# AN ASSESSMENT OF THE EQUITABILITY OF FARM PROGRAM PAYMENTS

A Thesis

by

LINDSEY MARIE HIGGINS

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

May 2005

Major Subject: Agricultural Economics

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Approved as to style and content by:

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# ABSTRACT

An Assessment of the Equitability of Farm Program Payments. (May 2005)

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Chair of Advisory Committee: Dr. Joe L. Outlaw

With increased pressures on today's Federal Budget, there may be funding cuts on agriculture programs. These cuts would certainly bring about increased concern as to which programs and which crops take the biggest cut. A straight cut across the board will likely affect each commodity group uniquely, thus creating a need to evaluate the current distribution of funding and the relative benefits associated with this distribution.

The equitable distribution of farm program payments has been an ongoing concern and publications have been written attempting to answer the question of which commodity is receiving more than their "fair share." This thesis will use the measures used in prior publications that have been updated to reflect current farm bill visions. Additionally, this research uses a consistent data set over a long enough time period so that comparisons between program crops can be made.

Equitability in relation to farm program payments is extremely difficult to measure as there are so many different factors to take into consideration. Thus, it would be expected that the answer does not resolve itself with one ratio. Ultimately, the results of this research show that depending upon which tool you choose, the relative levels of

support may change. For example, rice receives the most support per pound of program production on average, relative to the other eight crops, yet receives the second lowest level of target price relative to total variable costs. The underlying causes for this variability of results are described in the research though investigation of trends in the market prices for these specific crops and the understanding of what each ratio is actually measuring.

By reviewing the results, a clearer picture of which crops are getting greatest support begins to emerge, yet the outcome is still subject to much debate as there is no single “tell-all” ratio. The whole picture needs to be taken into consideration. This research provides a reference and attempts to present the whole picture, providing a consistent and complete reference for policy makers to refer to as this debate increases.

## ACKNOWLEDGEMENTS

Finishing this thesis marks the end of my first year and a half in College Station, yet it also marks the beginning of the long road toward a Ph.D. I owe so many thanks to those here at A&M for making the decision to continue my studies here so effortless. By the time I am finished studying here, I will owe countless more thanks. Gratitude is often difficult to put into words when a simple thank you doesn't seem to be quite enough. Since this feels more like a beginning than an end, I wanted to share this poem, by an unknown author, that I try to keep close in mind each day.

*Be thankful that you don't already have everything you desire,*

*If you did, what would there be to look forward to?*

*Be thankful when you don't know something,*

*For it gives you the opportunity to learn.*

*Be thankful for the difficult time,*

*During those times you grow.*

*Be thankful for your limitations,*

*Because they give you opportunities for improvement.*

*Be thankful for each new challenge,*

*Because it will build your strength and character.*

*Be thankful for your mistakes,*

*They will teach you valuable lessons.*

*Be thankful when you're tired and weary,*

*Because it means you've made a difference.*

*It is easy to be thankful for the good things.*

*A life of rich fulfillment comes to those who are also thankful for the setbacks.*

*Gratitude can turn a negative into a positive.*

*Find a way to be thankful for your troubles and they can become your blessings.*

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# CHAPTER I

## INTRODUCTION

Federal spending on agriculture will continue to come under close scrutiny, as pressures to "level the playing field" and move toward a balanced federal budget persist. With a threat in the reduction of funding for Agriculture programs, it is natural to expect that disagreements will arise on how reductions are put into effect and which commodity groups will take the biggest cuts. This research will take a closer look at the current and past distribution of federal funding on agriculture.

The equitable distribution of farm program payments has become a foremost concern for policymakers and producers. The distribution of benefits is multifaceted and often becomes a heated topic of debate among those with vested interests. Michael Salassi stated, "One of the concerns about the current payment limitation structure regards some assumptions about who needs payments and who doesn't" (Laws). Setting limits on farm program payments was one of the most controversial issues Congress debated prior to signing the Farm Security and Rural Investment Act (FSRIA) of 2002; the debate about payment limits ultimately comes down to a discussion of equity among producers (Miller et al. 1995). Equity among producers is a complex subject as there are many distinctions among producers and among crops; there are also regional differences within crops throughout the United States, due to differing production practices,

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This thesis follows the style of the *American Journal of Agricultural Economics.*

location, and input use. Taking those factors into consideration, the subject of equitability becomes abstract. Yet, its importance persists as each producer has an innate desire to receive their fair share and, historically, Congress has recognized the importance of ensuring public and farm policy that assists those it was designed to help.

After the Farm Security and Rural Investment Act of 2002 (FSRIA) was signed, there were immediate responses as to its fairness. Bart Ruth, President of the American Soybean Association (ASA) stated, "The farm bill proposal offered by conferees from the House Agriculture Committee today does not provide U.S. soybean farmers equity with producers of other program crops" (American Soybean Association). Additionally, Ruth called on conferees to continue working until a fair and balanced compromise for producers of all crops is met.

## Objectives

The primary objective of this research is to assess measures of farm program payment equitability across commodities and to discuss the implications of each tool used to measure equitability. Specifically, this paper will compare the price and income support payments received by "program crops," non-program crops, and payments on conservation over the last 13 years, a time span that covers the three most recent farm bills. Farm programs typically support producers of nine major "program" crops: corn, wheat, barley, sorghum, rice, oats, cotton, peanuts and soybeans. A secondary objective will be to define the term equitability as it applies to farm program payments.

## Justification

There is a need to determine a basis for comparing the benefits to payment recipients, considering the increased pressure on the expenditures of farm programs. The complexity surfaces when two farmers receive the same amount of funding, yet receive different degrees of benefits, due to factors not considered within this simplistic view. Currently, there is no simple means to compare benefits other than by comparing the total amount of support received.

In the past, there has been little research to compare the program payments received by one commodity versus another. This research will be useful to policy makers interested in determining a method for equitably limiting or expanding spending on farm programs, and also to interest group leaders who want their commodity to continue receiving their 'justifiable' portion of federal spending.

## Procedures

The data used in the analysis will be collected from a number of sources. Commodity Credit Corporation data on historical annual expenditures, broken down by crop and farm program, will be obtained from the USDA, Farm Service Agency. This data will be used to calculate different support ratios to determine the equitability of historical payments. Historical payments will be compared against the costs of production data collected from the USDA, Economic Research Service, actual production data obtained from the USDA, National Agriculture Statistics Service, and Farm Bill Payment provisions predominately obtained from the USDA, Farm Service

Agency. Once the ratios have been calculated, they will be compared and analyzed for their particular strengths or weaknesses.

# CHAPTER II

## LITERATURE REVIEW

The relevant literature for this study can be broken down into two separate, yet equally important categories- equitability and farm bills. To obtain functional results, it is essential to understand prior work on the development of applicable definitions of equitability by looking at research done in that area and having a keen understanding of the relevant farm bills and farm programs.

### Equitability

Merriam-Webster defines fair as "an implied elimination of one's feelings, prejudices, and desires so as to achieve a proper balance of conflicting interests," while the term equitable "suggests equal treatment of all concerned." For what seems to be a simple definition by Webster, these words have a rich history and there is copious literature that attempts to settle the terms fair, equitable, and just allocations in real-life and policy contexts.

The etymology of the word equitable traces its origin back to the Latin word aequus, which means even or fair. Philosophers have debated for years the concept of how to determine fairness. Aristotle developed his definition of the two forms of the word justice, in Book V of *The Politics*. He described the first as meaning lawful and the second as meaning something that is fair and equal. Aristotle saw the distribution of goods between individuals as just when the distribution was proportional. Injustice would be a violation of proportion. Harvard philosopher and author of *A Theory of*

*Justice,* John Rawls, argued that if a group of people could agree upon a set of rules or allocation without knowing what their social position is, the rules would be fair. If social positions are unknown, a fair allocation would ultimately arise since no one would agree to an unfair set of rules. One of the underlying principals of Rawls work is that fair allocations come out of the hypothetical situation where individuals are all equal. Although equitable means fair, there has been disagreement on determining fairness.

Despite the rich literature on general applications and the philosophy associated with equitability, very little literature has been written on the complexities of applying fairness and equitability to farm program payments. Hines and Reid discuss the use of Federal Outlays data as a means of measuring program equity. They argue that "the appropriateness of individual equity criteria" depends on the analytic level at which one focuses, and thus break the analysis down to the micro-level and macro-level. The particular ratios used in Hines and Reid's study are not applicable to this research, as their focus is on community development and other public policy aspects. However, the principles of comparison stand. The authors make the point that "Perhaps the most common method of evaluating equity is to weigh expenditure for a function against variables indicating need." In addition, the arguments concerning the limitations of using Federal Outlays data may prove similar to the limitations of using CCC expenditures when attempting to define equitability.

Morehart, Kuhn, and Offutt define "fair income for farm businesses" as an income that allows producers to pay their bills, or revenue that exceeds the costs of production. Alternative scenarios for the proportion of financially viable wheat farms

were analyzed, while addressing the fact that different sized farms will have different cost structures. Thus, one policy no longer fits all, as policies will typically have different affects on each producer.

Perhaps the most discussed aspect of equitability in farm program payments is farm program payments versus economies of scale. Yet, despite economies of scale being the more controversial aspect of farm program equitability, "little empirical analysis exist[s] regarding the relative effect of commodity program benefits and payment limits on operations of various sizes and cost structures" (Miller et al. 2003). Although Miller's research did not address this specific aspect of equitability, it is relevant to this study. Miller found, through investigation of a firm's cost structure that as government payments change, tighter limits on government payments will adversely affect cotton farmers much more than soybean farmers, because "counter-cyclical payment rates are higher relative to fixed direct payment rates for cotton, while the opposite occurs for soybeans." His findings further illustrate the need for a way to measure the equitability among farm program payments.

Another way to analyze equitability as it relates to United States farm program payments is to compare the distribution of federal support between states. Babcock raises the point that at the time neither the Clinton Administration nor members of Congress were satisfied with the way payments were distributed, however there is no consensus on how to "fix" the system. Babcock compares the current distribution of farm program payments by state and then compares it to payments calculated based on existing planted acreage, not historical base acreage.

The USDA did an equity analysis of the 1990 farm legislation, in response to concern in the Senate over the differing levels of support received by agriculture commodities (USDA 1990). They utilized the following measures to compare differences in relative support among commodities: government payments or support per unit of production, gross farm income, Commodity Credit Corporation (CCC) outlays, and an aggregate measure of government support. The paper used expenditure estimates from the 1992 President's Budget, to determine changes in commodity payments between the 1985 Farm Bill and the 1990 Farm Bill in relation to equitable distribution of support. The analysis concluded that equity outcomes will depend upon the measurement tool being used; however, they are able to make some general conclusions on the projected changes the 1990 Farm Bill will cause.

Comparable work on this subject was done by the Agriculture and Food Policy Center (AFPC) in 1989, 1995, and 2001 (Keough et al.; et al. 1995; and Smith et al.). The AFPC analyses addressed the issue of equitability by using ratios of payments relative to variable costs of production to distinguish differences in production costs among commodities.

The ratios by Keough et al. (1989) were expanded on by the Miller, et al. (1995). The measurements of equity were broken down into four categories; target price relative to production costs, effective total revenue relative to production costs, government dependence, and participation rates. The target price category was further broken down into target price divided by variable cash expenses, target price divided by total cash expenses, and target price divided by total economic costs. However, there were some

weaknesses associated with target price comparisons. Specifically, Miller et al. (1995) addressed the fact that target price comparisons failed to “fully capture the costs and benefits derived from other program provision such as acreage reduction requirements”.

The second category of support ratios used by Miller et al. (1995) included the following measures of effective support (the variables used in these equations are defined in Table 1);

- Effect total revenue divided by effective variable cash expenses

$$\frac{\left[\left(\left(DP * FPY\right) * \left(1 - ARP - NFA\right)\right) + \left(\left(MP * AY\right) * \left(1 - ARP\right)\right)\right]}{\left[\left(\left(VCE\right) * \left(1 - ARP\right)\right) + \left(MA * ARP\right)\right]} \quad (1)$$

- Effective total revenue divided by effective total cash expenses

$$\frac{\left[\left(\left(DP * FPY\right) * \left(1 - ARP - NFA\right)\right) + \left(\left(MP * AY\right) * \left(1 - ARP\right)\right)\right]}{\left[\left(\left(TCE\right) * \left(1 - ARP\right)\right) + \left(MA * ARP\right)\right]} \quad (2)$$

- Effective total revenue divided by effective total economic costs

$$\frac{\left[\left(\left(DP * FPY\right) * \left(1 - ARP - NFA\right)\right) + \left(\left(MP * AY\right) * \left(1 - ARP\right)\right)\right]}{\left[\left(\left(VCE\right) * \left(1 - ARP\right)\right) + \left(MA * ARP\right)\right]} \quad (3)$$

**Table 1. Definition of Variables Used**

| | | | |
|---|---|---|---|
| **DP** | Direct Payment | **CCPY** | Counter Cyclical Payment Yield |
| **DPY** | Direct Payment Yield | **0.85** | Payment Fraction |
| **AY** | Actual Yield | **ARP** | Acreage Reduction Program (percent) |
| **TP** | Target Price | **TEC** | Total Economic Costs |
| **LR** | Loan Rate | **VC** | Variable Costs |
| **MP** | Market Price | **MA** | Maintenance Cost for ARP Program (assumed to be $20/acre) |
| **NFA** | Normal Flex Acreage | **FPY** | Farm Program Yield |

Equations 1 through 3 of effective support are essentially a modification of equations that were used in the Keough et al. (1989). The only difference lies in the fact that normal flex acreage percentages (NFA) are incorporated into the equation, and the market price is incorporated as an effective benefit, not the maximum of the loan rate or the market price. These equations, equations 4 through 6, still fail to incorporate the payment fraction for the deficiency payment rates.

The Government Dependence category is measured through the following three support ratios:

- Government revenue divided by effective variable cash expenses

$$\frac{\left[\left(DP * FPY\right) * \left(1 - ARP - NFA\right)\right]}{\left[\left(\left(VCE\right) * \left(1 - ARP\right)\right) + \left(MA + ARP\right)\right]} \quad (4)$$

- Government revenue divided by effective total cash expenses

$$\frac{\left[\left(DP * FPY\right) * \left(1 - ARP - NFA\right)\right]}{\left[\left(\left(TCE\right) * \left(1 - ARP\right)\right) + \left(MA + ARP\right)\right]} \quad (5)$$

- Government revenue divided by effective total economic costs

$$\frac{\left[\left(DP * FPY\right) * \left(1 - ARP - NFA\right)\right]}{\left[\left(\left(VCE\right) * \left(1 - ARP\right)\right) + \left(MA + ARP\right) + \left(TEC - VCE\right)\right]} \quad (6)$$

The only difference between these government dependence ratios and the effective total revenue ratios is that the numerator does not include price, only government supports. The authors state that this type of ratio can be thought of as a measure of farm program dependence or an indicator of that particular crops' political influence. Finally, participation rates by commodity group are measured as an indicator of the relative benefits received by that commodity group in comparison to other commodities where participation rates are much lower.

The results of this research are broken down by type of ratio for the 1984 to 1992 study period for corn, cotton, rice, wheat, and barley. In large, a portion of the results depend on which time frame you look at and how you define equity. The conclusions state, "The results of the study suggest that no single measure of equity in the share of benefits across commodities yields consistent results" (Miller et al. 1995).

The following 3 ratios of government support were used by Smith (2000):

$$\text{RGS (1)} = \frac{\text{Loan Rate * Expected yield}}{\text{Variable Cost of Production}} \quad (7)$$

$$\text{RGS (2)} = \frac{\text{RGS (1) + Adjusted LDP}}{\text{Variable Cost of Production}} \quad (8)$$

$$RGS\ (3) = \frac{RGS\ (2) + AMT}{\text{Variable Cost of Production}} \quad (9)$$

From the analysis done on these ratios of government support, the work by Keough et al. (1989), Miller et al. (1995), and Smith et al. (2001) presented the results for sorghum, corn, wheat, soybeans, upland cotton, and rice individually, without making an assessment of which commodity group received relatively more support. The research done by Smith et al. was limited in that it only covered actual payments made at one point in time, 2002, and used FAPRI baseline data to project 2002 and 2010 ratios.

Jim Wiesemeyer of AgWeb recently summarized a Congressional Research Service (CRS) report on the ranking of agriculture commodities by farm payments. The CRS report ranked commodities in terms of net outlays by the Commodity Credit Corporation for fiscal year 2003 and by estimated net outlays for fiscal years 2004 and 2005. The CRS estimates showed feed grains receiving 29% of total spending during those 3 years, with corn getting approximately 90% of the total expenditure on feed grains. However, since this method only addressed each commodity's relative effect on the federal budget and not the impact among commodities, further analysis was done By CRS to incorporate costs of production. The CRS report used government payments per acre and government payments as a percent of gross income as their criteria. The CRS report indicated that feed grains is the largest recipient in farm bill; however, on a percent of income basis wool and mohair, rice, and peanuts are getting a larger share.

Pasour (1980) proposed using costs of production as the appropriate basis for agriculture price supports. Costs of production have been used to determine equitability

among payments, thus Pasour's findings should prove germane in discussing the limits of using costs of production as a measure of equitability. Pasour (1980) stated that using "reasonable cost estimates" to estimate price supports appears to be foredoomed because using costs of production was only meaningful in "static equilibrium models". Another limit associated with using cost of production is that "costs cannot be used independently of demand when resources are limited" (Pasour).

Recently, Hart used a ratio comparing government support to the value of production for corn, soybeans, and cotton over the 1999 to 2002 time period (equation 10), to show that there are sizable benefits in relation to value. Relevant to the research that will be done in this thesis there was an important inclusion in his definition of government support. Not only were direct payments, countercyclical payments, market loss assistance payments, and marketing loan benefits included, but he included net crop insurance benefits. Net crop insurance benefits were defined as indemnities less premiums plus subsidies obtained from the USDA Risk Management Agency.

Government support / Value of production (10)

The equity ratios used in the past will serve as a basis for the equity ratios which will be used in the present study. This research will build on the implications discussed in the prior research to create new ways of analyzing equitability, while updating the results found in the prior work to reflect changes in the new farm bill. Additionally, this research will provide a common point of reference policy makers can use as they begin drafting the next farm bill.

## Farm Bills and Programs

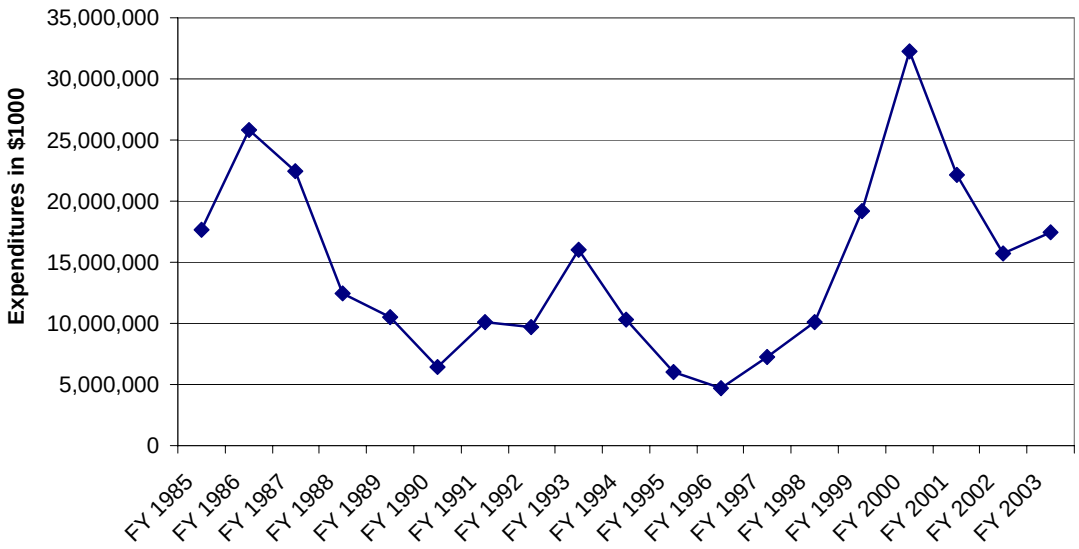
The Agriculture Adjustment Act of 1933 was signed as part of Roosevelt's New Deal (Knutson, Penn, and Flichbaugh). It was designed specifically to help the farm sector survive the Great Depression, via stabilization of farm prices and income, which was done through 100 percent parity pricing. Through a prices-paid index, the parity price concept attempted to relate support price and production costs (Pasour).

Just as agriculture has changed since that time, farm bill programs have also changed. New programs have been created, the methods of support have evolved, and the commodities being supported have changed. However, historically, farm bills have had the same 4 basic measures: (1) land retirement, (2) stored reserves, (3) price supports, and (4) income supports (Knutson, Penn, and Flichbaugh).

Although the goals of the farm bills are not unambiguously defined by Congress, there are some generally agreed upon goals of farm policy. Knutson, Penn, and Flinchbaugh (2004) described the following fundamental goals of farm policy: expanding farm production, supporting and stabilizing farm prices and incomes, expanding agricultural exports, adjusting of farm production to market needs, resource conservation and preservation, family farm survival, and to be multifunctional (which addresses the broader role that agriculture plays, specifically in relation to environmental protection).

Total spending on farm bill programs has changed drastically since the first farm bill. The fluctuations in spending over the last 18 fiscal years are illustrated in Figure 1.

The most recent farm bill, the Farm Security and Rural Investment Act of 2002, is estimated to spend $470.5 billion over the 2002-2007 periods (CBO).




**Source: Farm Service Agency, USDA (2004).

**Figure 1. Total Commodity Credit Corporation and public law 480 expenditures, fiscal years 1985 to 2003**

Annual changes in expenditures are attributed to many causes, including changes in program revisions in the farm bills and changes in annual crop prices and production. However, simply looking at the total expenditures does little to tell the actual story of what is occurring. Thus, the reader must have an understanding of the differences between the farm bills and their programs.

Following the Food Security Act of 1985, Congress passed the first bill that will be covered by this research, the Food, Agriculture, Conservation, and Trade Act of 1990 (FACT), which eliminated the newly introduced Findley payments, and lowered target prices (Richardson, Anderson, and Smith). The 1990 Act also confirmed the importance of conservation in the farm bill through the extension of the acreage reduction program from the 1985 bill (Outlaw and Klose) and the creation of the environmental conservation reserve program and the forestry stewardship program.

After the longest farm bill debate to date, the Federal Agricultural Improvement and Reform Act of 1996 (FAIR) eliminated target prices for income supports (USDA-ERS, April 1996). The 1996 Act significantly changed U.S. agricultural policy. It removed the "link between income support payments and farm prices by providing for seven annual fixed, but declining production flexibility contract payments" (USDA-ERS, April 1996). Federal outlays for the years 1996-2002 were estimated to reach $36 billion and were divided among commodities by fixed percentages. The 1996 Act was the second time income support payments were actually decoupled from farm prices and production. Under FAIR, annual contract payments were limited to $40,000 per entity, $10,000 less than the prior legislation allowed (USDA- ERS, June 2002). Peanut quotas were eliminated, price supports for dairy were phased down and sugar was reauthorized as a "no net cost program" (USDA- ERS, April 1996).

The current farm bill, the Farm Security and Rural Investment Act, was signed into legislation on May 13, 2002 by President Bush. The bill brought soybeans and peanuts under the same provisions as other program crops that utilize three main support

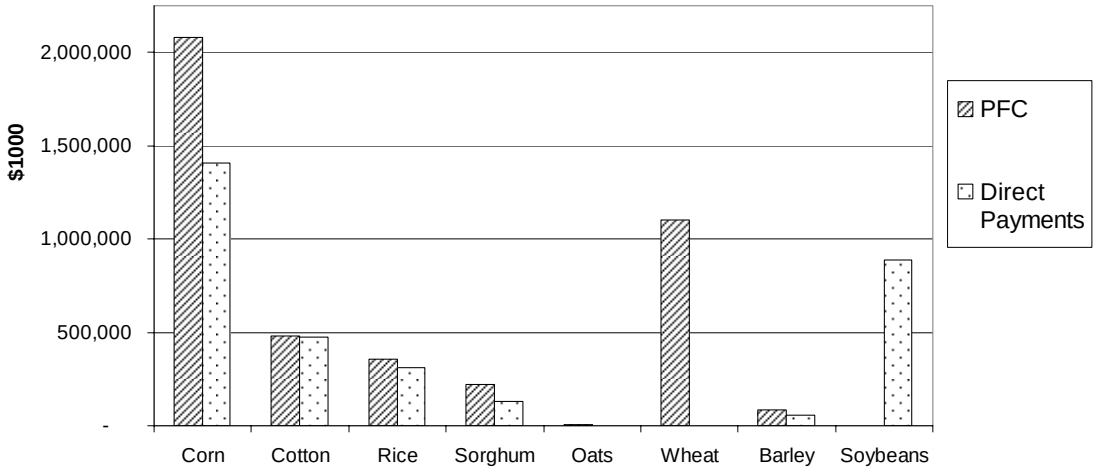
mechanisms: marketing loans, direct payments, and counter-cyclical payments. An additional $17 billion was allocated for spending on the environment.

The 2002 Farm Bill specifies direct payment rates for wheat, corn, grain sorghum, barley, oats, upland cotton, rice, soybeans, peanuts and oilseeds. Covered commodities receive counter-cyclical payments whenever the season average price is less than the target price minus the direct payment rate. Sugar operates on a "no cost program" and a dairy program consists of milk price supports, milk marketing orders, and a new milk income loss contract (MILC) that provides counter cyclical support.

Prior to 1996, deficiency payments were paid at a rate of the difference between the target price and either the loan rate or the average market price, whichever is greater. A producer's payment was calculated by taking the rate and multiplying it by eighty-five percent of the producer's base acreage and payment yield. Producers had the option to receive up to half of this payment at the time of program signup. The FAIR act of 1996 replaced deficiency payments with production flexibility contract payments. These production flexibility contract payments, also called agricultural market transition act or AMTA payments, allowed wheat, cotton, rice, and feed grain producers to enter 7 year production contracts. Farmers could plant 100% of their contract acreage to any crop and receive a full payment (USDA- FSA, February 1999).

Direct payments made under the 2002 Farm Bill are similar to the production flexibility contract payments in the 1996 Farm Bill. Both payments are decoupled from production and established as a fixed payment. Direct payments are made to traditional program crops which now include peanuts and soybeans. These payments are equal to

the direct payment rate times the farm's direct payment yield, times 85 percent of the farm's base acreage. Figure 2 shows a comparison between average production flexibility contract payments under the 1996 and direct payments under the 2002 Farm Bill.




Note: PFC payments represent annual average payments for crop years 1996 through 2001, while direct payments represent average annual payments for crop year 2002.

Source: Data obtained from the USDA-FSA (2004).

**Figure 2. Comparison of average PFC payment expenditures under the 1996 farm bill and direct payment expenditures in 2003**

Market loss assistance payments were authorized by separate pieces of emergency legislation over the 1998 to 2001 time period (U.S. Trade Representative). These payments were made to recipients of production flexibility contract payments and were proportional to the amount of those PFC payments, and thus were commonly referred to as double AMTA payments (U.S. Congress). The 2002 Farm Bill's counter-

cyclical payments were designed to replace market loss assistance payments. By making counter-cyclical payments a part of the farm bill, presumably Congress "would no longer have to debate and enact periodic emergency ad hoc assistance during times of low prices (Becker and Womach). Counter-cyclical payments are decoupled from production and make up the difference between the U.S. marketing year average price plus the fixed payment and the target price (USDA-FSA, May 2003b). Producers are paid on 85 percent of their base acreage and limited to a total of $65,000 per person in counter-cyclical payments (USDA- FSA, June 2003).

Producers benefit from marketing loan rates through two different types of payments-marketing loan gains and loan deficiency payments. Marketing loan gains occur when a producer repays their loan and the repayment rate on the loan is less than the loan principal. A loan deficiency payment (LDP) is a direct payment made to eligible producers who agree to forgo a loan. LDPs were originally authorized under the 1990 Food, Agriculture, Conservation, and Trade Act for cotton and rice. The loan deficiency payment rate is the difference between the loan rate and the loan repayment rate. The loan repayment rate utilizes the posted county price for wheat, feed grains, and oilseeds and the adjusted world price for upland cotton and rice (Westcott). Prior to 1998, loan deficiency payments were rarely made except for cotton and rice since commodity crop prices were high enough to avoid triggering loan deficiency payments (Johnson).

Certificate exchange gains are a form of non-cash benefits received by producers. The main reason for Congress' authorization of commodity certificates was to provide

producers with an alternative to forfeiting their commodity loan collateral (Illinois Farm Bureau). These certificates, issued by the FSA, are purchased by producers with outstanding non-recourse marketing assistance loans at the posted county price and exchanged for the loan collateral (USDA- FSA, July 2003). The "gain" is the difference between the loan rate and the posted county price. Certificate exchanges have been used extensively by cotton and rice producers.

Disaster assistance is designed to aid producers in times of both natural disasters and economic losses, thus offering a means for producers to manage their risk. The USDA has three ongoing programs designed to aid in times of disaster: crop insurance, non-insured assistance program payments, and emergency disaster loans (Chite).

The noninsured assistance program (NAP), which was authorized under the Federal Crop Insurance Reform Act of 1994, is available for producers of crops currently not covered by federal crop insurance programs (Chite). The producer must realize at least a 50% loss of their crop due to a natural disaster, to receive a NAP payment. Low interest emergency disaster loans are available to producers in counties that have been declared a disaster area by either the Secretary of Agriculture or the President (Chite). Producers can borrow up to the full value of their actual production or physical losses and are typically repaid during a 7 year period.

Federally subsidized crop Insurance is the largest single source of financial protection for farmers (Insurance Information Institute). Following the turmoil of the dustbowl, Congress authorized Federal Crop Insurance in the 1930s to insure farmers against natural disasters (USDA-Risk Management Agency). Until 1980, crop insurance

was a temporary program. The 1980 Farm Bill expanded the crop insurance program and resulted in widespread participation. Currently, the Risk Management Agency in USDA administers the crop insurance programs and in 2003 insured over 100 different crops on an estimated 216.3 million acres (Insurance Information Institute). They offer several different insurance programs including multiple peril insurance, revenue insurance, and crop-hail insurance. Producers pay the premium associated with the type of coverage they want, and then the insurance agency agrees to enter into a contract with the producer and indemnify them for losses. Indemnities are paid after an associated crop loss. The Agriculture Risk Protection Act of 2000 provided $8.2 billion in support over fiscal years 2001-2005, largely in the form of premium subsidies for crop and revenue insurance (Harwood and Novak). Thus, there has been some controversy over subsidized insurance being an income support rather than a risk management tool (Harwood and Novak).

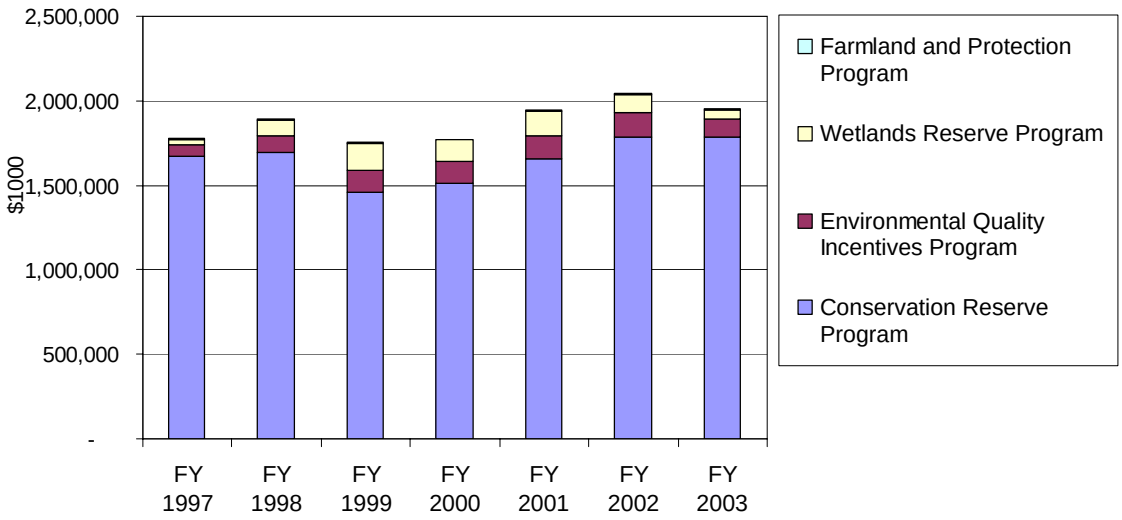
In addition to these ongoing disaster assistance measures, each year Congress typically authorizes supplemental disaster assistance programs to provide emergency aid for crop, livestock, and conservation losses as ad-hoc appropriations (Chite). Crop disaster payments are typically awarded to eligible producers who suffered a significant reduction in that year's crop yield (Chite). The livestock compensation program is designed to compensate producers who have experienced significant losses to their feed or pasture land. This program was first authorized in late 2002 and provided an estimated $836 million in assistance during its first few months of authorization.

The livestock indemnity program (LIP) provides eligible livestock owners with partial reimbursements for livestock losses due to an emergency or natural disaster (USDA-FSA, April 2004). The program was introduced in 1997, as a direct attempt to help producers who lost a significant amount of livestock in North Dakota, South Dakota, and Minnesota due to winter storms (Krub). Payments are determined based upon the "applicable market value for each livestock category during the disaster period, minus the mortality rates", with a limit of $50,000 for each producer (Krub).

Other than the funding offered through crop insurance, noninsured assistance program, and the livestock assistance program during times of natural disasters, non-traditional "specialty" crops, including fruits, vegetables, nuts and livestock are left out of the majority of the government spending on farm programs (Knutson and Anderson). Soybeans and minor oilseeds were added to the list of commodities eligible for program payments in 1998, however, the majority of nontraditional program crops remain largely unsupported despite the fact they account for 25% of U.S. agricultural income (Cline). There has been increasing interest among these groups to have a role in government commodity programs, and countless producers are calling for government assistance for specialty crops.

Another rather controversial issue of the farm bill is the aspect of conservation. Conservation programs in the 2002 farm bill are now getting more funding than ever before. Figure 3 shows conservation spending by type since 1996. The Congressional Budget Office estimated that the 2002 farm bill would provide $9.2 billion above the April 2001 baseline in conservation spending through fiscal year 2007. The 1985 Farm

Bill was the first to merge conservation and farm programs by introducing the conservation reserve program, sodbuster, conservation compliance, and swamp buster; some of which required producer participation to maintain eligibility for other farm programs (Zinn).




