IMPACTS OF THE 2002 FARM BILL ON SOUTHEASTERN REPRESENTATIVE COTTON FARMS

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Abstract

This research estimates the farm-level impacts of the 2002 Farm Bill on the financial strength and performance of five representative cotton farms as compared to projections under continuation of the 1996 Farm Bill with government payment rates held constant at their 2002 level. Five southeastern representative cotton farms are simulated under both policy scenarios including: 1) a 4,050 acre cotton farm in southwest Tennessee; 2) a 1,900 acre cotton farm in southwest Tennessee; 3) a 3,000 acre cotton farm in northwest Alabama; 4) a 1,500 acre cotton farm in the coastal plains of North Carolina; and 5) a 1,700 acre cotton farm in southwestern Georgia. The farms were designed to represent a typical operation in each region and are processed using the stochastic FLIPSIM model and baseline agricultural and economic projections from the Food, Agricultural and Policy Research Institute (FAPRI) (December 2001 FAPRI Baseline and November 2002 FAPRI Baseline). The financial position of all five representative cotton farms improves considerably under the provisions of the 2002 Farm Bill compared to continuation of the 1996 Farm Bill. The primary cause of the rightward shift in net farm income under the new farm legislation is the influx of government payments under the new policy. In addition to fixed direct payments, additional direct payments are made to the farms in the form of counter-cyclical payments when prices are low. The option to update base acreages exercised by each farm also contributes to a significantly better financial position under the new farm legislation. The Georgia cotton farm further benefits from the changes to the peanut program in the new legislation. Over the projection period, net cash farm income is improved significantly for all farms, however, several farms (North Carolina, larger Tennessee, and Alabama) still face a fairly significant risk of a cash flow deficit. Government payments as a portion of total cash receipts increase for all farms under the new legislation, with all five farms receiving at least 20% of their total cash receipts from government program payments under the 2002 Farm Bill. Among the five representative farms, the smaller Tennessee cotton farm is on the most sound financial footing under the new farm legislation provisions. This is primarily a result of their input cost structure and relatively high average yields. All of the farms experience a significant reduction in the ratio of total costs to total cash receipts under the new farm legislation.

Introduction

The Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Bill) was crafted and authorized during a period of very high prices for U.S. cotton and other major agricultural commodities. At the time that discussions of federal agricultural policy reform were being debated, the 1995 marketing year average price for U.S. upland cotton reached a record high level of $0.754 per pound. As discussions of farm policy reform progressed, the pervasive theme in Washington was that outdated farm programs and restrictive trade barriers were preventing U.S. agriculture from achieving maximum prosperity.

As passed, the 1996 Farm Bill, dubbed Freedom to Farm, marked a significant departure from previous farm bill legislation and movement toward a market-based agriculture policy. Provisions of the 1996 Farm Bill included removal of short-term land diversion programs, complete planting flexibility, suspension of the Farmer-Owned Grain Reserve and virtual suspension of all other stock-based price stabilization mechanisms, substantial reductions in support prices, and elimination of program base and target prices from production decision making. The widespread expectation upon passage of the 1996 Farm Bill was that traditional farm programs were being phased out over the life of the legislation. While not expressly written into the legislation, the stated intent of the legislation's most ardent backers was that the transition was to be to total elimination of farm programs after the 2002 expiration of the legislation (Ray, 1999).

Soon after the 1996 Farm Bill took effect, prices for most major U.S. agricultural commodities began to decline. U.S. cotton producers have been hit hard in recent years by dramatic price declines, rapidly rising costs of production, and strong international competition. Average farm prices for upland cotton dropped 40 percent from their 1995 marketing year peak to $0.45 per pound in 1999, and up only slightly to $0.498 cents per pound for 2000 before declining dramatically to $0.298 per pound in 2001. As 2001 began, there was a cautious sense of optimism in the U.S. cotton industry. Cotton prices had risen substantially from the lows of 2000. World cotton mill use seemed ready for a long awaited increase, with some anticipating use of 93 million bales or more. The optimism faded with signs of a stalled market recovery. U.S. mill use of cotton declined, an-

ticipated Chinese imports didn't materialize, world mill use stagnated, and production expectations began rising. The combined effect on cotton prices was devastating (National Cotton Council of America, Economic Outlook for U.S. Cotton 2002). By 2002, cotton prices were down more than 60 percent compared to the pre-1996 Farm Bill level. Average monthly cash prices received by farmers for upland cotton in 2002 have ranged from 27 to 41 cents per pound. As a result of the very low cotton prices, government assistance for cotton producers has been very high in recent years. Between fiscal years 1998 and 2003 (estimated), total government payments for upland cotton exceeded $15.5 billion (Agricultural Outlook, USDA/ERS, December 2002).

The lowest cotton prices since the mid-1970s, record government payments, continued depressed prices for all major agricultural commodities, and a weak outlook for short-term price recovery provided the backdrop as discussions about farm bill reauthorization began to heat up in 2000. These discussions eventually culminated in passage of the Farm Security and Rural Investment Act of 2002 (2002 Farm Bill) in May 2002, with a six year lifespan from 2002 to 2007. The general approach of the 2002 Farm Bill is similar to the 1996 Farm Bill legislation. Complete planting flexibility is retained with virtually no production control mechanisms (with the exception of continued programs like the Conservation Reserve Program). Provisions for fixed annual payments decoupled from production are continued at rates similar to those in effect in the latter years of the previous legislation. A marketing loan program is continued (LDPs and marketing loan gains) with marketing loan rates for most commodities slightly higher than under the 1996 Farm Bill. A new counter-cyclical program (CCP) is instituted where direct payments are made when a commodity's market price falls below a predetermined target price. The CCP essentially provides a mechanism for automatic disbursal of the supplemental emergency and disaster payments that had been authorized since 1999 as prices plummeted. The 2002 Farm Bill allows for updating base acreage and program yields and additional establishment of oilseed base acreage. The legislation also contains a peanut quota buyout and makes peanut producers eligible for traditional crop commodity programs.

The 2002 Farm Bill also expands conservation land retirement programs and emphasizes on-farm environmental practices while relaxing rules to make more borrowers eligible for Federal farm credit assistance. It also adds various commodities to those requiring country-of-origin labeling and introduces provisions on animal welfare.

The 2002 Farm Bill provides income support for wheat, feed grains, upland cotton, rice, and oilseeds through three methods: direct payments, counter-cyclical payments, and marketing loans. Peanuts, sugar, and dairy have somewhat different provisions. One farm in this study does have peanuts; the situation for peanuts changed from a price support system with marketing quotas to one with marketing loans, direct and counter-cyclical payments, as well as quota-loss-compensation (buyout) payments. Direct payments under the 2002 Farm Bill are similar to the production flexibility contract payments established in the 1996 Farm Bill. Direct payments are not affected by current production or market prices, but based on historical acreages and yields. Coverage is expanded to include soybeans, oilseeds, and peanuts. Relevant direct payment rates under the 2002 Farm Bill as well as direct payment rates (production flexibility payment, or AMTA) for the last year under the 1996 Farm Bill are provided in table 1. The rates for all crops are higher than they were in the last year of the declining production flexibility contract payment rates. The new rates remain constant over the life of the 2002 Farm Bill. Under the 2002 Farm Bill, counter-cyclical payments provide price-dependent benefits for covered commodities whenever the effective price (the higher of the loan rate or the season average price plus the direct payment rate) is less than the target price, and based on historical acreages and yields. Counter-cyclical payments are made when the higher of the loan rate or the season average price is below the target price minus the direct payment rate. Relevant target prices are also provided in table 1. Target prices increase slightly for some commodities for years 2004-2007. The 2002 Farm Bill continues marketing loan provisions similar to the marketing loan program under the 1996 Farm Bill, but at slightly higher rates for most commodities, as seen in table 1. Note that soybean rates are reduced, but soybeans are now eligible for other types of payments. The 2002 Farm Bill allows for updating base acreages used for determining direct and counter-cyclical payments and also farm program yields for determining counter-cyclical payments. Direct payments are made on 85% of base acres.

The objective of this research is to estimate the impacts of the 2002 Farm Bill on the financial strength and performance of five representative cotton farms as compared to projections under continuation of the 1996 Farm Bill. This research makes direct contributions to cotton farmers in the region, providing them with an easy-to-understand evaluation of how policy affects a farming operation similar in characteristics to their own. The results also serve as a resource for county agents and other agricultural interests who are in frequent contact with many farmers. This farm-level evaluation of the impacts of the newly enacted farm policy is particularly important early in the year as farmers are making their final planting decisions for 2003.

Data and Methods

Five representative cotton farms have been developed typifying cotton production in the Southeast and Mid-South. The five representative cotton farms include 1) a 4,050 acre cotton farm in Southwest Tennessee producing cotton, corn, soybeans, and wheat; 2) a 1,900 acre cotton farm in Southwest Tennessee producing cotton, corn and soybeans; 3) a 3,000 acre cotton farm in Alabama producing cotton soybeans, and corn; 4) a 1,500 acre cotton farm in North Carolina producing cotton, soybeans, and wheat; and 5) a 1,700 acre cotton farm in Georgia producing cotton, corn and peanuts. The farms were designed to

represent a typical operation in each region. The representative farms were built from detailed farm data (including enterprise, operations, costs, finances, machinery, marketing, etc.) collected from producer panels using a consensus method. Farms are generally representative of moderate size full-time farm operations in the area. A second Tennessee cotton farm is included representing farms two to three times larger.

Representative farms are processed using the stochastic FLIPSIM model and baseline agricultural and economic projections from the Food, Agricultural and Policy Research Institute (FAPRI). The research uses a whole farm analysis approach to evaluate the financial outlook and stability of the cotton farms under the newly enacted 2002 Farm Bill as compared to the previous 1996 Farm Bill, as analyzed by the University of Tennessee's Agricultural Policy Analysis Center (APAC), Texas A&M University's Agricultural and Food Policy Center (AFPC), and FAPRI at the University of Missouri-Columbia.

The representative farm concept recognizes the diversity of farm operations and the wide range of impacts that the same policy can have on farms with different characteristics. The representative farm models are created by panels of farmers using a consensus building approach rather than averaged individual farm data. This approach results in a representative farm that is recognizable and relevant for each panelist and the typical grower in that region, while preserving a high degree of anonymity of the farm panelists. Verification of representative farm panel data is an important contribution of the farm panelists. Upon initial data collection, panelists are required to review and verify input data and simulation output. This helps to ensure that the representative farm model is performing in a manner consistent with conditions in that region. The use of consistent farm panels over time to create and update representative farms enhances the credibility of the representative farm approach. This approach also assures policy makers that the farm panelists – his constituents – agree that this farm and the analyses based on the farm data accurately represent their interests.

