farm program that sets supplies and prices free. With this farm bill expiring in 2002, and subject to replacement before that, the debate season for a new bill is about to start. A key question is: Will the next farm bill essentially be an extension of the current bill with relatively minor modifications or are we in for a significant rewrite? The stay-the-course-versus-revamp debate will hinge on how the 1996 Farm Bill is perceived to have performed.

There will be differences of opinion about how to determine/measure/judge its performance. Some may declare it a success simply because it allows farmers planting flexibility and prices are determined by markets and not by the government. Others may call it a failure because the original decoupled contract payments were not held fixed as intended but were factored upward with additional appropriations, implying that adjustments would have taken place with timely recovery of sector prices and incomes had the additional payment not been paid. Still others will say that loan deficiency payments are the reason crop supplies are large. And some may blame "bad luck" external events (e.g., Asian financial crisis, exchange rates, etc.) for the low prices and market receipts, implying that once these short-term disruptions subside, agriculture will be fine. Another approach is to gather information to determine whether the extremely low price responsiveness of crop supply and demand—that economists have said long characterized crop agriculture (Bonnen and Schweikhardt)—is uncharacteristic of crop agriculture today. That is, have the crop markets of the last four years, unconstrained by farm

program planting restrictions and price supports, revealed a degree of crop supply and demand price responsiveness that was not present when farm programs were first implemented?

This paper begins with a discussion of some of the events and changes in perceptions that led to the adoption of the 1996 Farm Bill. Next, it matches up changes in crop prices and incomes with the periods of the debate, passage, and enactment of the 1996 farm legislation. Finally, it addresses the price responsiveness question: Have the crop markets shown capacity to self-correct by reducing the quantity supplied and increasing the quantity demanded in response to relatively large declines in crop prices?

1996 Farm Bill: Long-Term Influences

The perceptions and events that led to the adoption of the 1996 Farm Bill had both long-term and short-term origins. Since the 1960s and, especially since 1985, commodity programs have increasingly relied less on Commodity Credit Corporation storage programs to support commodity prices and more on direct payments to support farm incomes. In addition, perceptions about the justification for farm programs increasingly moved away from the traditional unique-economic-structure explanation and toward an entrepreneurial rent-seeking explanation accomplished through political prowess (Rausser, 1982; Rausser, 1992; Runge Schnittker and Penny). There were several reasons for these changes. The increased importance of exports to the economic health of agriculture was one.

Beginning in the mid-sixties, large commercial agribusinesses and low-cost crop producers believed that the U.S. would be more competitive in international markets if government actions that support commodity prices, often above world prices, were de-emphasized or terminated (Orden, Paarlberg and Roe). Except for a relapse or two in the late seventies and early eighties, the move to “cash out” farm programs gained momentum and direct

payments became the dominant means of supporting crop agriculture by the early 1990s. Increased export competitiveness and reduced governmental intrusion in agricultural markets were compelling arguments for shifting to direct payments. A combination of studies and conjecture contributed to a conventional wisdom that agricultural export demand was certainly price elastic after a few years and probably elastic in the short-run (Tweeten; Schuh). The unspoken translation of this belief in export price responsiveness was that farmers would receive increased revenue with lower prices despite the fact that the export price elasticity would have to be extremely large to offset the well-known price inelasticity of domestic crop demand, agriculture's major market outlet. In addition, the cost of storing relatively large quantities of grains acquired by the government, or administered by the government in the case of the Farmer-Owned-Reserve (FOR), as a result of supporting commodity prices was judged to be exorbitant. And farmers complained that such stocks overhung the market preventing realization of price run-ups during times when domestic crop yields faltered or export demand surged.

Another longer-term consideration for moving toward the policies of the 1996 Farm Bill was the dramatic change in the way agriculture is organized and operated. When farm programs were first instituted in the 1930s, 25 percent of the population lived on farms and most of the economic activity in a large share of the country was directly or indirectly dependent upon agriculture (Hallberg, Spitze and Ray). Thus, it was argued that the benefits of propping up agriculture with farm programs also benefited a large segment of rural America. Today, only two percent of the nation's population live on farms. Few of the inputs used on the 6.8 million farms in 1935 were purchased from off-farm sources. Oats and hay produced on the farm fueled the horse power, manure fertilized the crops, home-grown seed filled the planter boxes, and mechanical and hand-labor kept the weeds at bay. Insect populations were kept down by the use

of crop rotations that were required to meet the feed and bedding needs of the diversified crop and livestock farms of the time. Since few items were store-bought decades ago, lower prices and incomes meant farmers had less spending money but the crop could go in the ground as usual come spring. Today's farmers, in contrast, face the very opposite situation: nearly all inputs are purchased and few are farm grown or in someway farm derived. Over time, as farm output increasingly became more based on purchased inputs, farmers were expected to be sensitive to changes in commodity and input prices. Thus, because crop agriculture contains fewer but larger farms and farmers must pay for most all inputs used to grow crops, crop supply was expected to be considerably less inelastic compared to when farm programs were started in the 1930s.

Still another long-term factor that served to set the stage for the 1996 Farm Bill was the increasing influence of the "Chicago School." The elegance and rigor of the perfectly competitive model does seem tailored to agriculture. There are many firms, none of which is large enough to influence total supply. Entry and exit of firms are relatively free and the products produced are largely homogenous and therefore indistinguishable. In the past, undergraduate and graduate students were routinely taught the distinguishing differences between the theory of the perfectly competitive model and way agricultural markets actually perform. Since, for the most part, agricultural economists are all in the "Chicago School," today's students—tomorrow's leaders—are generally not given the opportunity to consider how (a) the inability to instantly adjust output levels during the growing season, (b) the tendency for resources such as land to be fixed in production from year-to-year, (c) the randomness of output rates (yields), and (d) the virtually fixed per capita demand for the final product, food, violate assumptions or expected

conditions that underlie the perfectly competitive model and, therefore, may blunt its predictive power (Cochrane, 1958; Bonnen and Schweikhardt).

Also, over the years, the export optimism of the 70s and portions of the 80s and 90s, the disillusionment with farm programs due in part to the occasional costly mistakes in land diversion and stock management decisions, the rising popularity of deregulation and less governmental interference in a number of industries (airlines, trucking and telecommunications, among others), and other factors contributed to a gradual, long-term shift to a political environment favoring movement toward the policies of the 1996 Farm Bill.

1996 Farm Bill: Short-Term Influences

While the policies of the current farm bill likely could not have been passed under any circumstances two or three decades ago, it is also unlikely that the 1996 Farm Bill could have been passed in 1996 without the coming together of a number of proximate events.