Source: USDA-FSA (2004)

**Figure 3. Conservation spending by program type**

The conservation reserve program (CRP) was started to assist in protecting environmentally sensitive land. “Producers enrolled in CRP plant long-term, resource-conserving covers to improve the quality of water, control soil erosion, and enhance wildlife habitat” (USDA-FSA, May 2003a). Producers who voluntarily put land in the program and comply with the requirements receive annual rents on the land. The rate of payment is based on sealed bids by FSA up to a maximum of 25% of cropland in the county.

The voluntary Environmental Quality Incentives Program (EQIP) provides assistance to farmers and ranchers and was established in the 1996 Farm Bill (Zinn). According to the Natural Resource Conservation Service, the objective of EQIP is to optimize environmental benefits through a process of defining priorities (USDA-NRCS). These priorities are summarized as the reduction of non-point source pollution, emissions, soil erosion and the promotion of at-risk species habitat (USDA- NRCS). To participate, producers develop an EQIP plan of operations, which then becomes the basis for a cost-sharing agreement between the producer and the USDA- NRCS. The 2002 Farm Bill set an individuals' limit on EQIP payments at $450,000 over all of their EQIP contracts entered into prior to fiscal year 2007 (USDA- NRCS).

Since 1985 there have been many amendments and changes made to conservation legislation. Some of the lesser known conservation programs that exist today include the farmland protection program, resource conservation and development, wildlife habitat incentives program, conservation security program (CSP), private grazing lands program, and the grasslands reserve program, all of which have very specifically defined objectives.

The issue of payment limitations has been debated by Congress since the concept first appeared in 1965. Initially this was in response to the opinion that large farms were receiving too much government assistance (Knutson et al., 2002). With each new farm bill since then, the definition and limitation of payments has been modified, while the "modern form" of limitations was introduced in 1987 (McLeod and Heslemeyer). The 2002 Farm Bill offers a limit on the total annual payments that a "person" can receive

under agricultural programs (USDA-FSA, July 2003). The annual per person limitation is set at $40,000 for direct payments, $65,000 for counter-cyclical payments, and $75,000 for marketing assistance loans (USDA-FSA, June 2003). Combining these payments, it could be feasible for one entity to receive up to $180,000 per year in payments (McLeod). Peanuts, wool, mohair, and honey are treated as having a separate set of limits from the other covered commodities.

# CHAPTER III

## METHODOLOGY

The literature review in Chapter II helped to illustrate some of the limitations of current research on this subject. There is a need to extend the previous work done by using a consistent data set and time period. Individual crop support ratios mean little on their own. It is only when the ratios are compared to other crops using a consistent data set and time period that these meanings emerge and its functionality as a tool to measure equitability surfaces. This research covers the 13 year period from 1990 until 2002. This time period was chosen because it represents programs in place during the last three farm bills. This will allow for an assessment of relative changes in positioning across time and program provisions.

Due to data limitations, this research will be broken down into two major areas. The first includes a comparison of expenditures on program crops versus expenditures on non-program crops and conservation. The second will make comparisons across program crops done predominately through the use of ratios. The comparison that incorporates non-program crops and conservation will simply use fiscal year Commodity Credit Corporation (CCC) expenditures as a measurement of relative benefits, while the calculations done on program crops will utilize several definitions of government support. This research defines program crops as: corn, cotton, rice, sorghum, wheat, barley, oats, soybeans, and peanuts. Non-program crops are any crop receiving some funding from the CCC and not listed above.

For the analysis of program crops, it was useful to develop a definition of government support. The historical CCC expenditures data sets available from FSA include all outlays associated with a particular crop, including expenditures not directly given to producers, such as outlays for the transportation of government owned stocks and outlays associated with Public Law 480. This research attempts to formulate a comparable representation of the support provided directly to producers, thus some adjustments to the historical CCC dataset were needed. After consulting with the FSA budget division director, direct government support was defined to include payments made to producers under the title of deficiency payments, production flexibility contract payments, loan deficiency payments, marketing loss assistance payments, direct payments, counter-cyclical payments, producer storage payments, marketing loan gains, and for cotton only, user marketing payments. Thus, transportation costs, processing and packing, loan collateral settlements, Public Law 480, disaster payments, purchases, loans, and miscellaneous expenditures were among the CCC Net Budgetary Expenditures that were left out of the measurement of total support since these payments were not given directly to producers or do not represent a direct "benefit" to producers. For example, disaster payments are distributed to make up for substantial losses, rather than as a benefit.

To formulate an accurate representation of total support given to producers, non-cash means of support must were included in the definition of government support. FSA's certificate gains data capture these non-cash transactions. Specifically, the certificate data was broken down into benefits received from certificate diversion

payments and certificate deficiency payments. Finally, crop insurance net benefits were incorporated into the measure of total support. The crop insurance data was collected from the USDA- RMA and the net benefits were defined as indemnities less premiums paid plus subsidies.

The government support data by commodity is presented in Appendix A in tables A1- A9. From 1990 to 2000, the first line of support combines deficiency payments, production flexibility contract payments, and market loss assistance payments (applicable for 1998, 1999, 2000, and 2001 only).

This analysis represents the 1990 to 2002 crop year period. Prior to 1990, much of the data is reported on a fiscal year basis only, rather than a crop year basis like the data that used for this research. Additionally, at the time of this research complete 2003 crop year data is not yet available. Crop year data, rather than fiscal year data, must be used to make meaningful comparisons using production data and payment provisions, which are only reported on a crop year or marketing year basis. Therefore to understand this research it is vital to first understand the marketing year for each crop and then the timing of payments. The marketing year for wheat, barley and oats begins June 1$^{st}$; the marketing year for corn, sorghum and soybeans begins September 1$^{st}$; and the marketing year for cotton, rice, and peanuts begins August 1$^{st}$. Table 2, from the USDA- FSA, outlines the timing of direct and countercyclical payments for the program crops analyzed in this research.

**Table 2. Timing of Direct and Countercyclical Payments by Program Crop, for 2003 and 2004 Crops**

| Month/Year | Barley, Oats Wheat | Corn, Sorghum, Soybeans | Peanuts, Rice, Upland Cotton |
|---|---|---|---|
| Fall 2002 | 2002 First Adv. CC<br>2002 Final Direct | 2002 First Adv. CC<br>2002 Final Direct | 2002 First Adv. CC<br>2002 Final Direct |
| December 2002 | 2003 Adv. Direct | 2003 Adv. Direct | 2003 Adv. Direct |
| February 2003 | 2002 Second Adv. Direct | 2002 Second Adv. Direct | 2002 Second Adv. Direct |
| July 2003 | 2002 Final CC | | |
| September 2003 | | | 2002 Final CC |
| October 2003 | 2003 First Adv. CC<br>2003 Final Direct | 2002 Final CC<br>2003 First Adv. CC<br>2003 Final Direct | 2003 First Adv. CC<br>2003 Final Direct |
| February 2004 | 2003 Second Adv. CC | 2003 Second Adv. CC | 2003 Second Adv. CC |
| July 2004 | 2003 Final CC | | |
| September 2004 | | | 2003 Final CC |
| October 2004 | | 2003 Final CC | |
| Note: CC = Counter- Cyclical, Adv.=Advance<br>Source: Farm Service Agency, May 2003 | | | |

A simplistic way to compare benefits is to compare total support received by each crop. Another simplistic approach is to calculate a support per farm measurement. Census of Agriculture data on the number of farms (Appendix C) and then divided into total government support. However, these comparisons can be somewhat deceiving as they leave out many key factors that make up the whole story. The ratios used in this research will attempt to give a more accurate picture of what is going on.

The first ratio that will be used in analyzing the equitability among program crops is a comparison between the total dollars of support and total acreage planted.

$$R_1 = \text{Total Support} / \text{Total Planted Acres} \quad (11)$$

This ratio was used by Monke (2003) and accounts for how concentrated the payments are among producers. The calculations will use the value of support for each individual crop on a crop year basis (Appendix A) and the planted acreage obtained from USDA- NASS (Appendix C). This same concept will be utilized in a ratio comparing government support to base acreage.

$$R_2 = \text{Total Support} / \text{Base Acres} \quad (12)$$

The base acreage data was obtained from the USDA- FSA and FAPRI's commodities database and can be viewed in Appendix D.

Since peanuts and soybeans did not become program crops until the most recent farm bill, they obviously didn't have payment provisions such as base acres and payment yields back to 1990. To compare support given to these two crops to the other program crops throughout out the entire time period, the initial provisions for peanuts and soybeans were assumed constant back to 1990. For example 2002 was the first year that peanut crops had a direct payment yield of 2,988.70 pounds per acre, therefore that yield was assumed as the direct payment yield for each year back to 1990.

Support per acre does not consider production that occurs on each acre. Incorporating yield into the equation results in a better picture of which crop is getting the most support per pound of production. Support per pound of program production was calculated by dividing total government support by program production.

$$R_3 = \text{Total Support} / \text{Total Pounds of Program Production} \quad (13)$$

Program production is defined as base acres multiplied by direct payment yield and converted from the typical unit of measurement for that particular crop to a pound basis. Each crop's annual production is converted to a pound basis so that a consistent measurement across crops is made. Base acres and direct payment yields are obtained from the USDA- FSA and FAPRI's commodities database (Appendix D). Support per pound of actual production takes total support divided by actual production.

$$R_4 = \text{Total Support} / \text{Total Pounds of Actual Production} \quad (14)$$

Actual production is obtained from the USDA- NASS (Appendix C) and converted to a pound basis. Table 3 illustrates the conversions used to convert production data into pounds of production.

**Table 3. Conversions from Reported Production Units to Pounds**

| Crop | Unit of Measurement | Pounds |
|---|---|---|
| Corn | Bu | 56 |
| Rice | Cwt | 100 |
| Sorghum | Bu | 56 |
| Oats | Bu | 32 |
| Wheat | Bu | 60 |
| Barley | Bu | 48 |
| Soybeans | Bu | 60 |

Although measurements of support per acre are more telling than comparing total expenditures, they fail to account for the costs of production for each unit. This research utilizes per acre support relative to total costs and per acre support relative to variable costs to account for costs of production.

$$R_5 = \text{Total Support per acre} / \text{Total Costs} \quad (15)$$

$$R_6 = \text{Total Support per acre} / \text{Total Variable Costs} \quad (16)$$

Per acre support relative to total costs is calculated by taking total support divided by planted acres, obtained from the National Agriculture Statistics Service (Appendix C), and then the quotient is divided by total costs per planted acre. Costs per planted acre were obtained from the USDA- ERS and can be viewed in Appendix B. Total costs include designated variable costs, general overhead and economic costs. Economic costs include capital replacement, operating capital, other non-land capital, land, and unpaid labor. Per acre support relative to total variable costs was calculated by dividing support per planted acre by total variable costs. Again total variable costs were obtained from the USDA- ERS costs of production data (Appendix B).

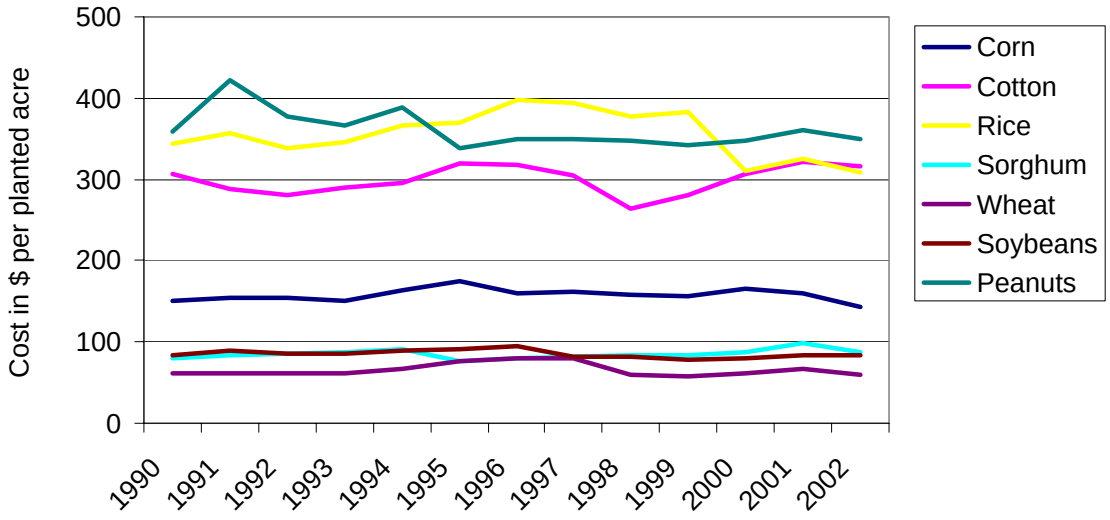
During the 1990 to 2002 time period, the USDA- ERS changed their reporting style for many of the program crops. In the older reporting style, variable costs included seed, fertilizer, chemicals, custom operations, fuel, lube, electricity, repairs, hired labor, and other variable costs. Fixed costs included general farm overhead, taxes, insurance,

and interest. The main difference between this reporting style and the new reporting style is that under the new style fixed costs and economic costs are combined. Additionally under the new reporting structure, interest is counted as variable cost and hired labor is not included in the figure for total variable costs. For this analysis to be valid, it must be as consistent as possible across the entire time period. Adjustments were made to the costs data by moving interest figures under the variable costs heading for the older data set, and in the new data set moving hired labor under variable costs. Although adjustments were made to make the data set consistent, there still may be deviations in reporting styles. So when analyzing the results, it is important to note the years in which the change in reporting styles took place. Table 4 illustrates the first year of the new reporting style for the program crops; note that there were no changes to the way costs of production were reported for barley and oats during the 1990 to 2002 time period.

**Table 4. First Year of New ERS Reporting Style for Costs of Production Data**

| **Crop** | **Year** |
|---|---|
| Corn | 1996 |
| Cotton | 1997 |
| Sorghum | 1995 |
| Peanuts | 1995 |
| Rice | 2000 |
| Soybeans | 1997 |
| Wheat | 1999 |

The following figure, Figure 4, displays adjusted variable costs for each crop over the 1990 to 2002 time period among the crops that had a change in variable costs reporting style. By comparing the year in which reporting styles changed from Table 4 and the annual changes in variable costs, the plausible affect of a change in reporting style can be viewed. For example, the first year of the new reporting style for rice occurred in 1999 and Figure 4 shows a significant decline in variable costs per planted acre between the years 1999 to 2000. This change may reflect a true change in the costs of production of rice or it may simply be a result of a change in reporting styles, therefore when viewing the results for per acre support relative to total variable costs the years in Table 4 should be kept in consideration.




**Source: USDA- ERS (2004)

**Figure 4. Economic Research Service adjusted variable costs by crop**

Comparisons to costs of production fail to account for the value of the good being produced. Comparing the average government support per unit to the annual average marketing price suggests the percentage of price being distributed as government payments. To calculate this support ratio, total government support is simply divided by NASS' actual production; the quotient is then divided by marketing year average price as obtained by NASS (Appendix C). Another way to incorporate value is to take total annual support divided by total value of production. Total value of production is obtained from NASS and can be viewed in Appendix C.

$$R_7 = \text{Support per unit / Price per unit} \quad (17)$$

$$R_8 = \text{Total Annual Support/ Total Value of Production} \quad (18)$$

The next set of ratios simply compares target prices and loan rates to variable and total costs of production as an attempt to measure how high the potential levels of support are relative to the costs of production. Loan rate and target price were both obtained from the USDA- FSA and FAPRI (Appendix D), while costs of production were obtained from the USDA- ERS. Our analysis will update the analysis done by Keough et al. (1989) and Miller et al. (1995).

$$R_9 = \text{Target Price/ Total Costs per unit} \quad (19)$$

$$R_{10} = \text{Target Price/ Total Variable Costs per unit} \quad (20)$$

$$R_{11} = \text{Loan Rate/ Total Costs per unit} \quad (21)$$

$R_{12}$= Loan Rate/ Total Variable Costs per unit (22)

However, to judge how much of an affect target price and loan rate are having on actual government support, it is necessary to compare those support tools to average prices. Thus, the next two ratios look at loan rate relative to price and target price relative to price.

$R_{13}$= Target Price/ Price (23)

$R_{14}$= Loan Rate/ Price (24)

The final three ratios used to compare benefits among program crops involve effective benefits and effective costs. By effective, all the associated costs and or benefits are taken into consideration and adjusted them to what an average producer would actually expect. The ration in equation 24 displays the formula used to calculate effective benefits divided by effective costs, while Table 5 defines the variables used in the formula.

$$R_{15}= \frac{[(DP(DPY/AY)+(TP-DP-Max(LR,MP)*(CCPY/AY))*.85]+Max(MP,LR)}{[VC+MA(ARP/(1-ARP))+(TEC-VC)/(1-ARP)]/AY} \quad (25)$$

**Table 5. Definition of Variables Used in Effective Formula**

| | |
|---|---|
| DP | Direct Payment |
| DPY | Direct Payment Yield |
| AY | Actual Yield |
| TP | Target Price |
| LR | Loan Rate |
| MP | Market Price |

| | |
|---|---|
| CCPY | Counter Cyclical Payment Yield |
| .85 | Payment Fraction |
| ARP | Acreage Reduction Program (percent) |
| TEC | Total Economic Costs |
| VC | Variable Costs |
| MA | Maintenance Cost for ARP Program (assumed to be $20/ acre) |

In equation 24, the numerator is the modified formula that was used by Keough et al. (1989) to account for changes in farm policy programs. Equation 24 takes the direct payment, adjusted by a ratio of direct payment yield to actual yield, and adds the countercyclical payment. The direct payment and the countercyclical payment are both multiplied by 85% to represent the payment fraction, and then either the loan rate or market price is added in as a benefit. The denominator represents effective costs by incorporating variable costs, maintenance costs of the acreage reduction program, and fixed costs adjusted for the actual percentage of acreage put into production. All of which is then brought to a per unit basis rather than a per acre basis, by dividing the denominator by the actual yield.

Equations 25 and 26 display minor modifications to the base effective benefits to effective costs formula. Equation 25 measures effective benefits relative to effective variable costs, by leaving out the fixed cost portion of the denominator, while equation

26 displays the formula used in calculating effective benefits to effective fixed costs, having left out the variable cost portion of the denominator.

$$R_{16}= \frac{[(DP(DPY / AY) + (TP - DP - Max(LR, MP) * (CCPY / AY)) * .85] + Max(MP, LR)}{[VC + MA(ARP / (1 - ARP))] / AY} \quad (26)$$

$$R_{17}= \frac{[(DP(DPY / AY) + (TP - DP - Max(LR, MP) * (CCPY / AY)) * .85] + Max(MP, LR)}{[MA(ARP / (1 - ARP)) + (TEC - VC) / (1 - ARP)] / AY} \quad (27)$$

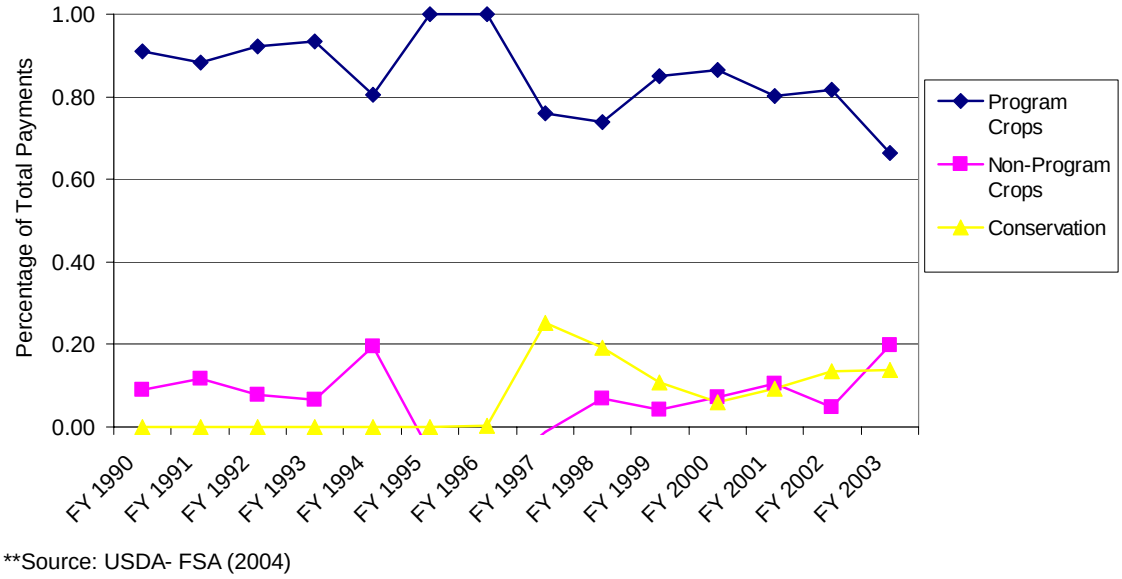
In formulas 24, 25, and 26 the maintenance cost for the acreage reduction program (ARP) was assumed to be $15. This is the same assumption that was used by Keough et al. (1989) because ARP has not been used since that paper was published the estimate was assumed to be accurate and was used for these calculations as well.

# CHAPTER IV

## EQUITABILITY RESULTS

The results in this chapter are presented by the measure of support. Initial results compare payments between program crops, non-program crops, and conservation, followed by in depth analysis on the 9 program crops. There were a total of 16 different support ratios used over the 13 year period for the nine program crops.

Since detailed crop year expenditure data is not available on non-program crops, fiscal year data from the CCC data will be used for simple comparisons across crops. Figure 5 shows the percentage of payments on program crops compared to non-program crops and conservation. There are other CCC expenditures during this time period; however, they were left out of this calculation. The only expenditures incorporated in this percentage calculation were payments made to program crops, non-program crops and conservation. Clearly and as expected, program crops get the majority of the funding. On a percentage basis, conservation spending peaked during fiscal year 1997 as a result of increase in expenditures on the conservation reserve program.




**Source: USDA- FSA (2004)

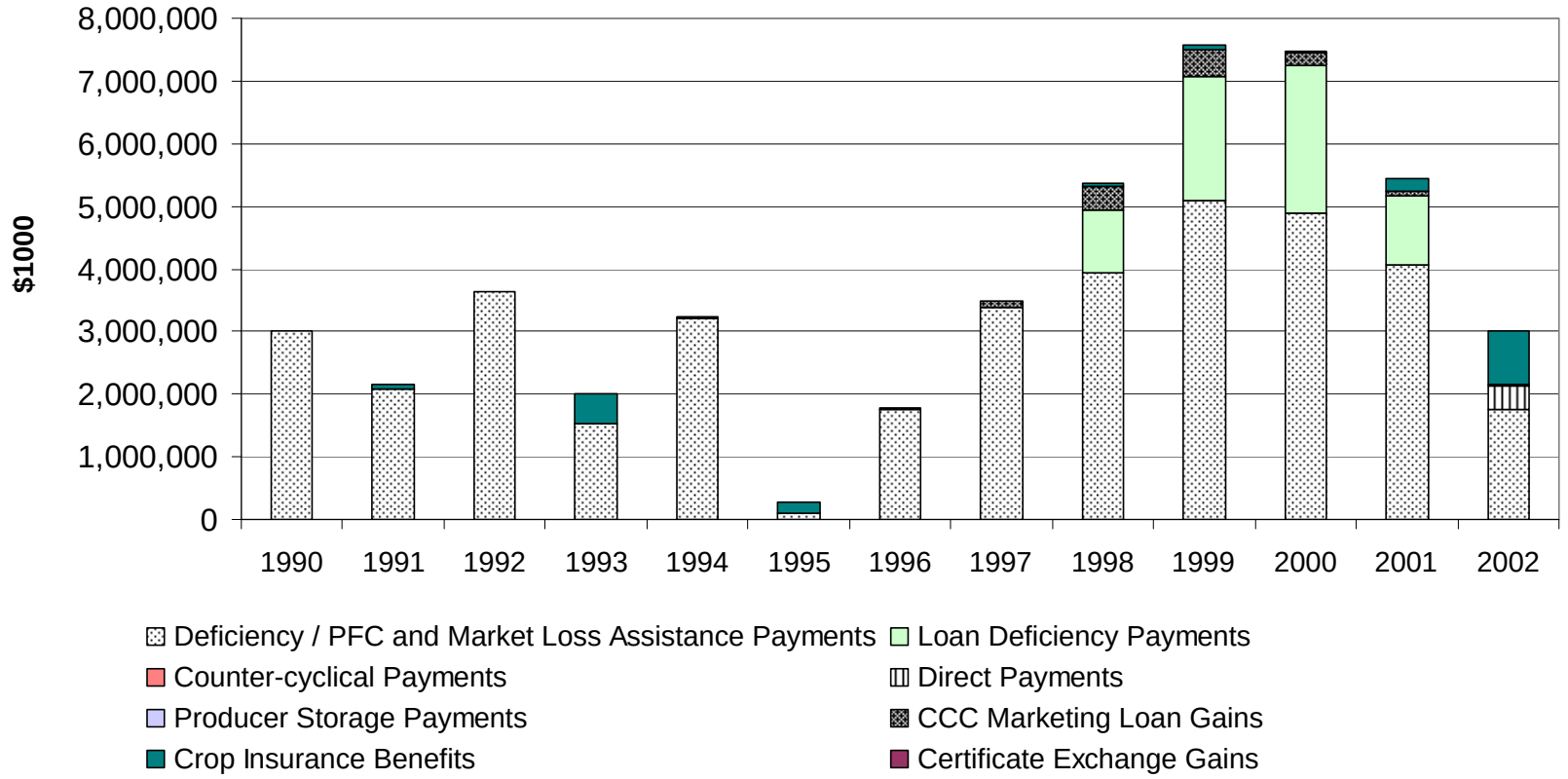
**Figure 5. Percentage of payments paid to program crops, non-program crops and conservation**

Non-program crops received up to 20% of expenditures on commodities and conservation. These non-program crops include feed grain products, extra long staple cotton, tobacco, dairy, soybean products, sugar, honey, wool and mohair, minor oilseeds, and vegetable oil products. These crops and countless others contribute significantly to the US agriculture economy; however, they maintain a very minor role in farm bill expenditures.

Prior to looking at the actual means of measuring equitability for program crops, it is useful to determine how each crop receives its share of support, thus serving as a gauge as to which programs are providing the most assistance to each particular crop. A key aspect to keep in mind while viewing these graphs is that reporting style

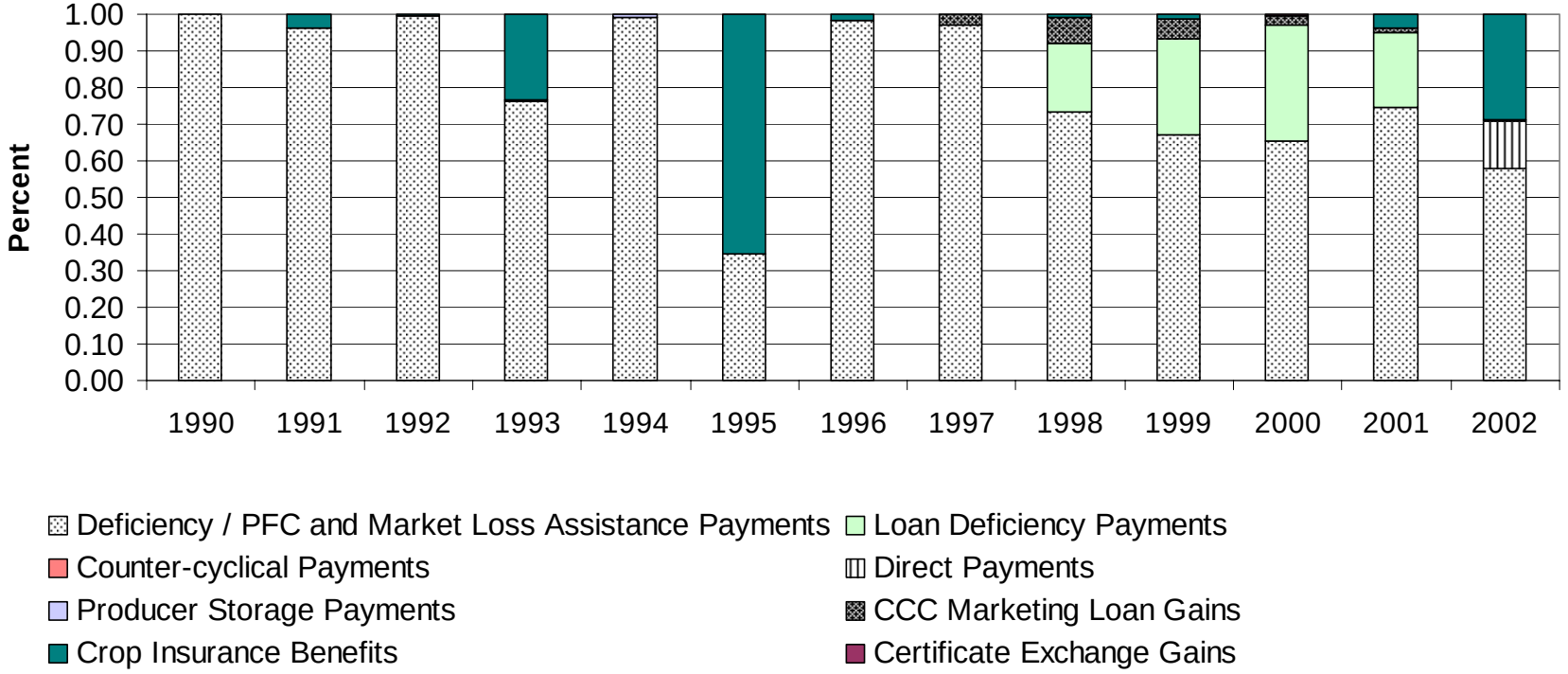
Incorporates deficiency payments, production flexibility contract (PFC), and marketing loss assistance payments all lumped into one category. Prior to 1996, deficiency payments were in place rather than production flexibility contract payments (PFC). Thus, from 1996 forward the line incorporates production flexibility contract (PFC) and marketing loss assistance payments.

Beginning with corn, Figure 6 and Figure 7 represent the total support received each year and by which program the support came from, in the form of actual dollars spent and as percentage of annual payments. Up until about 1995, corn was getting the majority of its support from deficiency payments and some support from crop insurance benefits. In 1996, the majority of corn's support came from production flexibility payments and direct payments. Although it cannot be seen due to reporting style, marketing loss payments likely make up a large proportion of the deficiency payment/PFC payment category in years 1998, 1999, 2000, and 2001.




*Note: Data obtained from Farm Service Agency, USDA

**Figure 6. Corn total annual support by program**




*Note: Data obtained from Farm Service Agency, USDA

**Figure 7. Corn percentage total annual support by program**

The sources of funding are further explained by Figure 8, which shows the relationship between price, target price and loan rates. One of the goals of farm policy is to help maintain a consistent farm income for producers; thus, it would be expected that producers receive higher levels of support in years of low prices and vice versa. During this time period corn support has a correlation coefficient of -.90 to price. In 1995 price was particularly high for corn, which explains why government support was significantly lower in that year. Additionally, price was relatively low in the years 1999 and 2000, which corresponds to the particularly high government support payments. Figure 9 illustrates further relationships between corn price and support.