Representative farm analyses are anchored to a baseline of projections for the farm. This approach allows farmers and policy makers a benchmark for comparing and interpreting policy alternatives. Since most agricultural policies introduce incremental changes from the current policy scenario, providing impact estimates in the context of a marginal change from a baseline scenario makes representative farm impact estimates easily interpreted and understood by farmers and decision makers. The representative farm approach also estimates a dynamic impact path over the projection period. Thus, production and profitability paths associated with policy alternatives evaluated are traceable. Representative farm panels are reconvened every two to three years to update farm data. The two representative Tennessee cotton farms used in this analysis were created in 1998 and updated in November and December 2001. The Alabama cotton farm was created in June 2001, the North Carolina farm was created in July 2001, and the Georgia farm was created in March 2002.

The FLIPSIM Model and Baseline Assumptions

Farm data have been processed for use in the Farm Level Income and Policy Simulation Model (FLIPSIM). FLIPSIM is a stochastic simulation model developed by James Richardson at Texas A&M University and research staff at Texas A&M's Agricultural and Food Policy Center. FLIPSIM uses accounting equations, identities, and probability distributions to simulate economic activities over a multi-year planning horizon. Incorporation of risk analysis in the model is an important feature for policy analysis. FLIPSIM has the ability to estimate the likelihood that predefined financial outcomes will occur in a given projection year, based on the representative farm's price and yield history. Using probability distributions based on actual historical data for the farm, the model calculates the annual probability of predefined outcomes, such as the probability of a cash flow deficit, the probability of meeting minimum cash needs, and the probability of declining real net worth. The analysis also solves for the amount of net cash income reduction that a farm can withstand before equity declines. Analyses using FLIPSIM are anchored to a baseline scenario to project changes away from the baseline resulting from introducing alternative policies or conditions.

The December 2001 FAPRI baseline projections for the agriculture sector, which are based on policy provisions established through the 1996 Farm Bill, were incorporated into the FLIPSIM model. The FAPRI December 2001 Baseline provides projected prices, policy variables, and input inflation rates data. Baseline scenarios incorporating the 1996 Farm Bill provisions have been run for each of the farms that were in existence at that time, including the moderate and large Tennessee farms as well as the Alabama and North Carolina farms. The baseline assumes that 1996 Farm Bill provisions (planting flexibility, production flexibility contract (AMTA) payments, LDPs, marketing loan gains, etc.) continue at their 2002 level through the 2006 projection period. The baseline does not assume that any market loss or disaster payments will be made after 2001. Approved market loss assistance payments and disaster program payments are included in the baseline for 2000 and 2001. The representative farms were structures so that government payment limits were not effective in reducing contract payments and loan deficiency payments. Fixed payments (AMTA) are made on 85 percent of base acres under the 1996 Farm Bill baseline scenario. The 1996 Farm Bill Baseline scenario for each representative farm determines the farms' economic viability by region through 2006 assuming continuation of 1996 Farm Bill policies.

A 2002 Farm Bill Baseline scenario is then simulated for each of the five representative cotton farms to determine the farms' economic viability by region throughout the life of the 2002 Farm Bill (through 2007). The November 2002 FAPRI Baseline projections were incorporated into the FLIPSIM model containing the provisions of the 2002 Farm Bill. Baseline scenarios

including the 2002 Farm Bill provisions have been run for each of the five farms involved in this study, including Georgia which was created in 2002. The baseline assumes that 2002 Farm Bill provisions (target prices, direct and counter-cyclical payments, etc.) continue at their 2002 level through the 2007 projection period. The baseline does not assume that any market loss or disaster payments will be made. The baseline scenario further assumes that government payments are not restricted by payment limitations. Fixed payments (AMTA) are made on 85 percent of base acres under the baseline scenario. For 2000 and 2001, the farm's yields and prices received are fixed at their observed levels. After 2001, yields were simulated stochastically based on the average yield levels reported by the producer panels and the historical yield variability observed for the farm. Projected prices after 2001 are based on FAPRI Baseline national price projections, localized for the farm.

The baseline projections for December 2001 as well as November 2002 also incorporate uncertainty around baseline prices and yields. Since principal and interest payments must be paid from farm receipts, the amount of debt a farm is carrying plays a large role in determining a farm's ability to cash flow. In this analysis, it is assumed that each farm had an initial long-term and inter-mediate-term debt level of 20 percent the first year of the simulation. Moving forward, a farm's debt level may improve or deteriorate depending on the farm's performance over time. The analysis also assumes that the farms begin the simulation period with no cash reserves. Operating expenses are financed with borrowed operating capital in the first simulation year (2000) and from cash reserves and/or additional short-term operating loans in subsequent years. Basic multi-peril crop insurance (MPCI) coverage is maintained at 100% price and 65% yield protection over the baseline period. No off-farm income is included in the simulations for any farm, including family employment. Thus, the performance of the farm reflects on the ability of the farm to provide for family living, pay taxes, pay down principal on loans, and replace machinery and capital.

Tennessee Moderate-Size Cotton Farm, TNC1900

The moderate representative cotton farm is a 1,900 acre West Tennessee (Fayette County) traditional cotton farm with rising popularity of corn and soybeans. The farm's crop mix and other characteristics are presented in table 2. This farm plants 915 acres cotton, 370 acres corn, and 370 acres of soybeans. They plant equal parts corn/soybeans for crop rotation purposes. The farm plants 65 acres of double-cropped wheat and has recently introduced 150 acres of grain sorghum into their crop mix with plans to continue planting at least some sorghum acreage each year. This farm also has 30 acres enrolled in the CRP. Crop rotations and no-till practices are important management considerations for this farm. About two-thirds of the farm's acreage is under no-till practices.

Of the 1,900 farmed acres, 225 acres are owned land and the remaining 1,675 acres are leased. Of the leased acres, about half is cash-rented, and about half is crop-shared under a 50/50 crop share arrangement. This farm owns approximately 60 additional acres including farmstead, roads, and wooded areas. This farm is in close proximity to Memphis, so land values are higher than they would be for other farms in West Tennessee further from a major metropolitan area. These higher land values indicate higher property taxes and cash rental costs, as well as offering farmers the safety net of better than average opportunities for liquidity if necessary.

The farm spends $29.60 per acre for cotton seed and associated technology fees. Expenditures per acre are $42.50 for fertilizer, $36.00 for herbicides, and $23.80 for insecticides. The farm pays $30.00 per acre for the Boll Weevil Eradication Program (BWEP). The farm is currently in the fifth year of the BWEP, with two years remaining. A state appropriation covers part of the total cost of the BWEP (total cost is $36 per acre; state pays $6 per acre). The farm's rental rate for cropland is $55 per acre. The farm employs one full-time laborer and about 550 hours of part-time labor per year. Total variable crop production costs are $255,854 in 2001 for the farm, and total cash expenses for the farm are $409,616. Costs are inflated annually over the simulation period according to input inflation rates in the FAPRI baseline projections.

Tennessee Large Cotton Farm, TNC4050

The large representative cotton farm is a 4,050 acre West Tennessee (Haywood County) traditional farm producing 2,670 acres of cotton, 820 acres of soybeans, 560 acres of yellow corn, and 328 acres of double-cropped wheat, as presented in table 2. More than half of the farm's acreage is under no-till practices. According to one panelist, cotton farmers in this area view themselves as residue managers, not tillage farmers. This farm has increased their acreage over the past three years, primarily the result of a preference to buy or lease available farmland instead of allowing it to be offered for sale to a local cotton gin or for development. The farm has also recently begun to introduce some skip-row planting. Of the 4,050 acres farmed, 1,000 acres are owned and 3,050 acres are leased. Of the leased acres, 610 acres are cash rented and the remaining 2,440 are share-leased. In addition to 1,000 acres of owned cropland, the farm owns about 200 acres of other land including farmstead, roads, and wooded areas.

The farm spends $54.00 per acre for cotton seed and associated technology fees. Expenditures per acre are $57.00 for fertilizer, $44.60 for herbicides and fungicides, and $23.23 for insecticides. The farm pays $24.50 per acre for the Boll Weevil Eradication Program (BWEP). Although this farm is in the county adjacent to the moderate Tennessee cotton farm, they are in a different BWEP zone, accounting for the difference in costs. The farm's rental rate for cropland is $80 per acre. Due to the size of the operation, this farm employs five full-time laborers. Total variable crop production costs were $857,257 in 2001, and total cash expenses for the farm were $1,302,386.

Alabama Cotton Farm, ALC3000

This representative cotton farm is a 3,000 acre farm in Courtland, Alabama (Lawrence County). The farm's crop mix and characteristics are presented in table 2. This farm plants 2,075 acres of dry cotton, 175 acres of irrigated cotton, and 750 acres of corn. This farm has been under a no-till regime for several years. Additionally, cotton produced on this farm is marketed through a cooperative gin. This gin has implemented ginning and marketing innovations that return a higher lint price than would be realized through conventional marketing channels. Cotton sales accounted for 80% of total farm receipts during 2002. The entire 3,000 acres of farmed land are leased. Of the leased acres, 570 are cash-rented, and the rest is crop-shared. Cash lease rates are $72 per acre.

The farm spends $38.97 per acre for cotton seed and associated technology fees. Expenditures per acre of cotton are $36.70 for fertilizer, $52.74 for herbicides ($20.00 of which is for growth regulators and harvest aids), and $60.79 for insecticides. The 175 acres of irrigated cotton have an additional cost of $9.93 for irrigation. The farm pays dues of $7.00 per acre to a buying service, cover crop cost of $6.00 per acre, and $17.00 per acre for application and scouting. The farm's rental rate for cropland is $72 per acre. The farm employs no full-time laborers but spends $158,000 or more for part-time labor per year. Total cash expenses for the farm are $915,700 in 2001. Input costs are inflated annually according to FAPRI baseline input inflation rate projections.