It is probably not an exaggeration to say that the election of Republican majorities in the Senate and the House of Representatives in 1994 was a necessary condition to achieve a 1996-like farm bill. Republicans generally have been less enthusiastic about farm programs than Democrats, especially those that intervene in the market determination of price such as price supports through the use of non-recourse loans and programs that annually take land out of production. But it was more than that. Incumbent and newly elected Republicans, including the 73 freshmen Republican Representatives and Senators, had signed the "Contract With America." The sense was that the American people had embraced the "contract" and had given Congressional Republicans a mandate to enact legislation to achieve the contract's goals. The Contract With America did not specifically mention agriculture or farming, but clearly agricultural programs could not escape significant budget cuts if total government outlays were

to be reduced as promised in the contract. It only took three to four months into the new Congress to ascertain the approach Republican leadership intended to use to accomplish the budget reductions. The House and Senate Budget Committees were instructed to determine the budget savings that were needed from each area of government expenditures. The authorization and appropriation committees in the House and Senate, including those for agriculture, were charged with writing the legislation that would generate the savings.

While Republican control of both Senate and the House, was a necessary condition for moving to the policies of the 1996 Farm Bill, it was not a sufficient condition. Just as there had been gradual changes in the perception about the need and justification for farm programs over recent decades, several things happened during 1994 and 1995 that influenced people's thinking and paved the way for the new legislation. One was a study entitled "Large Scale Land Idling Has Retarded Growth of U.S. Agriculture" that was financed by the National Grain and Feed Association's foundation. It was released in May 1994. Schertz and Doering (p. 4) wrote: "Over 185 companies, most of whose profits are geared substantially to volume of commodities handled or processed, were involved in supporting the study prepared by Abel, Daft, & Earley, a consulting firm in the Washington, D.C. area." Although its findings essentially assumed a relatively price elastic demand and has since been discredited, its clever presentation, and the proclivity of many "to want to believe" that agriculture would be more profitable if permitted to fully produce, allowed lobbyists to affect the perceptions of land withdrawal farm programs among politicians and agriculture stakeholders alike. (Also see Frydenlund)

Later, shortly after the 1994 elections, Senator Richard G. Lugar, R-Ind, who became the new chairman of the Senate Agriculture Committee, circulated a set of questions designed to generate discussion of the "purposes, effectiveness, and utility of farm programs" (Schertz and

Doering, p. 3). It was clear from the questions that were asked and the way the questions were phrased that Senator Lugar had serious concerns about farm programs. It was not going to be business as usual this time around.

Two anonymous three-page papers, one in January 1995 the other in July 1995, were also part of the maze that led to the new farm legislation. The first paper outlined the basics of a 1996-like farm program and was circulated to only a few Senate staffers, selected government officials and university economists. It outlined a decoupled direct payment program based on average deficiency payments received from 1992 to 1994. In 1996 the landowner and farm operator would divide a payment equal to 100 percent of their average payment for the three years, 90 percent the second year, and declining to 10 percent the ninth year and zero for all future years. The second paper essentially laid out the major provisions of the commodity portion of the 1996 Farm Bill and was circulated widely. The seed was planted. But through the middle of 1995, a 1996-like farm bill had far too little support to become legislation.

The final enabling event did not originate from the halls of Congress, the Oval Office, or other institution or group, anonymous or otherwise. The 1996 Farm Bill owes its life to the "sudden and rapid increase in farm commodity prices" (Orden, Paarlberg and Roe). Only when farm organizations, commodity groups, and Senators and Representatives figured out that the guaranteed payments of the proposed bill would provide payments even as commodity prices rose above the target prices of the previous legislation, did support for the 1996 Farm Bill begin to mushroom. The run-up in prices provided the needed votes to ensure passage of the legislation. The President signed the Federal Agriculture Improvement and Reform Act of 1996 (FAIR Act) into law on April 4, 1996. The legislation eliminated the target price/deficiency payment program, decoupled "transition" payments by allowing total planting flexibility among

virtually all crops except fruits and vegetables, eliminated the annual acreage diversion programs and eliminated the Farmer-Owned Grain Reserve (Young and Shields; Young and Westcott).

Prices Peak Prior To Start Of 1996 Farm Bill

It is ironic that the run-up in crop prices that helped coalesce legislative support for the 1996 FAIR Act peaked about the time the legislation was signed into law. Generally, prices began their drop soon thereafter, and in some cases, the early declines were abrupt and severe. For example, the closing corn futures price for the nearest contract month for the week ending July 12, 1996 was $5.38 per bushel but dropped to $3.58 per bushel for the week ending August 2, 1996, a $1.80 decline in three weeks (figure 1). In the case of wheat, the peak came in the month the FAIR Act was signed. The wheat closing futures price for the nearest contract month for the week ended April 26 was $7.16 per bushel. Six weeks later the comparable price had dropped nearly $2.00 per bushel to $5.00. Corresponding ending weeks and prices for soybeans were July 12, $8.40 per bushel, and July 26, $7.63. Unlike other crops, soybean price during portions of calendar year 1997 rose above their highest levels in calendar 1996. The 1996 peak weekly closing futures for cotton was 87.25 cents per pound on January 26 and by June 28, it had dropped to 70.65 cents per pound. It should be noted that cotton prices had been over $1.00 per pound during the spring of 1995.

Figure 1. Weekly corn futures price for nearest contract month, 1994-1998 ***(Source: Chicago Board of Trade)*****.**

Note that, with the exception of soybeans and rice, crop prices for the eight major crops reached their record high levels before the FAIR Act took effect. Although the law was signed April 4 1996, the 1996 crop year—the first crop year governed by the act—did not begin until later in 1996: June for wheat, barley and oats; August for soybeans, rice and cotton; September for corn and grain sorghum. While prices during the 1996 and 1997 marketing years were well above the target prices of previous legislation, the record nominal crop prices, except for soybeans and rice, actually occurred in the 1995 crop year. Soybean and rice did not realize their recent price highs until the 1996 crop year.

Corn prices were still relatively high in crop years 1996 and 1997 because stocks brought in from the 1995 crop year were the lowest since 1974 and it took a couple of years for stocks to grow sufficiently to push prices down to the levels of 1998 and 1999 (table 1). Corn exports were not "high" during the high-price crop years of 1996 and 1997; they declined in both these years. Corn exports dropped 400 million bushels in 1996 and another 300 million bushels in the 1997.

It is inaccurate to claim that corn exports bolstered corn prices in 1996 and 1997 crop years, then the Asian crisis crashed exports and prices in 1998 and 1999.