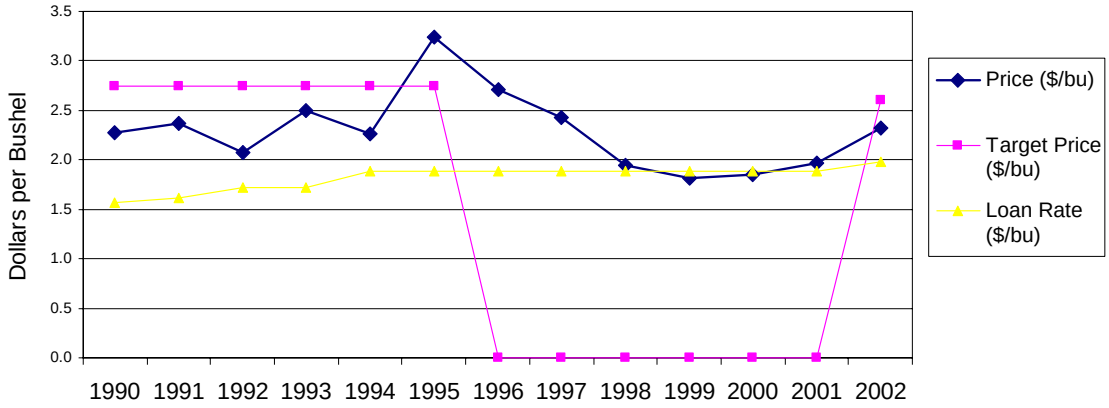



**Figure 8. Relationship between corn price, target price and loan rate**

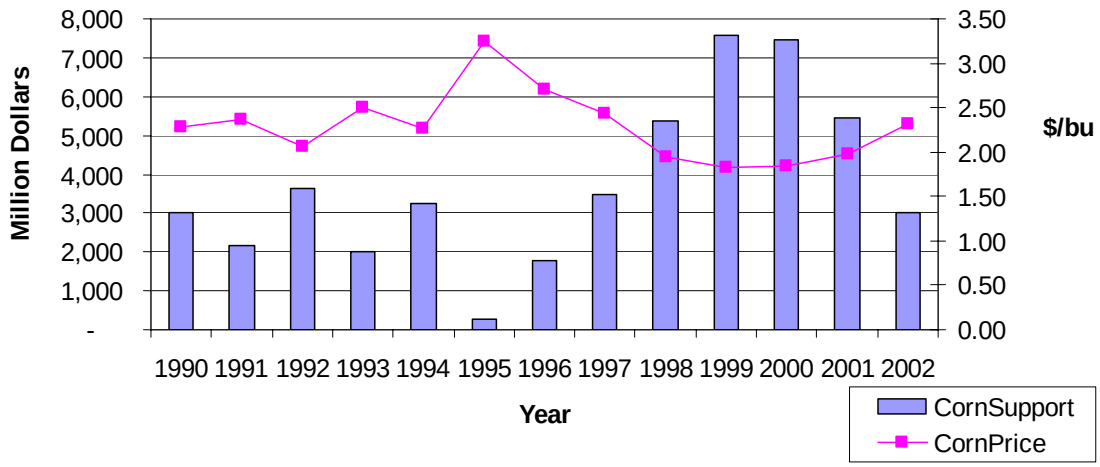
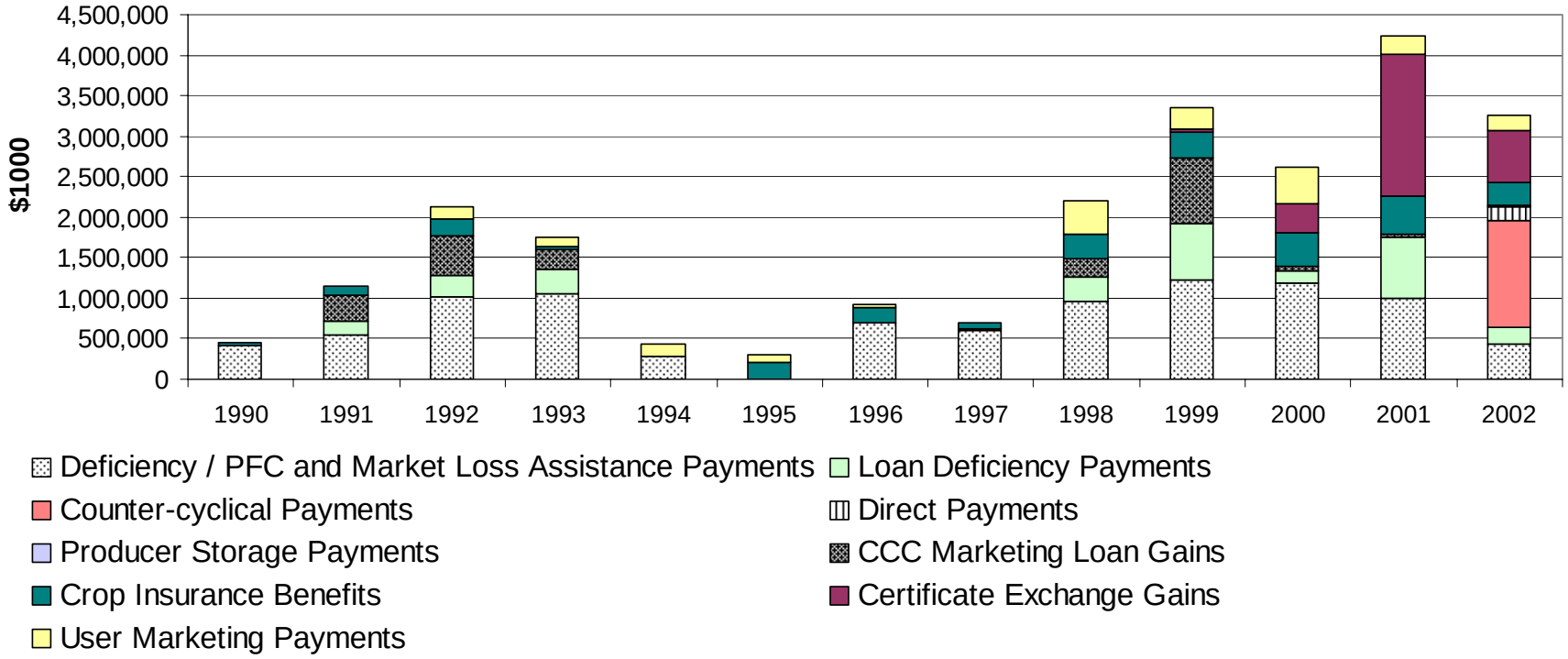


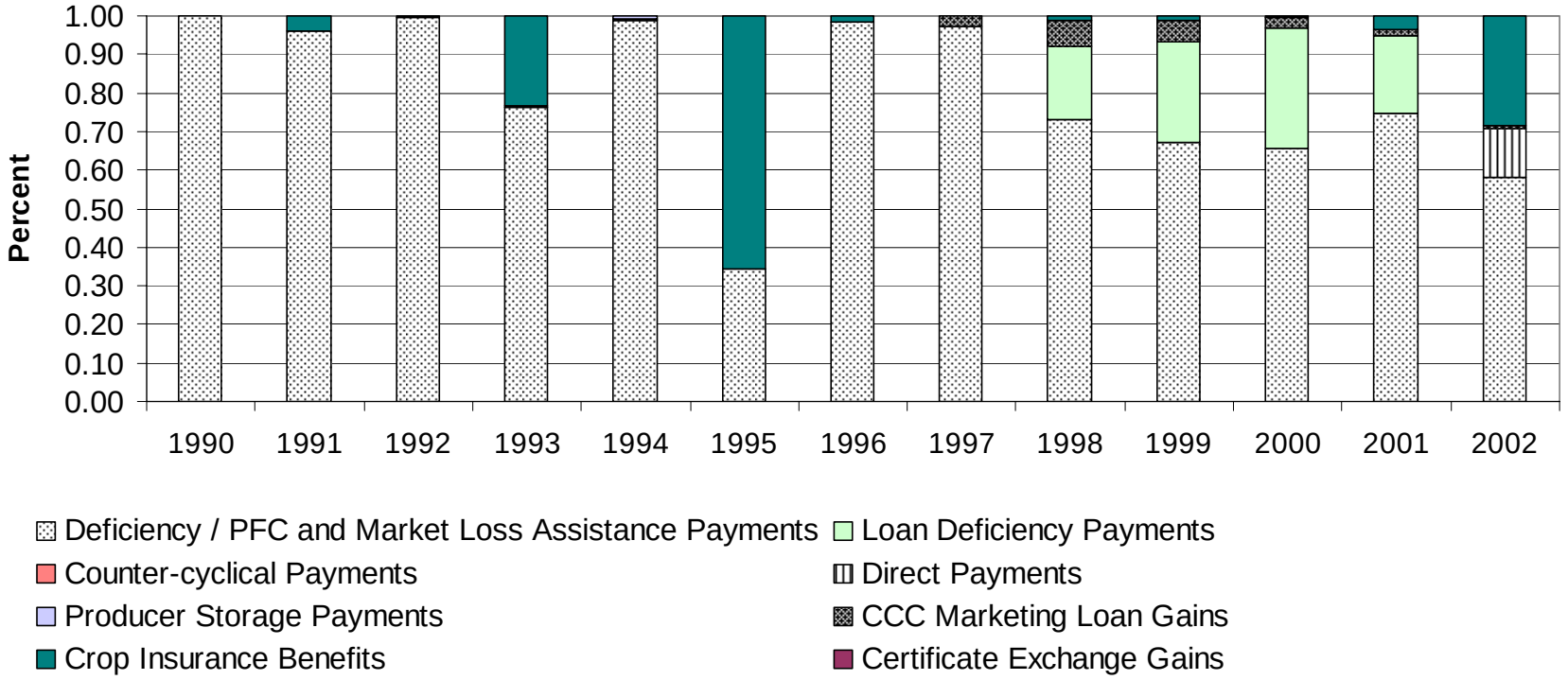

**Figure 9. Comparison between corn price and support**

By looking at Figure 10 and Figure 11 it is easy to see that cotton support is received through different support tools than corn. Deficiency and production flexibility contract payments make up the majority of the support; however, marketing loan gains play a more significant role in their total support figure. Cotton producers also see a significantly lower level of support during the 1994 to 1997 time period and increasing levels of support during the late 90's. In 2002, cotton producers benefit considerably from countercyclical payments. Countercyclical payments make up nearly 40% of payments for that year, while direct payments have a relatively minor impact on total payments received by cotton producers.




*Note: Data obtained from Farm Service Agency, USDA

**Figure 10. Cotton total annual support by program**




*Note: Data obtained from Farm Service Agency, USDA

**Figure 11. Cotton percentage total annual support by program**

Figure 12 and Figure 13 show a relatively complete explanation for the levels of support cotton has received. Figure 12 shows that loan rate was below price until 1999, which explains the increase in loan deficiency payments in 1998 and 1999. There were also loan deficiency payments made in 1991- 1993, which also corresponds to years when price dipped to nearly the level of the loan rate. These loan deficiency payments occurred even though price, according to Figure 12, was above loan rate since the figure is using national average prices and loan rates. Actual loan deficiency payments are made according to the difference between countywide loan repayment rates and posted county prices. Therefore, although the national average price was above the loan rate, that was not the situation in all counties and loan deficiency payments were made to producers. User marketing payments (Step 2) are unique to cotton. The percentages in Step 2 payments are not extremely significant, except in years 1995 and 1996 when support is already significantly low.

Price and support have a correlation of -.96, which means there was nearly a perfectly inverse movement between price and support. Figure 13 supports this statement.

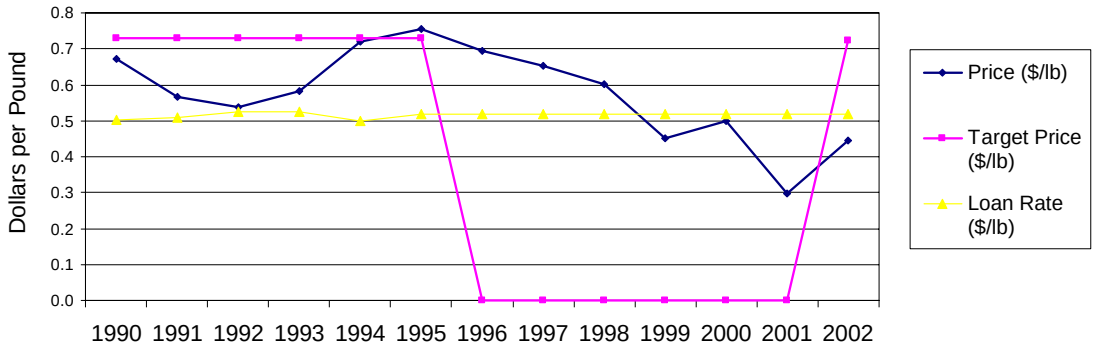



**Figure 12. Relationship between cotton price, target price and loan rate**

Rice receives the majority of government support through deficiency, production flexibility contract payments, and marketing loss assistance payments over the full 13 year time span, as Figures 14 and 15 depict. Figure 14 shows direct and counter cyclical payments coming into play in 2002. In comparing rice's benefits to the other program crops, rice receives relatively less support from crop insurance benefits. Throughout the early 1990s and 2000s up to 20% of rice producer's benefits came from marketing loan gains. In 2002 production flexibility contract payments dropped from providing nearly 50% of benefits to providing only 20% of benefits. However, in 2002 counter-cyclical payments came into play and provided approximately 20% of that year's support.

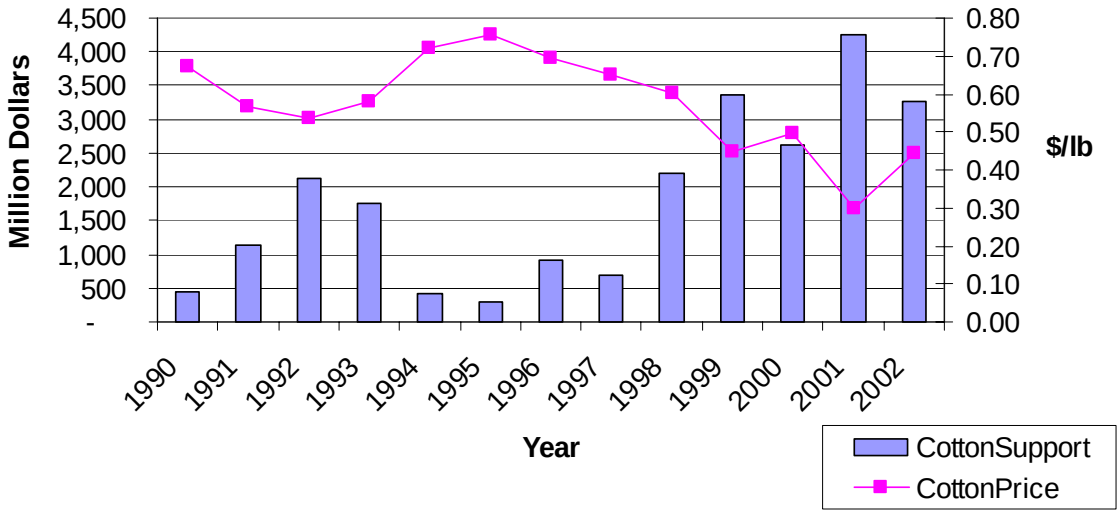
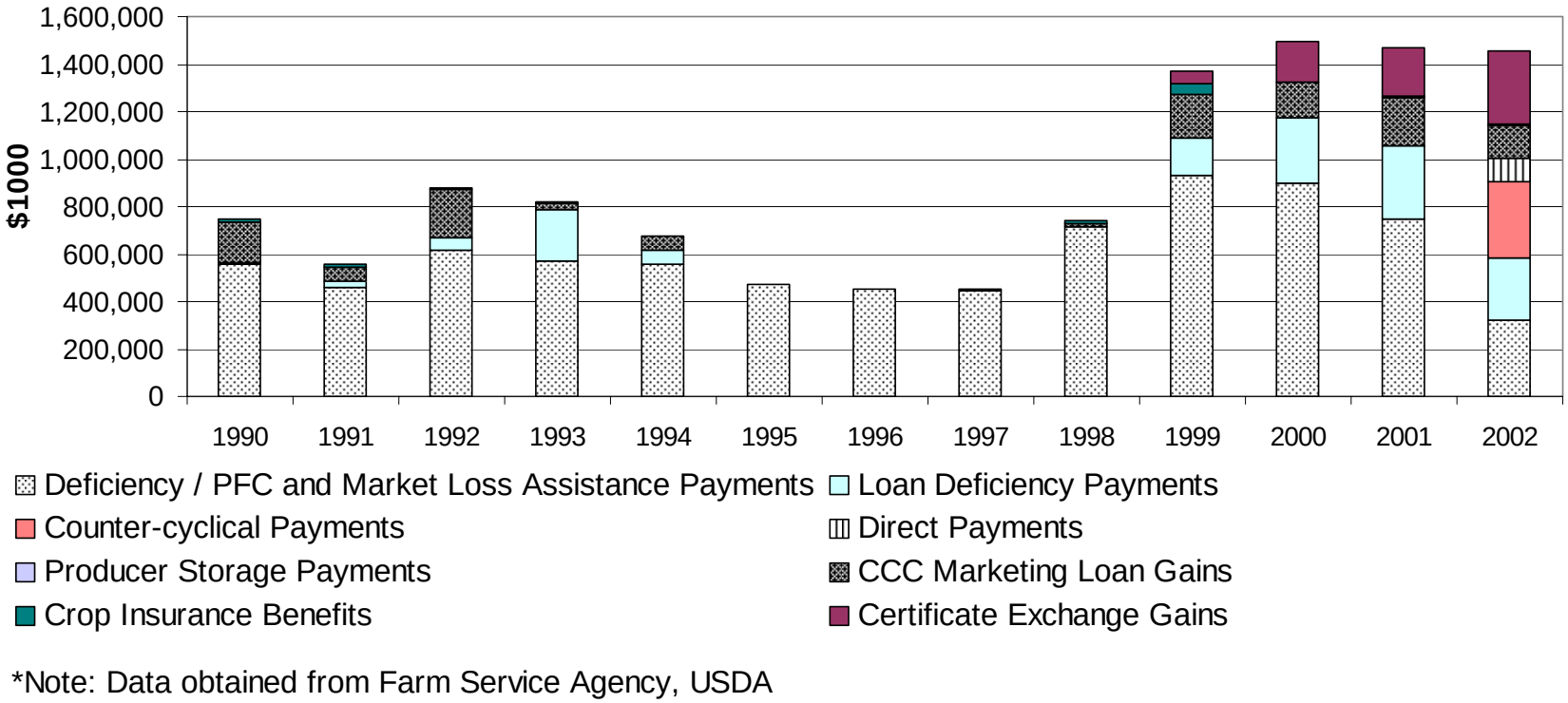
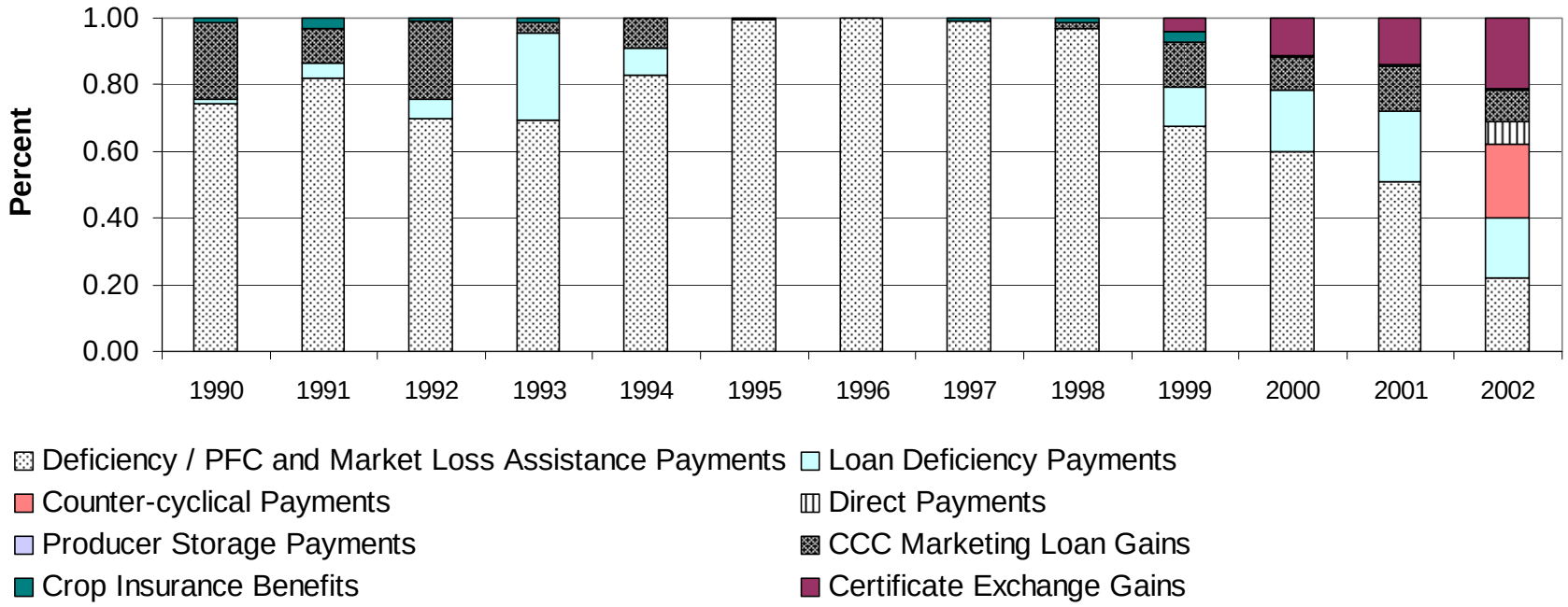



**Figure 13. Relationship between cotton price and support**




*Note: Data obtained from Farm Service Agency, USDA

**Figure 14. Rice total annual support by program**




*Note: Data obtained from Farm Service Agency, USDA

**Figure 15. Rice percentage total annual support by program**

Further explanation of rice's support levels can be concluded by reviewing Figure 16, the relationship between price, target price, and loan rate. Loan rate has been constant over the full 13 year period. However, price has not. The 1995 to 1998 time period saw significantly higher prices, and justly corresponded to lower levels of support. Rice has a correlation between price and support of -.87, which is less than that of corn and cotton. However, it still shows a strong correlation between the two; Figure 17 visually confirms this result. Additionally, price is significantly below target price in 2002, therefore explaining the substantial counter cyclical payment for that year.

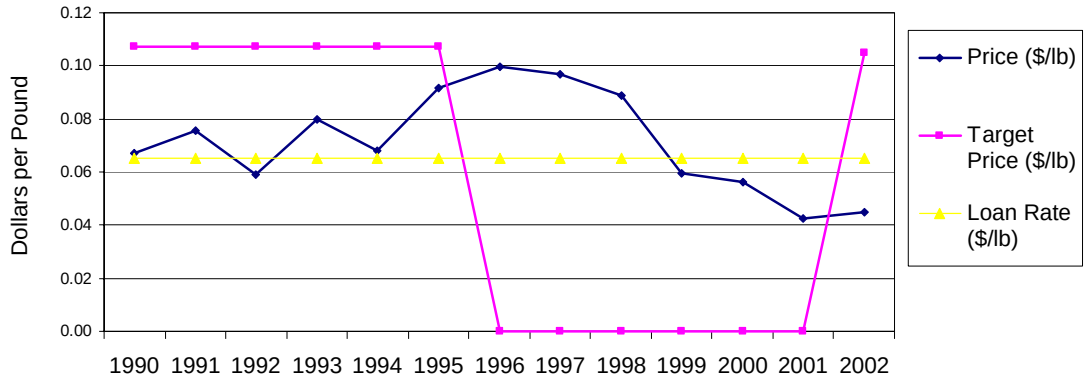



**Figure 16. Relationship between rice price, target price and loan rate**

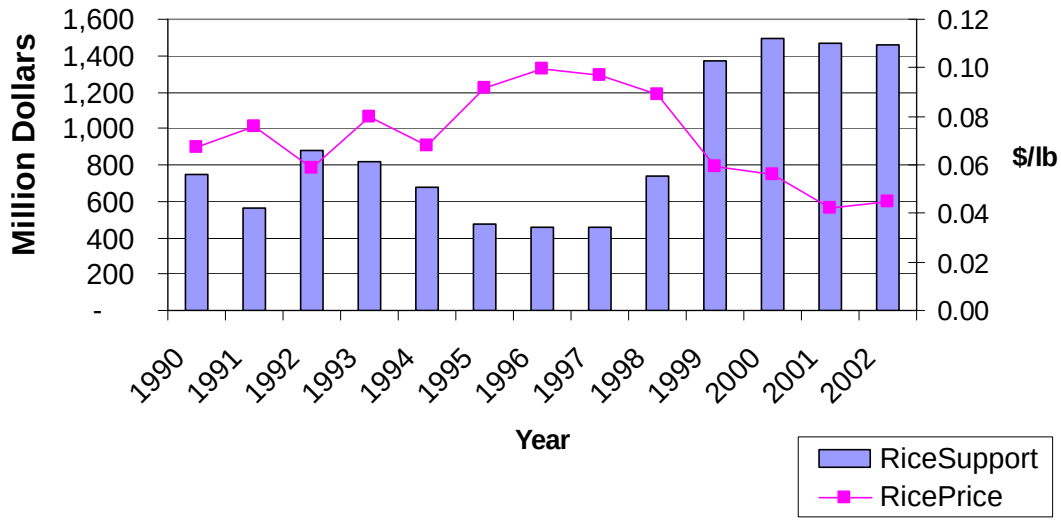
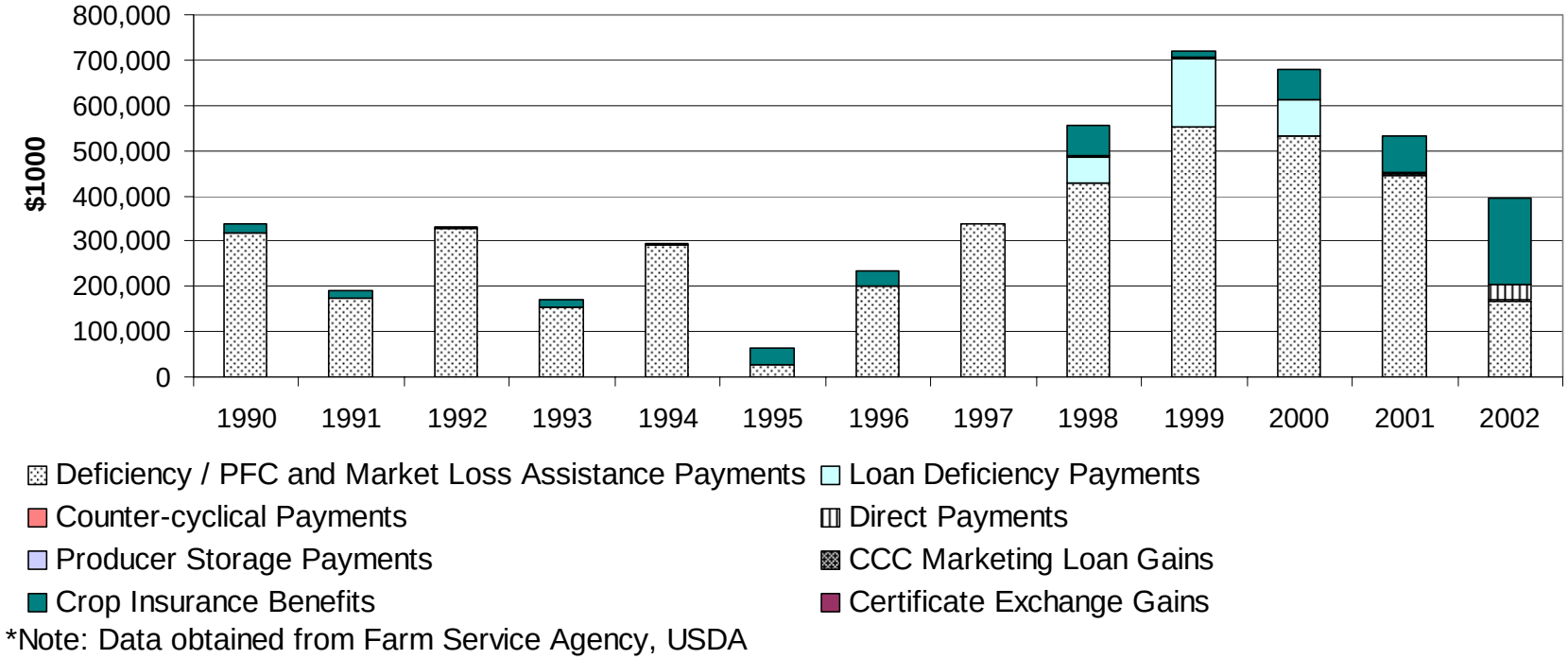



**Figure 17. Rice relationship between price and support**

Figure 17 and Figure 18 depict the programs that have benefited grain sorghum between the years of 1990 and 2002. Government support for sorghum predominately comes from deficiency, PFC, and marketing loss assistance payments during the 13 year period. Loan deficiency payments kicked in during the 1998 to 2000 time period. In 2002, there were some direct payments given to sorghum producers, however it did not make up a significant proportion of the payments received. An interesting point is that although counter cyclical payments are a relevant program in 2002, they didn't benefit sorghum during that crop year. Sorghum sources and flow of support is comparable to that of corn.




*Note: Data obtained from Farm Service Agency, USDA

**Figure 18. Sorghum total annual support by program**

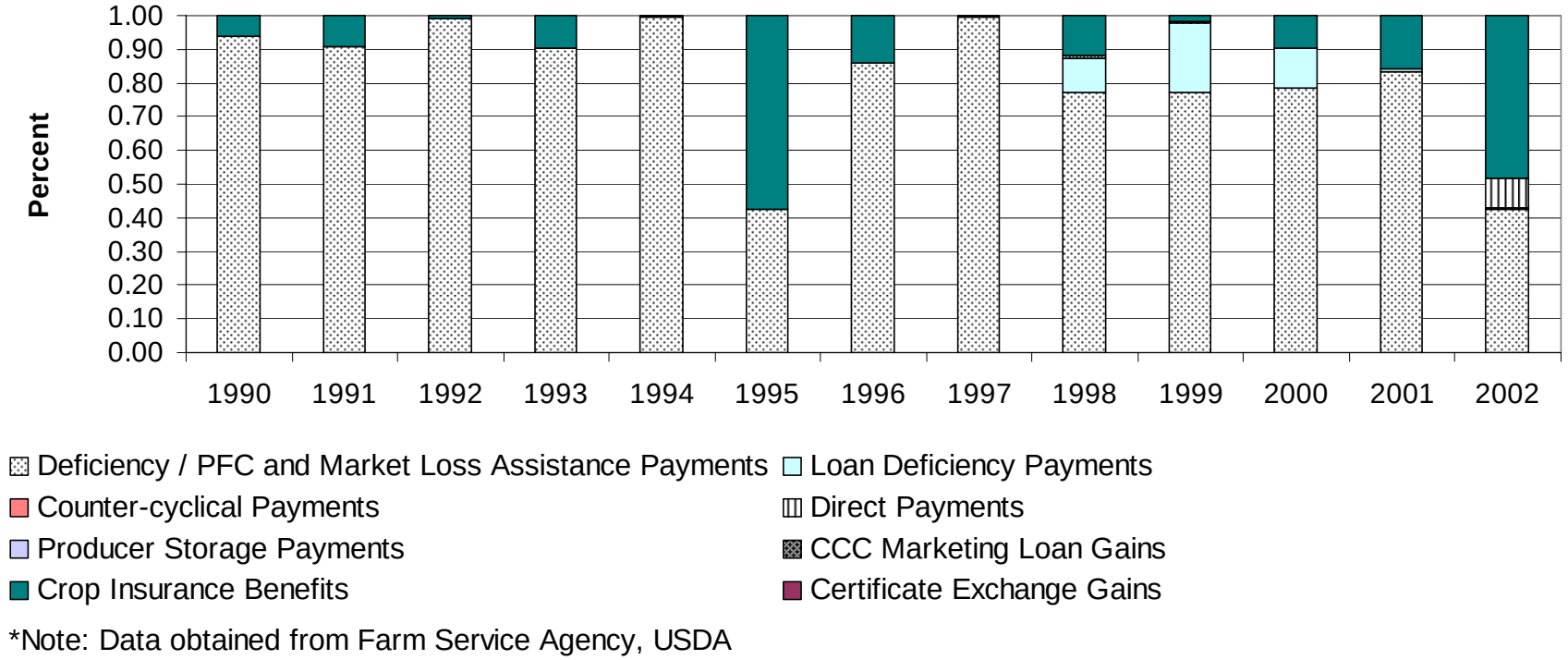



**Figure 19. Sorghum percentage total annual support by program**

The information in Figure 18 and Figure 19 can be explained by Figure 20 and Figure 21. Grain sorghum experienced a constant average target price from 1990 to 1995 at $2.61 per bushel. Average marketing year price jumped, peaking in 1995 at $3.19 per bushel and the loan rate stayed fairly constant between $1.5 per bushel to $2.0 per bushel. The peak in price in 1995 corresponds to a much lower level of support for that same year, as expected, given sorghum's -.82 correlation between price and support. Additionally in 1999, Figure 20 shows that price dipped below the loan rate, depicted in Figure 18 and Figure 19 by an increase in loan deficiency payments.

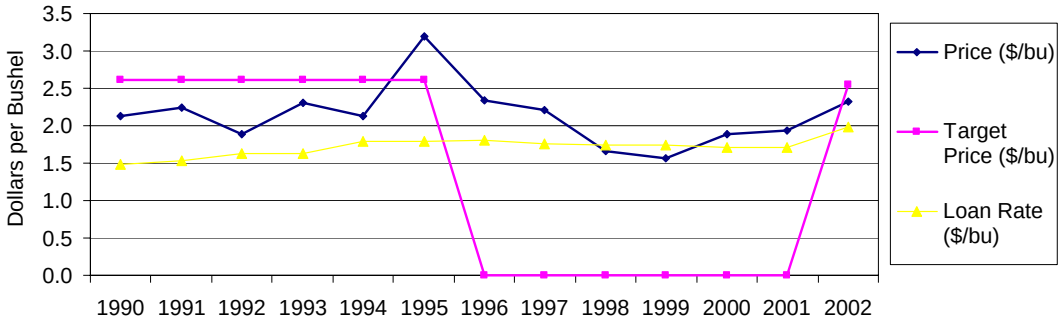



**Figure 20. Relationship between sorghum price, target price and loan rate**

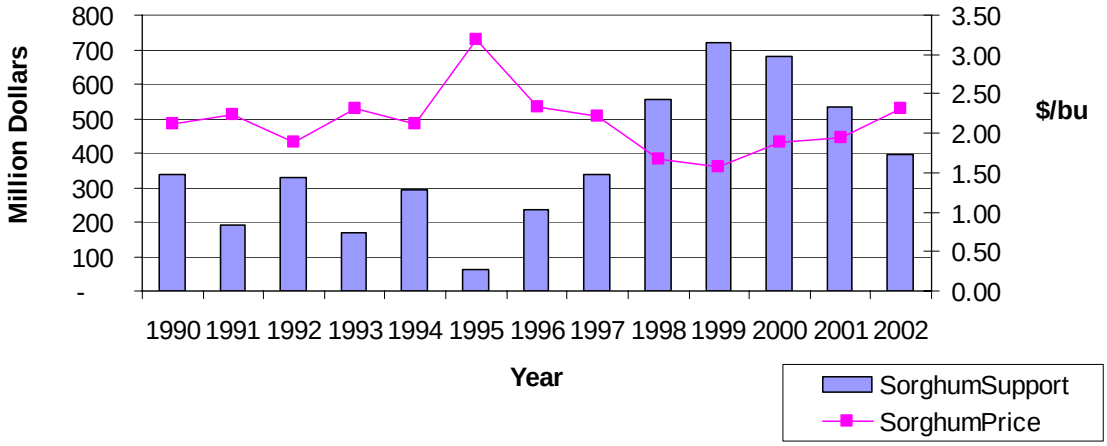



**Figure 21. Relationship between sorghum price and support**

Government support for oats is shown by program in Figure 22 and Figure 23. Oats follow the typical flow of support, with relatively high levels of funding in the early 90's, minimizing in 1995, then enjoying a rise in support during the late 90's. Until 1998, oats received virtually all of their support from deficiency, production flexibility contract payments and crop insurance benefits. In 1998, 1999, and 2000 loan deficiency payments provided a substantial proportion of their funding. In 2002, when direct payments and countercyclical payments were in affect, oats received less than 5% of their payments from direct payments, and nothing measurable from countercyclical payments. However, while the majority of program crops received less money in 2002 than the prior year, oat producers received slightly more relative to their support in 2001.