North Carolina Cotton Farm, NCC1500

This is a 1,500 acre cotton farm located on the upper coastal plain of North Carolina in Wayne County. They plant 1,000 acres of cotton, 500 acres of wheat, and 500 acres of double-cropped soybeans annually. This farm was added to the set of representative farms in 2001 to reflect the return of large-scale cotton production to North Carolina. Cotton accounted for 69% of this farm's 2002 receipts with 19% coming from soybeans. Flue-cured tobacco has historically provided a significant portion of crop cash receipts in this area, with relatively large profit margins and relatively little price and income risk. However, substantial reductions in tobacco quota (cut by more than half since 1998) and significant pressures on the federal tobacco program have contributed to significant reductions in tobacco acreage and a rise in cotton acreage over the last few years.

Of the 1,500 farmed acres, 225 acres are owned land and the remaining 1,275 acres are leased. Of the leased acres, about 1,050 is cash-rented, and 225 acres are crop-shared. This farm owns approximately 12 additional acres including farmstead, roads, and wooded areas.

In 2001, the farm spent $40.19 per acre for cotton seed and associated technology fees. Expenditures per acre were $48.36 for fertilizer, $23.47 for herbicides, and $25.06 for insecticides. The farm's rental rate for cropland is $60 per acre. The farm employs two full-time laborers with salaries of $26,350 each, and spends $17,918 for part-time labor per year. Total cash expenses for the farm are $601,310 in 2001. Costs are inflated annually according to the FAPRI baseline inflation rates.

Georgia Cotton Farm, GAC1700

This representative cotton farm is a 1,700 acre farm in Bainbridge, Georgia, located in Decatur County. This farm plants 1,020 acres of cotton, 510 acres of peanuts, and 170 acres corn. 816 acres of cotton are irrigated and 204 acres of cotton are dry. This farm is unique to the set because it includes peanuts. The peanut quota buyout and resulting changes in crop expenses, the influx of quota buyout payments, and changes in the market price for peanuts have a significant impact on this farm's profitability during the simulation period. Cotton accounts for about 55% of total farm receipts, followed by peanuts at 38%.

Of the 1,700 farmed acres, 510 acres are owned land and the remaining 1,190 acres are cash leased. The farm's rental rate for cropland is $120 per acre. This farm does not operate on any land that is under a crop share arrangement. This farm owns an additional five acres including farmstead, roads, and wooded areas.

The Georgia cotton farm spends $32 per acre for seed and associated technology fees on irrigated cotton acres, and $16 per acre on dry cotton acres. Expenditures per acre of irrigated cotton are $95.00 for fertilizer, $35.00 for herbicides, $57.00 for insecticides, $28 for irrigation, $9 for scouting, $22 for defoliant, $15 PIX growth regulator, $10 custom application, and $4.25 for boll weevil application. Expenditures per acre of dry cotton are $53.00 for fertilizer, $35.00 for herbicides, $36.00 for insecticides, and $40 for defoliant, scouting and boll weevil application. The farm employs three full-time laborers with total salaries of $65,400. Total cash expenses for the farm are $1,076,850 in 2001. Input costs are inflated annually according to FAPRI baseline input inflation rates.

Results

Results for each of the four farms simulated under the 1996 Farm Bill baseline scenario are summarized in table 3. The Georgia cotton farm is not included in this simulation set because it was not created until after passage of the 2002 Farm Bill. As indicated by the overall financial position ranking averaged over the simulation period, none of the four farms are on sound financial footing. The smaller Tennessee farm and the Alabama farm are rated "Marginal" while the larger Tennessee farm and the North Carolina farm are rated "Poor". The North Carolina farm is in the most serious trouble, loosing over 11

percent of their real net worth over the period. By the latter years of the simulation, the North Carolina farm is nearly certain to experience a cash flow deficit in any year. In contrast, the smaller Tennessee cotton farm is the highest rated performer, projected to increase real net worth an average of more than three percent over the simulation period, and with a very low probability of losing real net worth in any simulation year.

Averaged over the seven simulation years, the smaller Tennessee farm generates $181,930 in net cash farm income (NCFI) while the larger Tennessee farm generates $211,490. The Alabama farm generates $286,120 in NCFI while the North Carolina farm averages $41,920 and experiences negative net cash farm income the final two years simulated. Net cash farm income is used to pay family living expenses, state and federal income taxes, principal payments on debt, and to replace machinery and other capital. All of the farms face a serious risk of being unable to meet minimum cash needs with the level of net cash farm income simulated. The risk of a cash flow deficit in any year on the smaller Tennessee farm ranges from a low of 10% to a high of 35%. Risk ranges from 40% to 49% on the larger Tennessee farm and from 29% to 53% on the Alabama farm, while the North Carolina farm is nearly certain not to meet their minimum cash needs after the first simulation year.

Under the new farm bill, farms have a range of options for updating crop acreage bases and farm program yields. If a farm chooses to update base acres, direct payments and counter-cyclical payments are made on 85% of updated base acres. If a farm updates base acres, they are also eligible to update farm program yields for computation of counter-cyclical payments. Direct payments, however, are paid based on old farm program yields, regardless of the farm's decisions about updating base acreages or yields. Updating base acreages and yields is a farm-level decision; partial updating for individual crops is not allowed. Farms have four options to consider in deciding whether to update base acreages: (1) keep current base acres in effect under the 1996 Farm Bill; (2) keep current base acres and add eligible oilseed base acres; (3) reduce current base acres and add the maximum allowable oilseed base acres, (4) update all crop acreage bases using the average of planted acres for 1998-2001. If (and only if) they update base acres, farms have a range of options for updating program yields: (1) keep current farm program yields; (2) keep current farm program yields and establish oilseed yields using 78% of the average oilseed yields for 1998-2001; (3) update yields for all crops using 70% of the increase in yields for 1998-2001 compared to existing farm program yields; (4) update farm program yields for all crops using 93.5% of the average yields for 1998-2001.

Each of the four farms in existence under the 1996 Farm Bill maximizes farm program benefits by updating base acreages and farm program yields. Base acres under the 1996 Farm Bill for the moderate Tennessee cotton farm included 750 cotton acres and 250 corn acres, 1,000 total base acres. Under the 2002 legislation, the moderate Tennessee cotton farm's total base acreage increases to 1,900 acres: 915 cotton acres, 370 soybean acres, 370 corn acres, 65 wheat acres, and 150 grain sorghum acres. This is a net gain of 900 payment acres for the moderate cotton farm, or nearly double their original base acreage. The farm updated farm program yields to 93.5% of the 1998-2001 average yield. Under the 1996 Farm Bill, the larger Tennessee farm had 2,400 base acres, of which 2,000 was cotton base, 250 corn base, and 150 wheat base. Under the 2002 Farm Bill, the large Tennessee cotton farm's total base acreage increases to 4,378 acres, representing a net gain of 1,978 base payment acres. The farm updated their base acres according to their 1998-2001 average acreage, as described in table 2. Note that the farm's payment acres after updating are greater than the farm's total cropped land due to double-cropped acres. The farm elected to update farm program yields using 70% of the increase in yields for 1998-2001 compared with existing farm program yields. The Alabama cotton farm had 2,230 cotton base acres and 107 corn base acres under the 1996 Farm Bill. After updating, the farm's base acreage includes 2,250 cotton acres and 750 corn acres. Farm program yields in place under the 1996 Farm Bill were retained. The North Carolina farm expanded their base acreage significantly by adding double-cropped acreage as new base and adding soybean base acres. The farm went from 650 acres of cotton base and 200 acres of corn base to 1,000 acres of cotton base, 500 acres of soybean base, and 500 acres of wheat base, nearly doubling their total payment acres. Farm program yields for the farm were updated using 93.5% of the average yields for 1998-2001 and 78% of the soybean yield for 1998-2001.

Results for each of the five farms simulated under the 2002 Farm Bill are summarized in table 4. As expected, each farm's financial position improves considerably in this scenario compared to the simulated projections under the 1996 Farm Bill. This result is not surprising considering that direct payments were at similar levels to those in the 1996 Farm Bill simulation, but additional counter-cyclical program payments were made during low price years. Further, the farms' significant increases in base acreages meant the significantly more acres were eligible for payments and total payments were considerably higher. LDPs and marketing loan gains were similar to those under previous legislation. The portion of total receipts that was a result of government payments increased for all farms. The largest gain was on the Alabama farm, where the average portion of receipts contributed by government payments rose from near 18% to over 23%. Smaller gains were experienced on other farms. The overall financial position of the farms, averaged over the life of the 2002 Farm Bill, improved. Three farms – both Tennessee farms and the Georgia farm – now achieved a ranking of "Good" while the Alabama farm improved to a ranking of "Marginal." The North Carolina farm is still rated "Poor", although their average change in real net worth improved significantly, as did their average net cash farm income over the period. Under the 2002 Farm Bill, the smaller Tennessee farm and the Georgia farm have a relatively low probability of a cash flow deficit in any simulation year while the larger Tennessee farm and the Alabama farm have an average probability under 25% for any simulation year. Averaged over the simulation period, net cash farm income improves to $377,750 for the moderate size Tennessee farm, $681,960 for the larger Tennessee

farm, $435,600 for the Alabama farm and $94,970 for the North Carolina farm. While no comparison is available for the Georgia farm, NCFI averages $314,050 per year, more than enough to cover minimum cash needs.

Tennessee Moderate-Size Cotton Farm, TNC1900
Net cash farm income for this farm under the 1996 and 2002 Farm Bills is presented in figure 1. Also presented in figure 1 is the simulated level of government payments for the farm under the 2002 Farm Bill scenario. Under the 1996 Farm Bill baseline, the farm fares well in 2000 with net cash farm income of $278,350 due largely to government payments, and in 2001 with net cash farm income of $262,940 due to better than average yields. Starting in 2002, the baseline reflects a return to trend yields, and 1996 Farm Bill provisions held constant at their 2002 levels without supplemental emergency or disaster payments. The average net cash farm income projected from 2002-2006 under the 1996 Farm Bill is $191,930. The probability that the farm will experience a cash flow deficit ranges from 10-35%, and the probability that the farm will lose real net worth ranges from 1-9% over the simulation period. With the provisions of the 2002 Farm Bill in effect for 2002-2007, the average projected net cash farm income is $377,750, a difference of $185,820. Government payments for the farm are largest in 2001 when actual emergency and disaster payments are added to payments authorized in the 1996 Farm Bill. Projected government payments then decline annually, primarily a result of FAPRI's projected price increases over the period, averaging $151,550 for the 2002-2007 period.