Table 1. U.S. acreage, yield, production, beginning stocks, exports, and farm price for corn, wheat, soybeans and cotton, 1994–1999 crop years ***(Source: Economic Research Service, USDA)*****.**

	Harvested acreage	Yield	Prod'n	Beginning stocks	Exports	Farm price
Corn	*M ac*	*Bu/ac*	*M bu*	*M bu*	*M bu*	*$/bu*
1994/95	72.9	138.6	10,103	850	2,177	2.26
1995/96	65.0	113.5	7,374	1,558	2,228	3.24
1996/97	72.6	127.1	9,233	426	1,797	2.71
1997/98	72.7	126.7	9,207	883	1,504	2.43
1998/99	72.6	134.4	9,759	1,308	1,981	1.94
1999/00*	70.5	133.8	9,437	1,787	1,935	1.80
Wheat	*M ac*	*Bu/ac*	*M bu*	*M bu*	*M bu*	*$/bu*
1994/95	61.8	37.6	2,321	568	1,188	3.45
1995/96	60.9	35.8	2,183	507	1,241	4.55
1996/97	62.8	36.3	2,277	376	1,002	4.30
1997/98	62.8	39.5	2,481	444	1,040	3.38
1998/99	59.0	43.2	2,547	722	1,042	2.65
1999/00*	53.8	42.7	2,299	946	1,090	2.48
Soybeans	*M ac*	*Bu/ac*	*M bu*	*M bu*	*M bu*	*$/bu*
1994/95	60.9	41.4	2,517	209	838	5.48
1995/96	61.6	35.3	2,177	335	851	6.72
1996/97	63.4	37.6	2,382	183	882	7.35
1997/98	69.1	38.9	2,689	131	873	6.47
1998/99	70.4	38.9	2,741	200	805	4.93
1999/00*	72.4	36.6	2,654	348	970	4.65
Cotton	*M ac*	*Lb/ac*	*M bales*	*M bales*	*M bales*	*cnts/lb*
1994/95	13.3	708	19.7	3.5	9.4	72.0
1995/96	16.0	536	17.9	2.7	7.7	75.4
1996/97	12.9	705	18.9	2.6	6.9	69.3
1997/98	13.4	673	18.8	4.0	7.5	65.2
1998/99	10.7	625	13.9	3.9	4.3	60.2
1999/00*	13.4	607	17.0	3.9	6.8	45.0

* Estimated

Wheat and cotton carry-in stocks, exports, and prices followed the same general pattern as corn. Wheat stocks brought into the 1996 crop year were extremely low, the lowest since

1973. Wheat stocks were down due to reduced yields in 1994 and 1995 and relatively strong exports during those years. Again, it was low carry-in stocks, not exports during the first two crop years of FAIR that provided support to wheat prices during those years. Compared to crop year 1995, wheat exports were down by 200 million bushels in 1996 and 1997. Wheat prices during the first two crop years of the FAIR Act, the two "high" price years so far under FAIR, occurred with weak export demand.

In the case of cotton, stocks had become depleted by the beginning the 1996 crop year, in part because of the near 50 percent increase in 1994 crop year cotton exports, due almost entirely to increased imports by China. In the 1995 crop year, cotton yield was down by over 20 percent and export demand, although down somewhat, remained high by historical standards. During this general time period, just as in the case of corn and wheat, the maximum season average price and export level for cotton occurred in years governed by the 1990 Farm Bill, with prices and export levels beginning or continuing their decline in the 1996 crop year, the first crop year covered by the new legislation. An exception to this pattern was 1997 cotton exports, which recovered from an 11% drop in 1996 only to plummet to its lowest level since 1985 during the 1998 crop year.

The situation for soybeans was generally similar to the other crops and, yet, quite different in some of the specifics. Low soybean stocks were carried into the 1996 crop year but exports did not decline in 1997 and 1998 as they did for corn and wheat. So rather than beginning the steady decline in season average prices in 1996, soybean prices reached their peak in 1997 and began declining in 1998 while exports remained stable to slightly higher. It was the 300 to 500 million bushel increases in soybean production in the crop years after 1996 that caused inventories to expand and crop year prices to begin their trek to levels not seen in three decades.

This journey through the numbers reveals two things. First, crop prices were "high" the first two marketing years of the 1996 Act not because exports were strong those years (soybeans being the exception). It was because—on day one—the granaries were empty. The low stocks carried into the 1996 crop year buoyed prices the first two marketing years. After those two years—with exports continuing to be mediocre, yields and total crop acreage coming in at supply boosting levels and the granaries no longer echoing—inventories continued to accumulate and prices sliced through most floors envision by farmers and others, e.g., $2.00 corn, $3.00 wheat and $5.00 soybeans.

Second, again except for soybeans, prices were not at record levels during the first two years of FAIR as is sometimes implied. The record prices occurred in the previous marketing year, during the time the 1996 Farm Bill was being debated but prior to the first marketing year the 1996 FAIR Act was in effect. Prices did not wait until the 1998 marketing year to head south, the price declines were well underway by then. In fact, compared to the 1995 marketing year, most of the drop in prices occurred during the first two years of the FAIR Act. It took until the third marketing year for prices to drop to critical, and politically unacceptable, levels.

Role of the Asian Financial Crisis

Conventional wisdom seems to be that agriculture was doing just fine until it was derailed by the Asian Crisis. There is no question that Asia significantly affects the level and variability of agricultural exports and prices. However, it is becoming increasing apparent that major drops in U.S. crop exports came before the Asia crisis occurred and, furthermore, the countries most associated with the Asian crisis are not large importers of U.S. crops, especially grains.

Table 1 shows corn exports of 2.2 billion bushels in marketing years 1994 and 1995, which is a 900 million bushel increase from the 1.3 billion bushels exported in 1993. Over half of the 900 million bushel increase came from Asia, capturing market share supplied by China and Argentina during the prior three years. Record U.S. corn exports were delivered to Japan, South Korea, Taiwan and Southeast Asia during the 1994 standard trade year with the bulk of the increase—about 500 million bushels—going to Japan and South Korea. The modest level of Southeast Asian corn imports during this time of 50 plus million bushels was Southeast Asia's first significant corn import from the U.S. since 1987, when 27 million bushels was imported. Of the 300 to 400 million bushel decreases in total U.S. corn exports in marketing years 1996 and 1997, about half of each year's decline can be accounted for by reduced exports to Japan, South Korea, Taiwan and Southeast Asia. And these same countries accounted for about half of the modest increase in U.S. corn exports in 1998. However, the dramatic decrease in U.S. corn exports in crop year 1997 did not occur because Japan, South Korea and Southeast Asian countries imported significantly less corn. Rather our loss of exports to these countries occurred because they significantly increased their imports from our export competitors China and Argentina.

Southeast Asia did not have a significant effect on U.S. corn export demand in any of the years. Besides that, the slump in U.S. corn (as well as wheat and cotton) exports took place chronologically before the occurrence of the financial crises in Indonesia, Thailand and other Southeast Asia countries. As we have seen, the major drop in U.S. grain and cotton export demands occurred in the 1996 crop year (Sept. 1, 1996 to Aug. 1997 in the case of corn) while the Asian crisis began in late 1997 and become serious in 1998 about the time U.S. grain exports began to turn upward.