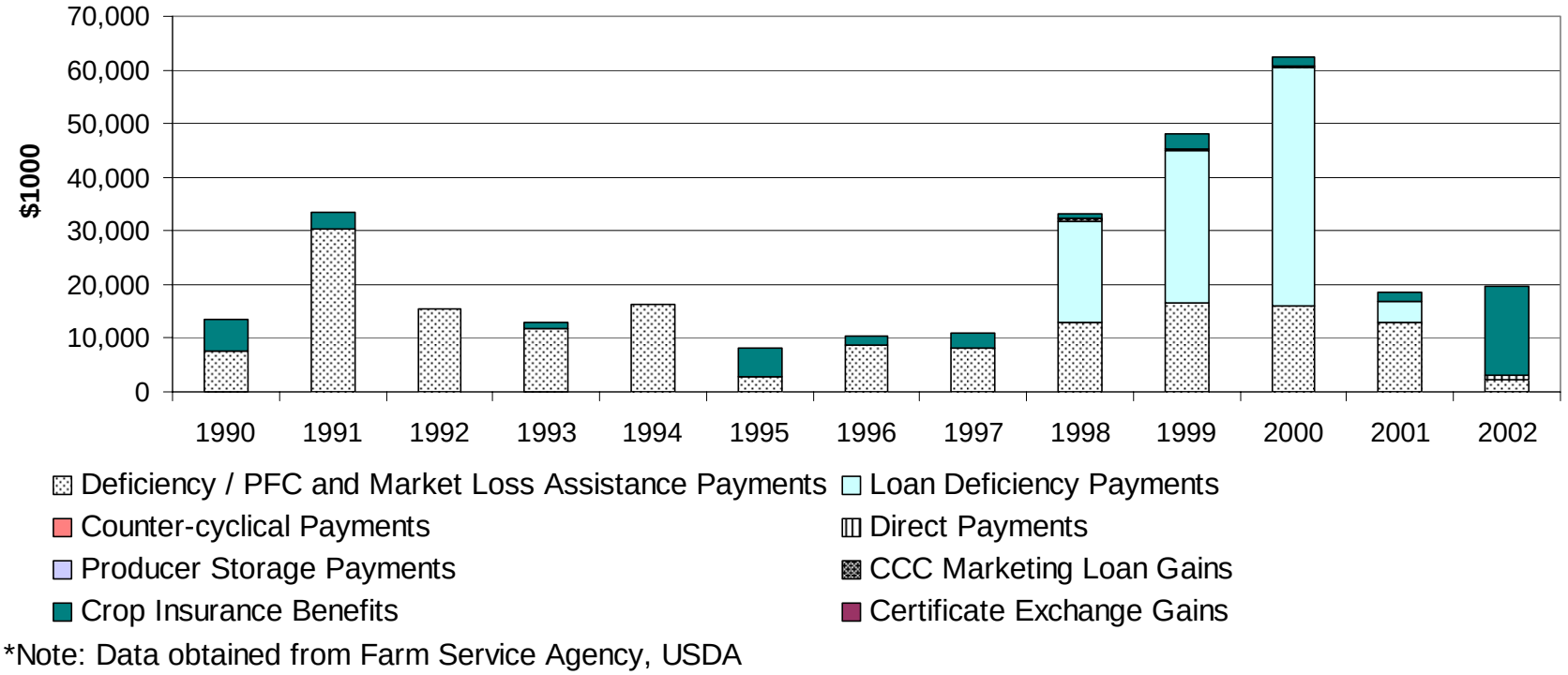
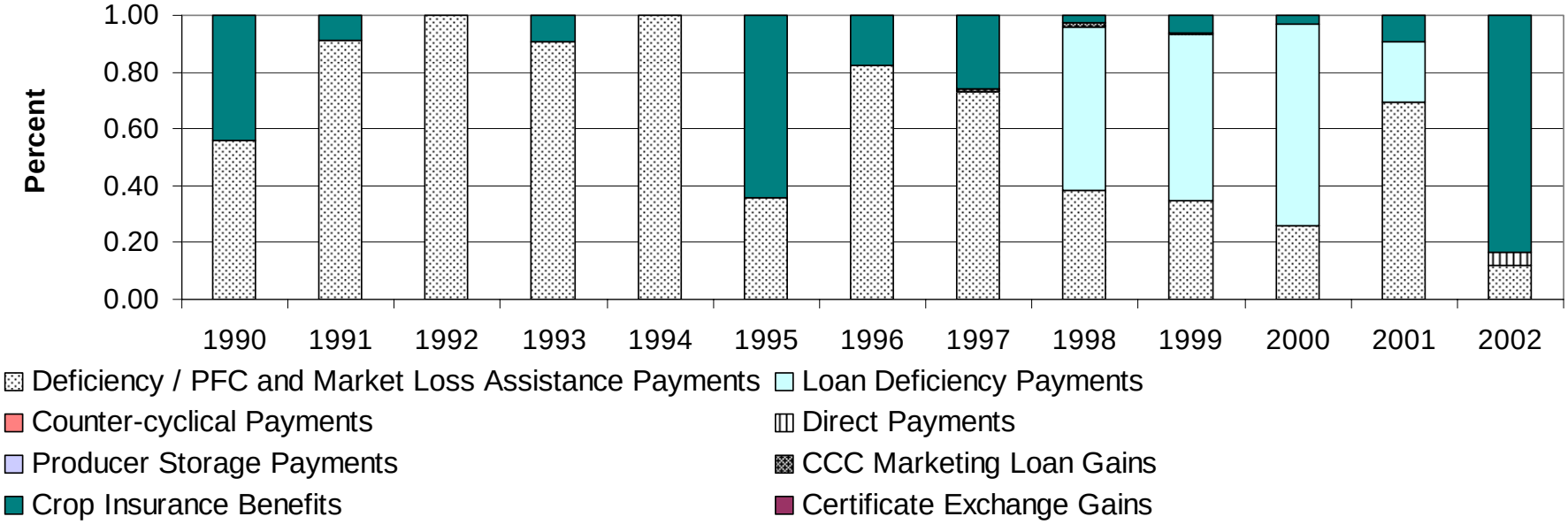



**Figure 22. Oats total annual support by program**




*Note: Data obtained from Farm Service Agency, USDA

**Figure 23. Oats percentage total annual support by program**

Figure 24 and Figure 25 explain payments made to oat producers. Oats have had a steadily increasing loan rate over the last 13 years, while target price, when in effect, remained constant. In 1994, price dipped close to the loan rate. At that time, deficiency payments were paid at a rate that matched the difference between target price and the higher of either market price or loan rate. In this instance, the average annual marketing year price was still higher than the loan rate; however, this dip in price corresponded to an increase in the payment rate and thus a likely increase in total deficiency payments for that crop year. Figure 22 authenticates this fact, showing an increase in deficiency payments from about $11 million to $16 million. Price plunged to below the loan rate in 1998 and stayed there until the year 2001. This resulted in a significant increase in loan deficiency payments during that same time period.

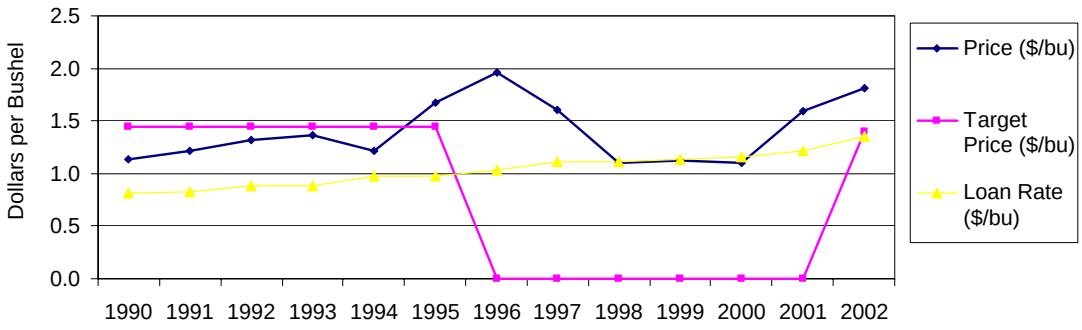



**Figure 24. Relationship between oats price, target price, and loan rate**

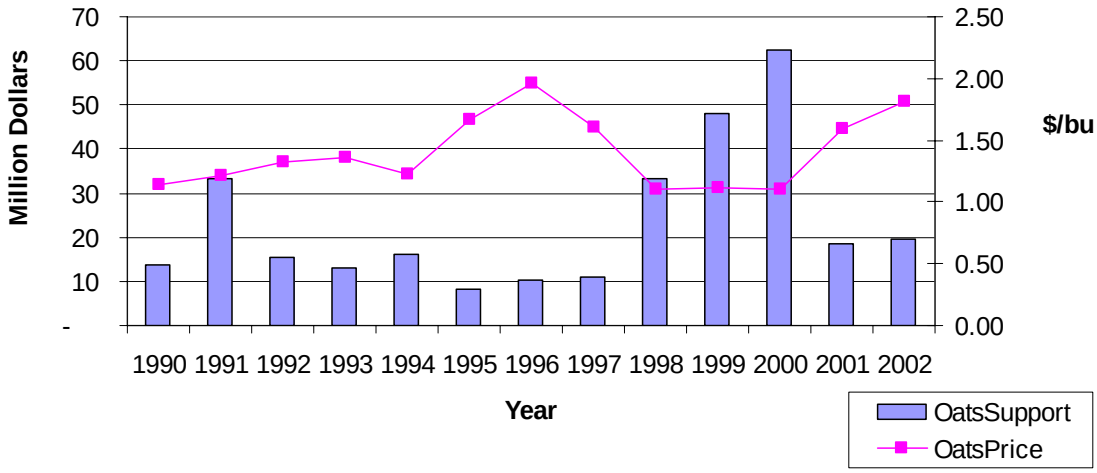
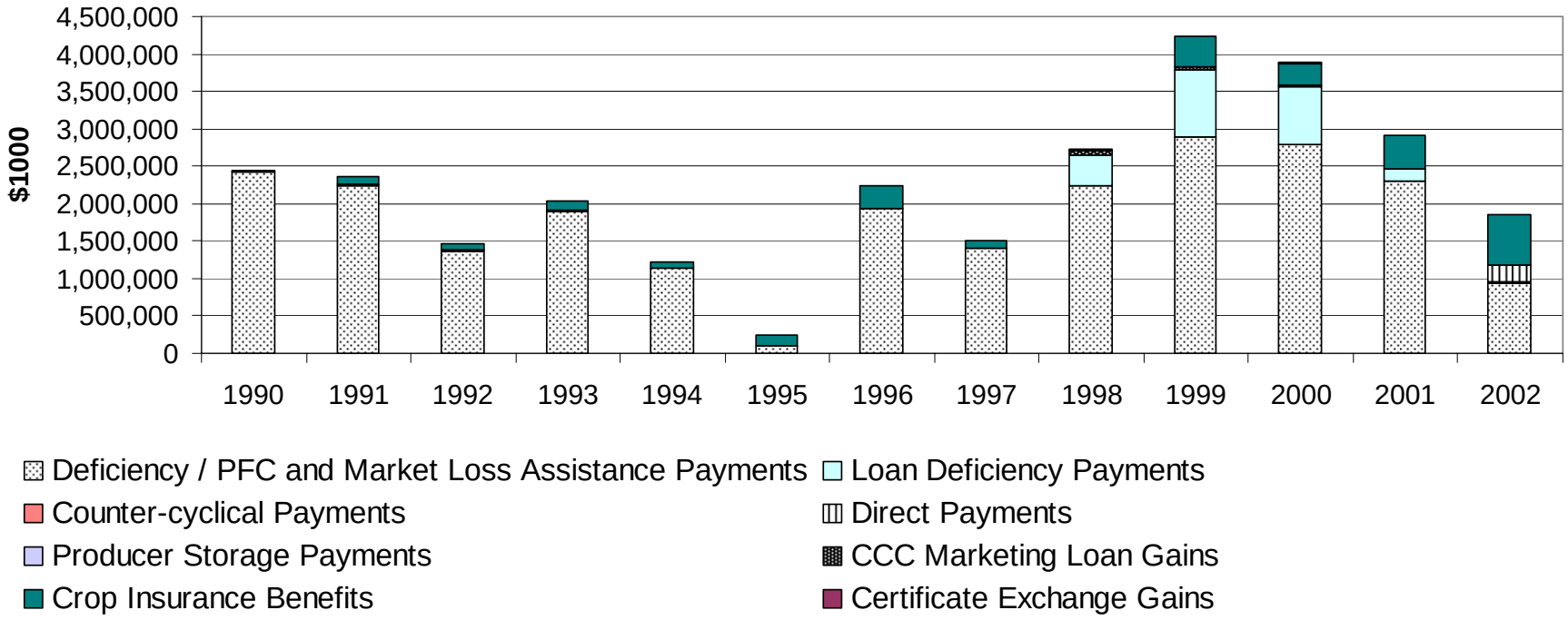


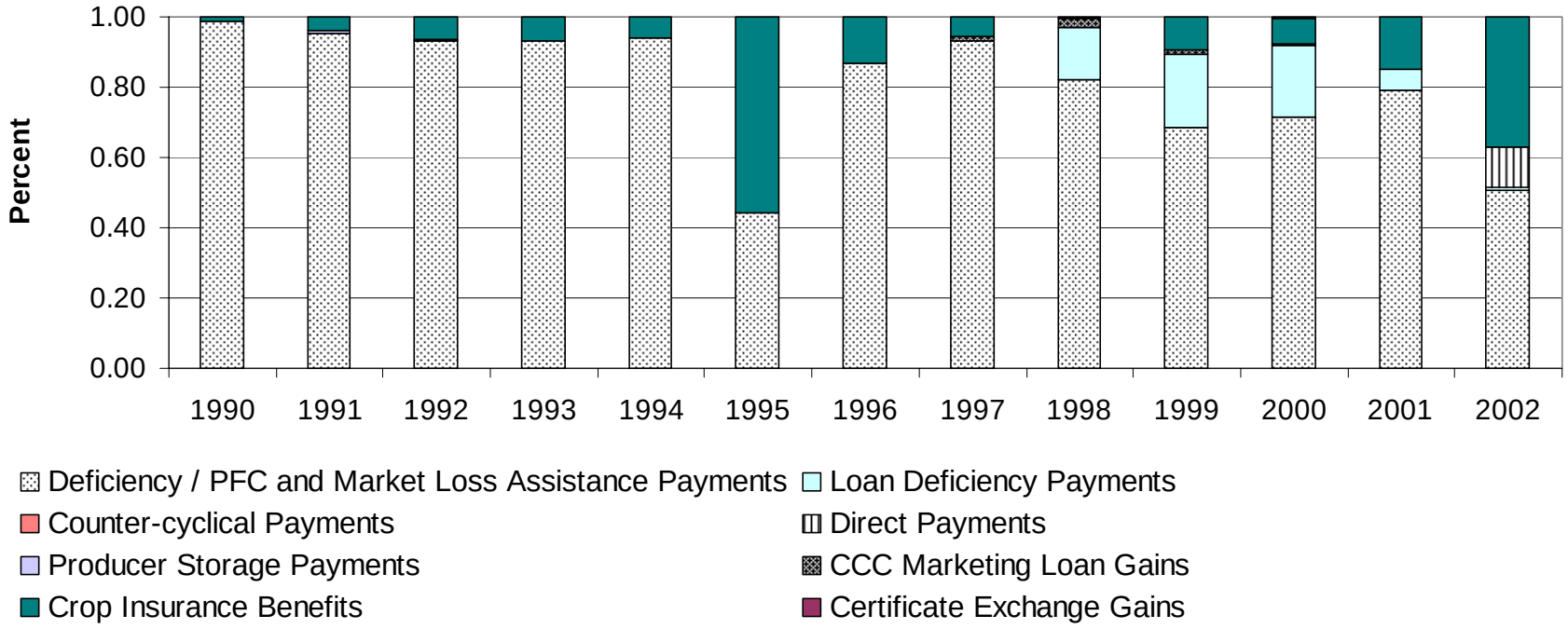

**Figure 25. Relationship between oats price and support**

Wheat producers experienced the following flow of support over the last 13 years: low levels of support in 1995, increased support during the late 1990's, and a decline during the first part of the new decade. Prior to 1998 wheat received the majority of its government payments in the form of deficiency and production flexibility contract payments, with minor support from crop insurance benefits. During crop year 1998, loan deficiency payments began making up a significant proportion of the total government payments received by wheat producers. Direct payments made up a relatively minor proportion of the total CCC expenditures on wheat in 2002. These payments are further illustrated in Figure 26 and Figure 27.




*Note: Data obtained from Farm Service Agency, USDA

**Figure 26. Wheat total annual support by program**




*Note: Data obtained from Farm Service Agency, USDA

**Figure 27. Wheat percentage total annual support by program**

Again, wheat payments can be explained by the relationships between price, target price, and loan rate. From 1990 to 1995 target price was constant at $4.00 per bushel and when target price resumed in 2002 it dropped down to $3.86 per bushel. 1995 is the only year when price was higher than target price, which explains why government support is low in that same year. Wheat price and support have a negative correlation of .77. Wheat loan rate has risen relatively steadily over the 13 year period. During crop year 1999, price dipped below loan rate, which justly corresponds to an increase in loan deficiency payments. Loan deficiency payments also occurred in 1998, 2000, and 2001. Figure 28 shows that price is extremely close to the loan rate those years. Certainly in some counties the posted county price was below the loan repayment rate and thus the accumulation of loan deficiency payments. Figure 29 shows the relatively strong inverse relationship between wheat price and support.

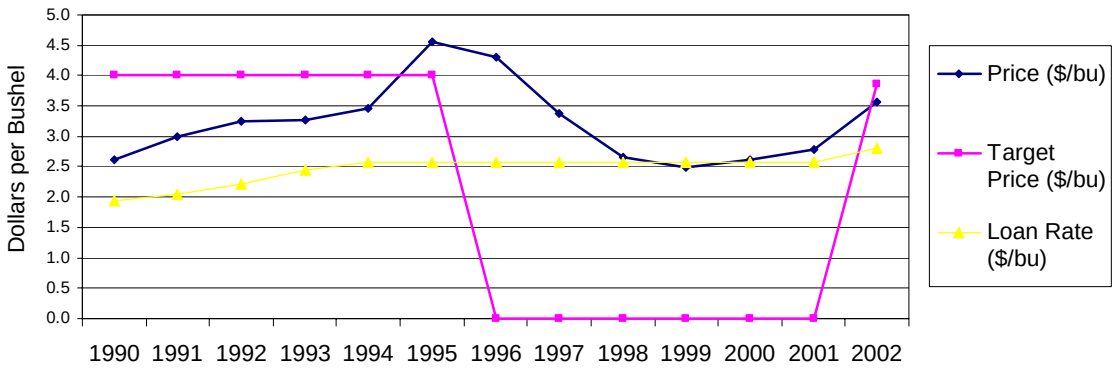



**Figure 28. Relationship between wheat price, target price, and loan rate**

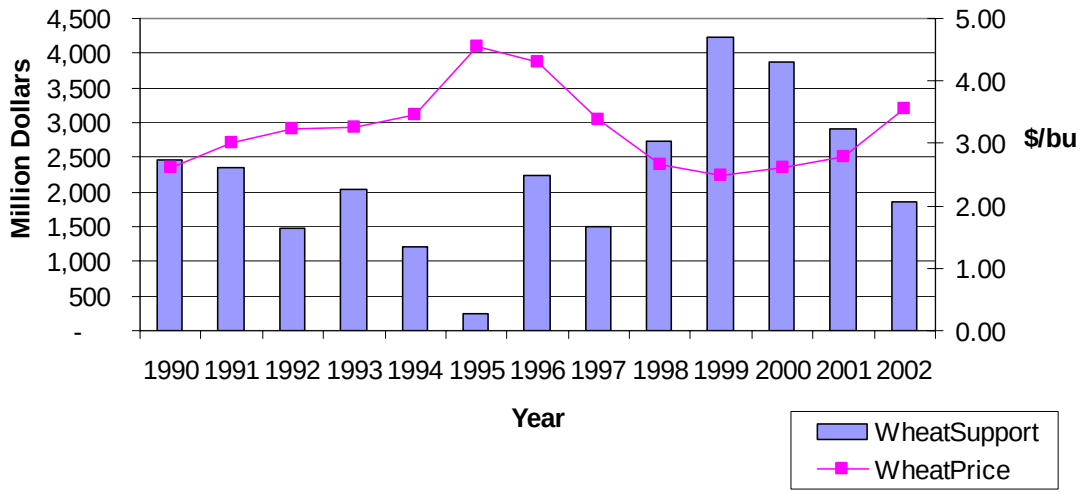
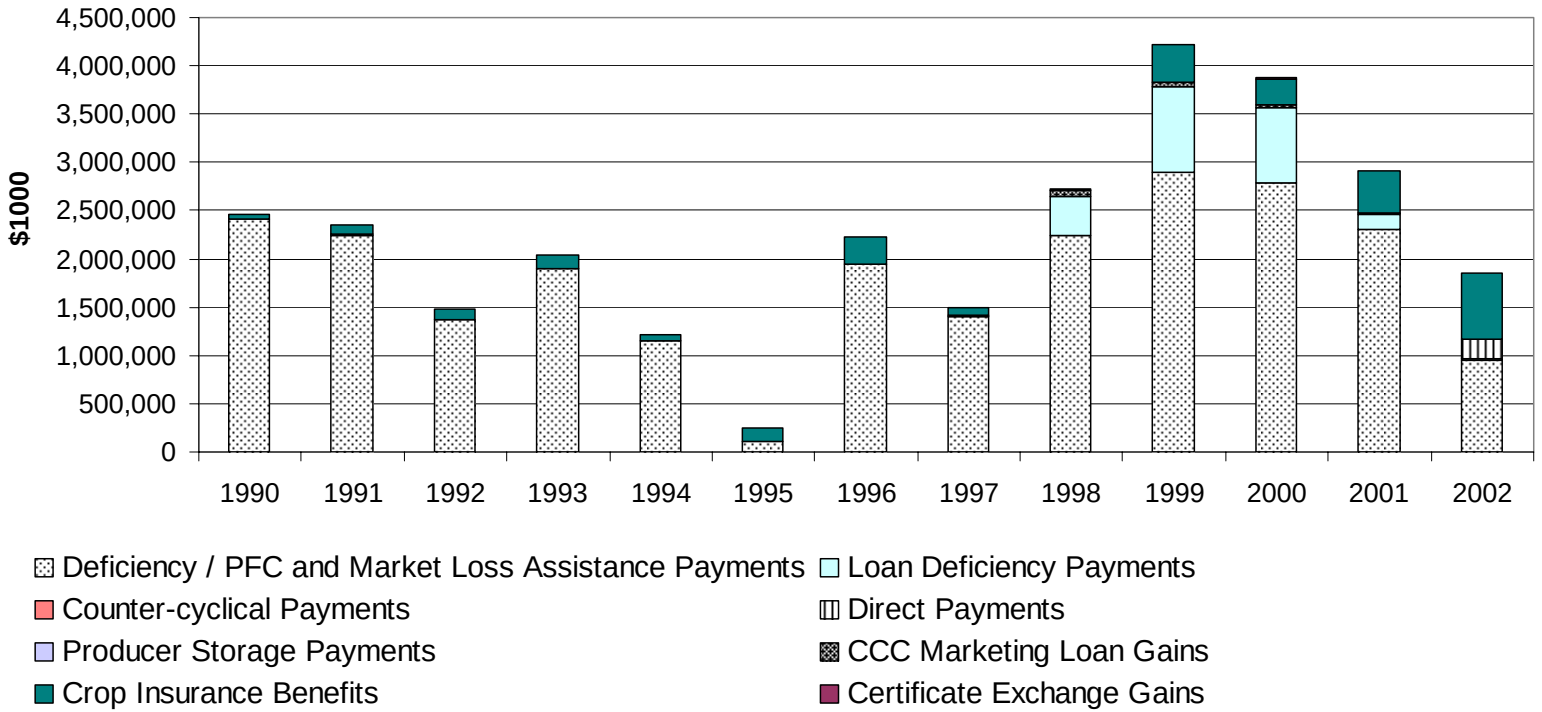


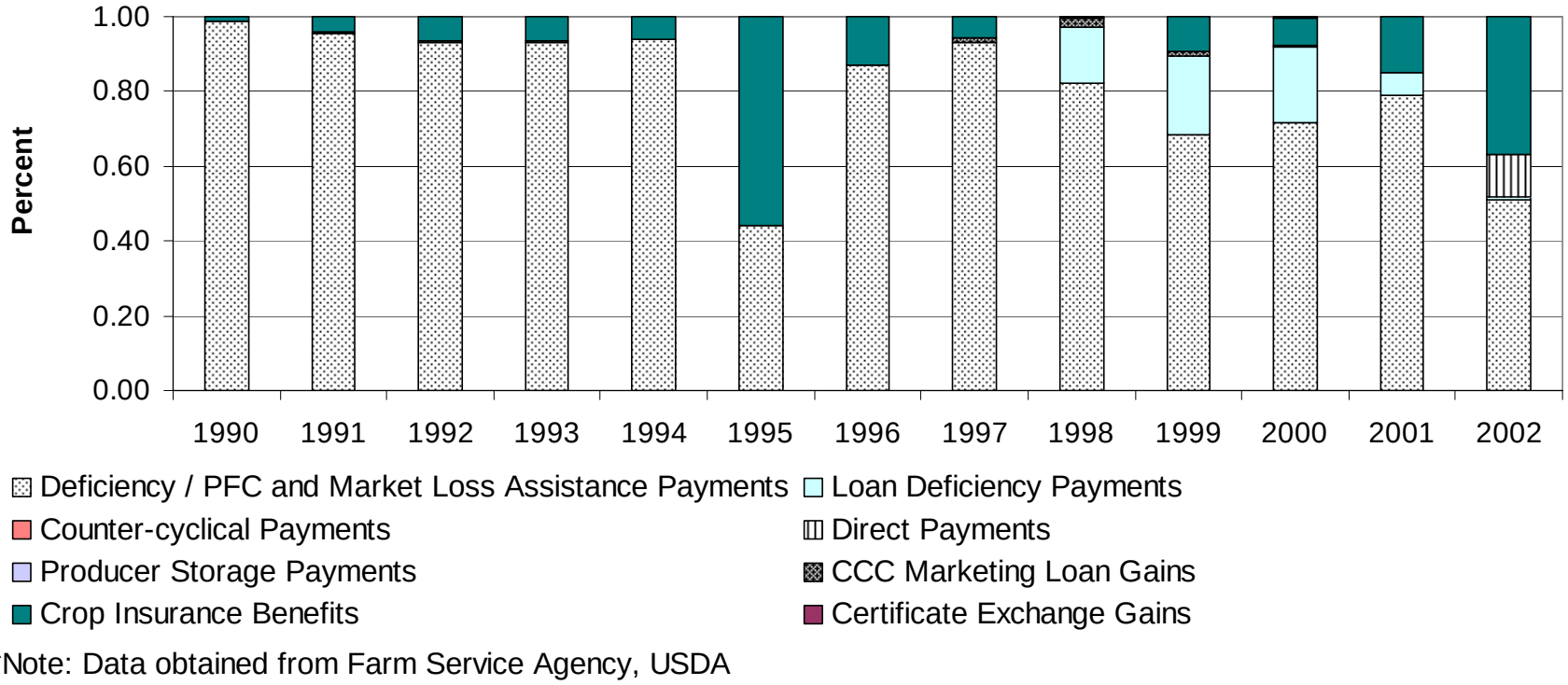

**Figure 29. Relationship between wheat price and support**

Barley support over the last 13 years has been fairly typical of the other program crops in terms of spending fluctuations and in type of payments received. Until 1998, barley received the majority of support through deficiency and production flexibility contract payments and some support from crop insurance benefits, as presented in Figure 30. Following 1998, barley still received production flexibility contract payments; however, loan deficiency payments kicked in and provided substantial support through 2001. Direct payments contributed about 5% of total annual payments to barley producers in 2002, as shown in Figure 31.




*Note: Data obtained from Farm Service Agency, USDA

**Figure 30. Barley total annual support by program**




*Note: Data obtained from Farm Service Agency, USDA

**Figure 31. Barley percentage total annual support by program**

From 1990 to 1995 barley had a constant target price of $2.36 per bushel. When target price was reinstated in 2002, the target price for barley declined to $2.21 per bushel. Loan rate has steadily risen since 1990 for barley producers. In 1990, the average loan rate was $1.28 per bushel, while the 2002 loan rate was $1.88 per bushel. This reflects an average of 4.6 cents per bushel annually.

Barley price peaked in 1995 at $2.89 per bushel, followed by a steady decline to a low price of $1.98 in 1998. However, barley price appears to be in another upward trend since that low, as displayed in Figure 32. Unlike the majority of the other crops, barley price and barley support doesn't have as strong a correlation between the two. At -.57, this lack of correlation is displayed in Figure 33.

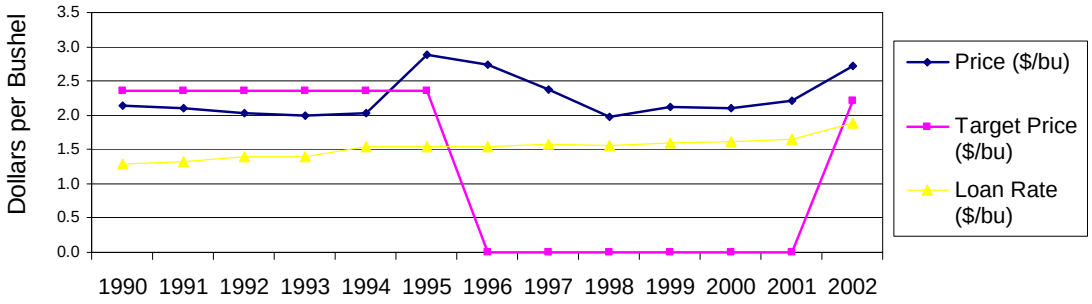



**Figure 32. Relationship between barley price, target price and loan rate**

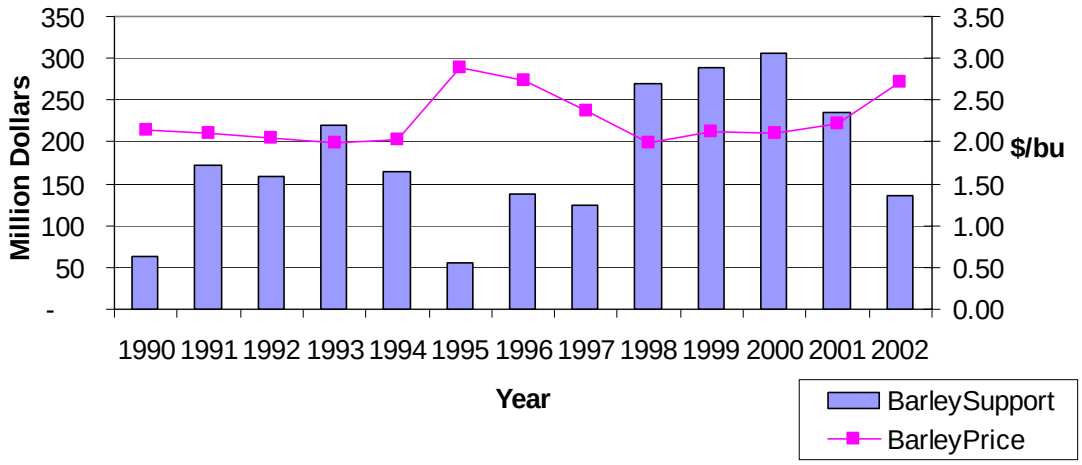
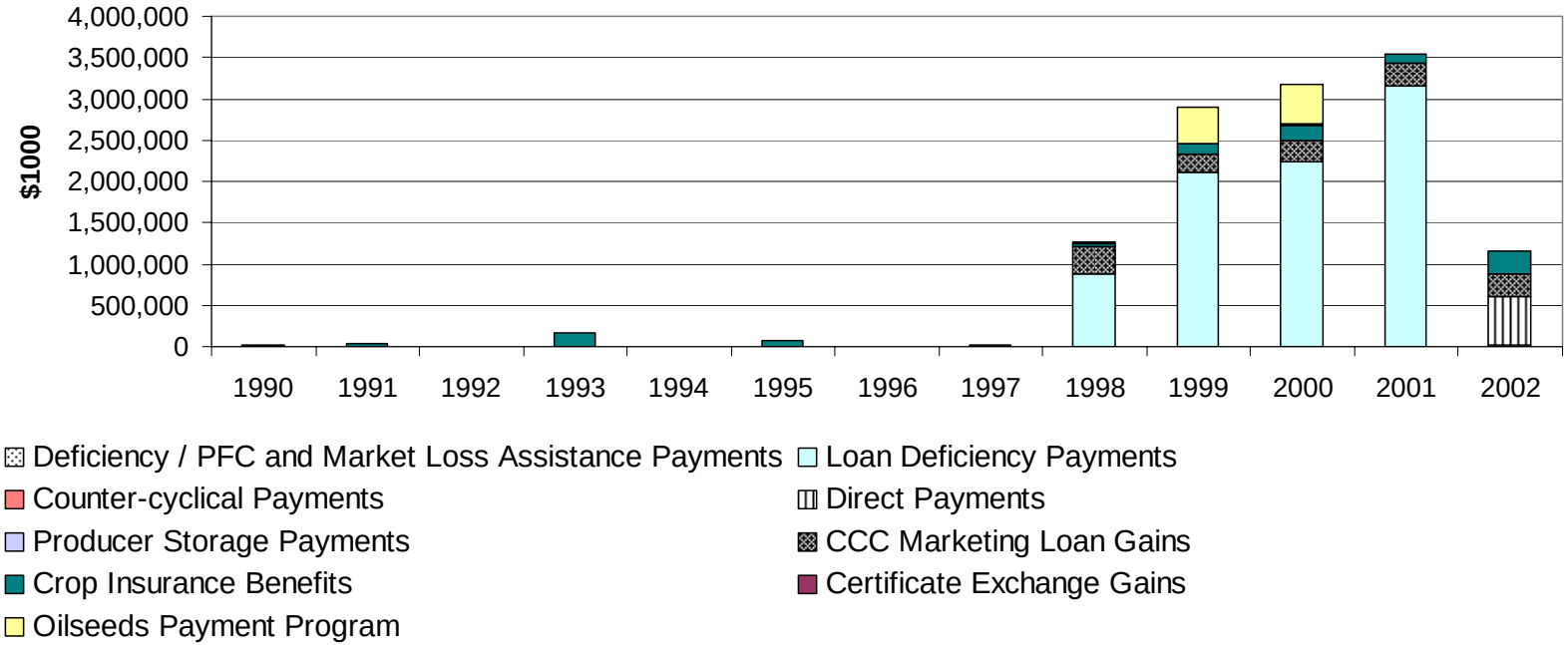



**Figure 33. Relationship between barley price and support**

Compared to the other program crops, soybean payments by program presents the most unique story, as Figure 34 and Figure 35 illustrate. Prior to 1998, the only form of support that soybeans received was crop insurance benefits and those benefits were minor compared to benefits going to other crops. Between 1998 and 2001 the predominate form of support for soybeans was loan deficiency payments, making up nearly 80% of total payments in some years. Soybean producers were also eligible to receive marketing loan gains and oilseed payments during that same time period. In 2002, not only did payments significantly drop off, but direct payments also took the place of loan deficiency payments as the main source of government funding for soybean producers.