Figure 2 shows the distribution of NCFI around the mean for each of the simulation years. Selected probabilities demonstrate the incorporation of historical price and yield risk for the farm. The bottom line signifies that there is a 5% probability that the net cash farm income will average $254,534 or less. Likewise, there is a 5% probability that net cash farm income will average $525,187 (the level of the highest line) or higher. The middle line signifies that there is a 50% probability of NCFI above or below that level, an average of $377,750. The farm's minimum cash needs (which have to cover family living withdrawals, taxes, principal payments, and capital purchases) total $137,730. Thus, the farm has a very low probability (less than 2%) that it will experience a cash flow deficit, and the probability that the farm will lose real net worth is reduced to near zero.

Tennessee Large Cotton Farm, TNC4050
Net cash farm income for this farm under the 1996 and 2002 Farm Bills is presented in figure 3. Also presented in figure 3 is the simulated level of government payments for the farm under the 2002 Farm Bill scenario. Under the 1996 Farm Bill baseline, the farm has net cash farm income of $366,330 in 2000 due largely to government payments, and in 2001 has net cash farm income of $379,880 due to better than average yields. Starting in 2002, the 1996 Farm Bill baseline reflects a return to trend yields, and 1996 Farm Bill provisions without double AMTA or disaster payments. The average net cash farm income projected from 2002-2006 is $211,490. The slight upward trend reflects increasing yields and increasing prices, as projected in the FAPRI Baseline. The probability that the farm will experience a cash flow deficit ranges from 40-59%, and the probability that the farm will lose real net worth ranges from 1-50% over the simulated period. With the provisions of the 2002 Farm Bill in effect for 2002-2007, the average projected net cash farm income is $681,960, more than three times higher than under the 1996 Farm Bill. Following actual government payments totaling $621,010 in 2001, the level of government payments declines over the simulation period, but remains very large, from a high of $475,360 in 2002 falling to $268,290 in 2007. Over the 2002 Farm Bill period, government payments account for nearly 21% of the farm's total receipts, averaging $347,190, but substantially higher in early simulation years. One reason that government payments rise substantially is due to a significant increase in base acres.

Figure 4 shows the distribution of NCFI around the mean for each of the simulation years in the 2002 Farm Bill scenario. Selected probabilities demonstrate the incorporation of historical price and yield risk for the farm. The line representing the 50th percentile, or mean NCFI, projects NCFI to average $681,960 over the 2002-2007 period. The bottom probability line signifies that there is a 5% probability that the net cash farm income will average $178,720 or less. Likewise, there is a 5% probability that net cash farm income will average $1,157,180 (the level of the highest line) or higher. Minimum cash needs total $234,660 for the farm. Between 2003 and 2007, the minimum cash needs line falls between the projected NCFI at the 5 percentile and 25 percentile points, indicating that the farm has between a 5% and 25% probability of a cash flow deficit in these years. However the farm experience a negligible probability of losing real net worth over the simulation period.

Compared to the smaller Tennessee cotton farm, this farm has a higher probability of experiencing cash flow problems over the simulation period and experiences smaller growth in real net worth. One reason is due to their cost structure. The larger farm has a cost to receipts ratio of 68.3% compared to a cost to receipts ratio of 53.2% for the smaller Tennessee farm. Significantly higher labor requirements (five full-time laborers for the larger farm compared to one for the smaller farm) are a large contributor to this difference. Higher cropland rental rates and input costs (seed, fertilizer, herbicides) also contribute to the difference.

Alabama Cotton Farm, ALC3000
Net cash farm income for this farm under the 1996 and 2002 Farm Bills is presented in figure 5. Also presented in figure 5 is the simulated level of government payments for the farm under the 2002 Farm Bill scenario. Under the 1996 Farm Bill baseline, the farm has net cash farm income of $422,140 in 2000 due largely to government payments. In 2001 net cash farm in-

come declines to $348,200 and remains fairly steady through the projection period. In both 2000 and 2002, net cash farm income would have been negative without government assistance beyond the level of AMTA payments authorized in the 1996 Farm Bill. Starting in 2002, the baseline reflects a return to trend yields and 1996 Farm Bill provisions held constant at their 2002 levels without supplemental payments. The average net cash farm income projected from 2002-2006 under the 1996 Farm Bill is $286,120. The probability that the farm will experience a cash flow deficit ranges from 29-53%, and the probability that the farm will lose real net worth ranges from 1-47% over the simulation period. With the provisions of the 2002 Farm Bill in effect for 2002-2007, the average projected net cash farm income is $435,600, a difference of nearly $150,000. Government payments for the farm are largest in 2001 when actual ad hoc payments are added to payments authorized in the 1996 Farm Bill. Over the simulation period, government payments average $303,210 per year for the farm, which accounts for over 23% of the farm's total receipts. On average, the annual change in real net worth is over 9%, an increase of nearly one million dollars over the simulation period.

Figure 6 shows the distribution of NCFI around the mean for each of the simulation years in the 2002 Farm Bill scenario. Selected probabilities demonstrate the incorporation of historical risk elements for the farm. The line representing the 50th percentile projects NCFI to average $435,600 over the 2002-2007 period. The farm has a 5% probability of net cash farm income averaging $154,800 or less. Likewise, there is a 5% probability that NCFI will average $703,086 or higher. The probability that the farm will experience a cash flow deficit under the November 2002 baseline is reduced to 13-39% for the period 2003-2007, and the probability that the farm will lose real net worth is reduced from over 25% to almost 0%.

North Carolina Cotton Farm, NCC1500
While the North Carolina farm remains in serious financial difficulty even with the new provisions of the 2002 Farm Bill, they are considerably better off than under continuation of the 1996 Farm Bill. One reason for this result is the very significant increase in base payment acreage for the farm. Allowing the farm to include all of their double-cropped acreage in their updated base allows the farm's payment acres to total 2,000 acres while the physical acreage of the farm is 1,500 acres. Figure 7 presents the farm's net cash farm income under the 1996 and 2002 Farm Bill scenarios. Also presented is the level of government payments under the 2002 Farm Bill. Emergency and disaster payments in 2000 and 2001 and higher than average yields in 2001 cause NCFI to be highest in those years compared to continuation of the 1996 Farm Bill provisions. The farm's NCFI is $151,920 in 2000 and declines to $85,060 in 2001 then continues to decline, becoming negative for years 2005 and beyond. The average net cash farm income projected from 2000-2006 under the 1996 Farm Bill scenario is $41,920. The probability that the farm will experience a cash flow deficit is 93% in 2002 and rises to 99% for the remaining simulation years. Beyond 2003, the farm is nearly certain to lose real net worth. With the provisions of the 2002 Farm Bill in effect for 2002-2007, NCFI peaks at $124,850 in 2002 before declining, averaging $94,970 over the 2002-2007 period. Over this same period, government payments for the farm average $147,490 per year, over $50,000 greater than average NCFI.

Figure 8 shows selected probabilities that demonstrate the incorporation of historical risk elements for the farm. Also presented is the level of cash required to meet minimum cash needs for the farm (family living, taxes, principal payments, and machinery purchases). The bottom line signifies that there is a 5% probability that the net cash farm income will average -$17,340 or less. Likewise, there is a 5% probability that net cash farm income will average $218,470 or higher. The middle line signifies that there is a 50% probability of NCFI above or below that level, an average of $94,970. Minimum cash needs for the farm are $102,120 per year and the farm faces a serious risk of a cash flow deficit. However, the farm's risk of losing real net worth is reduced to an average risk of 31% over the simulation period.

Georgia Cotton Farm, GAC1700
Baseline results for NCFI under the 2002 Farm Bill are presented in figure 9. The farm was not created until after passage of the 2002 Farm Bill and sufficient historical data were not available for the farm to run the simulation under the provisions of the 1996 Farm Bill. The results under the 2002 Farm Bill are quite different for the Georgia farm than for other cotton farms analyzed. This results primarily from the peanut acreage on this farm and the peanut quota buyout authorized in the 2002 Farm Bill. The jump in NCFI from 2001 (observed) to 2002 and beyond (simulated) reflects annual payments for the permanent retirement of the farm's peanut quota. After the peanut quota buyout is begun, peanuts are eligible for commodity program participation traditionally reserved for grains, cotton and rice. Further, the cost of leasing peanut quota, a significant cost of production, is eliminated after they buyout, reducing the farm's costs to receipts ratio. The farm's 2001 net cash farm income is $101,620. With the provisions of the 2002 Farm Bill in effect for 2002-2007, the average projected net cash farm income is significantly higher at $314,050. Government payments average $147,490 per year for this farm.

Figure 10 shows the distribution of NCFI around the mean for each of the simulation years under the 2002 Farm Bill scenario. Selected probabilities demonstrate the incorporation of historical price and yield risk for the farm. The lowest line signifies that there is a 5% probability that the net cash farm income will average $218,760 or less. Likewise, there is a 5% probability that net cash farm income will average $344,740 or higher. The middle line signifies that there is a 50% probability of NCFI above or below that level, an average of $314,050. The probability that the farm will experience a cash flow deficit under the November 2002 baseline is 1-21%, and the probability that the farm will lose real net worth is reduced to a

negligible amount. On average, real net worth on the farm rises more than 7% annually. Minimum cash needs for the farm are $168,900, easily covered by the farm's projected NCFI.

Summary and Discussion

The financial position of all five representative cotton farms improves considerably under the provisions of the 2002 Farm Bill compared to continuation of the 1996 Farm Bill. The primary cause of the rightward shift in net farm income under the new farm legislation is the influx of government payments under the new policy. Recall that the simulation continuing provisions of the 1996 Farm Bill held payment rates fixed at their 2002 levels throughout the period and ad hoc or emergency government payments were not included beyond those authorized through 2001. The option to update base acreages exercised by each farm also contributes to a significantly better financial position under the new farm legislation. All of the farms significantly increased the total acreage on which payments are received. By adding soybean base acreages, three of the farms benefit from program-crop treatment for soybeans that is not available under the 1996 Farm Bill baseline scenario. The Georgia cotton farm further benefits from the changes to the peanut program in the new legislation. Compensation payments for retirement of peanut marketing quotas (buyout payments) and future eligibility of peanuts for commodity program participation (i.e., marketing loans, direct payments, and counter-cyclical payments) plus the elimination of quota lease as a cost of production significantly enhances the profitability of the Georgia farm.