Income Measurement

An examination of price and income data reveals that published crop and aggregate farm income numbers were lower in 1995 even though published 1995 crop prices were at record levels. Further, when published crop receipts and farm income peaked in 1996 or 1997, prices were on their way down. Most of the apparent drop in income in 1995 is attributable to the change in the value of inventory from 1994 to 1995. Likewise, most of the growth in income in 1996 comes from the adjustment due to the increase in inventory (stored crops). Understanding what the data reveal requires disentangling the definition of a "year". The word year preceded by crop (or marketing) versus calendar or fiscal designation means something very different. And interweaving and/or interchanging these time designations can lead to misunderstandings and misinterpretations.

The U.S. Department of Agriculture uses all three time designations. Typically, annual prices are reported based on the crop's marketing year which, in general. begins just prior the crop's normal harvest time. Annual estimates of crop receipts, production expenses, net income and many other aggregate indicators are based on the standard calendar year. And, while calendar year government payments are reported and used to compute aggregate income measures, nearly all government expenditures reported by commodity and program type use a federal fiscal year definition. For making comparisons of commodity supply and utilization with other countries there is actually a fourth year designation, standard trade year.

As an example of this confusing collection of alternative measuring periods, most of the "high" 1995 (or 1995/1996) crop year prices are reflected in calendar year 1996 cash receipt numbers. Government payments are even trickier because payments may be given out early, as portions were last fiscal year, or disbursed late. Direct payments to farmers in fiscal 1996 (which

began October 1, 1995) were mostly paid in crop year 1995 and mostly showed up in calendar 1996 net farm income calculations.

Matching reported numbers to a timeline is difficult. As shown in table 2, 1996 was the highest net farm income year and 1997 was also a "good" year. The strong 1996 net farm income number reflects record crop prices received during the marketing year prior to the FAIR Act and, especially, the $20 million increase in cash receipts from livestock and other crops during calendar 1996. Hence, the record net farm income reported for calendar 1996 had relatively little to do with FAIR. Crops sold from the first marketing year of FAIR resulted in higher 1997 major-crop cash receipts, with the increase largely due to $7.35 per bushel soybeans.

Table 2. Farm income sources, 1995-1999 ***(Source: Economic Research Service, USDA)*****.**

	Major Crops Cash Receipts *(Bil $)*	All Other Crop & Livestock Cash Receipts *(Bil $)*	Gov't Pmts. *(Bil $)*	Major Crop Cash Receipts + Gov't Pmts *(Bil $)*	Gov't Pmts as % of Major Crop Cash Receipts + Gov't Pmts. *(%)*	Net Farm Income *(Bil $)*	Government Payments as % of Net Farm Income *(%)*
1995	57.3	126.1	7.3	64.6	11.3	36.9	19.8
1996	61.4	146.2	7.3	68.7	10.6	54.9	13.3
1997	63.5	145.3	7.5	71.0	10.6	48.6	15.4
1998	55.2	141.1	12.2	67.4	18.1	44.6	27.4
1999	45.4	142.8	20.6	66.0	31.2	43.4	47.5

Table 2 shows a 25 percent drop in major-crop cash receipts by 1999 while calendar year government payments to farmers increased by nearly three times. By 1999, government payments were nearly a third of the total revenue received by major crops. This proportion is an approximation since some direct government payments were not paid to major crop operators or

landlords. Total net farm income also declined through time and by 1999 direct farm payments represented 48 percent of all net income in agriculture.[4]

Table 3 contains state level net farm income and government payment data that are comparable to the calendar year U.S. income numbers in table 2. Also, shown are direct payments as percent of net farm income and each state's 1999 net farm income as a percent of average 1990 to 1998 net farm income. Data are presented for the Grain Belt, Southern and Northeast and West, regions equivalent to those used by the Economic Research Service, USDA, to report farm marketing data in Agricultural Outlook. In the Southern region about $1 of every $3 of net farm income came from direct payments. Southern states with the largest government payments as a percent of net farm income were Tennessee, where direct payments were about 1.5 times total net farm income, and West Virginia and Louisiana where direct payments were about 85 and 70 percent of net farm income, respectively. The West region also received about a third of its net farm income from government payments. The Northeast region is the least dependent on direct farm payments (about 15 percent).

The Grain Belt region received the largest share of 1999 government payments and is the most dependent on them. On average, the Grain Belt received the equivalent of all its net farm income from government payments. Looking at individual states, government payments to Indiana and North Dakota were twice a large as their respective 1999 net farm incomes and government payments were greater than net farm incomes in Missouri, Illinois, and Iowa.

[4] The 48 percent number represents the direct payment percentage of net income generated from the production of livestock, fruits and vegetables as well net income from program crops. No estimate is available for major-crop net farm income.

Table 3. Farm income and direct government payments by state and region, calendar 1999