*Note: Data obtained from Farm Service Agency, USDA

**Figure 34. Soybean total annual support by program**

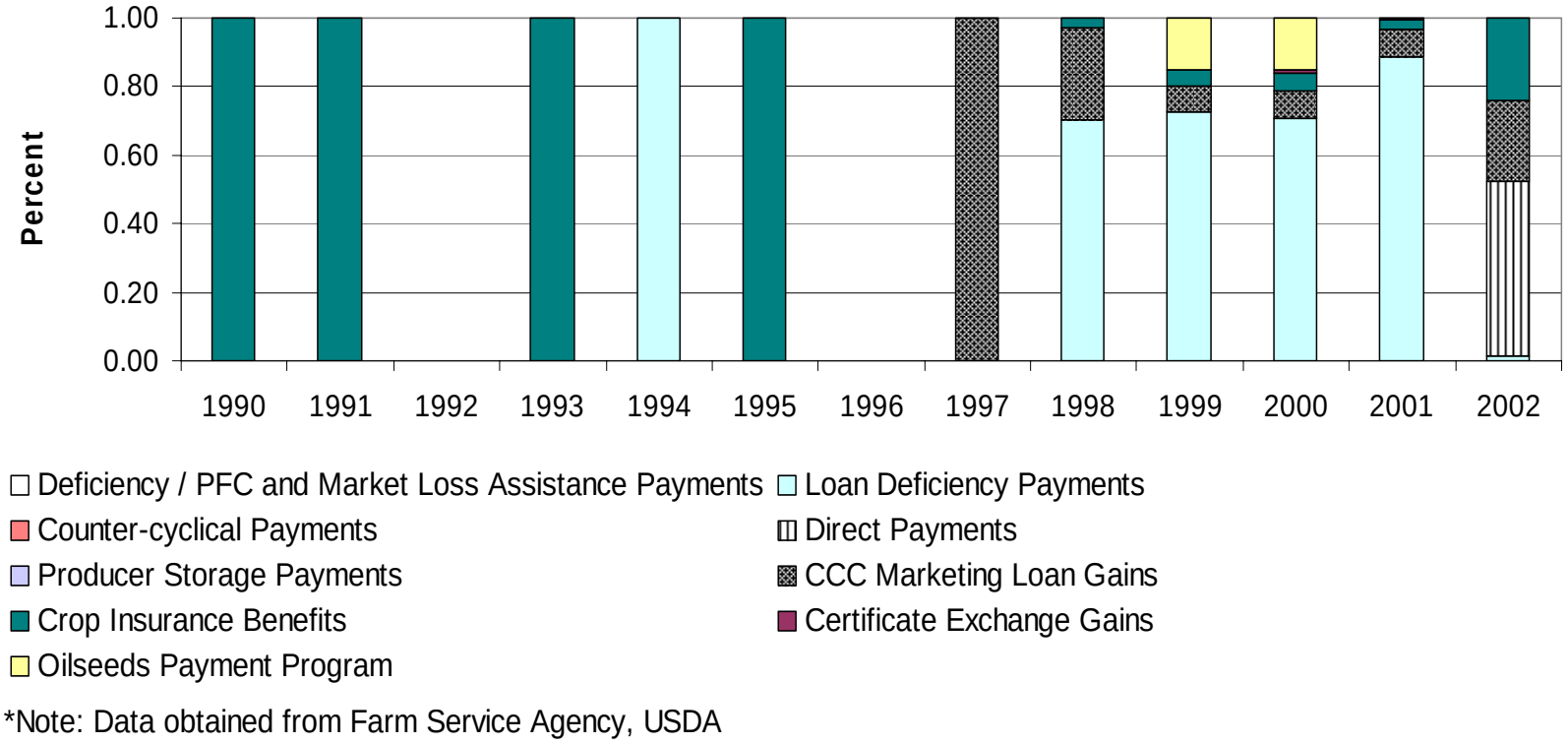



**Figure 35. Soybean percentage total annual support by program**

Since soybeans officially didn't become a program crop until 2002 and given that crop insurance benefits are not linked to price, there is little correlation between soybean price and support over the full 13 year period, as clearly evident in Figure 37. However, between the years of 1999 and 2002 there is a correlation between soybean price and level of government support of -.90, which is a fairly strong correlation. However, for the rest of the analysis soybeans were assumed to be a full fledged program crop during the full 13 year period, so it may serve future analysis to take a closer look at soybean price and loan rate fluctuations over the time period. Figure 36 depicts the fairly constant soybean loan rate and the price fluctuations over the last 13 years. Both Figure 36 and Figure 37 plainly show a peak in soybean price in 1995, followed by a significant downturn until 2002 when average marketing year price rose for the first time since 1996.

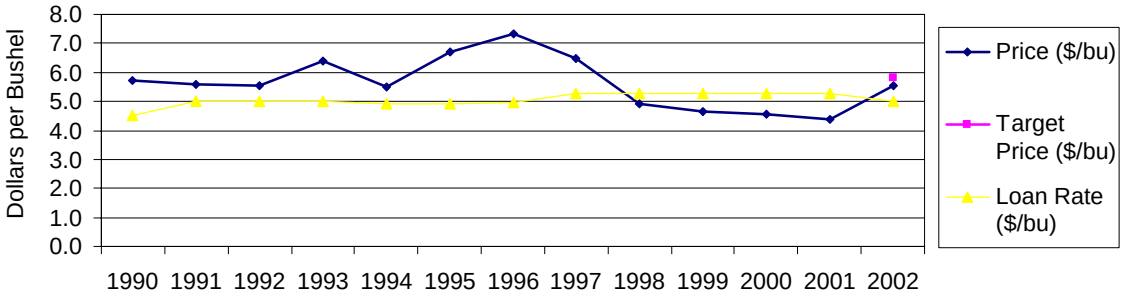



**Figure 36. Relationship between soybean price, target price and loan rate**

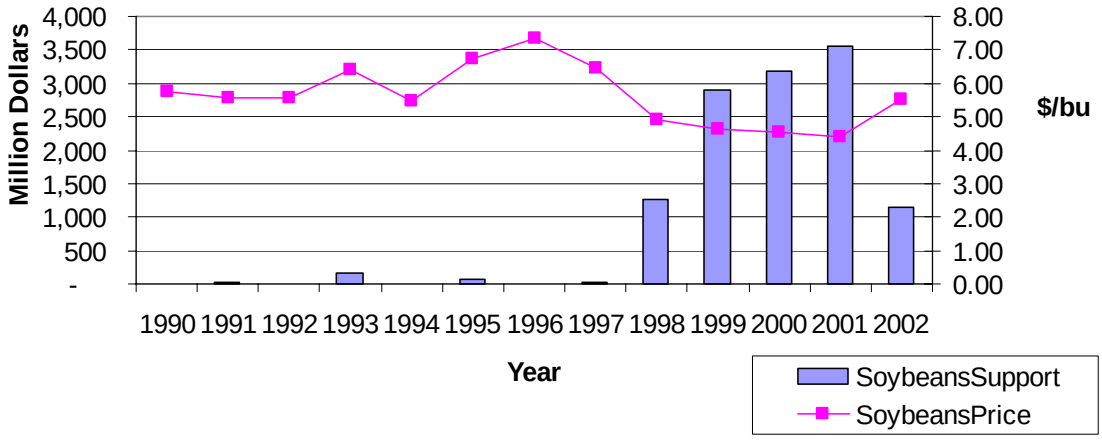
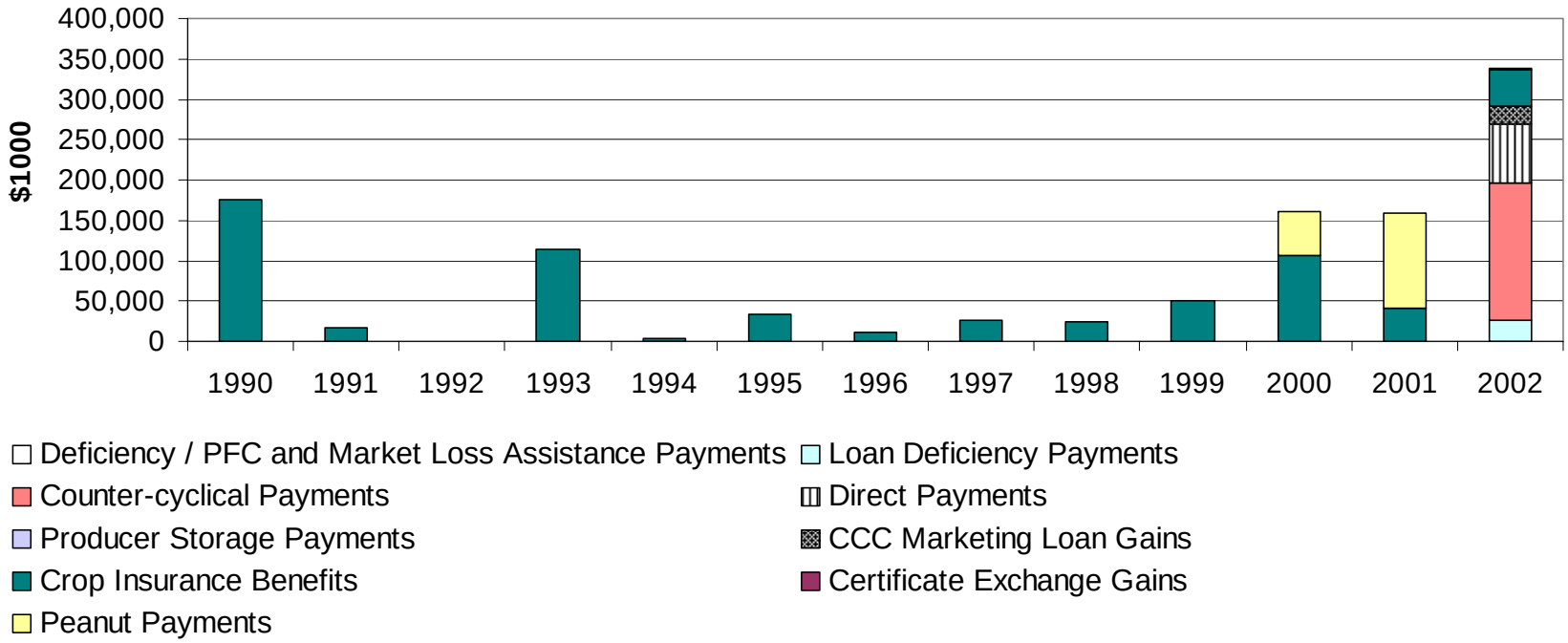



**Figure 37. Relationship between soybean price and support**

Figure 38 and Figure 39 display total annual support by program for peanuts from 1990 to 2002. Since peanuts didn't become a program crop until late in the given time period, their support payments are very comparable to those of soybeans. From 1990 to 1999, the only measurable form of government support that peanut producers received was crop insurance benefits. Peanut payments began benefiting producers in 2000. Among the eight other crops reviewed, peanut producers are the only producers to receive a significant increase in payments between the years 2001 and 2002. This increase is made up of many components. Countercyclical payments make up a largest proportion of 2002 payments although, significant benefits came from loan deficiency payments, direct payments, and marketing loan gains in addition to crop insurance benefits.




*Note: Data obtained from Farm Service Agency, USDA

**Figure 38. Peanut total annual support by program**

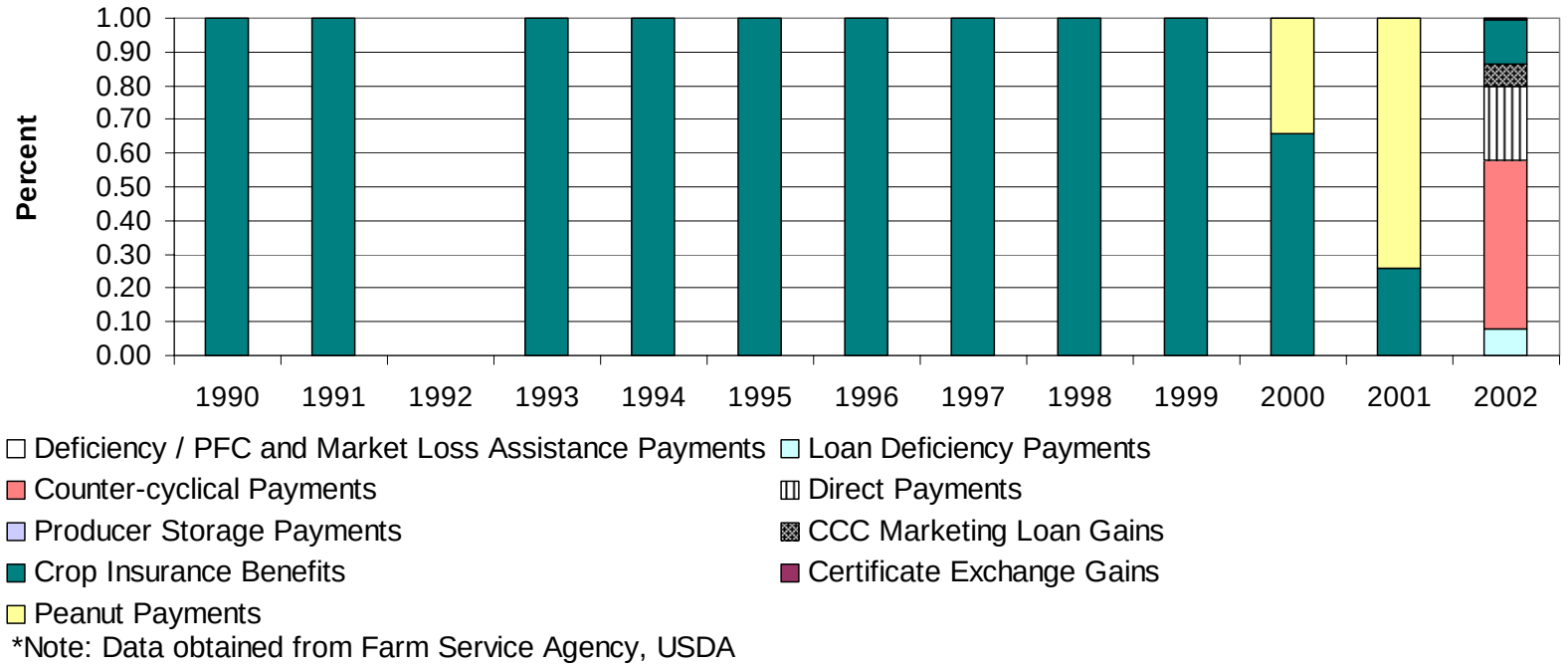



**Figure 39. Peanut percentage total annual support by program**

Between 1990 and 2002 peanut price was at its highest in 1990, remained relatively steady for the majority of the '90s, but since 2000 has significantly declined, as shown in Figure 40. This low price is a strong explanatory variable for many of the payment tools which come into play to make up the government support payments in 2002. Because peanuts were not a program crop for the majority of the years analyzed in this research, there is very little correlation between price and support, only -.53, which is depicted in Figure 41.

Peanuts had a quota loan rate of $.3157 per pound in 1990. Quota loan rate was constant between 1996 and 2001 at $.305 per pound. In 2002, the loan rate for all eligible peanut crops averaged $.1775 per pound. Peanut target price averaged $.2475 in its initial year, which is significantly below the prior quota loan rates.

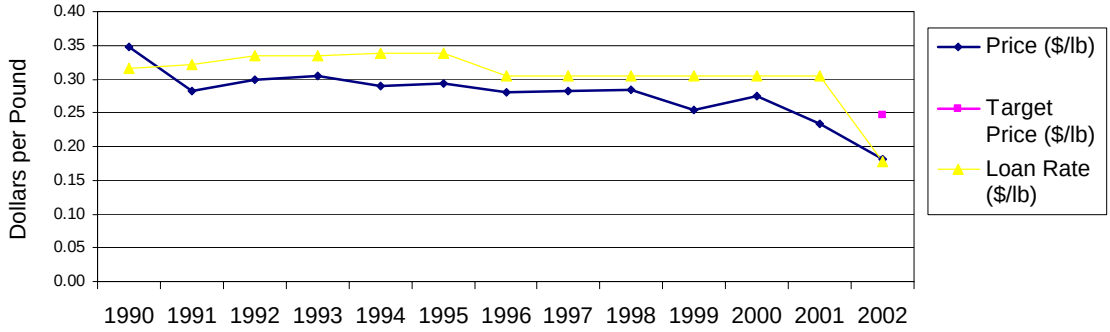



**Figure 40. Relationship between peanut price, target price and loan rate**

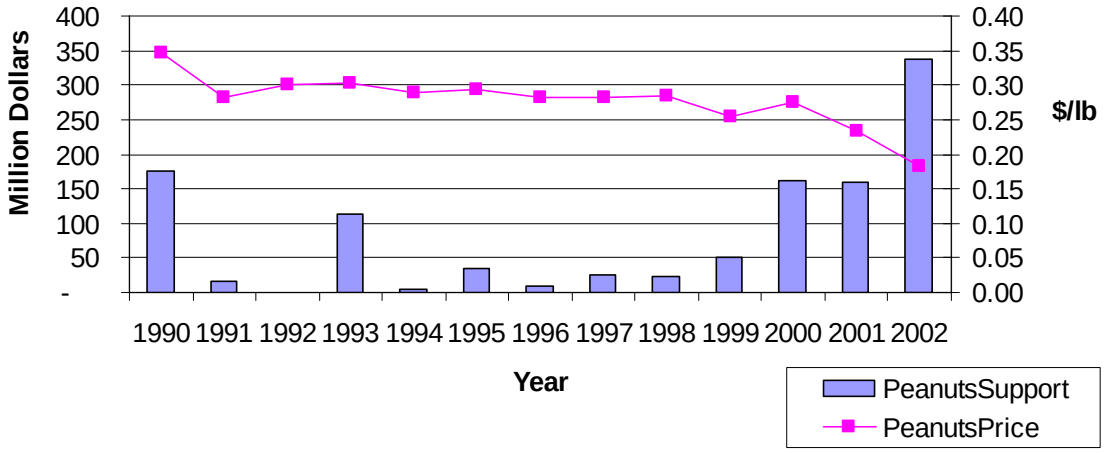



**Figure 41. Relationship between peanut price and support**

One of the most simplistic methods and perhaps the most commonly used method to compare farm program between program crops is by percentage of funding. Each commodity group is interested in maintaining their "percentage of the pie." The following pie graphs illustrate the percentage distribution of funding among those 9 major program crops.

Figure 42 shows the breakdown of payments between major program crops during the full 13 year period. On average, corn received more than 30% of payments, which corresponds to nearly $4 billion each year, with wheat and cotton following with 22% and 18% of payments, respectively. As a reference value, 1% shown in Figure 42 is equivalent to just over $100 million. Therefore, although oats received .002%, their average annual support payments are approximately $23 million.

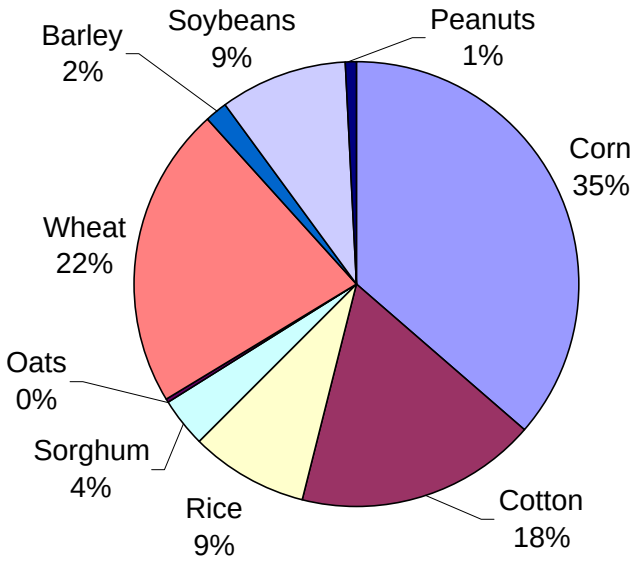



**Figure 42. Average total annual support by crop, 1990 to 2002**

The proceeding pie graphs break down the 13 year period into farm bill ranges. Figure 43 shows the 1990 to 1995 period which covers the lifespan of the Food, Agriculture, Conservation, and Trade Act of 1990 (FACT). There are no significant percentage differences between the FAIR act and the 13 year averages viewed in Figure 42 except for soybeans. During the life of the 1990 farm bill, soybeans received a mere 1% of total annual payouts, compared to the 9% received over the full time period.

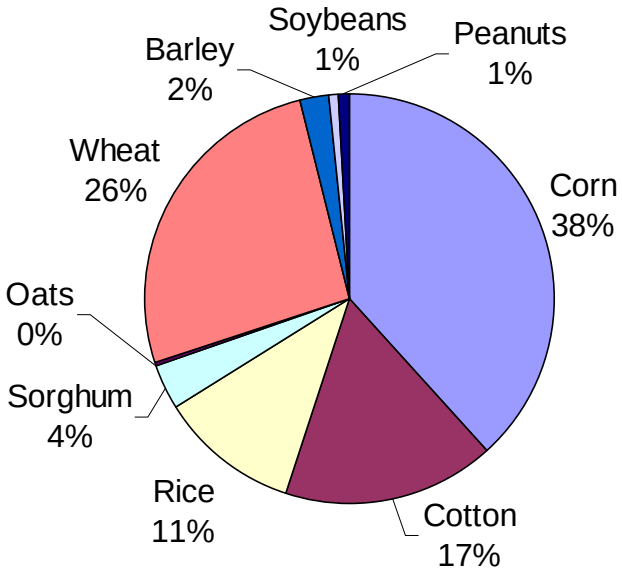



**Figure 43. Average total annual support by crop, 1990 to 1995**

The breakdown of how funding is being divided among program crops for the period that covers the Federal Agricultural Improvement and Reform Act of 1996 is illustrated in Figure 44. The one major divergence between payment dispersions during the FAIR Act and the FACT farm bill is the difference in spending for soybeans. Soybeans expenditures jumped from 1% to 13%, which accounts for an increase in support of about $1.7 billion. In fiscal year 1998, soybeans began receiving loan deficiency payments, followed by oilseed payments in 2000, which explains the substantial increase in funding. Prior to this soybeans had only been receiving the majority of their support from crop insurance benefits.

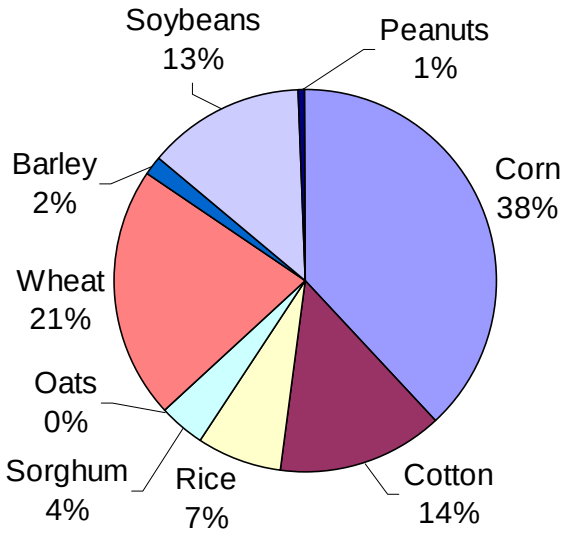



**Figure 44. Average total annual support by crop, 1996 to 2001**

The final pie graph encompasses the 2002 Farm Bill and shows some stark changes as compared to prior comparisons. Program crop payments to corn dropped from 38% to 26%, which corresponds to a drop from average payments of $5 billion under the 1996 farm bill to $3 billion during the first year of the 2002 farm bill. Another stark difference is the fact that peanuts receive 3% of payments whereas, in the past, peanuts averaged approximately 1%. Taking a closer look at the data set, peanuts began receiving program payments in 2002. Cotton also had a substantial increase in funding with the enactment of the 2002 Farm Bill, jumping from 14% of the payments to 28%, while oats still received the smallest percentage.

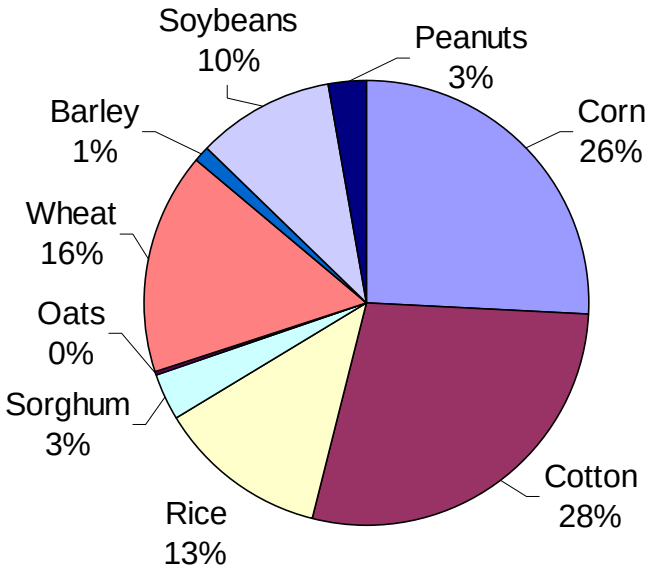


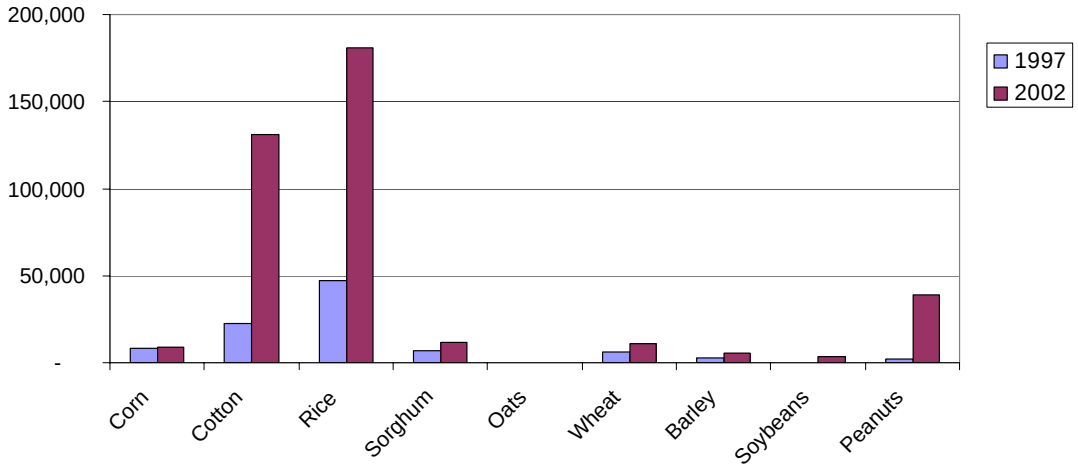

**Figure 45. Total annual support by crop, 2002**

Figure 42, Figure 43, Figure 44, and Figure 45 aid in visualizing prevalent trends in the past four farm bills. Corn has historically received the largest percentage of funding, but those percentages are steadily declining. Cotton also receives a substantial proportion of the funding, which has been fairly consistent over the farm bills, yet received an increase with the most recent legislation. Rice, sorghum, oats, and barley have been consistent in their percentages and thus their 18 year averages should be fairly representative of their average annual percentage of support. Wheat has experienced a significant decline in the percentage of funding from 26% under the 1985 and 1990 farm bills to 9% under the 2002 legislation. Soybeans and peanuts have received benefits of significantly higher support under the most recent farm bills.

However, using percentage of payments as a measure of equitability has significant flaws. This measure fails to take into consideration, among other things, the

number of acres being planted, the value of the crop being supported, the costs of production, number of farmers planting a crop and should not be used as a measure of equitability of payments. Further equitability analysis in this research will attempt to capture those concepts.

The next calculation utilizes census data from 1997 and 2002 to get an approximate calculation of average support per farm. The results of this calculation are displayed in Figure 46 and Appendix E. Census data for 1992 was not used, as it failed to provide a full breakdown of the number of farms for each of the crops being analyzed. The results presented in the following figure clearly show that in 2002 individual cotton and rice farms are getting more support relative to the other program crops. It is important to keep in mind that this calculation does not account for the size of the farm, nor the production costs associated with each crop. An additional result evident from Figure 46 is that individual farms received significantly more support, on average, in 2002 than in 1997. Oat support per farm is barely evident in the figure; nonetheless, the results in Appendix E show that in 1997 and 2002 the average oat farm received $117 and $307. The results for this calculation are somewhat misleading, since all farms are included not just participating farms.

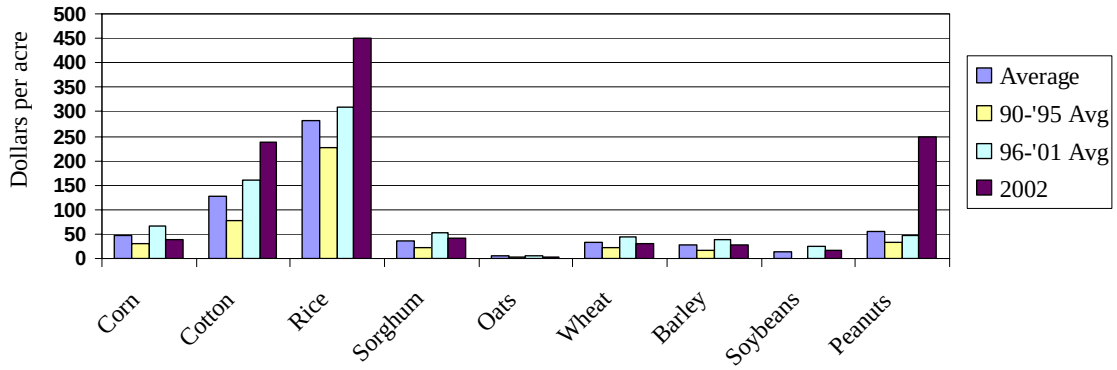



*Total annual support divided by number of farms

**Note total annual support obtained from the Farm Service Agency. Number of farms data obtained from the Census of Ag.

**Figure 46. Support per farm**

Another method of measuring the equitability of support across crops is to compare the support given to acreage planted and a spin off of that, comparing support to base acreage. The results for all 13 years are available in Appendix E, while Figure 47 and Figure 48 present the averages based on different acreages. By looking at both of these comparisons, it is easy to see that rice consistently received the most support in the form of dollars per acre. Other than peanut support in 2002, cotton received the second largest dollar amount of support per acre. As compared to the "piece of the pie" measurements, support per acre tells a much different story for corn. Corn has received almost the largest share of payments for each time period analyzed, but individual producers are not receiving as much per acre because the large share of funds is being divided among a vast area.

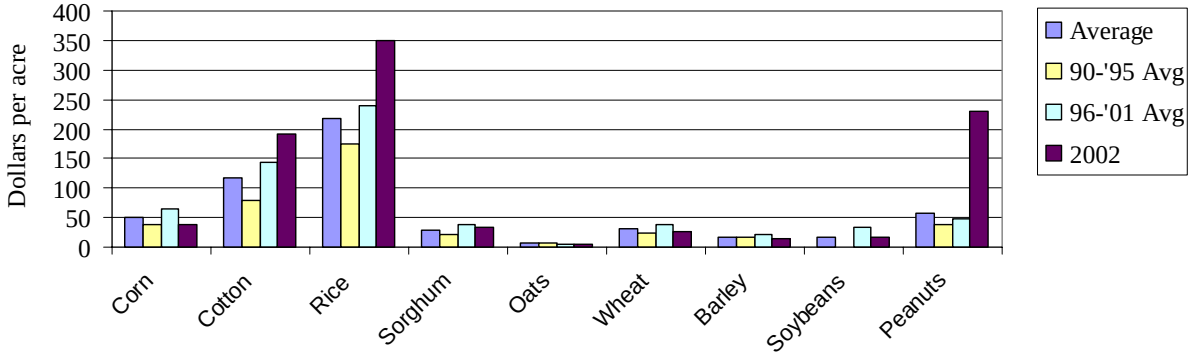



*Total Annual Support divided by Total Annual Planted Acres

**Note: CCC Expenditures obtained from Farm Service Agency, USDA. Planted acres obtained from National Agricultural Statistics Service, USDA.

**Figure 47. Support per planted acre**

The results for the support per base acre calculation are virtually the same as those for support per planted acre; however, there are slight variations. For example, rice planted acreage is less than rice base acreage and thus support per planted acre is higher than support per base acre. However, the net effect is the same: rice and cotton are getting significantly more support per acre relative to the other program crops.




*Total Annual Support divided by Annual Base Acreage

**Note: CCC Expenditures obtained from Farm Service Agency. Base Acres obtained from FAPRI and Farm Service Agency.

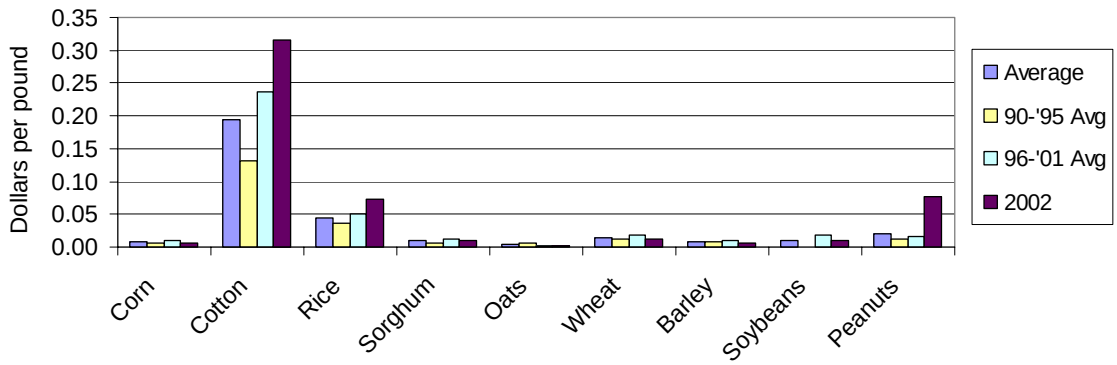
**Figure 48. Support per base acre**

Appendix F reveals the similar results as those presented in Figure 48, in the form of a ranking system from the lowest relative amount of support, indicated by number one, to the highest relative amount of support, indicated with number nine. The average rankings for the 13 year period are virtually the same for both the support per planted acre and the support per base acre. The rankings, from the lowest amount of support to the highest average level of support, in dollars per acre are: oats, soybeans, barley, peanuts, wheat, sorghum, corn, cotton, and rice. Rice has received the most support per acre every year since 1990.

By utilizing the Support per acre equitability calculation, it can be determined that just looking at the dollars spent on each commodity is not an accurate way to measure equitability as it fails to represent the full story. For example, although corn has historically received 40% of government payments, it proportionally received much less than rice in terms of dollars per acre.