Over the projection period, net cash farm income is improved significantly for both Tennessee farms, the Alabama farm, and the North Carolina farm under the 2002 Farm Bill scenario. Comparing the average NCFI over the simulation period for the moderate Tennessee cotton farm, there is a difference of $195,820 (an increase of 107%) between the 1996 Farm Bill baseline and the 2002 Farm Bill baseline. The large Tennessee cotton farm improves NCFI by $470,470 (222%), the Alabama farm by $149,480 (52%) and the North Carolina farm by $53,050 (127%). While all farms improve their net cash farm income standing with the new farm legislation, several farms still face a fairly significant risk of being unable to meet their cash flow needs and experiencing a cash flow deficit. This risk is greatest for the North Carolina cotton farm, which remains in very poor financial health even under the 2002 Farm Bill provisions. Over the life of the 2002 Farm Bill, the North Carolina farm faces a 31% probability of decreasing real net worth. The larger Tennessee cotton farm and the Alabama cotton farm also face about a 25% probability of a cash flow deficit in the latter years of the 2002 Farm Bill, although their risk of decreasing real net worth is negligible.

As seen in figure 11, government payments as a portion of total cash receipts increase for all farms under the new legislation. All five farms receive at least 20% of their total cash receipts from government program payments under the 2002 Farm Bill. The Georgia cotton farm receives the largest proportion, 25.5%, of receipts in government payments. Sufficient historical data were not available to simulate the Georgia farm under the 1996 Farm Bill baseline so no information is available to compare the increase, although the expected increase is large, especially since the farm benefits significantly from peanut program changes. Based on the simulation data available, the Alabama cotton farm receives the largest relative benefit from the 2002 Farm Bill, moving from 18% to 23.4% of total cash receipts, or an average of $332,050 per year over the 2002-2007 period, in government payments under the new legislation.

Among the five representative farms, the smaller Tennessee cotton farm is on the most sound financial footing under the new farm legislation provisions. This is primarily a result of their input cost structure and relatively high average yields. Total variable costs for the smaller Tennessee farm are just over half the costs for the nearly equivalent acreage North Carolina farm and just over a third of the costs for the smaller acreage Georgia farm. Lower labor requirement for the smaller Tennessee farm contribute to this difference in variable costs. Figure 12 shows the ratio of total costs to total cash receipts for each of the five farms under the 2002 Farm Bill and four farms under the 1996 Farm Bill. All of the farms experience a significant reduction in the ratio of total costs to total cash receipts under the new farm legislation. On average, the ratio is reduced by about 20%. This reduction is due primarily to the significant increase in the level of government payments under the 2002 Farm Bill, which are included in total receipts. However, it is likely that the Georgia farm also experiences a reduction in expenses as peanut quota lease costs are eliminated from future production.

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Table 1. Relevant government program payment rates under the 1996 and 2002 Farm Bills.

	Direct Payment Rates		Loan Rates			Target Price	
	1996 FB	2002 FB	1996 FB	2002 FB		2002 FB	
	(2002)	*(2002-07)*	*(1996-2002)*	*(2002-03)*	*(2004-07)*	*(2002-03)*	*(2004-07)*
Corn	$0.26	$0.28	$1.89	$1.98	$1.95	$2.60	$2.63
Wheat	$0.46	$0.52	$2.58	$2.80	$2.75	$3.86	$3.92
Grain Sorghum	$0.31	$0.44	Rel. to corn	$1.98	$1.95	$2.54	$2.57
Cotton	$0.0572	$0.0667	$0.5192	$0.52	$0.52	$0.724	$0.724
Rice	$2.05/cwt	$2.35/cwt	$6.50/cwt	$6.50/cwt	$6.50/cwt	$10.50/cwt	$10.50/cwt
Soybeans	--	$0.44	$5.26	$5.00	$5.00	$5.80	$5.80
Peanuts	--	$36/ton	--	$355/ton	$355/ton	$495/ton	$495/ton

Table 2. Summary of representative farm characteristics.

County	TNC1900 Fayette	TNC4050 Haywood	ALC3000 Lawrence	NCC1500 Wayne	GAC1700 Decatur
Total Cropland	**1900**	**4050**	**3000**	**1500**	**1700**
Acres Owned	225	1000	0	225	510
Acres Leased	1675	3050	3000	1275	1190
Assets ($1000)					
Total	**1508**	**3592**	**1588**	**1570**	**1909**
Real Estate	664	1678	144	1065	1137
Machinery	321	1299	1025	437	680
Other & Livestock	522	614	420	67	93
Debt/Asset Ratios					
Total	**0.14**	**0.18**	**0.15**	**0.15**	**0.27**
Intermediate	0.07	0.17	0.15	0.08	0.38
Long Run	0.17	0.18	0.19	0.19	0.19
2002 Gross Receipts ($1,000)*					
Total	**710.7**	**1687.5**	**1363.9**	**704.1**	**1259.3**
Cotton	515.5	1360.1	1085.4	520.1	697.7
	72.5%	*80.6%*	*79.6%*	*73.9%*	*55.4%*
Sorghum	29.6	0	0	0	0
	4.2%	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Wheat	14.3	71.2	0	96.6	0
	2.0%	*4.2%*	*0.0%*	*13.7%*	*0.0%*
Soybeans	61.7	122	102.2	87.3	0
	8.7%	*7.2%*	*7.5%*	*12.4%*	*0.0%*
Corn	88.3	130.2	176.3	0	84
	12.4%	*7.7%*	*12.9%*	*0.0%*	*6.7%*
Peanuts	0	0	0	0	477.7
	0.0%	*0.0%*	*0.0%*	*0.0%*	*37.9%*
Other Receipts	1.4	4	0	0	0
	0.2%	*0.2%*	*0.0%*	*0.0%*	*0.0%*
2002 Planted Acres**					
Total	**1900**	**4378**	**3000**	**2000**	**1700**
Cotton	915	2670	2250	1000	1020
	48.2%	*61.0%*	*75.0%*	*50.0%*	*60.0%*
Sorghum	150	0	0	0	0
	7.9%	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Wheat	65	328	0	500	0
	3.4%	*7.5%*	*0.0%*	*25.0%*	*0.0%*
Soybeans	370	820	0	500	0
	19.5%	*18.7%*	*0.0%*	*25.0%*	*0.0%*
Corn	370	560	750	0	170
	19.5%	*12.8%*	*25.0%*	*0.0%*	*10.0%*
CRP	30	0	0	0	0
	1.6%	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Peanuts	0	0	0	0	510
	0.0%	*0.0%*	*0.0%*	*0.0%*	*30.0%*

* Receipts for 2002 are included to indicate the relative importance of each enterprise to the farm. Percentages indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

** Acreages for 2002 are included to indicate the relative importance of each enterprise to the farm. Total planted acreage may exceed total cropland available due to double cropping. Percentages indicate the percentage of total planted acreage accounted for by the crop.

Table 3. Representative farm simulation results under the 1996 Farm Bill baseline.

	TNC1900	TNC4050	ALC3000	NCC1500
Overall Financial Position				
2002-2006 Ranking	Marginal	Poor	Marginal	Poor
Change in Real Net Worth (%)				
2002-2006 Average	3.37	0.05	2.81	-11.38
Govt Payments/Receipts (%)				
2002-2006 Average	21.05	19.14	17.95	20.07
Cost to Receipts Ratio (%)				
2002-2006 Average	69.09	93.82	86.83	113.07
Total Cash Receipts ($1000)				
2000	663.69	1480.31	1301.22	759.20
2001	634.46	1490.23	1218.99	674.71
2002	532.81	1289.78	1106.06	623.20
2003	541.15	1321.97	1126.97	634.36
2004	556.24	1354.87	1157.58	635.18
2005	569.13	1388.20	1183.71	649.26
2006	582.06	1420.08	1197.78	659.90
2000-2006 Average	556.28	1354.98	1184.62	662.26
Net Cash Farm Income ($1000)				
2000	278.35	366.33	422.14	151.92
2001	262.94	379.88	348.20	85.06
2002	168.88	190.19	230.75	36.37
2003	176.49	206.12	239.65	35.84
2004	179.36	210.07	249.95	14.98
2005	189.53	220.54	257.31	-3.060
2006	195.38	230.53	254.87	-27.66
2000-2006 Average	181.93	211.49	286.12	41.92
Prob. of a Cash Flow Deficit (%)				
2001	13	40	29	70
2002	35	56	46	93
2003	10	42	52	99
2004	32	56	50	99
2005	21	59	53	99
2006	27	54	50	99
Ending Cash Reserves ($1000)				
2000	316.18	402.21	844.57	24.05
2001	407.17	481.63	985.34	-18.20
2002	439.29	412.76	1034.13	-105.81
2003	510.44	446.08	1075.84	-204.21
2004	541.80	411.21	1115.66	-367.29
2005	602.12	402.04	1143.75	-565.43
2006	658.16	384.82	1182.51	-831.96
Nominal Net Worth ($1000)				
2000	1403.70	2914.20	1808.21	1292.43
2001	1512.48	3124.39	1926.56	1249.80
2002	1583.14	3144.87	1963.10	1167.26
2003	1648.09	3151.94	2023.20	1066.01
2004	1697.38	3102.20	2083.40	918.11
2005	1763.43	3118.32	2157.90	734.18
2006	1840.08	3136.13	2216.35	507.63
Prob. of Losing Real Net Worth (%)				
2001	1	1	1	1
2002	1	1	1	1
2003	9	42	47	93
2004	8	45	34	99
2005	4	50	26	99
2006	1	46	25	99

Table 4. Representative farm simulation results under the 2002 Farm Bill baseline.