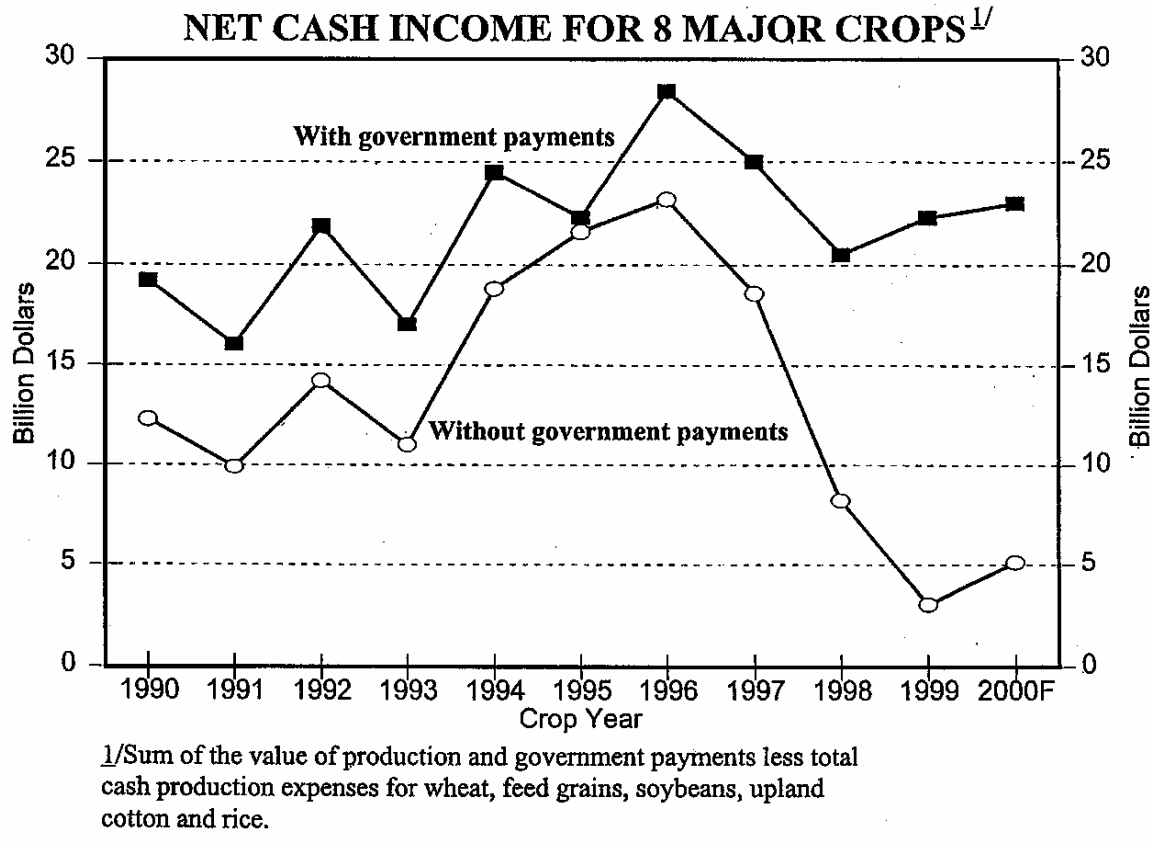
State	1999				
	Direct Government Payments (Thousand $)	Net Farm Income (Thousand $)	% (DGP/NFI) (%)	1999 as a % of 1990-1998 average (%)	1990-1998 Average (Thousand $)
Alabama	178,144	1,449,606	12.3	138.2	1,048,900
Arkansas	768,896	1,830,918	42.0	132.2	1,385,000
Delaware	19,615	120,678	16.3	104.8	115,200
Florida	76,914	2,815,328	2.7	124.2	2,266,800
Georgia	360,680	2,099,384	17.2	120.7	1,739,300
Kentucky	229,103	846,974	27.0	73.7	1,149,200
Louisiana	411,864	565,350	72.9	115.1	491,200
Maryland	67,358	337,364	20.0	109.3	308,700
Mississippi	431,096	948,998	45.4	139.9	678,300
North Carolina	284,725	1,966,190	14.5	73	2,693,400
Oklahoma	526,401	1,149,787	45.8	135.5	848,600
South Carolina	127,083	422,469	30.1	107.4	393,400
Tennessee	208,224	141,430	147.2	28.1	503,300
Texas	1,914,139	4,649,677	41.2	143.3	3,244,700
Virginia	98,556	395,968	24.9	63.3	625,500
West Virginia	11,102	13,287	83.6	24.5	54,200
Southern	**5,713,900**	**19,753,408**	28.9	**112.6**	**17,545,700**
Alaska	1,766	19,587	9.0	157.6	12,400
Arizona	108,030	707,686	15.3	111.5	634,700
California	651,295	1,830,918	35.6	132.2	1,385,000
Colorado	368,005	922,905	39.9	122.7	752,200
Hawaii	824	63,151	1.3	101.1	62,500
Idaho	208,846	873,776	23.9	102.6	851,600
Montana	487,851	482,022	101.2	97.6	493,900
Nevada	2,674	65,039	4.1	102.4	63,500
New Mexico	92,069	639,839	14.4	136.6	468,400
Oregon	105,499	323,441	32.6	60.5	534,600
Utah	30,089	280,458	10.7	119.9	233,900
Washington	269,452	519,009	51.9	47.8	1,085,800
Wyoming	39,947	172,843	23.1	104.1	166,000
West	**2,366,347**	**6,900,674**	34.3	**102.3**	**6,744,500**
Connecticut	8,708	139,290	6.3	96.8	143,900
Maine	11,671	98,152	11.9	92.7	105,900
Massachusetts	10,162	64,853	15.7	47.8	135,700
New Hampshire	3,944	24,691	16.0	86.2	28,600
New Jersey	9,955	127,254	7.8	66.3	191,900
New York	117,168	586,536	20.0	123.4	475,300
Pennsylvania	94,277	627,314	15.0	81.7	767,800
Rhode Island	877	11,762	7.5	42.3	27,800
Vermont	12,242	140,790	8.7	121.8	115,600
Northeast	**269,004**	**1,820,642**	14.8	**91.4**	**1,992,500**
Illinois	1,711,034	1,007,007	169.9	63.2	1,593,400
Indiana	810,451	420,822	192.6	52.5	801,600
Iowa	1,875,525	1,450,176	129.3	57.6	2,517,700
Kansas	1,382,800	1,547,850	89.3	96.8	1,599,000
Michigan	389,099	658,575	59.1	144.1	457,000
Minnesota	1,256,091	1,257,252	99.9	96.6	1,301,500
Missouri	688,022	404,773	170.0	50.5	801,500
Nebraska	1,322,091	1,650,646	80.1	72.8	2,267,400
North Dakota	951,581	452,137	210.5	66.5	679,900
Ohio	627,715	802,983	78.2	70.8	1,134,200
South Dakota	746,176	1,189,945	62.7	109.1	1,090,700
Wisconsin	484,134	878,986	55.1	119.6	734,900
Grain Belt	**12,244,719**	**11,721,152**	104.5	**78.3**	**14,978,800**
United States	**20,593,972**	**40,195,876**	51.2	97.4	41,261,500

Source: ERS State Fact Sheets; December 2000, ERS Government Payments by program and state, 1998 and 1999 - Revised May 1, 2000

While the Grain Belt received the largest share of 1999 farm payments, it also experienced the greatest reduction in 1999 net farm income compared to 1990 to 1998 income averages. Grain Belt states with 1999 net incomes down 35 percent or more from their respective 1990-98 averages include Iowa, Illinois, Indiana, and Missouri.