To take this ratio to the next level, this study broke down the ratio on a per unit of production basis, both actual production and "program production." Program production is defined as base acres multiplied by direct payment yield in pounds, while levels of actual production were taken directly from NASS and converted to pounds for each individual crop. The complete set of ratio results is available in Appendix E, while the averages for each crop are presented in Figure 49 and Figure 50.

As viewed in Figure 49, rice no longer received more support than the other program crops. Rice yields significantly higher poundage per acre than any other program crop, thus it makes sense that their per acre support is much higher. Although the support that rice receives per pound is comparable to the amounts the other crops receive, it is still higher than the majority of other crops. Comparatively, cotton receives the most support per pound of production in every single year, up to $.43 in 2001. Of the three crops that are getting the most support per pound of production, each crop had an increase in support per pound during crop year 2002, while each of the other program crops had a decline in support during the 2002 crop year.

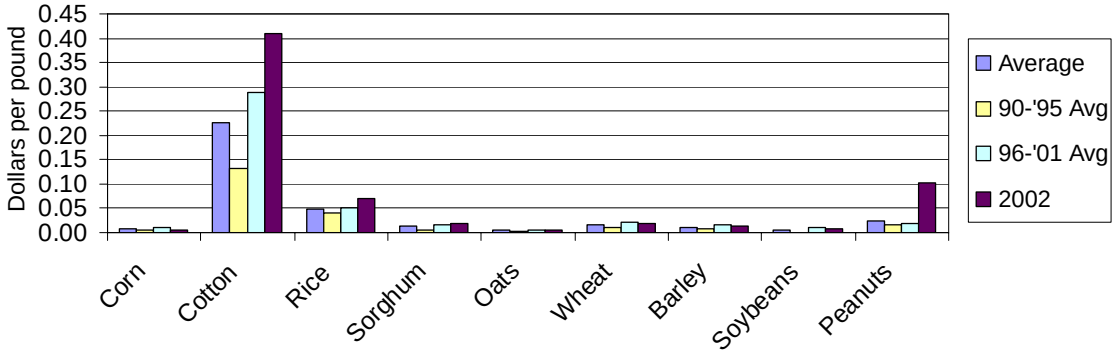



*Total Annual Support divided by total pounds of "Program Production". Program Production is program yield multiplied by base acres.
**Note: CCC Expenditures obtained from Farm Service Agency. Program yield and base acres obtained from FAPRI and Farm Service Agency.

**Figure 49. Support per pound of program production**

The differences between support per pound of program production (Figure 49) versus support per pound of actual production (Figure 50) are minor and don't change the overall picture of the results. On average, actual production tends to be about the same as program production. Average annual program production slightly exceeds actual annual production over the 13 year period for barley, wheat, sorghum, and rice.

Cotton has received between 4 and 45 cents per pound produced over the last 13 years. The only other crops that have ever received more than 5 cents per pound were rice in 2000 and peanuts in 2002. For the remaining crops that are getting considerably less support, it is rare for them to receive more than one cent in government support per pound of actual production.




*Total Annual Support divided by total pounds of actual production.

**Note: CCC Expenditures obtained from Farm Service Agency. Annual Production obtained from National Agricultural Statistics Service.

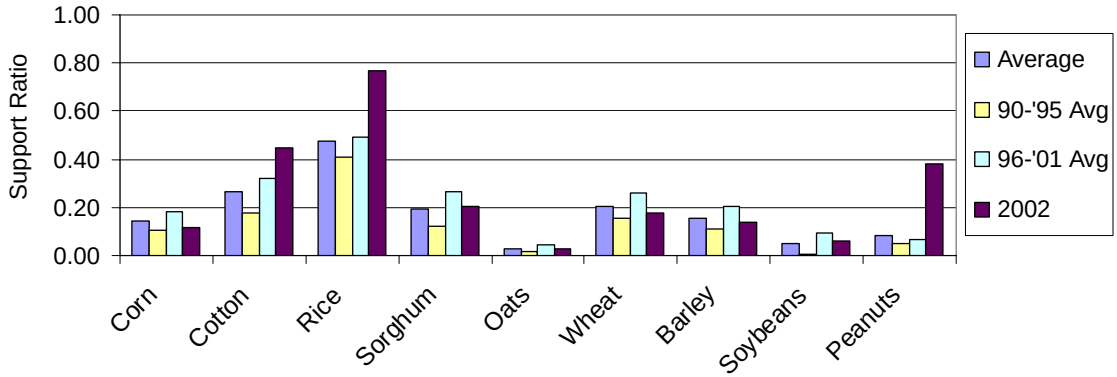
**Figure 50. Support per pound of actual production**

Comparative rankings for support per pound are given for each individual year in Appendix F. Soybeans received the lowest amount of support until 1998, when peanuts and oats received the least support per pound. On the other end of the scale, cotton received the highest ranking, corresponding to the highest amount of support, every year. Rice closely followed cotton's lead.

Although cotton received the most support per pound of production, this method of determining equitability of payments fails to account for production costs of cotton. The following set of ratios, per acre support relative to total economic costs per acre and per acre support relative to total variable costs per acre, attempt to factor costs into our results. The results of these two ratios are presented in Figure 51 and Figure 52.

When total annual support per planted acre is divided by total costs per planted acre, oats received the least amount of support relative to total costs per acre, while rice received the largest percentage of total costs covered by government support. During the 13 year period oat producers received from as low as .9% and up to 9.5% of their

total costs covered by government support payment. Rice received from 21% to 85% of their annual total costs matched in government support payments.

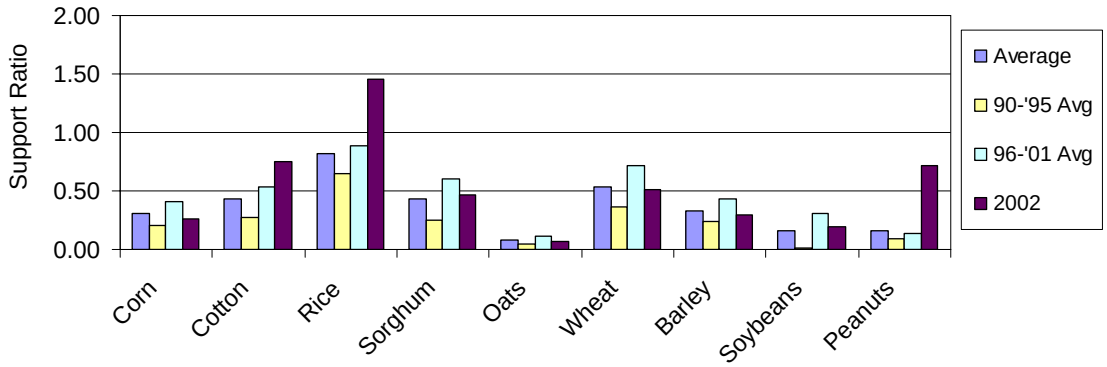



*Total Annual Support per planted acre divided by Total Costs per planted acre.

**Note: CCC Expenditures obtained from Farm Service Agency. Total Costs obtained from Economic Research Service, USDA.

**Figure 51. Per acre support relative to total costs**

Figure 52 illustrates the results for the per acre support relative to total variable costs calculation organized by farm bills. When looking at these results it is important to keep in mind that the USDA-ERS changed variable cost reporting styles for these crops during different years (see Table 3), which could have an affect on the outcome of the results for this ratio. Therefore, it is important to not only look at the averages by farm bill year, as presented in Figure 52, but also to look at the results on an individual year basis.




*Total Annual Support per planted acre divided by Total Variable Costs per planted acre.

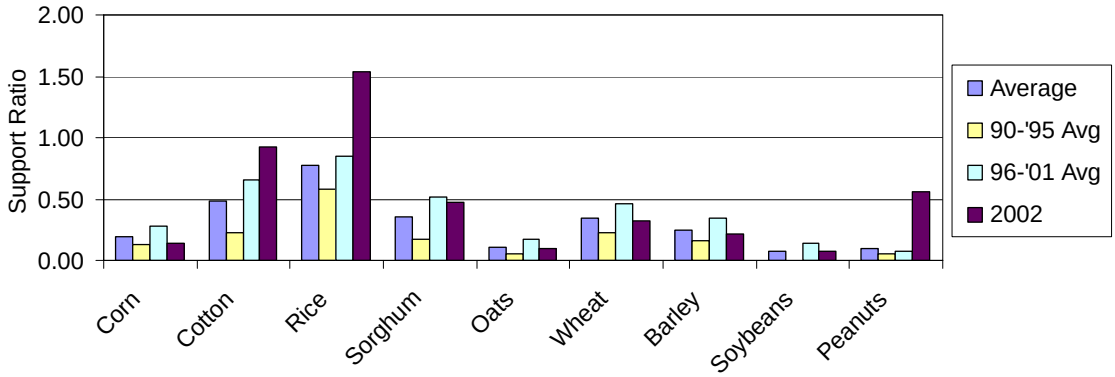
**Note: CCC Expenditures obtained from Farm Service Agency. Total Variable Costs obtained from Economic Research Service (ERS). ERS changed reporting style for total variable costs for sorghum & peanuts in 1995, corn in 1996, cotton & soybeans in 1997, wheat in 1999, and rice in 2000.

**Figure 52. Per acre support relative to total variable costs**

The new variable cost reporting style changed in 1996 for corn. From Figure 4 in Chapter III, corn variable costs per planted acre went from $175 in 1995 to $160 in 1996. A drop of that size appears to be uncharacteristic. However, there is no way of knowing if 1995 costs were overstated, 1996 costs were understated, or if both are accurate representations of variable costs for each year. The striking difference between the two is the different years of variable cost are in the interest expenses. In 1996 the interest cost is reported as nearly $17 per planted acre, while 1995 interest expense is reported as barely under $4. Therefore, corn support per acre relative to total variable costs may be slightly higher than what it would be if the variable costs were reported consistently throughout the 13 year period. Each of the other program crops were similarly affected depending on the reporting style; those changes need to be considered when analyzing the complete results.

Despite the limitation of cost data, per acre support relative to total variable costs presents a theoretically important concept. When variable costs are met, production is encouraged. Therefore, there are a few years of support that present some concern in terms of encouraging production.

Support per unit relative to price is the first ratio to incorporate value. Figure 53 shows the average results by farm bill period. The full results are available in Appendix E. In every year other than 1998, rice received a higher percentage of support relative to the annual marketing year price. On the other end of the spectrum, soybean producers received the least of support overall.



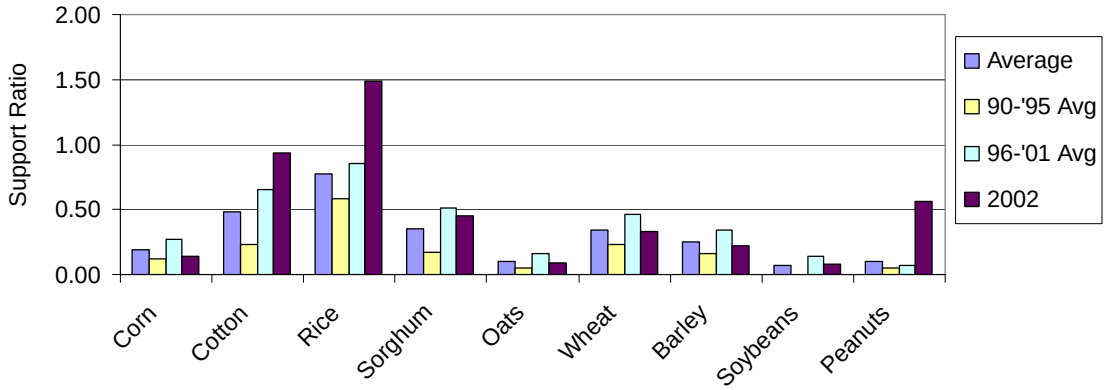

*Divides Support per Actual Production by Price per unit. Support per Actual Production is Total Annual Support divided by Actual Production.

**Note: CCC Expenditures obtained from Farm Service Agency. Price obtained from National Agricultural Statistics Service.

**Figure 53. Support per unit relative to price**

The second ratio used in this research that includes value is total annual support divided by total value of production. The complete results are available in Appendix E, while average results based on farm bill year are shown in Figure 54. This value of

production calculation is the closest thing to incorporating the importance or worth of the good to society. Crop dollar value may not be an accurate measure of worth, but it demonstrates a rough measure of the crop's value. Given the use of prior ratios, an argument may be made that crops receiving less support may not be as valuable to our society; however the following calculations show that even relative to their own "value" crops such as oats are still received comparatively less.



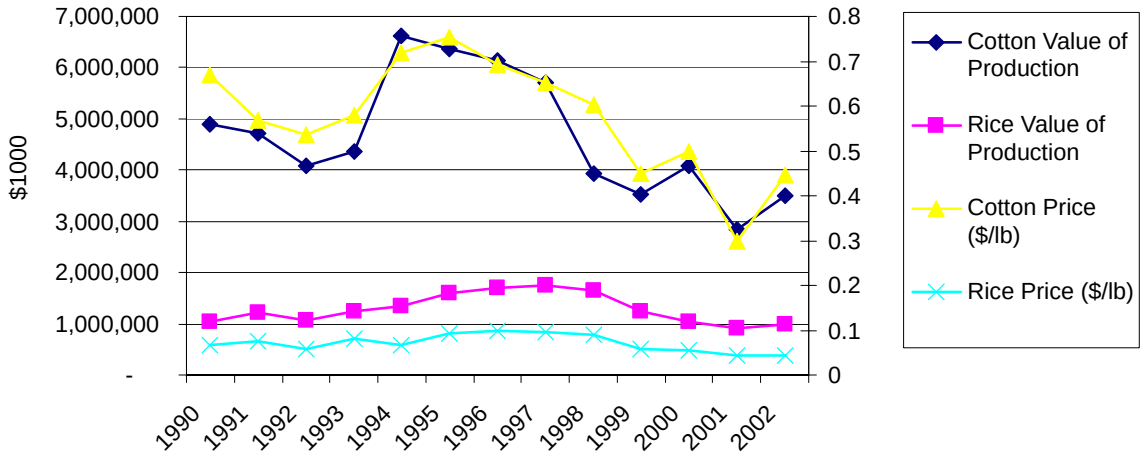

*Total Annual Support divided by Total Annual Value of Production.

**Note: CCC Expenditures obtained from Farm Service Agency. Total Value of Production obtained from National Agricultural Statistics Service.

**Figure 54. Total annual support divided by total value of production**

Another important fact learned from the results in Figure 54 is that, in a few individual cases, government support exceeds the annual value of the crop. Between the years 1999 and 2001, rice received from 111% to 159% of their total value in government payments. In 2001, cotton producers received 150% of that year's total value in government payments. These results may simply be anomalies caused by excessively low prices leading to low total crop values. Figure 55 shows the relatively low total values for cotton and rice during those years. Thus suggesting the reason

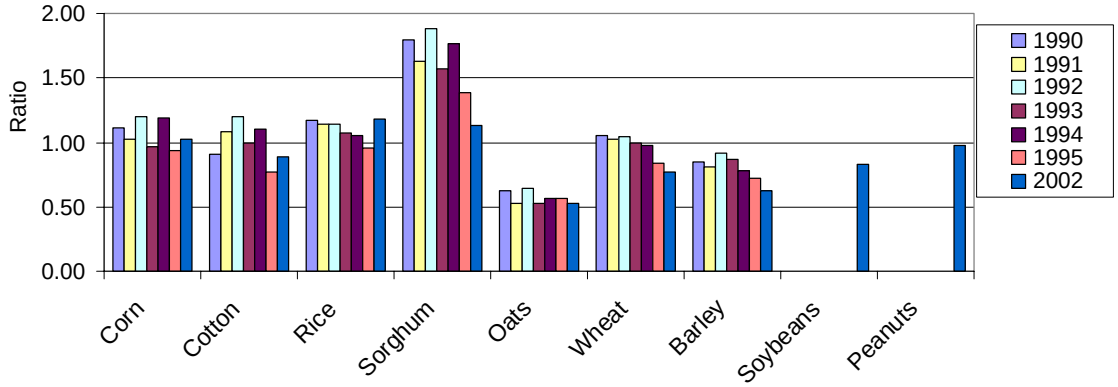
payments exceed total value is that there are low total crop values for those years of interest.




**Note: Price and Value of Production obtained from National Agricultural Statistics Service.

**Figure 55. Total value of production and price for cotton and rice**

The next set of ratios compares specific payment provisions to different forms of production costs. Figure 56 exhibits the full results for the target price relative to total economic costs calculation. Since target prices were not in effect between 1996 and 2001 that time period was eliminated from the graph. Since soybeans and peanuts did not have target prices until 2002, that was the only year included. This ratio was designed to show the fluctuations and disparity in payment provisions across the seven years since 1990 when target prices were in effect. It is important to note that this calculation includes no measure of payment fractions or actual funding received by producers, it simply compares average target price to average annual total costs.




*Annual Target Price per unit divided by Total Economic Costs per unit. Economic costs per unit calculated by taking Total Economic Costs per planted acre divided by yield in units per acre.
**Source: Target Price obtained from FAPRI. Total Economic Costs obtained from Economic Research Service, USDA. Actual Yield obtained from National Agricultural Statistics Service, USDA.

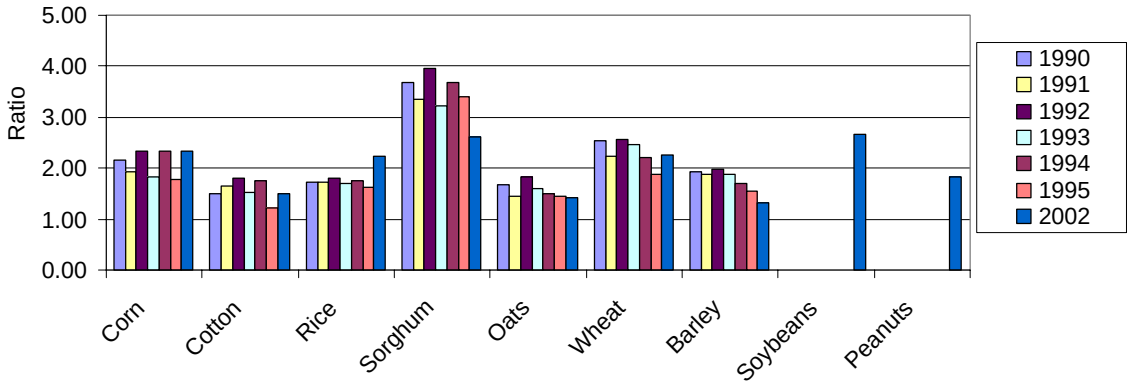
**Figure 56. Target price relative to total costs**

The results for corn, cotton, rice, wheat and barley are all relatively comparable, each with about a seven year average ratio of 1 to 1, target price to total costs. Peanuts also have a 1 to 1 ratio of target price relative to total costs for 2002, and soybeans are not far off with a ratio of .83. The two crops that show a larger divergence from the norm established by these 7 crops are sorghum and oats. Oats still received the least amount of support, but this is the first ratio to show sorghum as having the potential to be the most supported.

Within each crop there are some discernible differences from year to year. The only consistent trend across the majority of crops is that 2002's ratio of target price relative to total costs is less than the average of the other six years, indicating either the provisions in the 2002 farm bill are set up to reduce some government payments or that it represents increasing costs of production relative to changes in target price. Rice is the only exception to this, showing a 2002 ratio above that of the seven year average. As the

results of the prior ratios have shown, rice has received significant funding relative to other program crops in the last few years. One of the primary arguments used to explain this increase in support is that rice prices have been low. However, the results from this ratio provide evidence to support the statement that rice has higher relative support provisions, independent from price.

Results for the target price relative to total variable cost calculation are presented graphically in Figure 57. The results of this ratio are comparable to the results in Figure 56. Slight differences in the results between crops show changes in the percentage of total costs made up of variable costs. Corn, rice, wheat, and barley have a target price set at about twice the variable costs per unit. While cotton and oats have their target price at only 1.5 times their variable costs. Sorghum, however, has a nearly a 3.5 to 1 ratio of target price to variable costs per unit. Barley appears to have a negative trend in their target price relative to variable costs.

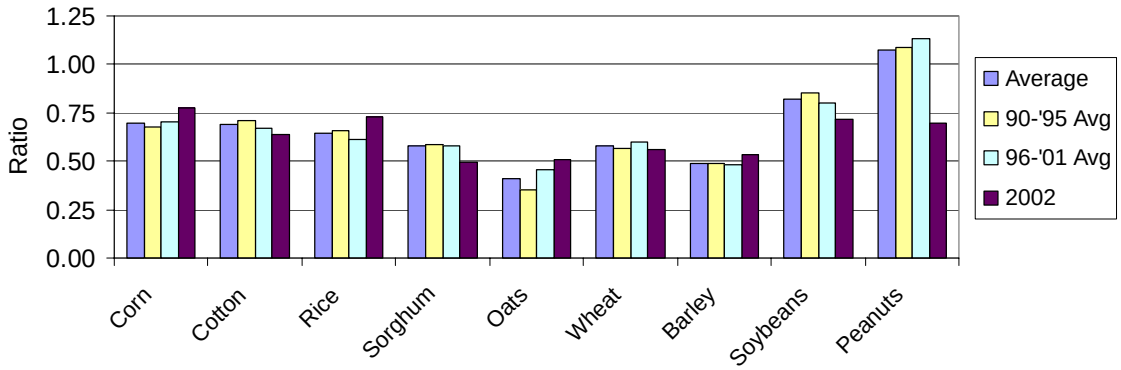



*Annual Target Price per unit divided by Variable Costs per unit. Variable costs per unit calculated by taking Total Variable Costs per planted acre divided by yield in units per acre.

**Note: Target Price obtained from FAPRI. Total Variable Costs obtained from Economic Research Service, USDA. Actual Yield obtained from National Agricultural Statistics Service, USDA. Economic Research Service changed reporting styles for total variable costs for sorghum and peanuts in 1995, corn in 1996, cotton and soybeans in 1997, wheat in 1999, rice in 2000.

**Figure 57. Target price relative to total variable costs**

The next two ratios compare loan rates relative to costs. A summary of the average results for loan rate relative to total economic costs is presented in Figure 58. Somewhat surprisingly, the results are significantly different than the results for target price relative to total economic costs. On average, the loan rate relative to total economic costs for corn, cotton, and rice is approximately the same. Corn and rice show a slight increase in relative loan rate provisions for the year 2002, while cotton decreased in 2002. Until 2002, the loan rate for peanuts was the quota loan rate; therefore, the loan rate is much higher relative to their total costs than the other program crops. During the 1991 to 1993 period for soybeans, the loan rate used is an effective loan rate; it is the true loan rate, $5.02/bu less the 2% origination fee. The loan rate for soybeans relative to total costs is still higher than the other crops except peanuts. Oats has the lowest loan rate relative to total costs. Complete results are presented in Appendix E.

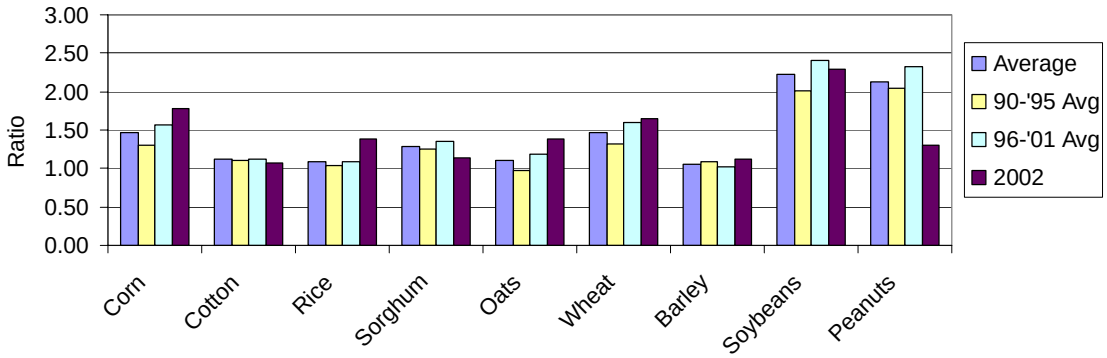



*Annual Loan Rate per unit divided by Total Economic Costs per unit. Economic costs per unit calculated by taking Total Economic Costs per planted acre divided by yield in units per acre.

**Note: Loan Rate obtained from FAPRI. Total Economic Costs obtained from Economic Research Service, USDA. Actual Yield obtained from National Agricultural Statistics Service, USDA.

**Figure 58. Loan rate relative to total costs**

The results for loan rate relative to total variable costs summarized by Figure 59 show similar results to those presented in Figure 58. However, an interesting difference between the two sets of calculations is that in the ratio of loan rate relative to variable cost, soybeans have a ratio similar to that of peanuts. Corn and wheat have an average loan rate set at roughly 1.5 times their variable costs per unit. Cotton, rice, sorghum, oats, and barley all have about a 1 to 1 ratio of loan rate relative to variable costs per unit.

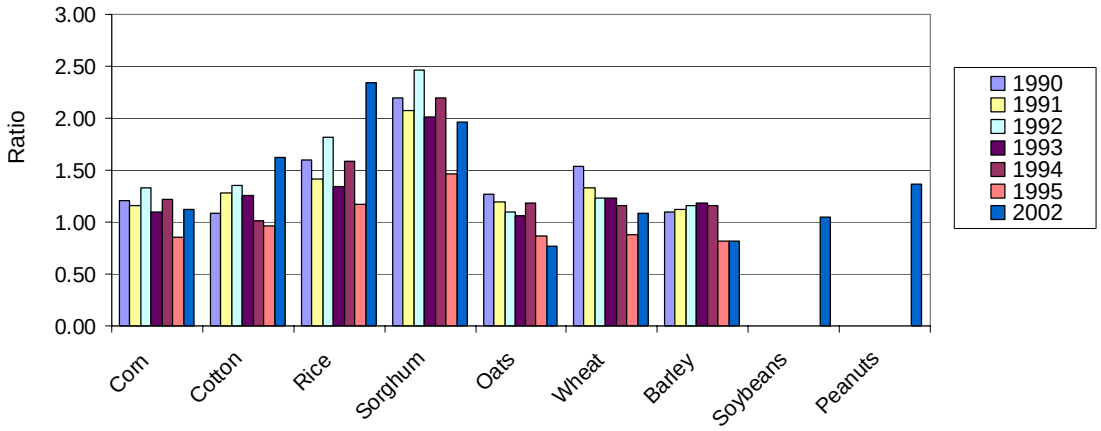



*Annual Loan Rate per unit divided by Variable Costs per unit. Variable costs per unit calculated by taking Total Variable Costs per planted acre divided by yield in units per acre.

**Note: Loan Rate obtained from FAPRI. Total Variable Costs obtained from Economic Research Service, USDA. Actual Yield obtained from National Agricultural Statistics Service, USDA. Economic Research Service changed reporting styles for total variable costs for sorghum and peanuts in 1995, corn in 1996, cotton and soybeans in 1997, wheat in 1999, rice in 2000.

**Figure 59. Loan rate relative to total variable costs**

The next two ratios compare target price and loan rate relative to price. By dividing target price relative to price, this calculation indicates how big a payment fraction the particular crop has had the potential to receive; the results are presented in Figure 60. Within each program crop, crop year 1995 shows a significantly lower ratio of target price relative to price. For the most part this was caused by an increase in price for those crops. Over the past seven years when target prices were in effect, grain sorghum had a target price that averaged twice their average annual marketing year price. Rice had a significant increase in their 2002 target price relative to price, which is explained by a significant decline in price from 1995 to 2002, not by an increase in target price. Rice target price actually declined, from $10.71 to $10.50 per hundredweight. Soybeans, barley, and oats have the lowest ratio of target price relative to price with approximately a 1 to 1 average ratio.

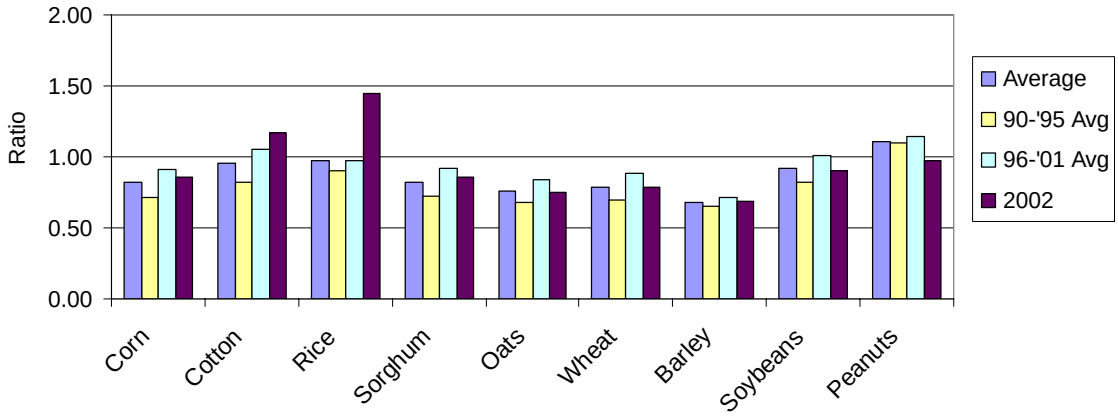



*Annual Target Price divided by Price

**Note: Target Price obtained from FAPRI. Price obtained from National Agricultural Statistics Service, USDA.

**Figure 60. Target price relative to price**

Figure 61 shows the average results for loan rate relative to price, while the full results are presented in Appendix E. When viewing these findings, the most striking result is rice's ratio of loan rate relative to price of nearly 1.5 to 1 in years 2001 and 2002. This is significantly above any of the other crops, however, it was not caused by a change in the loan rate (rice loan rate has been fixed at $6.50 per hundredweight since 1990), but caused by a decline in price. Rice average marketing year price dropped from $5.61 per hundredweight in 2000 to $4.25 per hundredweight in 2001. Despite this large increase in 2002 for rice, peanuts still have the highest average ratio of loan rate relative to price, at about 1.11. This is easily explained given the fact that the loan rate being used for these calculations is the quota loan rate. Barley has the lowest average ratio of loan rate relative to price, with a loan rate set at only 68% of average price.

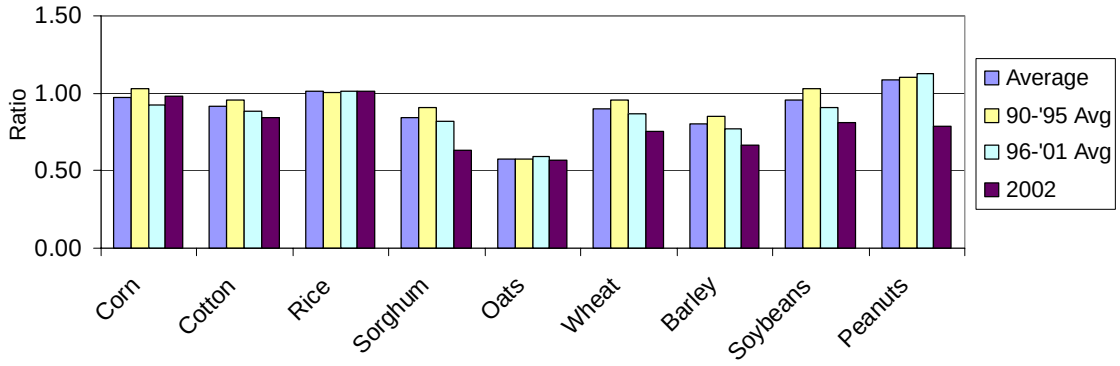



*Annual Loan Rate divided by Price

**Note: Loan Rate obtained from FAPRI. Price obtained from National Agricultural Statistics Service, USDA.

**Figure 61. Loan rate relative to price**

The average results for the effective benefits relative to effective costs are presented in Figure 62. This calculation captured the effective income an average producer receives relative to their costs. Thus a one to one ratio would be a break-even outcome. The benefits incorporated direct payments, the greater of either the loan rate or the market price, and countercyclical payments for the year 2002. The majority of the crops have an average at about one. At one extreme, barley, oats and sorghum don't have a single year where benefits exceed costs; while at the other extreme, peanuts have 11 years where benefits exceed costs, based on the quota loan rate for peanuts. On average, oats have the lowest ratio of effective benefits relative to effective costs, with average effective benefits at 58% of effective costs. Other than peanuts, rice has the highest benefit to cost ratio at 1.01.



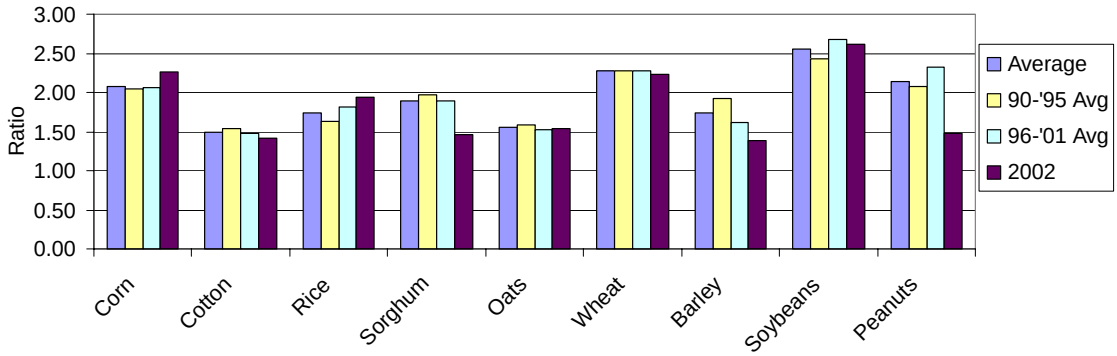

*Effective Benefits divided by Effective Costs. Effective benefits include direct payments, market price or loan rate, payment fractions, and for 2002, countercyclical payments. Effective costs include variable costs, fixed costs, and ARP costs.

**Note: Actual Yield and price obtained from NASS, USDA. Farm bill payment provisions obtained from Farm Service Agency, USDA.