|	TNC1900	TNC4050	ALC3000	GAC1700	NCC1500
Overall Financial Position					
2002-2007 Ranking	Good	Good	Marginal	Good	Poor
Change Real Net Worth (%)					
2002-2007 Average	11.06	7.99	9.38	7.11	0.23
Govt Payments/Receipts (%)					
2002-2007 Average	21.42	20.87	23.39	25.52	21.28
Cost to Receipts Ratio (%)					
2002-2007 Average	53.20	68.33	70.29	76.14	88.28
Total Cash Receipts ($1000)					
2001	658.47	1532.75	1263.90	1178.47	686.37
2002	775.73	1810.35	1365.55	1295.04	710.47
2003	759.15	1860.91	1349.16	1280.60	699.45
2004	765.02	1864.26	1354.19	1297.74	701.22
2005	773.66	1884.52	1360.69	1311.80	712.43
2006	782.56	1908.27	1378.17	1332.07	724.46
2007	799.19	1936.68	1385.38	1343.62	737.31
2002-2007 Average	759.11	1828.25	1365.52	1310.14	714.22
Government Payments ($1000)					
2001	240.85	621.01	527.75	320.71	290.76
2002	195.51	475.36	428.35	428.74	208.59
2003	167.19	369.88	336.97	357.35	170.11
2004	152.02	346.78	299.17	328.21	147.25
2005	140.73	316.85	270.20	298.35	129.74
2006	134.07	305.99	256.55	301.16	122.39
2007	119.75	268.29	228.02	278.47	106.85
2002-2007 Average	151.55	347.19	303.21	332.05	147.49
Net Cash Farm Income ($1000)					
2001	262.94	379.88	348.20	101.62	85.06
2002	396.44	682.73	467.66	325.80	124.85
2003	387.07	739.08	445.97	307.72	111.02
2004	397.53	737.43	440.85	308.99	106.11
2005	394.22	731.30	425.64	306.73	94.83
2006	399.94	743.29	422.12	315.99	76.25
2007	406.14	760.04	411.35	319.09	56.78
2002-2007 Average	377.75	681.96	435.60	314.05	94.97
Prob. of a Cash Flow Deficit (%)					
2002	1	1	1	1	1
2003	1	23	23	3	51
2004	1	22	13	7	36
2005	2	25	21	21	59
2006	1	25	29	3	67
2007	1	24	39	2	92
Ending Cash Reserves ($1000)					
2001	66.53	121.00	174.76	-12.81	24.60
2002	214.72	420.52	393.57	117.57	73.21
2003	336.74	632.71	547.29	181.61	93.54
2004	498.16	921.35	764.50	229.31	138.54
2005	616.34	1142.17	953.91	257.61	131.50
2006	767.27	1384.25	1129.18	330.12	90.54
2007	915.91	1611.33	1261.51	409.41	-41.58
Nominal Net Worth ($1000)					
2001	1140.51	2663.47	1138.25	1293.54	1299.36
2002	1344.62	3048.99	1343.47	1479.39	1380.77
2003	1520.04	3361.94	1498.89	1602.80	1436.28
2004	1710.06	3677.39	1674.09	1725.59	1487.53
2005	1881.32	3926.50	1821.85	1833.38	1504.09
2006	2063.70	4242.12	1979.99	2011.87	1481.38
2007	2251.73	4542.55	2114.05	2124.56	1409.24
Prob. of Decreasing Real Net Worth					
Over 2001-2007 (%)	1	1	1	1	31
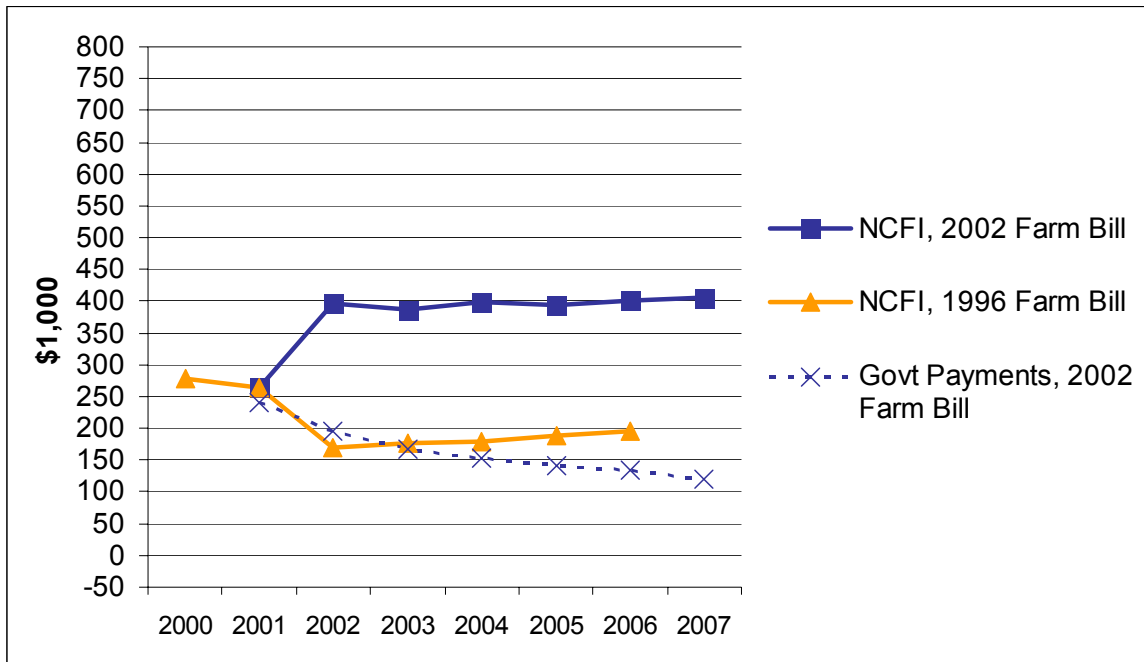
Figure 1. Average projected net cash farm income and government payments, TNC1900.
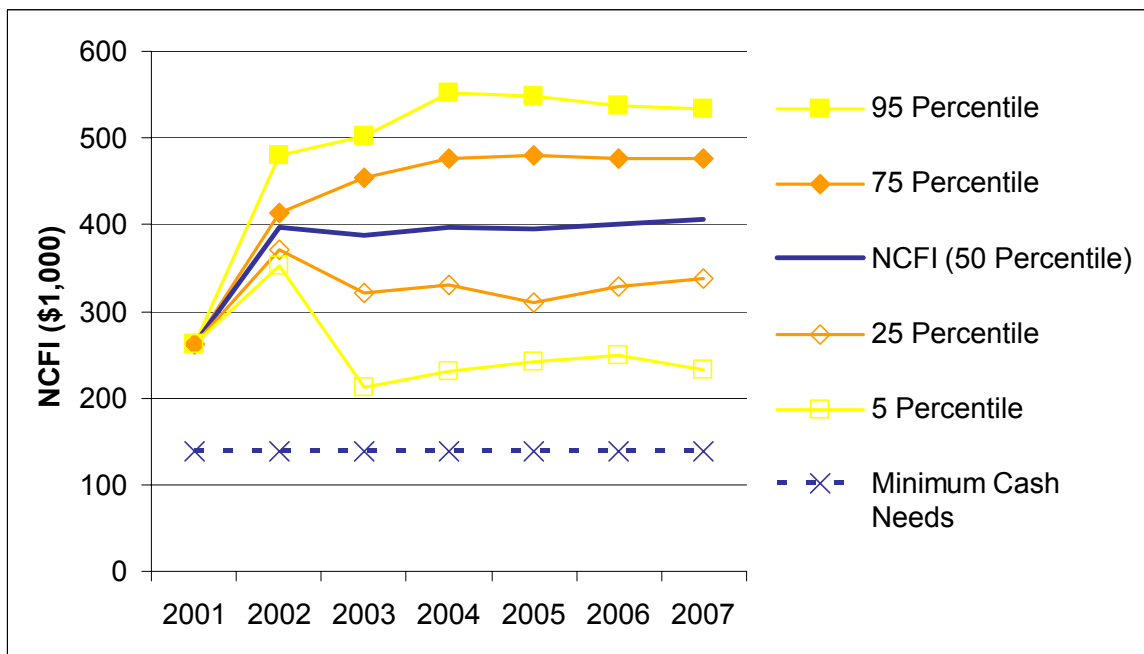

Figure 2. 2002 Farm Bill baseline net cash farm income probabilities and minimum cash needs, TNC1900.
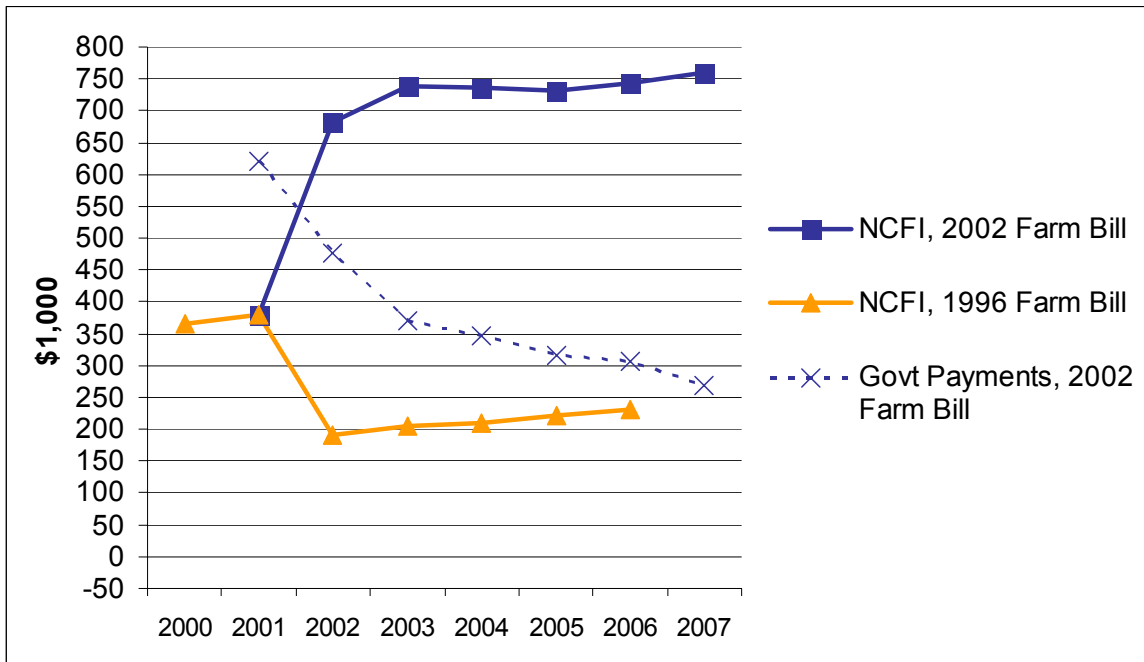
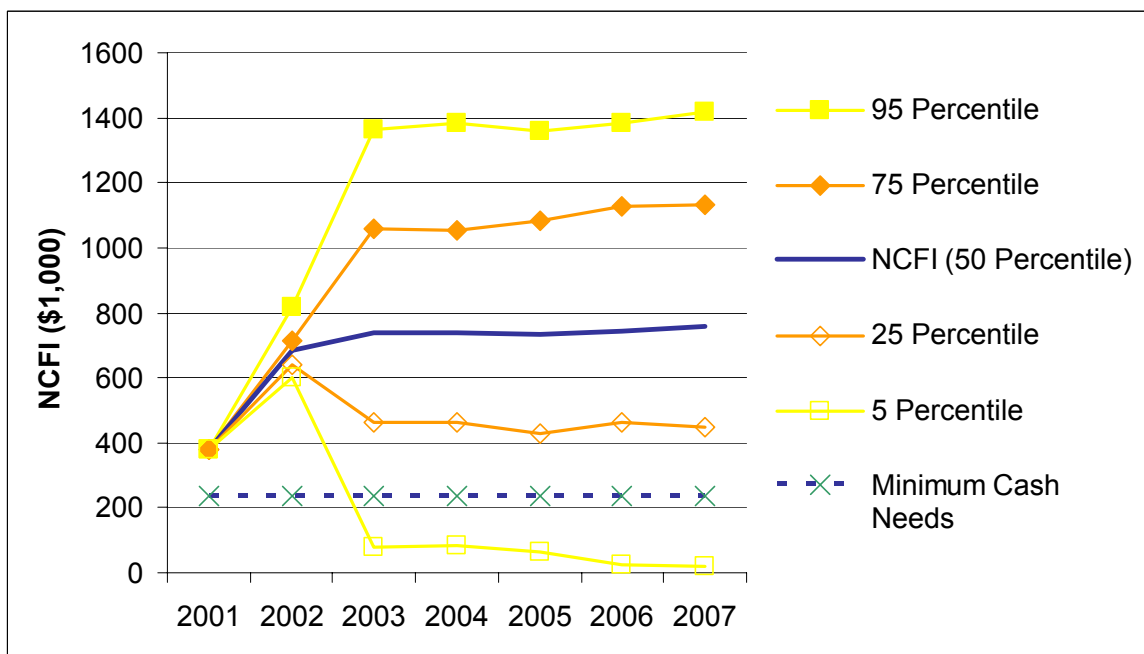Figure 3. Average projected net cash farm income and government payments, TNC4050.