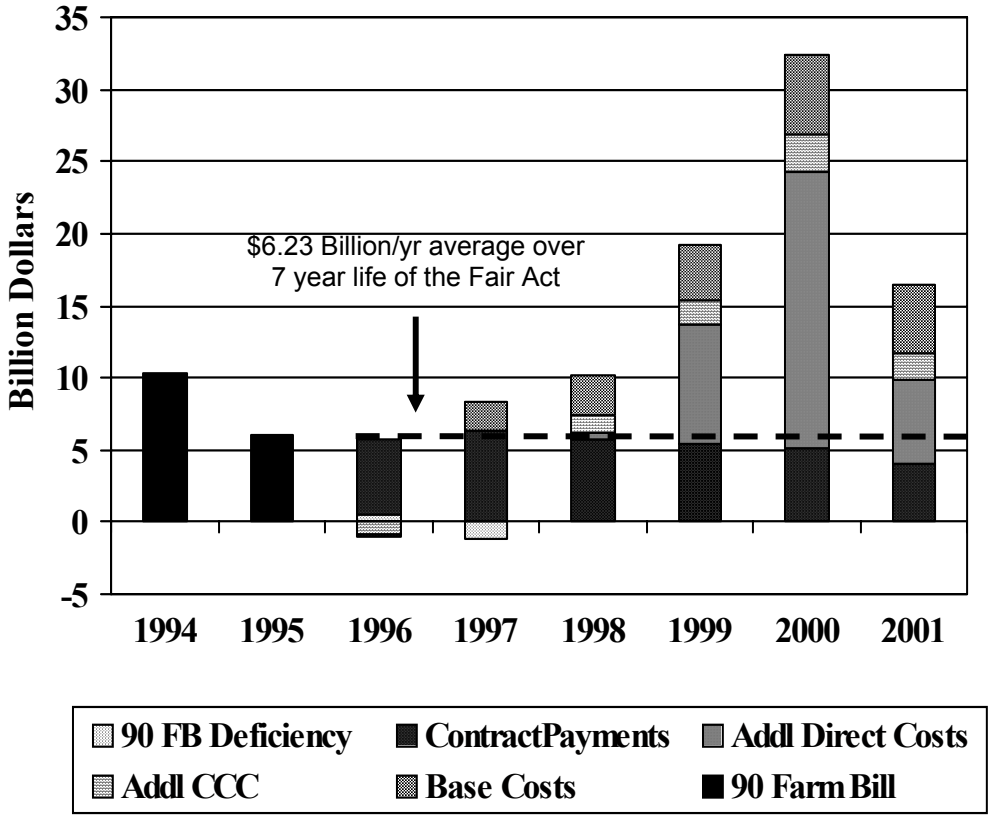
Using crop years, net return-like numbers can be computed for major crops based on the value of crop-year production, computed as season average price times production less estimated expenses, as measured by the product of acreage and the ERS cost-per-acre estimate. Figure 2 shows net cash income for the eight major crops computed two ways. The data plotted as squares were computed as the sum of the value of production and government payments less total cash production expenses. The other plotted line excludes government payments. Thus, the vertical distances between the two lines represent direct government payments to farmers by crop year. In the 1999 crop year, about 87 percent of the net cash income to the eight major crops came from government payments. Put another way, government payments were seven times greater than net cash income for the eight major crops. For the 8 crops to have a negative 1999 crop year net income, depreciation and other non-cash production expenses need only be greater than $3 billion.

Figure 2. Net cash income for eight major crops, 1990–2000 (Source: USDA).



As already mentioned, government expenditures are usually reported by fiscal years. Figure 3 shows total farm program expenditures for fiscal years 1990 through 2000. The portion of each bar denoting additional direct payments includes all payments that were not in the FAIR budget, such as market loss assistance payments, loan deficiency payments, crop disaster payments, and price support operations and interest expenditures. In fiscal 2000, in addition to the scheduled production contract, conservation reserve program and other farm payments, the government expended another $20 billion in direct payments and price support activities.

Figure 3. Government outlays by source, 1994–2001 (Source: USDA).



FAIR Act Performance

Since a stated intent of the FAIR Act was to replace the cost unpredictability of previous farm programs with a seven-year fixed schedule of prescribed farm program expenditure levels, clearly, the FAIR Act did not perform as intended, or, as some contend, was not allowed to perform. But to say that FAIR was not allowed to perform implies two things: (1) that the farm economy is capable of self-correcting within a relatively short timeframe, and (2) that those who supported the legislation and those who voted for the FAIR Act were aware that market prices, net incomes, and land values could crash during the tenure of the act and that was fine with them. It seems unlikely that Congress, farm organizations, or farmers entertained expectations of

possible financial devastation or that they would have supported the legislation if they knew such crashes were likely to occur. An evaluation of the FAIR Act is an exercise in analyzing the premises and expectations that underlie the act. Were those premises/expectations reasonable under a wide variety of economic conditions or was the act doomed from the start? My evaluation assumes that FAIR supporters did not anticipate the need to spend additional billions of dollars nor did they believe that the unmodified legislation could, or even might, cause crop prices, incomes, and land values to drop precipitously, thereby jeopardizing the financial solvency of even low-cost crop producers.

One expectation was that double-digit growth in per capita incomes in China and other Asian countries during the mid-90s would continue. Because of this economic growth and other trade expanding reasons including the newly negotiated trade agreements hefty growth in U.S. exports was expected over the FAIR period and beyond. Figure 4 shows the difference between projected corn exports and realized corn imports in China while figure 5 shows the difference between projected and realized corn exports for the U.S. Each figure also shows more recent corn trade projections for the respective countries. Note that in 1996, China was projected to import 260 million bushels of corn in 1999 but exported over 400 million instead. The overly optimistic projections of corn imports from China and from other countries translated into overly optimistic projections of U.S. exports. Annual corn export projections for the 1996 to 1999 marketing years averaged 400 million bushel per year greater than the quantity of corn actually exported. If these and other crop export expectations had been realized, prices and incomes would have remained buoyant and the FAIR Act would have appeared to perform well. But in such a case, the more basic premises about the underlying nature of the crop markets would have

gone largely untested. What is clearly true is that expectations at the time FAIR was enacted about future crop export growth were unrealistically optimistic.

Figure 4. Net corn trade for China, actual and projections, crop years 1994–2005 ***(Source: USDA, FAPRI)*****.**