**Figure 62. Effective benefits relative to effective costs**

The next two ratios partition the prior ratio of effective benefits relative to effective costs into effective benefits relative to effective variable costs, as summarized in Figure 63, and effective benefits relative to effective fixed costs, Figure 64. The results in Appendix E and Figure 63 depict 4 crops that have benefits at least twice that of their variable and ARP costs: corn, wheat, soybeans, and peanuts. Cotton and oats have the lowest effective benefits relative to effective variable costs with an average ratio of about 1.5. Within each crop, the ratio of benefits to costs has been fairly consistent. Peanuts show the largest change in the year 2002, however, that can be explained by the fact that the quota loan rate was used through 2001 in this calculation, while 2002's loan rate was not based upon a quota allotment. Other than that, sorghum is the only other crop that shows a significant drop between any two years. This decline

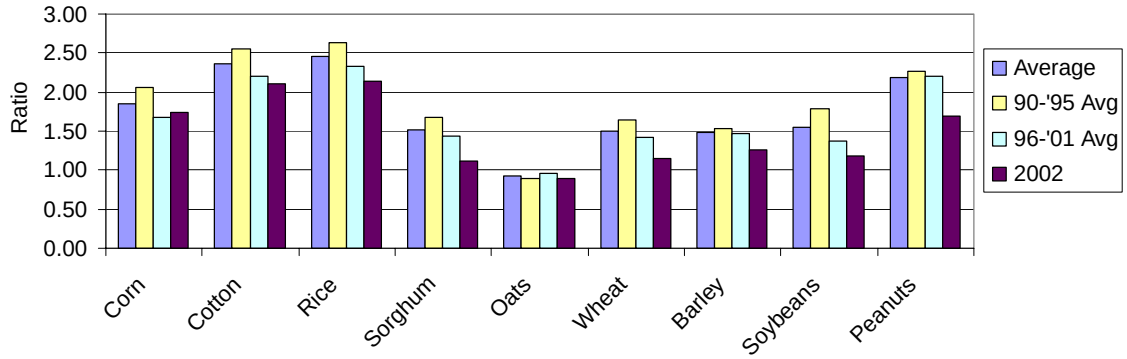
is caused not by a decline in benefits (benefits actually rise in 2001 and 2002), but an increase in effective variable costs.




*Effective benefits divided by effective variable costs. Effective benefits include direct payments, market price or loan rate, payment fractions, and for 2002, countercyclical payments. Effective variable costs include variable costs and ARP costs.
**Note: Actual Yield and price obtained from NASS, USDA. Farm bill payment provisions obtained from Farm Service Agency, USDA. Variable costs obtained from the economic research service, USDA. Economic Research Service changed reporting styles for total variable costs for sorghum and peanuts in 1995, corn in 1996, cotton and soybeans in 1997, wheat in 1999, and rice in 2000.

**Figure 63. Effective benefits relative to effective variable costs**

While cotton had one of the lowest ratios when looking at benefits compared to effective variable costs, effective benefits relative to effective fixed costs show that cotton's benefits are higher than the majority of other program crops being compared as shown in Figure 64. This is explained by cotton having a smaller percentage of their total costs made up by fixed costs. On average cotton's variable costs make up 62% of total costs, while all other crops (except rice) have variable costs that make up around 50% of total costs. Oats have a lower level of benefits relative to fixed costs; in fact, their average ratio of benefits to fixed costs is less than one. Barley is the only other crop that receives less than 1.5 times their effective fixed costs in benefits.




*Effective Benefits divided by Effective Costs. Effective benefits include direct payments, market price or loan rate, payment fraction, and for 2002, countercyclical payments. Effective total economic costs include fixed costs reduced by ARP percentage

**Note: Actual Yield and price obtained from NASS, USDA. Farm bill payment provisions obtained from Farm Service Agency, USDA.

**Figure 64. Effective benefits relative to effective fixed costs**

The final table, Table 6, presents the ranked results from each of the equitability measures. The results for each equitability measure were ranked annually, 9 representing the commodity that is receiving the most amount of support in that particular year, while 1 represented the commodity that had an equitability result that represented the least amount of support. These ranks were then averaged over the 13 years and are presented in Table 6. Each row describes the average results for a particular equitability measure by commodity, while the columns represented how an individual commodity faired relative to the other 8 commodities in each of the equitability calculations. Although only averages, the table still presents a large quantity of information.

Corn ranks between 3.3 and 6.4 depending upon the ratio used, showing that it's rankings are actually fairly "middle of the road", especially when compared to simply looking at the percentage of total funding received. The summarized results presented

for cotton show a much more varied response. Cotton ranges from receiving the most amount of support in unit based calculations, while ratios that incorporate a comparison with total variable costs present a different story, show cotton as raking much closer to the bottom. One of the most interesting spreads for cotton is the difference between the rankings of effective benefits to effective costs relative to the average ranking of effective benefits to effective fixed costs. Illustrating that, in a relative sense, the variable costs for cotton are more sizable than the fixed costs. Sorghum and wheat are very comparable in their distribution of averaged ranked results. Both have an average raking of 5.4, making them slightly "better off" than the majority of the other crops analyzed. Oats, on the other hand consistently have average ranked results that are fairly low relative to the other crops in this study. Barley has rankings that range from 5.2 to 1.6. The story being told by the average ranked results for soybeans and peanuts is slightly different as their averages are averaged over a much smaller time period. But, within that time period their results by ratio are still highly varied ranging from a relatively low amount of support to the highest amount of support for soybeans, and in the case of peanuts an average ranked result of 8.4. The most important result that the table illustrates is that no single commodity consistently ranks at the top or bottom and thus no one single result, either by year or by equitability measure, represents the whole picture.

**Table 6. Average Ranked Results from Equitability Measures**

| | Corn | Cotton | Rice | Sorghum | Oats | Wheat | Barley | Soybeans | Peanuts |
|---|---|---|---|---|---|---|---|---|---|
| Support per Base Acre | 6.4 | 7.5 | 9.0 | 4.8 | 1.9 | 4.8 | 3.5 | 2.3 | 4.7 |
| Support per Planted acre | 6.2 | 7.6 | 9.0 | 5.2 | 1.7 | 4.7 | 4.2 | 1.7 | 4.7 |
| Support per pound of Program Production | 4.0 | 9.0 | 7.8 | 4.4 | 2.5 | 6.1 | 3.8 | 2.8 | 4.5 |
| Support per pound of Actual Production | 3.3 | 9.0 | 7.8 | 5.0 | 2.0 | 6.2 | 5.1 | 1.9 | 4.6 |
| Per Acre Support Relative to Total Costs | 4.5 | 6.8 | 8.9 | 6.4 | 2.0 | 6.4 | 5.2 | 1.8 | 2.8 |
| Per Acre Support Relative to Total Variable Costs | 4.5 | 5.9 | 8.5 | 6.5 | 2.2 | 7.3 | 5.2 | 1.9 | 2.8 |
| Support per Unit Relative to Price | 4.3 | 6.7 | 8.8 | 6.6 | 2.7 | 6.3 | 5.5 | 1.4 | 2.6 |
| Total Annual Support/Total Value of Production | 4.3 | 6.7 | 8.8 | 6.8 | 2.7 | 6.2 | 5.4 | 1.4 | 2.6 |
| Target Price to Total Costs | 4.9 | 4.4 | 5.9 | 7.1 | 1.0 | 3.7 | 2.0 | 4.0 | 6.0 |
| Target Price to Total Variable Costs | 5.3 | 1.9 | 3.3 | 7.1 | 1.9 | 5.9 | 3.3 | 9.0 | 4.0 |
| Loan Rate to Total Costs | 6.4 | 5.9 | 5.2 | 3.7 | 1.2 | 3.9 | 2.0 | 7.9 | 8.7 |
| Loan Rate to Total Variable Costs | 6.3 | 3.2 | 2.5 | 4.8 | 2.7 | 6.2 | 2.5 | 8.7 | 7.9 |

**Table 6. Continued**

| | Corn | Cotton | Rice | Sorghum | Oats | Wheat | Barley | Soybeans | Peanuts |
|---|---|---|---|---|---|---|---|---|---|
| Target Price relative to Price | 3.3 | 4.0 | 6.4 | 7.1 | 2.4 | 3.9 | 2.0 | 3.0 | 6.0 |
| Loan Rate relative to Price | 4.1 | 6.4 | 6.4 | 4.7 | 3.2 | 3.4 | 1.6 | 6.8 | 8.4 |
| Effective Benefits/ Effective Costs | 6.4 | 5.2 | 7.2 | 3.5 | 1.0 | 4.8 | 2.3 | 6.4 | 8.2 |
| Effective Benefits/ Effective Variable Costs | 6.2 | 1.6 | 3.6 | 4.7 | 2.4 | 7.5 | 3.8 | 8.6 | 6.7 |
| Effective Benefits/ Effective Fixed Costs | 6.1 | 7.8 | 8.5 | 3.4 | 1 | 3.3 | 3.4 | 4 | 7.5 |

# CHAPTER V

## SUMMARY AND CONCLUSIONS

With increased pressures on today's federal budget, it is reasonable to assume that federal spending allocated to farm programs will be scrutinized in the near future. Even a slight threat of reduction in funding will spark the interest of those affected, and thus producers and commodity groups alike will begin questioning the equitable distribution of farm program payments.

Each tool utilized in this research shows a different way of incorporating the pieces of information and distinctions among the characteristics of program crops and the associated cropping practices that make up the whole story behind farm program payments. There ratios that incorporate acreage to show the distribution of funding relative to the land that it is grown on, there are tools to show support relative to units of production, support relative to production costs, and support relative to measures of value, each ratio giving its own interpretation of which crop is getting the most support. With that in mind, the results of this research ultimately present a number of different tools that can be used to compare benefits across different crops, and each tool presents different and sometimes slightly opposing figures. Thus, it leaves only one conclusion- the results depend on how you look at it.

Depending on which tool is used, an interested party can draw different conclusions, crops can be interpreted as receiving the most amount of support by looking at the results one way and the least amount of support looking at the results another way. Therefore this research is of particular importance as it serves as a consistent set of data

and methods, and utilizes the most commonly used measures of equitability. It is not uncommon for a commodity group to pick out the tool that best represents their crop, or in this case shows their lack of financial representation. This research will serve as a reference for comparisons of statements made by those types of groups.

Although these tools and their applications are designed to analyze the equitability of payments, a key factor to remember is that although a particular crop may receive the highest amount of support, it may be a result of compensation for low prices and/or some other extenuating event or disaster. Situations like that are examples of policy tools coming into effect as they were designed to do so, when prices are low and the producer needs the income stabilization. Looking at a minimal or select time period can result in a selection of years where price for that particular crop is low, policy tools are coming into play, and thus it appears that that crop is receiving more than there "equitable share", when in fact that is not necessarily true. This fact reiterates the point that we need to analyze a longer time period in order to get a true representation of what is actually going on.

This research may be expanded by incorporating methods to determine which commodities have payment provisions that could be lowered to result in government savings. It is unlikely that an across the board cut will have the same effect on each crop, especially considering these research results, which demonstrate that each commodity receives a different proportion of their costs and values supported by government payments. Additionally, it may prove useful to incorporate regional data in the mix of calculations. The production costs associated with a single crop are variable

across the country and it would be interesting to determine the role regional crop differences play in determining the equitability of farm program payments.

In conclusion, to level the field and equitably distribute government funding for agriculture programs is as complicated and difficult as an attempt to level an ever-expanding mountain range and thus cannot be resolved with a single tell-all solution.

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# APPENDIX A

# ACTUAL COMMODITY CREDIT CORPORATION DATA USED FOR EQUITABILITY CALCULATIONS

Table A1. Corn Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | **1990** | **1991** | **1992** | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | 3,014,400 | 2,079,500 | 3,624,300 | 1,520,000 | 3,199,100 | 95,800 | 1,745,000 | 3,383,800 | 3,940,100 | 5,089,100 | 4,891,800 | 4,051,131 | 1,743,670 |
| Loan Deficiency Payments | - | - | - | - | 3,933 | - | - | 1 | 1,001,731 | 1,991,712 | 2,352,170 | 1,104,164 | 172 |
| Counter-cyclical Payments | | | | | | | | | | | | | - |
| Direct Payments | | | | | | | | | | | | | 386,776 |
| Producer Storage Payments | (1,800) | - | - | 7,900 | 29,000 | - | - | - | - | - | - | | |
| CCC Marketing Loan Gains | - | - | - | - | - | - | - | 97,900 | 379,400 | 409,400 | 196,922 | 82,600 | 15,979 |
| Crop Insurance Benefits | - | 81,554 | 12,233 | 466,193 | - | 182,427 | 26,939 | - | 54,857 | 84,297 | - | 192,473 | 860,654 |
| Certificate Exchange Gains | | | | | | | | | 41 | 2,855 | 31,010 | 2,722 | 150 |
| **Total Support** | **3,012,600** | **2,161,054** | **3,636,533** | **1,994,093** | **3,232,033** | **278,227** | **1,771,939** | **3,481,701** | **5,376,129** | **7,577,364** | **7,471,902** | **5,433,090** | **3,007,401** |

Source: USDA- FSA

Table A2. Cotton Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | 409,600 | 552,300 | 1,017,500 | 1,053,300 | 279,200 | 6,500 | 698,900 | 597,000 | 953,200 | 1,227,000 | 1,186,000 | 997,355 | 437,036 |
| Loan Deficiency Payments | 18 | 154,252 | 267,846 | 303,957 | - | - | - | 2,753 | 303,377 | 684,725 | 151,813 | 745,185 | 205,212 |
| Counter-cyclical Payments | | | | | | | | | | | | | 1,311,719 |
| Direct Payments | | | | | | | | | | | | | 180,449 |
| Producer Storage Payments | | | | | | | | | | | | | |
| CCC Marketing Loan Gains | 605 | 322,219 | 475,902 | 241,688 | - | - | - | 26,088 | 230,272 | 814,850 | 50,023 | 46,701 | 8,504 |
| Crop Insurance Benefits | 45,459 | 116,544 | 224,292 | 35,661 | - | 205,578 | 185,355 | 66,645 | 307,584 | 316,943 | 425,834 | 472,293 | 276,841 |
| User Marketing Payments | - | - | 140,293 | 113,594 | 148,635 | 88,014 | 34,111 | 6,401 | 416,260 | 280,072 | 445,294 | 235,757 | 176,963 |
| Certificate Exchange Gains | | | | | | | | | 101 | 36,531 | 360,315 | 1,747,950 | 657,834 |
| **Total Support** | **455,682** | **1,145,315** | **2,125,833** | **1,748,200** | **427,835** | **300,092** | **918,366** | **698,887** | **2,210,794** | **3,360,121** | **2,619,279** | **4,245,241** | **3,254,558** |

Source: USDA- FSA

Table A3. Rice Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | **1990** | **1991** | **1992** | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | 555,200 | 458,300 | 613,400 | 570,100 | 557,900 | 471,400 | 455,200 | 448,300 | 715,600 | 930,000 | 896,200 | 749,232 | 322,379 |
| Loan Deficiency Payments | 8,219 | 25,694 | 53,746 | 214,745 | 56,422 | 1 | - | - | 1,008 | 160,685 | 277,675 | 308,779 | 260,023 |
| Counter-cyclical Payments | | | | | | | | | | | | | 322,792 |
| Direct Payments | | | | | | | | | | | | | 98,958 |
| Producer Storage Payments | | | | | | | | | | | | | |
| CCC Marketing Loan Gains | 173,224 | 57,647 | 206,815 | 26,353 | 60,474 | - | - | - | 13,086 | 182,913 | 150,328 | 199,117 | 135,414 |
| Crop Insurance Benefits | 9,175 | 18,708 | 7,402 | 10,171 | - | 2,314 | - | 4,562 | 9,387 | 41,691 | 3,524 | 7,512 | 8,230 |
| Certificate Exchange Gains | | | | | | | | | 15 | 57,020 | 169,339 | 205,099 | 309,799 |
| **Total Support** | **745,818** | **560,349** | **881,363** | **821,369** | **674,796** | **473,715** | **455,200** | **452,862** | **739,096** | **1,372,309** | **1,497,066** | **1,469,739** | **1,457,595** |

Source: USDA- FSA

Table A4. Sorghum Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | 317,300 | 174,600 | 328,200 | 153,400 | 292,500 | 26,700 | 200,800 | 338,200 | 428,100 | 553,600 | 532,200 | 444,982 | 167,523 |
| Loan Deficiency Payments | - | - | - | - | 11 | - | - | - | 56,947 | 148,653 | 80,885 | 5,011 | 2,253 |
| Counter-cyclical Payments | | | | | | | | | | | | | - |
| Direct Payments | | | | | | | | | | | | | 34,506 |
| Producer Storage Payments | - | - | - | 300 | 1,000 | - | - | - | - | - | - | | |
| CCC Marketing Loan Gains | - | - | - | - | - | - | - | 1,100 | 4,100 | 3,900 | 842 | 218 | 237 |
| Crop Insurance Benefits | 19,979 | 17,767 | 2,578 | 16,172 | - | 36,007 | 33,133 | - | 66,094 | 11,976 | 64,263 | 83,106 | 190,535 |
| Certificate Exchange Gains | | | | | | | | | | 64 | 947 | 9 | 29 |
| **Total Support** | **337,279** | **192,367** | **330,778** | **169,872** | **293,511** | **62,707** | **233,933** | **339,300** | **555,241** | **718,193** | **679,137** | **533,326** | **395,083** |

Source: USDA- FSA

Table A5. Oats Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | **1990** | **1991** | **1992** | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | 7,600 | 30,300 | 15,400 | 11,700 | 16,200 | 2,900 | 8,600 | 8,100 | 12,800 | 16,700 | 16,100 | 12,942 | 2,358 |
| Loan Deficiency Payments | - | - | - | - | 2 | - | - | 1 | 19,096 | 28,183 | 44,235 | 3,890 | 13 |
| Counter-cyclical Payments | | | | | | | | | | | | | - |
| Direct Payments | | | | | | | | | | | | | 830 |
| Producer Storage Payments | - | - | - | - | - | - | - | - | - | - | - | | |
| CCC Marketing Loan Gains | - | - | - | - | - | - | - | 70 | 493 | 285 | 269 | 1 | 6 |
| Crop Insurance Benefits | 5,955 | 3,016 | - | 1,196 | - | 5,250 | 1,829 | 2,894 | 858 | 2,953 | 1,796 | 1,780 | 16,395 |
| Certificate Exchange Gains | | | | | | | | | | - | 27 | | |
| **Total Support** | **13,555** | **33,316** | **15,400** | **12,896** | **16,202** | **8,150** | **10,429** | **11,065** | **33,247** | **48,121** | **62,427** | **18,613** | **19,602** |

Source: USDA- FSA

Table A6. Wheat Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | **1990** | **1991** | **1992** | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | 2,420,600 | 2,246,100 | 1,370,600 | 1,900,700 | 1,145,400 | 106,500 | 1,940,500 | 1,396,800 | 2,240,900 | 2,890,300 | 2,779,700 | 2,299,431 | 944,666 |
| Loan Deficiency Payments | - | - | - | 827 | 14 | - | - | 24 | 413,518 | 888,904 | 781,008 | 168,280 | 15,036 |
| Counter-cyclical Payments | | | | | | | | | | | | | 0 |
| Direct Payments | | | | | | | | | | | | | 211,514 |
| Producer Storage Payments | (100) | 16,000 | 7,200 | 4,300 | 500 | - | - | - | - | - | - | | |
| CCC Marketing Loan Gains | - | - | - | 7 | - | - | - | 15,700 | 62,300 | 48,400 | 30,182 | 5,005 | 1,390 |
| Crop Insurance Benefits | 32,509 | 90,696 | 94,043 | 135,571 | 72,576 | 135,148 | 290,324 | 84,499 | 13,318 | 397,612 | 278,011 | 431,533 | 685,257 |
| Certificate Exchange Gains | | | | | | | | | - | 310 | 13,282 | 1,551 | 2 |
| **Total Support** | **2,453,009** | **2,352,796** | **1,471,843** | **2,041,405** | **1,218,490** | **241,648** | **2,230,824** | **1,497,023** | **2,730,036** | **4,225,526** | **3,882,183** | **2,905,800** | **1,857,865** |

Source: USDA- FSA

Table A7. Barley Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | **1990** | **1991** | **1992** | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | 59,000 | 173,000 | 152,400 | 204,200 | 162,200 | 40,200 | 136,900 | 113,000 | 179,400 | 229,600 | 220,400 | 185,212 | 64,995 |
| Loan Deficiency Payments | - | - | - | 2 | 2 | - | - | 6 | 78,551 | 37,148 | 66,698 | 15,765 | 3,785 |
| Counter-cyclical Payments | | | | | | | | | | | | | - |
| Direct Payments | | | | | | | | | | | | | 18,295 |
| Producer Storage Payments | - | - | - | 1,200 | 2,000 | 1,000 | - | - | - | - | - | | |
| CCC Marketing Loan Gains | - | - | - | - | - | - | - | 2,100 | 3,900 | 1,400 | 1,072 | 281 | 19 |
| Crop Insurance Benefits | 3,343 | - | 5,504 | 15,404 | 31 | 14,273 | 1,236 | 8,855 | 7,164 | 20,647 | 18,118 | 34,310 | 48,415 |
| Certificate Exchange Gains | | | | | | | | | | 17 | 593 | 6 | 8 |
| **Total Support** | 62,343 | 173,000 | 157,904 | 220,806 | 164,233 | 55,473 | 138,136 | 123,961 | 269,015 | 288,812 | 306,881 | 235,574 | 135,517 |

Source: USDA- FSA

Table A8. Soybeans Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | | | | | | | | | | | | | |
| Loan Deficiency Payments | - | - | - | - | 1 | - | - | - | 882,234 | 2,105,658 | 2,244,665 | 3,155,666 | 16,093 |
| Counter-cyclical Payments | | | | | | | | | | | | | |
| Direct Payments | | | | | | | | | | | | | 588,829 |
| Producer Storage Payments | | | | | | | | | | | | | |
| CCC Marketing Loan Gains | - | 16 | - | 1 | - | - | - | 15,794 | 337,434 | 217,584 | 256,996 | 271,249 | 155 |
| Crop Insurance Benefits | 11,647 | 27,593 | - | 161,439 | - | 69,000 | - | - | 37,133 | 130,170 | 171,125 | 108,566 | 277,303 |
| Oilseeds Payment Program | - | - | - | - | - | - | - | - | - | 437,800 | 476,300 | | |
| Certificate Exchange Gains | | | | | | | | | 207 | 2,100 | 33,168 | 15,553 | 9 |
| **Total Support** | **11,647** | **27,609** | **-** | **161,440** | **1** | **69,000** | **-** | **15,794** | **1,257,008** | **2,893,312** | **3,182,254** | **3,551,034** | **882,389** |

Source: USDA- FSA

Table A9. Peanuts Actual Commodity Credit Corporation Expenditures, Crop Years 1990-2002 ($1,000)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deficiency / PFC and Market Loss Assistance Payments | | | | | | | | | | | | | |
| Loan Deficiency Payments | | | | | | | | | | | | | 26,026 |
| Counter-cyclical Payments | | | | | | | | | | | | | 169,832 |
| Direct Payments | | | | | | | | | | | | | 73,106 |
| Producer Storage Payments | | | | | | | | | | | | | |
| CCC Marketing Loan Gains | | | | | | | | | | | | | 22,914 |
| Crop Insurance Benefits | 175,600 | 16,481 | - | 113,496 | 3,952 | 33,680 | 10,311 | 25,933 | 24,210 | 49,753 | 105,780 | 40,825 | 44,691 |
| Peanut Payments | - | - | - | - | - | - | - | - | - | - | 55,029 | 118,046 | 244 |
| Certificate Exchange Gains | | | | | | | | | | | | | 764 |
| **Total Support** | **175,600** | **16,481** | **-** | **113,496** | **3,952** | **33,680** | **10,311** | **25,933** | **24,210** | **49,753** | **160,809** | **158,871** | **337,577** |

Source: USDA- FSA

# APPENDIX B

## ACTUAL COSTS OF PRODUCTION DATA, ESTIMATED BY ECONOMIC RESEARCH SERVICE, USED FOR EQUITABILITY CALCULATIONS

Table B1. Corn Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 20.52 | 21.61 | 22.1 | 22.49 | 22.67 | 23.98 | 26.65 | 28.71 | 30.02 | 30.29 | 30.02 | 32.34 | 31.84 |
| Fertilizer, lime and gypsum | 42.58 | 44.59 | 43.16 | 43.26 | 46.07 | 55.85 | 47.04 | 46.21 | 41.44 | 38.75 | 39.04 | 47.72 | 35.49 |
| Soil conditioners | | | | | | | 0.16 | 0.16 | 0.16 | 0.17 | 0.16 | 0.12 | 0.12 |
| Manure | | | | | | | 0.60 | 0.56 | 0.51 | 0.49 | 0.48 | 2.65 | 2.13 |
| Chemicals | 22.64 | 22.46 | 23.46 | 24.27 | 25.22 | 26.34 | 27.42 | 26.87 | 27.36 | 28.40 | 28.82 | 26.44 | 26.11 |
| Custom operations | 6.28 | 9.21 | 9.54 | 8.97 | 10.05 | 9.65 | 11.30 | 11.30 | 11.29 | 11.37 | 11.48 | 10.94 | 10.79 |
| Fuel, lube, and electricity | 24.00 | 18.92 | 18.29 | 18.02 | 18.96 | 17.92 | 24.43 | 24.55 | 22.96 | 23.04 | 29.12 | 20.88 | 18.93 |
| Repairs | 9.28 | 13.31 | 14.83 | 13.95 | 16.13 | 15.91 | 15.78 | 16.17 | 16.65 | 17.17 | 17.55 | 13.76 | 13.91 |
| Hired labor | 8.61 | 7.37 | 7.74 | 7.55 | 7.54 | 8.03 | 2.83 | 3.07 | 3.19 | 3.28 | 3.36 | 2.92 | 3.06 |
| Other variable cash expenses | 0.30 | 0.41 | 0.4 | 0.43 | 0.44 | 0.45 | 0.30 | 0.32 | 0.31 | 0.31 | 0.31 | 0.22 | 0.22 |
| Interest | 16.65 | 16.79 | 14.74 | 11.86 | 15.96 | 16.73 | 3.86 | 3.96 | 3.61 | 3.50 | 4.53 | 2.60 | 1.17 |
| **Total, variable cash expenses** | **150.86** | **154.67** | **154.26** | **150.80** | **163.04** | **174.86** | **160.37** | **161.88** | **157.50** | **156.77** | **164.87** | **160.59** | **143.77** |
| Taxes and insurance | 14.85 | 17.98 | 18.41 | 18.11 | 20.68 | 20.01 | 6.98 | 7.00 | 7.05 | 6.96 | 7.13 | 5.49 | 5.42 |
| General farm overhead | 12.06 | 10.39 | 10.58 | 8.98 | 13.49 | 12.46 | 10.38 | 12.21 | 11.47 | 10.88 | 11.11 | 11.67 | 11.91 |
| **Total, fixed cash expenses** | **26.91** | **28.37** | **28.99** | **27.09** | **34.17** | **32.47** | **17.36** | **19.21** | **18.52** | **17.84** | **18.24** | **17.16** | **17.33** |
| **Total Cash Expenses** | **177.77** | **183.04** | **183.25** | **177.89** | **197.21** | **207.33** | **177.73** | **181.09** | **176.02** | **174.61** | **183.11** | **177.75** | **161.10** |
| **Total Economic Costs** | **292.52** | **292.55** | **302.33** | **287.1** | **321.47** | **333.42** | **350.53** | **360.29** | **359.46** | **361.3** | **374.84** | **343.9** | **329.54** |

Source: USDA- ERS

Table B2. Cotton Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | **1990** | **1991** | **1992** | **1993** | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 9.11 | 13.30 | 13.61 | 14.31 | 14.79 | 15.67 | 16.75 | 17.63 | 17.87 | 18.35 | 30.10 | 37.82 | 47.99 |
| Fertilizer, lime, and gypsum | 26.49 | 35.62 | 34.97 | 36.28 | 38.16 | 44.89 | 46.53 | 35.31 | 31.76 | 29.91 | 31.32 | 35.26 | 30.56 |
| Chemicals | 51.19 | 48.19 | 49.69 | 49.63 | 49.87 | 50.43 | 50.98 | 60.19 | 58.54 | 58.60 | 58.32 | 59.25 | 56.80 |
| Custom operations | 14.42 | 17.29 | 17.16 | 17.67 | 19.59 | 21.69 | 20.92 | 23.27 | 13.02 | 19.67 | 19.93 | 19.99 | 19.25 |
| Fuel, lube, and electricity | 36.49 | 34.65 | 32.01 | 33.00 | 31.03 | 38.31 | 35.67 | 31.64 | 26.29 | 26.64 | 36.97 | 36.49 | 31.37 |
| Repairs | 24.87 | 23.34 | 21.63 | 25.37 | 25.67 | 28.59 | 29.18 | 25.39 | 27.32 | 26.28 | 27.18 | 28.53 | 29.10 |
| Hired labor | 43.80 | 38.43 | 39.79 | 38.56 | 39.47 | 39.91 | 41.86 | 33.72 | 33.92 | 35.48 | 36.98 | 37.89 | 38.16 |
| Ginning | 56.47 | 50.41 | 49.38 | 51.29 | 52.74 | 53.13 | 50.84 | 62.75 | 43.78 | 53.08 | 51.46 | 57.14 | 55.61 |
| Other variable cash expenses, water | 8.67 | 5.31 | 5.31 | 5.40 | 5.63 | 5.79 | 6.05 | 8.71 | 6.89 | 6.12 | 6.55 | 5.05 | 5.01 |
| Interest | 35.30 | 21.33 | 17.72 | 17.77 | 17.68 | 20.48 | 19.60 | 6.57 | 5.40 | 5.61 | 7.55 | 4.71 | 2.31 |
| **Total, variable cash expenses** | **306.81** | **287.87** | **281.27** | **289.28** | **294.63** | **318.89** | **318.38** | **305.18** | **264.79** | **279.74** | **306.36** | **322.13** | **316.16** |
| General farm overhead | 25.80 | 15.67 | 14.87 | 15.11 | 17.05 | 18.20 | 16.52 | 15.55 | 14.21 | 15.35 | 15.82 | 16.11 | 15.97 |
| Taxes and insurance | 15.14 | 19.96 | 19.14 | 20.03 | 22.35 | 23.33 | 23.31 | 14.97 | 14.20 | 15.07 | 15.93 | 16.68 | 17.01 |
| **Total fixed cash expenses** | **40.94** | **35.63** | **34.01** | **35.14** | **39.40** | **41.53** | **39.83** | **30.52** | **28.41** | **30.42** | **31.75** | **32.79** | **32.98** |
| **Total Cash Expenses** | **347.75** | **323.50** | **315.28** | **324.42** | **334.03** | **360.42** | **358.21** | **335.70** | **293.20** | **310.16** | **338.11** | **354.92** | **349.14** |
| **Total Economic Costs** | 508.49 | 436.65 | 420.46 | 441.02 | 464.26 | 502.07 | 500.58 | 516.27 | 461.16 | 488.07 | 517.66 | 530.52 | 529.02 |

Source: USDA- ERS

Table B3. Rice Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 21.51 | 20.42 | 20.76 | 19.49 | 28.14 | 19.23 | 22.38 | 24.15 | 25.15 | 24.34 | 23.31 | 21.21 | 20.32 |
| Fertilizer | 35.59 | 34.26 | 42.08 | 43.18 | 45.72 | 54.96 | 56.10 | 52.59 | 46.41 | 43.93 | 46.65 | 59.11 | 43.46 |
| Soil conditioners | | | | | | | | | | | 0.01 | 0.01 | 0.01 |
| Chemicals | 42.59 | 46.99 | 52.33 | 55.67 | 58.33 | 65.11 | 67.86 | 68.32 | 68.32 | 68.78 | 49.25 | 49.44 | 55.40 |
| Custom operations | 35.53 | 37.19 | 41.85 | 44.66 | 45.71 | 45.15 | 45.57 | 45.80 | 45.32 | 45.45 | 68.69 | 65.59 | 67.58 |
| Fuel, lube, and electricity | 64.23 | 68.91 | 64.80 | 60.28 | 62.29 | 57.42 | 73.03 | 68.14 | 58.25 | 61.39 | 57.84 | 69.25 | 60.66 |
| Repairs | 30.01 | 31.13 | 25.26 | 26.06 | 27.90 | 28.51 | 28.69 | 28.83 | 29.10 | 30.03 | 19.16 | 19.90 | 20.44 |
| Hired labor | 38.55 | 40.12 | 32.44 | 33.73 | 33.33 | 32.52 | 35.81 | 38.01 | 37.60 | 39.74 | 26.28 | 26.13 | 27.67 |
| Drying | 40.20 | 41.80 | 27.10 | 27.94 | 30.46 | 28.37 | 30.14 | 29.72 | 27.87 | 29.35 | | | |
| Other variable cash expenses | 8.33 | 9.49 | 9.45 | 10.86 | 11.08 | 11.40 | 12.03 | 12.23 | 12.03 | 12.52 | 11.12 | 9.64 | 10.46 |
| Interest | 27.81 | 26.72 | 22.61 | 23.59 | 23.42 | 26.77 | 26.42 | 26.57 | 27.99 | 26.60 | 7.77 | 4.96 | 2.34 |
| **Total, variable cash expenses** | **344.35** | **357.03** | **338.68** | **345.46** | **366.38** | **369.44** | **398.03** | **394.36** | **378.04** | **382.13** | **310.08** | **325.24** | **308.34** |
| General farm overhead | 23.96 | 22.21 | 20.10 | 26.72 | 28.36 | 29.91 | 28.00 | 32.90 | 31.03 | 26.60 | 22.11 | 22.73 | 23.32 |
| Taxes and insurance | 12.57 | 12.65 | 18.89 | 25.48 | 29.02 | 29.30 | 31.88 | 30.55 | 38.54 | 25.50 | 15.69 | 15.87 | 15.88 |
| **Total, fixed cash expenses** | **36.53** | **34.86** | **38.99** | **52.20** | **57.38** | **59.21** | **59.88** | **63.45** | **69.57** | **52.10** | **37.80** | **38.60** | **39.20** |
| **Total cash expenses** | **380.88** | **391.89** | **377.67** | **397.66** | **423.76** | **428.65** | **457.91** | **457.81** | **447.61** | **434.23** | **347.88** | **363.84** | **347.54** |
| **Total Economic Costs** | **506.73** | **539.23** | **537.24** | **551.80** | **605.70** | **630.17** | **672.34** | **684.75** | **676.08** | **671.04** | **578.89** | **594.12** | **586.32** |