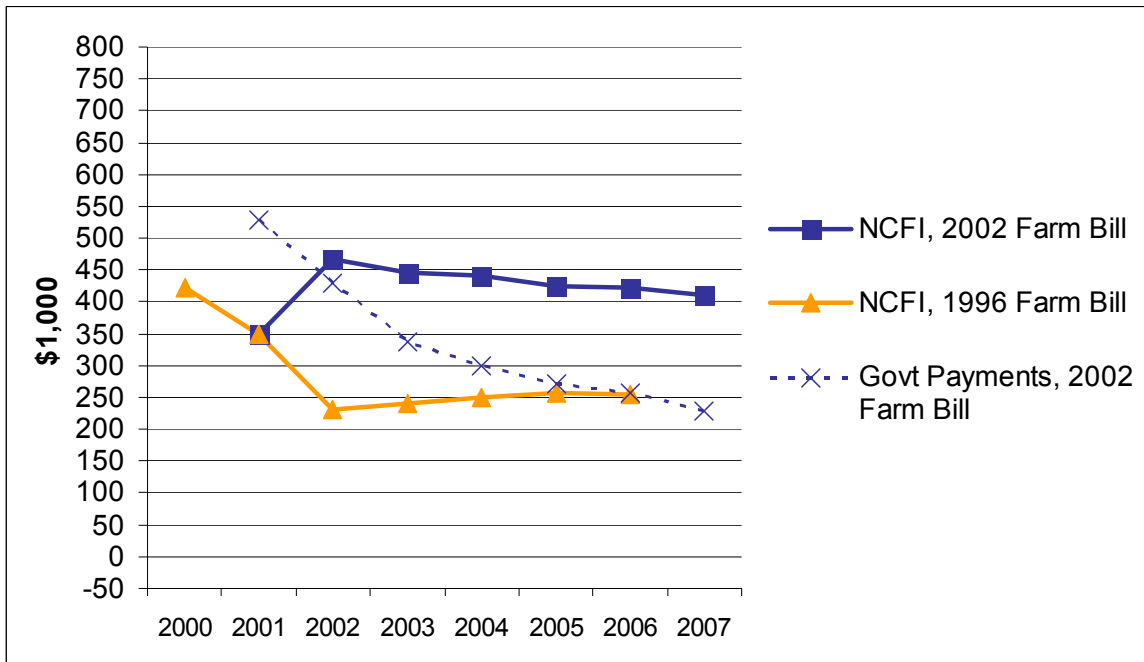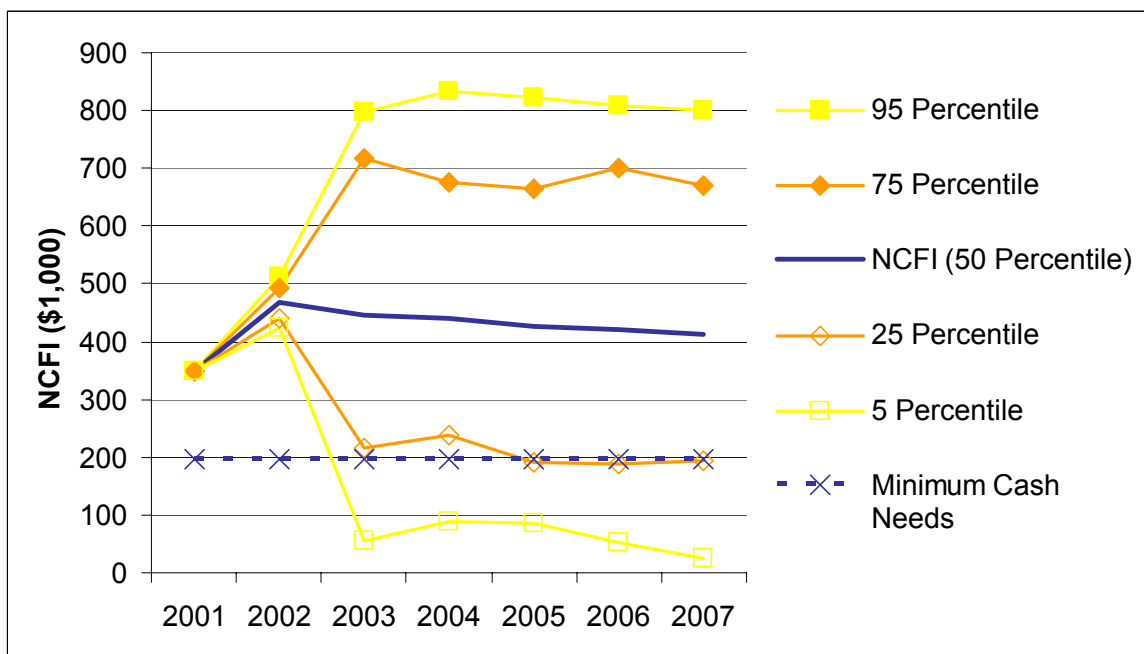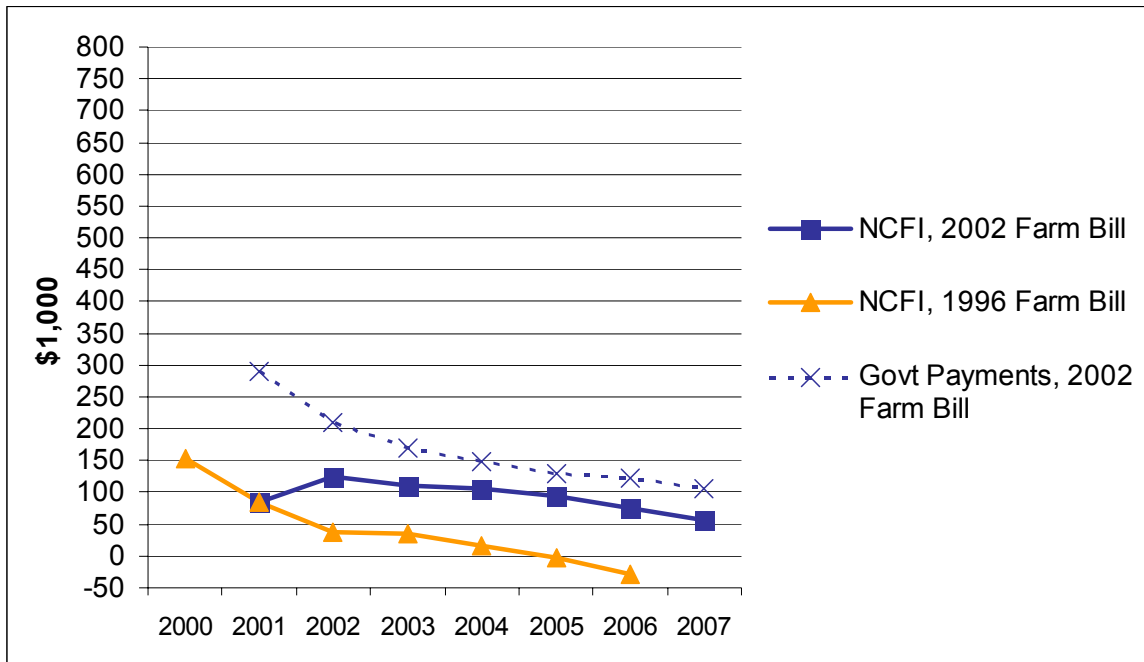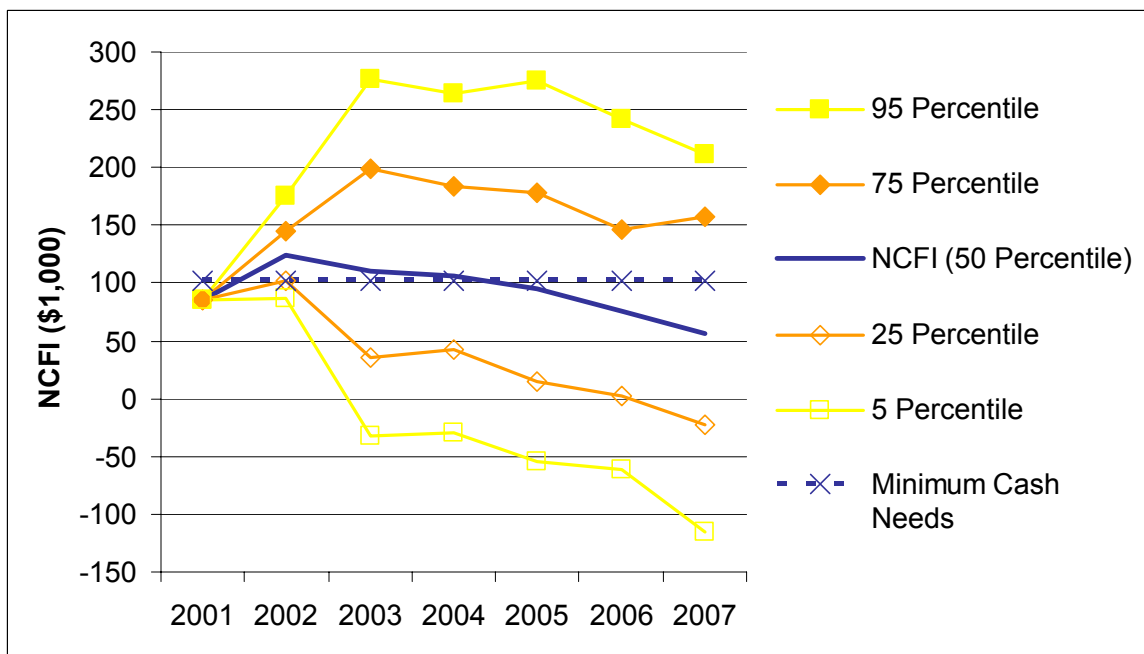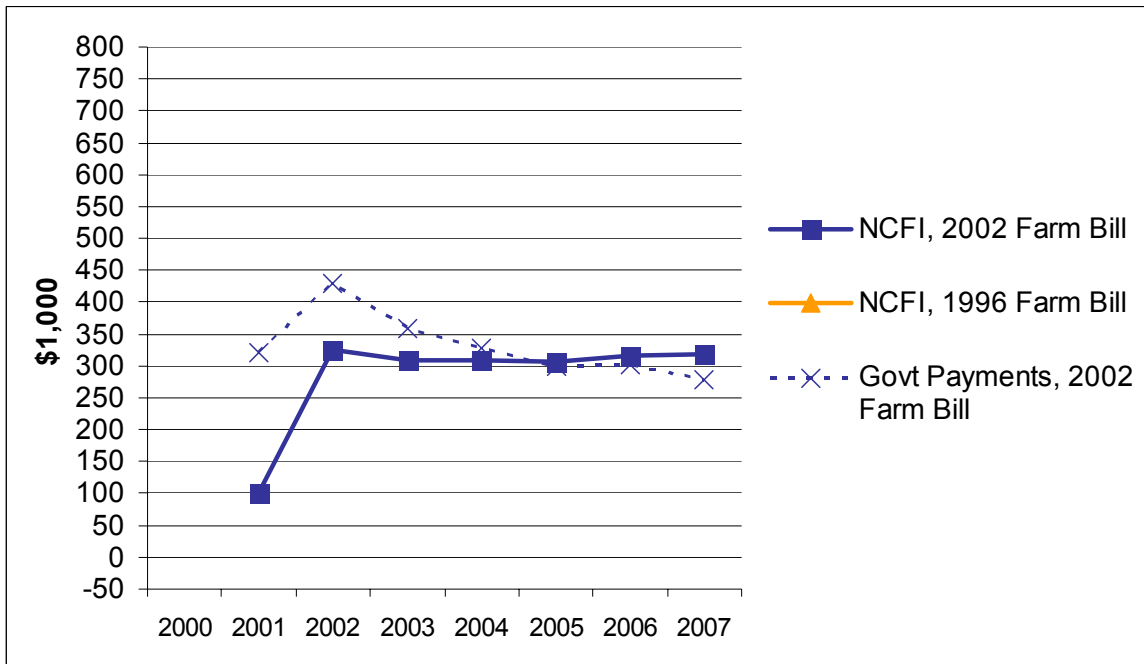Figure 4. 2002 Farm Bill baseline net cash farm income probabilities and minimum cash needs, TNC4050.