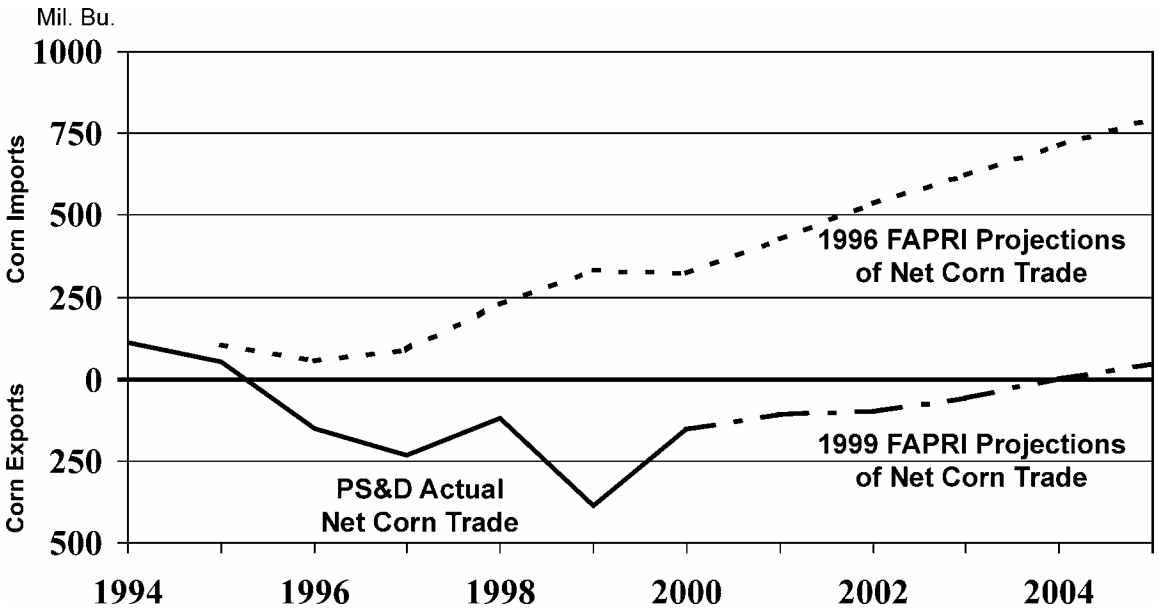
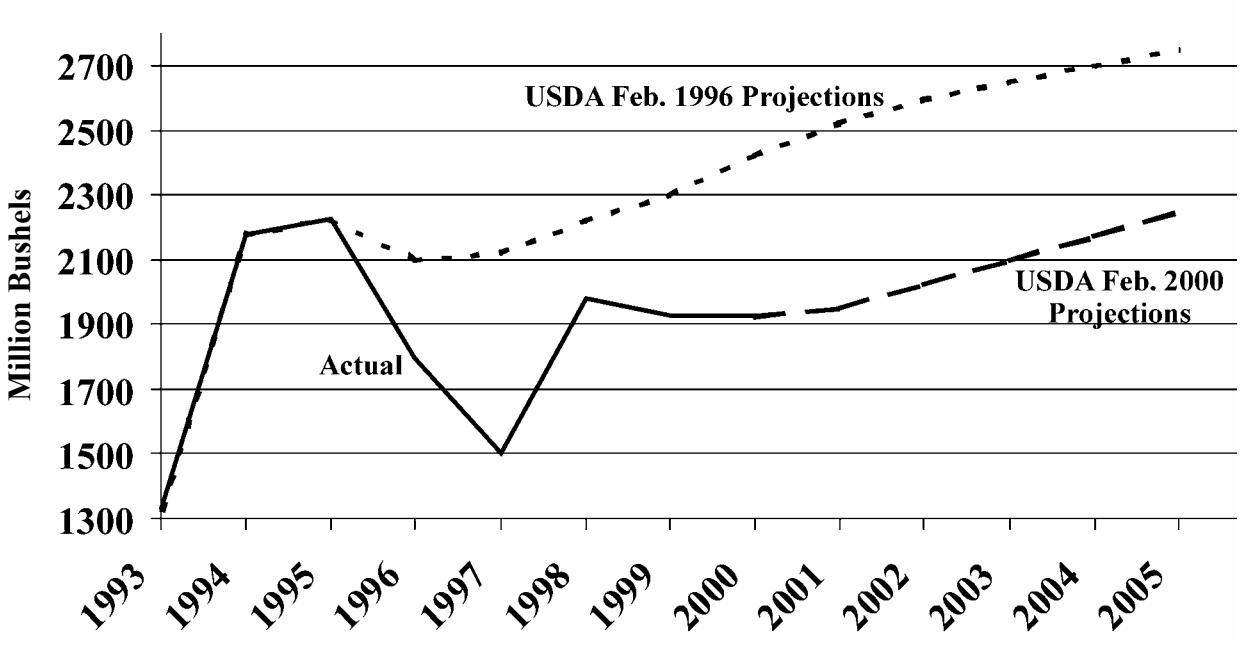


Figure 5. Expected and actual U.S. corn exports, crop years 1993–2005 ***(Source: USDA)*****.**



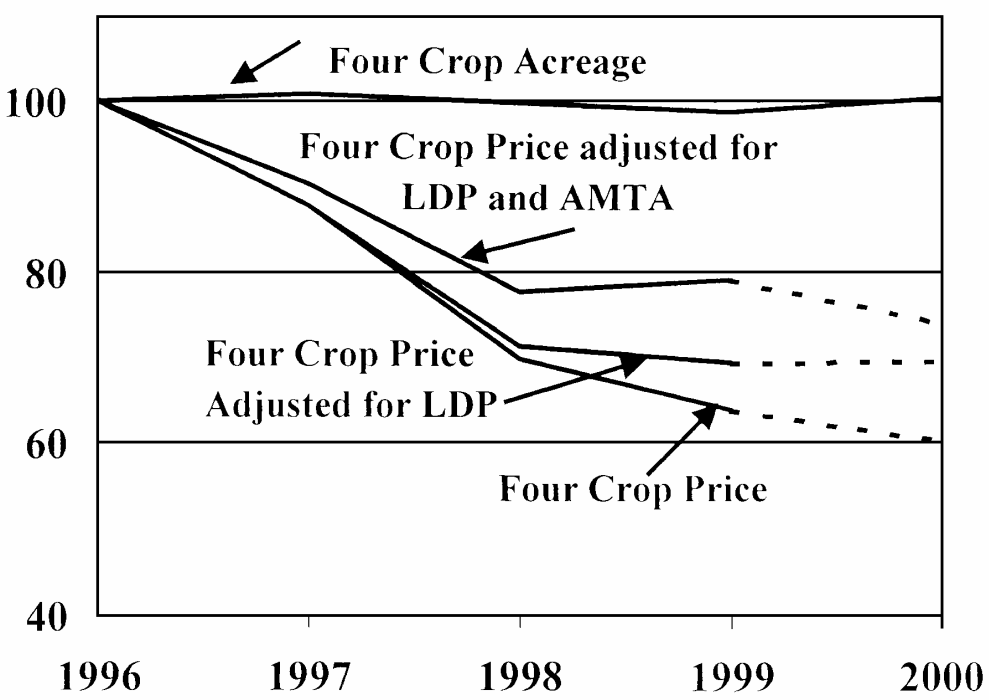
Sustained growth in crop exports for periods of time similar to the seven-year tenure of FAIR Act have only occurred three times in the last century, once during each of the two World Wars and once during the time from the mid-1970s to early 1980s. Except for these relatively brief periods of sustained growth, crop exports tend to be highly variable and usually exhibit a flat to downward trend. Hence, it would be extremely risky to base or justify a fundamental change in farm policy on the expectation that crop agriculture has entered a "new era" characterized by long-term accelerating export growth. But those who are the most zealous about moving agriculture toward free markets would be just as zealous with or without optimistic export projections.

The most important premises or expectations that need to be investigated when evaluating the FAIR Act relate to the price responsiveness of the crop sector. If the aggregate quantity supplied of major crops responds significantly and reasonably quickly to price changes, especially price declines, and if there are significant to considerable changes in the quantity demanded in response to price changes, especially price declines, the crop sector can self-correct as needed without the interference and intrusion of policy instruments traditionally found in farm programs. As mentioned earlier, there has been a gradual movement to the view that today's farmers are more sensitive than decades ago to changes in crop and input prices in the determination of the quantity they produce. Similarly, there appears to have been a gradual movement to the view that crop demand has become considerably more responsive to price, primarily due to the increased importance of exports.

Crop Supply

Has the combined acreage of the major crops—the component of the crop supply over which farmers have complete control—declined in response to the near 40 percent reduction in crop prices since 1996? As seen in figure 6, the index of total corn, soybean, wheat, and cotton planted acreage shows virtually no change in the total acreage of the four crops from 1996 to 2000. Setting aside the theoretical prediction of the impact of fixed payments on acreage decision, perhaps, when all per unit revenue is considered, the crop "prices" perceived by farmers have not really declined and therefore no change in total crop acreage would be expected. Including the loan rate floor and adding the implied revenue impacts of contract payments results in a smaller price decline, but per unit revenues decline even when these adjustments are include. Depending on the measure, crop prices or revenues per unit have declined by 36 percent, 31 percent or 21 percent and virtually no response is detected in total acreage of the crops, suggesting a perfectly inelastic supply curve.

Figure 6. Indexed crop acreage and price with adjustments, crop years 1996 –2000, 1996=100 ***(Source: computed based on USDA published data)*****.**



Planting flexibility only determines which crop is grown on fixed acreage. Having the flexibility to grow no crop at all is not an option farmers consider. Land continues to be used to produce crops either by the current farmer or the by farmer that replaces him or her. Despite assertions to the contrary, farmers who idled land under 0/92 provisions of previous legislation do not view decoupled payments as a 0/100 incentive to continue to idle land. Under the 0/92 provision of previous legislation, a farmer could idle land and for each acre idled receive 92 percent of the deficiency payment that otherwise would have been paid if that acre were used to produce the program crop. It would be to his benefit to put a base acre into the 0/92 program, if the 92 percent payment exceeds the expected net return from producing the crop. Since, in contrast to 0/92, no land idling is required to receive FAIR contract payments, the decision to idle land is not based on whether the land's net returns exceeds 92 percent of a deficiency payment rate but whether the land's net return exceeds zero.

Crop Demand

Has crop demand become sufficiently price responsive so that now a price decline will cause the quantity demanded to increase significantly, reducing inventories and initiating market self-correction? Historically, domestic crop demand has been notoriously price inelastic and it can be convincingly argued that domestic feed demand, the major demand for corn and processed soybeans, is becoming less, not more, sensitive to price. That puts the burden of increased price responsiveness on the export market. Given that total world exports are also highly inelastic within a given population and income configuration (Cochrane 2000), very little increase in the total world export quantity can be expected from a decline in crop price. This price inelasticity comes from the unique status of food. Under a given population and per capita income configuration, only so much food can be consumed no matter what its price. Also, countries tend to import food because they have to, not because they want to. So even if it is cheaper to import food than to produce it locally as a result of the price drop, food security and other politically important considerations often override price. With price inelasticity of total export demand in the short and longer-run price inelastic due to the nature of food and food security considerations, U.S. exports would only be price elastic in the short-run if U.S. exports represent a small share of the total export market or our export competitors fail to match U.S. price reductions.

If lower prices have little impact on the quantity imported by importing countries, everything else held constant, can we look to our export competitors to reduce exportable supplies when prices decline, especially when price declines continue multiple years? While we are the dominant exporter of corn, Brazil and Argentina are major soybean competitors and the EU is a long-standing wheat export competitor. Brazil has increased its soybean acreage by 13

percent from 1996 to 2000, even though soybean prices have declined by nearly 40 percent and U.S soybean acreage has increased from 60 to over 70 million acres. Argentina has also increased its soybean acreage and EU has increased wheat production.

If neither importer quantities demanded nor our export-competitors' level of exports responds appreciably to sustained price declines, a price-elastic export demand for U.S. crops seems to be logically precluded even in the long-run.

Supply and Demand Shifters

U.S. crop supply and export demand are notoriously variable from one crop year to the next. Much of the short-term variability can be traced to weather's influence on yields, in this country for supply, and in our export customers' and competitors' countries for U.S. export demand. Other random or sudden shifts, especially in exports, often have political roots. It's these unpredictable shifts of supply and demand coupled with inelastic demand that account for much of the variability of annual crop prices. But, these random rightward and leftward shifts can nearly offset one another over the long run. Thus, chronic price and income problems are not caused by random shifts in crop supply and demand. Insurance products and farm savings accounts work fine to help protect farmers from these types of variability.

Chronic price and income problems can occur if "non-random" shifts in supply are consistently greater than "non-random" shifts in demand. The most important shifter of supply is technological change. Over time, a major share of that new technology has come directly or indirectly from publicly sponsored research organizations, including Land Grant University Experiment Stations and the USDA's Agricultural Research Service. When prices decrease as result of a technological induced supply shift, the low price responsiveness of supply and demand results in small reductions in the quantity supplied and small increases in the quantity

demanded. Self-correction does not take place, inventories increase. With continued technologically induced supply shifts that exceed demand shifts, prices and income decline further, inventories expand and so on. Under this combination of inelastic supply and demand and supply shifting to the right faster than demand, prices and income become chronically depressed. Revenue insurance products and farm savings accounts provide little to no protection against chronically low prices and incomes.

At one time, most advances in crop technology were discovered in this country and primarily used in this country. With the global market, new technologies quickly become available worldwide or can be quickly adapted to local-country conditions. Couple this ever-increasing availability of technology to our export customers and export competitors with the hundreds of millions of acres that can be brought into production in Brazil, Ukraine, India, China and other countries, and the U.S. may face price and income depressing leftward shifts in exports as a result of accelerated rightward shifts in supply in foreign countries.

More open trade arrangements, resulting directly or indirectly from international trade agreements, have accelerated the rate of investment by multinational agribusinesses in new input manufacturing and processing plants, especially in countries we have looked to as potential customers such as China, and in countries that are major export competitors such as Brazil. Countries that are poised for "take-off" in agricultural output and productivity are tremendous market opportunities for the multinationals. Thus, unless future growth rates of world population and per capita incomes are greater than currently expected, technology driven shifts may provide farmers a double whammy on prices and incomes in the years ahead—rightward shifts in supply and leftward shifts in exports.

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