Figure 5. Average projected net cash farm income and government payments, ALC3000.
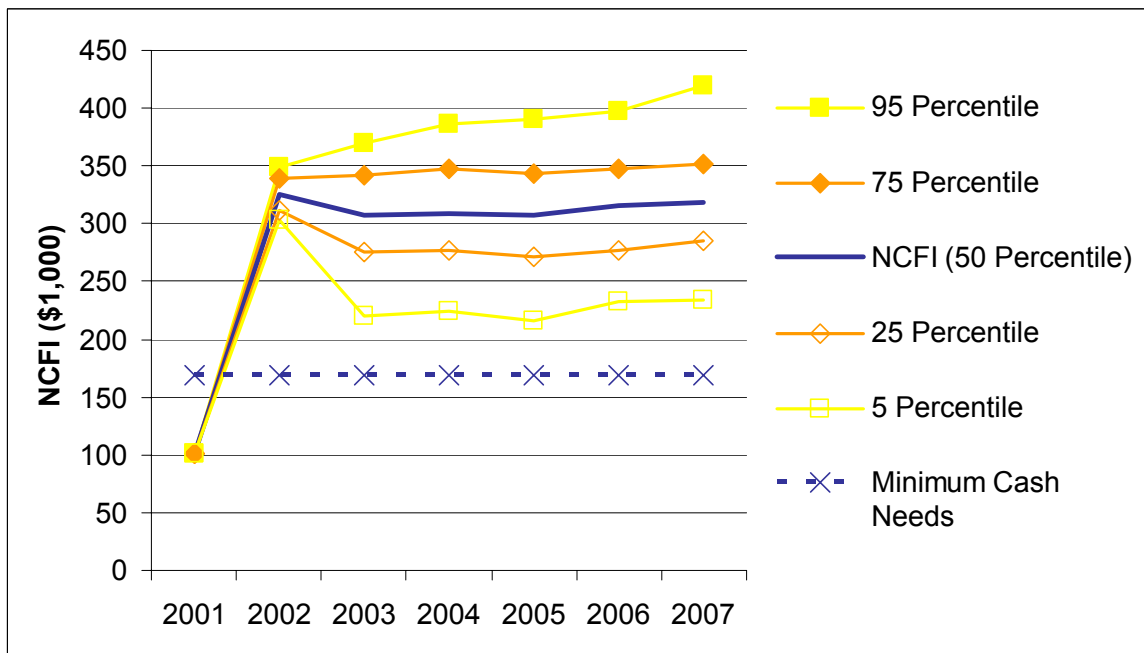

Figure 6. 2002 Farm Bill baseline net cash farm income probabilities and minimum cash needs, ALC3000.

Figure 7. Average projected net cash farm income and government payments, NCC1500.

Figure 8. 2002 Farm Bill baseline net cash farm income probabilities and minimum cash needs, NCC1500.

Figure 9. Average projected net cash farm income and government payments, GAC1700.

Figure 10. 2002 Farm Bill baseline net cash farm income probabilities and minimum cash needs, GAC1700.
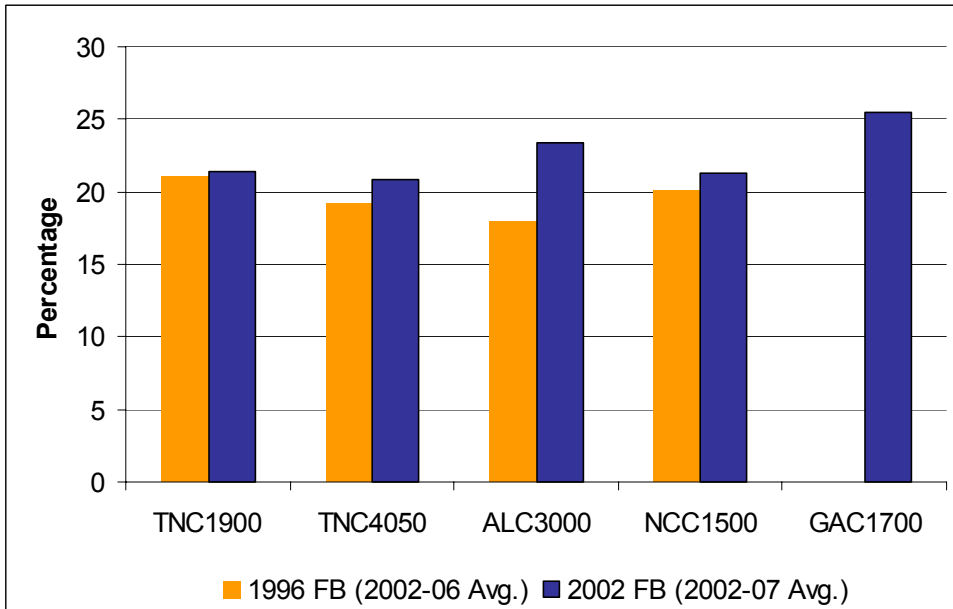
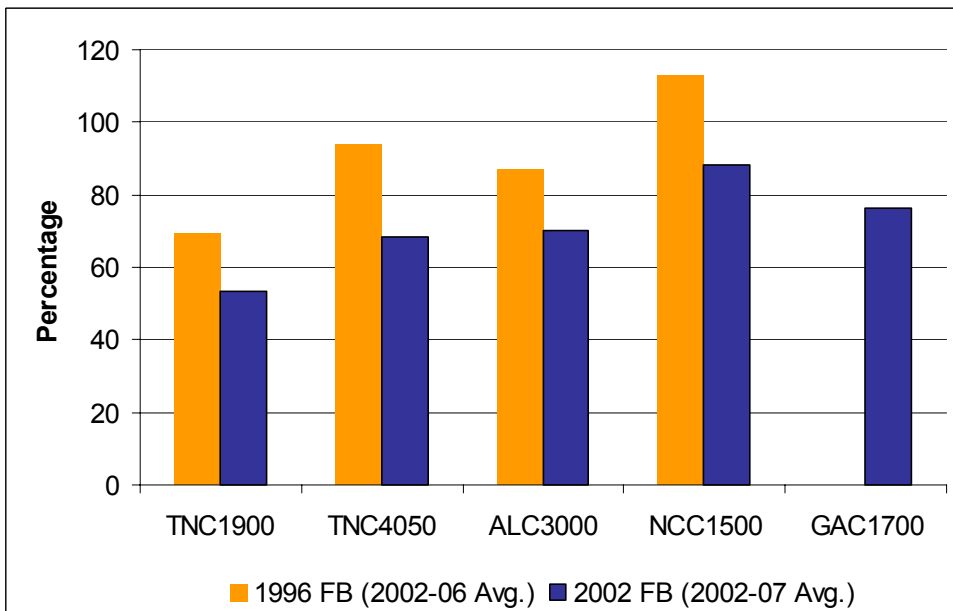Figure 11. Ratio of government payments to total cash receipts.

Figure 12. Ratio of total costs to total cash receipts.