Source: USDA- ERS

Table B4. Sorghum Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 5.43 | 5.52 | 5.70 | 5.99 | 6.43 | 5.42 | 6.00 | 6.57 | 6.72 | 6.72 | 6.33 | 6.35 | 6.63 |
| Fertilizer, lime, and gypsum | 17.71 | 18.42 | 18.82 | 18.80 | 20.28 | 19.19 | 17.99 | 17.62 | 13.89 | 13.89 | 14.34 | 21.53 | 15.10 |
| Chemicals | 10.11 | 10.97 | 11.18 | 13.71 | 14.26 | 12.63 | 12.29 | 11.69 | 11.20 | 11.20 | 11.15 | 11.31 | 11.22 |
| Custom operations | 4.34 | 4.46 | 4.88 | 4.48 | 4.46 | 5.07 | 6.23 | 6.91 | 6.78 | 6.78 | 5.48 | 5.27 | 4.38 |
| Fuel, lube, and electricity | 14.80 | 15.51 | 14.79 | 14.36 | 13.30 | 14.13 | 17.10 | 17.37 | 21.92 | 21.92 | 26.09 | 29.99 | 24.92 |
| Repairs | 10.71 | 11.54 | 12.70 | 12.42 | 13.13 | 12.89 | 13.81 | 14.25 | 14.70 | 14.70 | 15.29 | 16.28 | 17.48 |
| Hired labor | 7.45 | 7.84 | 8.59 | 7.84 | 8.12 | 4.98 | 5.41 | 5.68 | 6.36 | 6.36 | 6.57 | 7.06 | 7.45 |
| Other variable cash expenses | 0.39 | 0.41 | 0.41 | 0.43 | 0.41 | | | | | | | | |
| Interest | 8.79 | 8.10 | 8.41 | 8.69 | 11.49 | 1.91 | 1.85 | 1.90 | 1.77 | 1.77 | 2.27 | 1.53 | 0.67 |
| **Total, variable cash expenses** | **79.73** | **82.77** | **85.48** | **86.72** | **91.88** | **76.22** | **80.68** | **81.99** | **83.34** | **83.34** | **87.52** | **99.32** | **87.85** |
| General farm overhead | 5.28 | 4.64 | 5.88 | 8.39 | 9.25 | 3.68 | 3.76 | 3.84 | 3.97 | 3.97 | 4.08 | 4.23 | 4.39 |
| Taxes and insurance | 10.02 | 8.90 | 10.35 | 11.48 | 13.38 | 5.06 | 4.98 | 5.02 | 4.90 | 4.90 | 5.07 | 5.1 | 5.04 |
| **Total, fixed cash expenses** | **15.30** | **13.54** | **16.23** | **19.87** | **22.63** | **8.74** | **8.74** | **8.86** | **8.87** | **8.87** | **9.15** | **9.33** | **9.43** |
| **Total, cash expenses** | **95.03** | **96.31** | **101.71** | **106.59** | **114.51** | **84.96** | **89.42** | **90.85** | **92.21** | **92.21** | **96.67** | **108.65** | **97.28** |
| **Total, economic costs** | **164.15** | **169.85** | **179.29** | **178.16** | **191.88** | **187.05** | **200.69** | **201.57** | **191.91** | **191.91** | **195.19** | **208.83** | **202.66** |

Source: USDA- ERS

Table B5. Oats Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 8.58 | 7.58 | 8.57 | 8.62 | 8.19 | 7.46 | 8.81 | 9.11 | 7.89 | 7.47 | 7.25 | 7.47 | 7.43 |
| Fertilizer, lime, and gypsum | 12.55 | 12.40 | 12.17 | 11.73 | 14.95 | 15.76 | 17.05 | 16.68 | 15.63 | 14.7 | 14.88 | 17.85 | 14.97 |
| Chemicals | 1.10 | 1.05 | 1.14 | 1.06 | 1.59 | 1.72 | 1.82 | 1.83 | 1.83 | 1.82 | 1.81 | 1.83 | 1.84 |
| Custom operations | 6.96 | 5.90 | 6.07 | 5.27 | 4.84 | 4.30 | 4.33 | 4.30 | 4.31 | 4.32 | 4.33 | 4.36 | 4.34 |
| Fuel, lube, and electricity | 7.60 | 8.25 | 6.95 | 6.73 | 6.84 | 6.38 | 7.41 | 7.99 | 6.71 | 6.34 | 9.10 | 9.30 | 7.44 |
| Repairs | 6.90 | 7.36 | 7.50 | 7.15 | 10.96 | 10.31 | 9.63 | 11.40 | 10.84 | 9.95 | 9.69 | 9.88 | 10.00 |
| Hired labor | 4.95 | 4.89 | 5.31 | 5.15 | 1.91 | 1.76 | 1.93 | 2.02 | 2.13 | 2.23 | 2.44 | 2.43 | 2.58 |
| Other variable cash expenses | 0.00 | 0.00 | 0.00 | 0.00 | 1.19 | 1.02 | 1.19 | 1.34 | 1.19 | 1.22 | 1.25 | 1.30 | 1.31 |
| Interest | 3.74 | 3.41 | 3.97 | 3.82 | 4.95 | 5.57 | 5.49 | 5.52 | 5.82 | 5.49 | 5.80 | 5.90 | 5.39 |
| **Total, variable cash expenses** | **52.38** | **50.84** | **51.68** | **49.53** | **55.42** | **54.28** | **57.66** | **60.19** | **56.35** | **53.54** | **56.55** | **60.32** | **55.30** |
| General farm overhead | 3.64 | 3.11 | 4.26 | 4.66 | 5.41 | 5.65 | 5.29 | 6.21 | 5.86 | 5.94 | 6.09 | 6.29 | 6.44 |
| Taxes and insurance | 13.51 | 11.92 | 17.31 | 18.78 | 13.95 | 13.88 | 14.85 | 14.85 | 14.20 | 14.85 | 15.60 | 15.88 | 15.72 |
| **Total, fixed cash expenses** | **17.15** | **15.03** | **21.57** | **23.44** | **19.36** | **19.53** | **20.14** | **21.06** | **20.06** | **20.79** | **21.69** | **22.17** | **22.16** |
| **Total, cash expenses** | **69.53** | **65.87** | **73.25** | **72.97** | **74.78** | **73.81** | **77.80** | **81.25** | **76.41** | **74.33** | **78.24** | **82.49** | **77.46** |
| **Total, economic costs** | **139.59** | **139.18** | **147.57** | **150.55** | **146.24** | **139.97** | **145.36** | **154.55** | **147.60** | **144.32** | **147.76** | **153.07** | **149.94** |

Source: USDA- ERS

Table B6. Wheat Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 7.69 | 5.87 | 6.67 | 6.94 | 7.46 | 7.57 | 9.26 | 9.02 | 7.61 | 6.38 | 6.14 | 6.34 | 6.65 |
| Fertilizer, lime, and gypsum | 14.59 | 15.30 | 14.46 | 14.37 | 16.70 | 20.89 | 21.11 | 19.85 | 18.61 | 16.95 | 17.28 | 23.90 | 17.71 |
| Chemicals | 5.45 | 5.73 | 6.15 | 6.35 | 5.69 | 5.86 | 6.23 | 6.32 | 7.36 | 7.22 | 7.13 | 7.20 | 7.13 |
| Custom operations | 4.56 | 4.25 | 4.24 | 4.27 | 5.70 | 5.96 | 5.35 | 6.33 | 6.77 | 6.47 | 6.50 | 6.37 | 5.67 |
| Fuel, lube, and electricity | 8.72 | 8.96 | 8.81 | 8.90 | 8.55 | 8.47 | 9.71 | 10.20 | 6.14 | 6.53 | 9.13 | 9.19 | 8.67 |
| Repairs | 6.51 | 6.70 | 7.22 | 7.53 | 11.69 | 12.20 | 13.26 | 13.37 | 9.00 | 9.44 | 9.97 | 10.24 | 10.15 |
| Hired labor | 4.92 | 5.34 | 5.52 | 5.33 | 3.83 | 4.01 | 4.69 | 5.00 | 2.12 | 2.17 | 2.30 | 2.45 | 2.53 |
| Other variable cash expenses | 0.20 | 0.18 | 0.20 | 0.20 | 0.36 | 0.38 | 0.40 | 0.40 | 0.58 | 0.57 | 0.59 | 0.62 | 0.61 |
| Interest | 9.56 | 9.12 | 7.77 | 7.87 | 7.84 | 10.94 | 9.63 | 9.68 | 1.34 | 1.26 | 1.64 | 1.08 | 0.48 |
| **Total, variable cash expenses** | **62.20** | **61.45** | **61.04** | **61.76** | **67.82** | **76.28** | **79.64** | **80.17** | **59.53** | **56.99** | **60.68** | **67.39** | **59.60** |
| General farm overhead | 6.47 | 5.15 | 4.97 | 6.04 | 5.36 | 7.00 | 5.80 | 6.78 | 6.59 | 6.69 | 6.84 | 7.10 | 7.25 |
| Taxes and insurance | 10.28 | 8.88 | 8.07 | 10.39 | 9.29 | 10.08 | 10.02 | 10.70 | 3.70 | 3.74 | 3.82 | 3.91 | 3.90 |
| **Total, fixed cash expenses** | **16.75** | **14.03** | **13.04** | **16.43** | **14.65** | **17.08** | **15.82** | **17.48** | **10.29** | **10.43** | **10.66** | **11.01** | **11.15** |
| **Total Cash Expenses** | **78.95** | **75.48** | **74.08** | **78.19** | **82.47** | **93.36** | **95.46** | **97.65** | **69.82** | **67.42** | **71.34** | **78.40** | **70.75** |
| **Total, economic costs** | **149.49** | **133.96** | **150.67** | **153.32** | **154.52** | **170.03** | **180.48** | **180.27** | **165.19** | **166.15** | **173.86** | **183.34** | **175.63** |

Source: USDA- ERS

Table B7. Barley Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 7.50 | 6.48 | 7.14 | 6.85 | 6.96 | 7.44 | 9.50 | 8.96 | 8.45 | 8.01 | 7.84 | 8.13 | 7.83 |
| Fertilizer, lime, and gypsum | 14.30 | 15.12 | 15.61 | 15.55 | 16.57 | 20.50 | 21.06 | 20.75 | 19.03 | 18.03 | 18.13 | 23.72 | 18.61 |
| Chemicals | 6.81 | 7.40 | 7.45 | 8.04 | 8.68 | 9.12 | 9.50 | 9.81 | 10.13 | 10.27 | 9.83 | 10.11 | 9.93 |
| Custom operations | 3.03 | 3.16 | 4.01 | 3.96 | 4.27 | 4.88 | 4.70 | 4.70 | 4.78 | 5.05 | 4.99 | 5.29 | 5.18 |
| Fuel, lube, and electricity | 8.54 | 9.08 | 11.69 | 11.95 | 11.43 | 12.08 | 13.15 | 13.34 | 12.14 | 13.57 | 16.17 | 15.57 | 14.90 |
| Repairs | 8.17 | 8.55 | 12.12 | 12.40 | 13.30 | 13.80 | 15.79 | 14.94 | 15.29 | 15.49 | 16.18 | 16.13 | 15.77 |
| Hired labor | 7.01 | 7.29 | 5.01 | 4.72 | 4.75 | 4.99 | 5.24 | 5.62 | 5.90 | 6.30 | 6.52 | 7.02 | 6.97 |
| Other variable cash expenses | 2.43 | 2.46 | 1.71 | 1.66 | 1.72 | 1.86 | 1.96 | 2.04 | 2.12 | 2.38 | 2.28 | 2.52 | 2.39 |
| Interest | 10.76 | 10.18 | 9.82 | 8.58 | 9.82 | 12.79 | 13.38 | 11.90 | 10.93 | 10.67 | 11.05 | 11.69 | 10.63 |
| **Total, variable cash expenses** | **68.55** | **69.72** | **74.56** | **73.71** | **77.50** | **87.46** | **94.28** | **92.06** | **88.77** | **89.77** | **92.99** | **100.18** | **92.21** |
| General farm overhead | 7.16 | 6.46 | 5.44 | 5.50 | 6.72 | 7.98 | 7.95 | 8.17 | 6.55 | 6.28 | 6.33 | 6.66 | 6.82 |
| Taxes and insurance | 7.71 | 7.91 | 10.49 | 10.52 | 12.27 | 13.20 | 14.27 | 13.40 | 12.40 | 12.02 | 12.02 | 12.48 | 12.51 |
| **Total, fixed cash expenses** | **14.87** | **14.37** | **15.93** | **16.02** | **18.99** | **21.18** | **22.22** | **21.57** | **18.95** | **18.30** | **18.35** | **19.14** | **19.33** |
| **Total, cash expenses** | **83.42** | **84.09** | **90.49** | **89.73** | **96.49** | **108.64** | **116.50** | **113.63** | **107.72** | **108.07** | **111.34** | **119.32** | **111.54** |
| **Total, economic costs** | **156.24** | **160.95** | **161.59** | **160.73** | **171.00** | **187.14** | **202.56** | **196.42** | **186.71** | **189.50** | **194.41** | **201.83** | **193.49** |

Source: USDA- ERS

Table B8. Soybeans Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 12.47 | 12.89 | 12.46 | 12.46 | 13.84 | 13.32 | 15.01 | 19.72 | 20.46 | 19.25 | 19.18 | 22.59 | 24.07 |
| Fertilizer, lime, and gypsum | 9.57 | 9.34 | 9.39 | 8.82 | 9.25 | 9.76 | 10.45 | 8.00 | 8.00 | 7.96 | 7.87 | 8.32 | 7.50 |
| Soil conditioners | | | | | | | | 0.10 | 0.10 | 0.10 | 0.14 | 0.11 | 0.11 |
| Manure | | | | | | | | 0.86 | 0.80 | 0.79 | 0.84 | 1.09 | 0.85 |
| Chemicals | 20.48 | 22.51 | 23.53 | 24.13 | 24.45 | 24.82 | 24.95 | 26.37 | 26.65 | 24.88 | 22.32 | 22.89 | 22.89 |
| Custom operations | 3.56 | 3.66 | 3.66 | 3.55 | 3.73 | 3.65 | 3.65 | 5.85 | 5.84 | 5.86 | 5.94 | 6.13 | 6.03 |
| Fuel, lube, and electricity | 9.06 | 9.49 | 8.46 | 8.31 | 7.93 | 7.64 | 9.45 | 7.14 | 5.97 | 5.90 | 8.60 | 8.69 | 7.89 |
| Repairs | 8.63 | 8.92 | 9.57 | 9.61 | 10.50 | 10.68 | 10.04 | 9.40 | 9.59 | 9.79 | 10.17 | 10.59 | 10.72 |
| Hired labor | 5.88 | 5.91 | 6.21 | 6.10 | 6.02 | 6.01 | 6.40 | 1.94 | 1.98 | 2.01 | 2.03 | 2.04 | 2.18 |
| Other variable cash expenses | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 |
| Interest | 13.35 | 15.54 | 12.76 | 12.49 | 13.17 | 15.02 | 15.65 | 1.98 | 1.86 | 1.75 | 2.16 | 1.36 | 0.67 |
| **Total, variable cash expenses** | **83.04** | **88.30** | **86.08** | **85.51** | **88.93** | **90.95** | **95.65** | **81.41** | **81.30** | **78.34** | **79.31** | **83.87** | **82.97** |
| General farm overhead | 8.23 | 9.25 | 8.78 | 9.79 | 11.03 | 11.58 | 11.44 | 13.68 | 12.94 | 14.13 | 14.56 | 15.17 | 15.40 |
| Taxes and insurance | 15.63 | 17.14 | 17.10 | 17.47 | 18.69 | 18.64 | 19.71 | 6.76 | 6.89 | 6.77 | 7.01 | 7.14 | 7.09 |
| **Total, fixed cash expenses** | **23.86** | **26.39** | **25.88** | **27.26** | **29.72** | **30.22** | **31.15** | **20.44** | **19.83** | **20.90** | **21.57** | **22.31** | **22.49** |
| **Total Cash Expenses** | **106.90** | **114.69** | **111.96** | **112.77** | **118.65** | **121.17** | **126.80** | **101.85** | **101.13** | **99.24** | **100.88** | **106.18** | **105.46** |
| **Total Economic Costs** | **190.54** | **196.63** | **203.02** | **204.17** | **218.40** | **219.79** | **233.77** | **245.83** | **247.56** | **249.02** | **254.10** | **264.08** | **266.04** |

Source: USDA- ERS

Table B9. Peanuts Costs of Production Data Estimated by Economic Research Service, Crop Years 1990-2002 ($/per planted acre)

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed | 71.98 | 110.47 | 70.32 | 71.18 | 78.57 | 72.88 | 74.80 | 74.29 | 75.48 | 72.89 | 72.71 | 73.72 | 73.57 |
| Fertilizer, lime, and gypsum | 28.77 | 43.86 | 43.27 | 42.40 | 44.53 | 43.47 | 42.50 | 39.80 | 39.52 | 39.49 | 37.25 | 41.84 | 39.09 |
| Chemicals | 80.14 | 87.56 | 89.70 | 92.57 | 90.97 | 97.83 | 99.02 | 98.22 | 97.96 | 97.92 | 93.00 | 93.73 | 92.18 |
| Custom operations | 10.30 | 8.01 | 7.90 | 7.92 | 8.76 | 8.44 | 9.77 | 9.67 | 9.93 | 9.63 | 8.04 | 10.64 | 9.92 |
| Fuel, lube, and electricity | 38.64 | 38.02 | 35.06 | 26.78 | 33.07 | 34.84 | 40.61 | 39.54 | 34.60 | 33.25 | 46.46 | 46.55 | 41.62 |
| Repairs | 21.17 | 26.95 | 29.01 | 27.60 | 29.91 | 25.18 | 25.30 | 27.50 | 30.40 | 27.74 | 28.62 | 29.74 | 30.93 |
| Hired labor | 32.96 | 44.35 | 46.47 | 44.93 | 47.52 | 31.97 | 32.86 | 35.06 | 35.14 | 37.72 | 39.10 | 41.45 | 42.51 |
| Drying | 21.37 | 15.32 | 16.36 | 12.71 | 16.58 | 14.95 | 17.04 | 16.65 | 17.31 | 17.00 | 13.61 | 18.15 | 17.16 |
| Other variable cash expenses | 0.00 | 0.49 | 0.49 | 0.56 | 0.58 | | | | | | | | |
| Interest | 52.48 | 46.74 | 38.44 | 38.93 | 38.57 | 8.20 | 7.77 | 7.82 | 7.31 | 7.01 | 8.64 | 5.3 | 2.60 |
| **Total, variable cash expenses** | **357.81** | **421.77** | **377.02** | **365.58** | **389.06** | **337.76** | **349.67** | **348.55** | **347.65** | **342.65** | **347.43** | **361.12** | **349.58** |
| Taxes and insurance | 13.48 | 19.44 | 19.12 | 17.57 | 16.59 | 18.47 | 18.85 | 19.27 | 20.57 | 19.66 | 20.42 | 21.47 | 22.22 |
| General farm overhead | 37.63 | 23.98 | 24.30 | 19.92 | 17.85 | 15.69 | 16.32 | 16.96 | 16.91 | 17.51 | 18.65 | 19.04 | 18.70 |
| **Total, fixed cash expenses** | **51.11** | **43.42** | **43.42** | **37.49** | **34.44** | **34.16** | **35.17** | **36.23** | **37.48** | **37.17** | **39.07** | **40.51** | **40.92** |
| **Total, cash expenses** | **408.92** | **465.19** | **420.44** | **403.07** | **423.50** | **371.92** | **384.84** | **384.78** | **385.13** | **379.82** | **386.50** | **401.63** | **390.50** |
| **Total Economic Costs** | **667.02** | **738.36** | **711.23** | **694.03** | **730.97** | **694.27** | **699.79** | **720.72** | **718.34** | **720.52** | **717.53** | **739.73** | **653.79** |

Source: USDA- ERS

# APPENDIX C

## ACTUAL PRODUCTION DATA USED FOR EQUITABILITY CALCULATIONS

Table C1. Corn Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 74,166 | 75,957 | 79,311 | 73,239 | 78,921 | 71,479 | 79,229 | 79,537 | 80,165 | 77,386 | 79,551 | 75,702 | 78,894 |
| Harvested Acres (1000 acres) | 66,952 | 68,822 | 72,077 | 62,933 | 72,514 | 65,210 | 72,644 | 72,671 | 72,589 | 70,487 | 72,440 | 68,768 | 69,330 |
| Yield (bushels) | 118.5 | 108.6 | 131.5 | 100.7 | 138.6 | 113.5 | 127.1 | 126.7 | 134.4 | 133.8 | 136.9 | 138.2 | 129.3 |
| Planted Acre Yield[1] | 107 | 98 | 119 | 87 | 127 | 104 | 117 | 116 | 122 | 122 | 125 | 126 | 114 |
| Production (1000 bushels) | 7,934,028 | 7,474,765 | 9,476,698 | 6,337,730 | 10,050,520 | 7,400,051 | 9,232,557 | 9,206,832 | 9,758,685 | 9,430,612 | 9,915,051 | 9,502,580 | 8,966,787 |
| Price ($/bu) | 2.28 | 2.37 | 2.07 | 2.5 | 2.26 | 3.24 | 2.71 | 2.43 | 1.94 | 1.82 | 1.85 | 1.97 | 2.32 |
| Value of Prod ($1000) | 18,191,643 | 17,860,947 | 19,723,258 | 16,035,515 | 22,874,154 | 24,202,234 | 25,149,013 | 22,351,507 | 18,922,084 | 17,103,991 | 18,499,002 | 18,888,389 | 20,974,734 |
| Number of Farms | | | 503,935 | | | | | 430,711 | | | | | 348,590 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA-NASS and the Census of Agriculture

Table C2. Cotton Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 12,117 | 13,802 | 12,977 | 13,248 | 13,552 | 16,717 | 14,395 | 13,648 | 13,064 | 14,584 | 15,347 | 15,499 | 13,714 |
| Harvested Acres (1000 acres) | 11,505 | 12,716 | 10,863 | 12,594 | 13,156 | 15,796 | 12,632 | 13,157 | 10,449 | 13,138 | 12,884 | 13,560 | 12,174 |
| Yield (pounds) | 632 | 650 | 694 | 601 | 705 | 533 | 700 | 666 | 619 | 595 | 626 | 694 | 652 |
| Planted Acre Yield [1] (pounds) | 600 | 599 | 581 | 571 | 684 | 503 | 614 | 642 | 495 | 536 | 525 | 607 | 579 |
| Production (1000 pounds) | 7,270,512 | 8,263,632 | 7,540,896 | 7,566,864 | 9,275,664 | 8,415,456 | 8,838,480 | 8,757,600 | 6,468,432 | 7,820,976 | 8,063,616 | 9,409,152 | 7,934,544 |
| Price ($/lb) | 0.671 | 0.568 | 0.537 | 0.581 | 0.72 | 0.754 | 0.693 | 0.652 | 0.602 | 0.45 | 0.498 | 0.298 | 0.445 |
| Value of Production ($1000) | 4,894,226 | 4,728,498 | 4,081,657 | 4,366,534 | 6,630,582 | 6,358,184 | 6,136,592 | 5,708,940 | 3,923,827 | 3,533,825 | 4,073,161 | 2,833,913 | 3,497,123 |
| Number of Farms | | | | | | | | 31,493 | | | | | 24,805 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA-NASS and the Census of Agriculture

Table C3. Rice Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 2,897 | 2,884 | 3,176 | 2,920 | 3,353 | 3,121 | 2,824 | 3,125 | 3,285 | 3,531 | 3,060 | 3,334 | 3,240 |
| Harvested Acres (1000 acres) | 2,823 | 2,781 | 3,132 | 2,833 | 3,316 | 3,093 | 2,804 | 3,103 | 3,257 | 3,512 | 3,039 | 3,314 | 3,207 |
| Yield (pounds) | 5,529 | 5,731 | 5,736 | 5,510 | 5,964 | 5,621 | 6,120 | 5,897 | 5,663 | 5,866 | 6,281 | 6,496 | 6,578 |
| Planted Acre Yield [1] (pounds) | 5,388 | 5,526 | 5,657 | 5,346 | 5,899 | 5,571 | 6,076 | 5,856 | 5,615 | 5,835 | 6,238 | 6,457 | 6,511 |
| Production (1000 cwt) | 156,088 | 159,367 | 179,658 | 156,110 | 197,779 | 173,871 | 171,599 | 182,992 | 184,443 | 206,027 | 190,872 | 215,270 | 210,960 |
| Price ($/lb) | 0.0670 | 0.0758 | 0.0589 | 0.0798 | 0.0678 | 0.0915 | 0.0996 | 0.0970 | 0.0889 | 0.0593 | 0.0561 | 0.0425 | 0.0449 |
| Value of Production ($1000) | 1,047,242 | 1,213,330 | 1,057,272 | 1,246,875 | 1,336,570 | 1,587,236 | 1,690,270 | 1,756,136 | 1,654,157 | 1,231,207 | 1,049,961 | 925,055 | 979,628 |
| Number of Farms | | | | | | | | 9,627 | | | | | 8,046 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA-NASS and the Census of Agriculture

Table C4. Sorghum Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 10,535 | 11,064 | 13,177 | 9,882 | 9,787 | 9,429 | 13,097 | 10,052 | 9,626 | 9,288 | 9,195 | 10,248 | 9,589 |
| Harvested Acres (1000 acres) | 9,089 | 9,870 | 12,050 | 8,916 | 8,882 | 8,253 | 11,811 | 9,158 | 7,723 | 8,544 | 7,726 | 8,579 | 7,125 |
| Yield (bushels) | 63.1 | 59.3 | 72.6 | 59.9 | 72.7 | 55.6 | 67.3 | 69.2 | 67.3 | 69.7 | 60.9 | 59.9 | 50.6 |
| Planted Acre Yield [1] (bushels) | 54 | 53 | 66 | 54 | 66 | 49 | 61 | 63 | 54 | 64 | 51 | 50 | 38 |
| Production (1000 bushels) | 573,303 | 584,860 | 875,022 | 534,172 | 645,741 | 458,648 | 795,274 | 633,545 | 519,933 | 595,166 | 470,526 | 514,040 | 360,713 |
| Price ($/ bushel) | 2.12 | 2.25 | 1.89 | 2.31 | 2.13 | 3.19 | 2.34 | 2.21 | 1.66 | 1.57 | 1.89 | 1.94 | 2.32 |
| Value of Production ($1000) | 1,220,501 | 1,331,302 | 1,667,194 | 1,234,500 | 1,317,149 | 1,389,772 | 1,986,316 | 1,408,909 | 905,468 | 937,406 | 847,075 | 979,794 | 876,471 |
| Number of Farms | | | | | | | | 50,860 | | | | | 33,172 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA-NASS and the Census of Agriculture

Table C5. Oats Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 10,423 | 8,653 | 7,943 | 7,937 | 6,637 | 6,225 | 4,638 | 5,068 | 4,891 | 4,668 | 4,473 | 4,401 | 4,995 |
| Harvested Acres (1000 acres) | 5,947 | 4,816 | 4,496 | 3,803 | 4,008 | 2,952 | 2,655 | 2,813 | 2,752 | 2,445 | 2,325 | 1,911 | 2,058 |
| Yield (bushels) | 60.1 | 50.6 | 65.4 | 54.4 | 57.1 | 54.6 | 57.7 | 59.5 | 60.2 | 59.6 | 64.2 | 61.5 | 56.4 |
| Planted Acre Yield [1] (bushels) | 34 | 28 | 37 | 26 | 34 | 26 | 33 | 33 | 34 | 31 | 33 | 27 | 23 |
| Production (1000 bushels) | 357,654 | 243,851 | 294,229 | 206,731 | 228,844 | 161,094 | 153,245 | 167,246 | 165,768 | 145,628 | 149,165 | 117,602 | 116,002 |
| Price ($/bu) | 1.14 | 1.21 | 1.32 | 1.36 | 1.22 | 1.67 | 1.96 | 1.6 | 1.1 | 1.12 | 1.1 | 1.59 | 1.81 |
| Value of Production ($1000) | 417,762 | 309,735 | 399,595 | 290,948 | 299,627 | 278,941 | 313,910 | 273,284 | 199,748 | 175,172 | 175,797 | 195,711 | 216,127 |
| Number of Farms | | | | | | | | 94,811 | | | | | 63,763 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA-NASS and the Census of Agriculture

Table C6. Wheat Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 77,041 | 69,881 | 72,219 | 72,168 | 70,349 | 69,031 | 75,105 | 70,412 | 65,821 | 62,664 | 62,549 | 59,432 | 60,318 |
| Harvested Acres (1000 acres) | 69,103 | 57,803 | 62,761 | 62,712 | 61,770 | 60,955 | 62,819 | 62,840 | 59,002 | 53,773 | 53,063 | 48,473 | 45,824 |
| Yield (bushel) | 39.5 | 34.3 | 39.3 | 38.2 | 37.6 | 35.8 | 36.3 | 39.5 | 43.2 | 42.7 | 42 | 40.2 | 35 |
| Planted Acre Yield [1] (bushels) | 35 | 28 | 34 | 33 | 33 | 32 | 30 | 35 | 39 | 37 | 36 | 33 | 27 |
| Production (1000 bushels) | 2,729,778 | 1,980,139 | 2,466,798 | 2,396,440 | 2,320,981 | 2,182,708 | 2,277,388 | 2,481,466 | 2,547,321 | 2,295,560 | 2,228,160 | 1,947,453 | 1,605,878 |
| Price ($/bu) | 2.61 | 3 | 3.24 | 3.26 | 3.45 | 4.55 | 4.3 | 3.38 | 2.65 | 2.48 | 2.62 | 2.78 | 3.56 |
| Value of Production ($1000) | 7,166,888 | 5,954,912 | 8,009,711 | 7,647,527 | 7,968,237 | 9,787,766 | 9,782,238 | 8,286,741 | 6,780,623 | 5,593,989 | 5,782,107 | 5,440,217 | 5,679,400 |
| Number of Farms | | | | | | | | 252,922 | | | | | 169,528 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA-NASS and the Census of Agriculture

Table C7. Barley Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 8,221 | 8,941 | 7,762 | 7,786 | 7,159 | 6,689 | 7,094 | 6,706 | 6,325 | 4,983 | 5,801 | 4,951 | 5,008 |
| Harvested Acres (1000 acres) | 7,529 | 8,413 | 7,285 | 6,753 | 6,667 | 6,279 | 6,707 | 6,198 | 5,854 | 4,573 | 5,200 | 4,273 | 4,123 |
| Yield (bushels) | 56.1 | 55.2 | 62.5 | 58.9 | 56.2 | 57.2 | 58.5 | 58.1 | 60.1 | 59.5 | 61.1 | 58.1 | 55 |
| Planted Acre Yield [1] (bushels) | 51 | 52 | 59 | 51 | 52 | 54 | 55 | 54 | 56 | 55 | 55 | 50 | 45 |
| Production (1000 bushels) | 422,196 | 464,326 | 455,090 | 398,041 | 374,862 | 359,376 | 392,433 | 359,878 | 351,569 | 271,996 | 317,804 | 248,329 | 226,906 |
| Price ($/ bu) | 2.14 | 2.1 | 2.04 | 1.99 | 2.03 | 2.89 | 2.74 | 2.38 | 1.98 | 2.13 | 2.11 | 2.22 | |
| Value of Production ($1000) | 911,545 | 996,542 | 946,463 | 812,889 | 783,709 | 1,028,183 | 1,080,940 | 861,620 | 686,517 | 597,038 | 649,130 | 536,582 | 603,796 |
| Number of Farms | | | | | | | | 43,269 | | | | | 24,747 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA- NASS and the Census of Agriculture

Table C8. Soybeans Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 57,795 | 59,180 | 59,180 | 60,085 | 61,620 | 62,495 | 64,195 | 70,005 | 72,025 | 73,730 | 74,266 | 74,075 | 73,963 |
| Harvested Acres (1000 acres) | 56,512 | 58,011 | 58,233 | 57,307 | 60,809 | 61,544 | 63,349 | 69,110 | 70,441 | 72,446 | 72,408 | 72,975 | 72,497 |
| Yield (bushels) | 34.1 | 34.2 | 37.6 | 32.6 | 41.4 | 35.3 | 37.6 | 38.9 | 38.9 | 36.6 | 38.1 | 39.6 | 38 |
| Planted Acre Yield [1] (bushels) | 33 | 34 | 37 | 31 | 41 | 35 | 37 | 38 | 38 | 36 | 37 | 39 | 37 |
| Production (1000 bushels) | 1,925,947 | 1,986,539 | 2,190,354 | 1,869,718 | 2,514,869 | 2,174,254 | 2,380,274 | 2,688,750 | 2,741,014 | 2,653,758 | 2,757,810 | 2,890,682 | 2,756,147 |
| Price ($/ bu) | 5.74 | 5.58 | 5.56 | 6.4 | 5.48 | 6.72 | 7.35 | 6.47 | 4.93 | 4.63 | 4.54 | 4.38 | 5.53 |
| Value of Production ($1000) | 11,042,010 | 11,091,996 | 12,167,564 | 11,941,449 | 13,746,071 | 14,599,145 | 17,439,971 | 17,372,628 | 13,493,891 | 12,205,352 | 12,466,572 | 12,605,717 | 15,214,595 |
| Number of Farms | | | | | | | | 317,611 | | | | | 317,611 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA- NASS and the Census of Agriculture

Table C9. Peanuts Production Data- Crop Years 1990 to 2002

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted Acres (1000 acres) | 1,846 | 2,039 | 1,687 | 1,734 | 1,641 | 1,538 | 1,402 | 1,434 | 1,521 | 1,535 | 1,537 | 1,541 | 1,353 |
| Harvested Acres (1000 acres) | 1,816 | 2,016 | 1,669 | 1,690 | 1,619 | 1,517 | 1,380 | 1,414 | 1,467 | 1,436 | 1,336 | 1,412 | 1,292 |
| Yield (pounds) | 1,985 | 2,444 | 2,567 | 2,008 | 2,624 | 2,282 | 2,653 | 2,503 | 2,702 | 2,667 | 2,444 | 3,029 | 2,571 |
| Planted Acre Yield [1] (pounds) | 1,952 | 2,416 | 2,540 | 1,957 | 2,588 | 2,251 | 2,612 | 2,468 | 2,606 | 2,496 | 2,125 | 2,775 | 2,455 |
| Production (1000 pounds) | 3,603,650 | 4,926,570 | 4,284,416 | 3,392,415 | 4,247,455 | 3,461,475 | 3,661,205 | 3,539,380 | 3,963,440 | 3,829,490 | 3,265,505 | 4,276,704 | 3,321,040 |
| Price ($/lb) | 0.347 | 0.283 | 0.3 | 0.304 | 0.289 | 0.293 | 0.281 | 0.283 | 0.284 | 0.254 | 0.274 | 0.234 | 0.182 |
| Value of Production ($1000) | 1,249,899 | 1,392,041 | 1,285,361 | 1,030,904 | 1,229,012 | 1,013,323 | 1,029,774 | 1,002,703 | 1,125,919 | 971,608 | 896,097 | 1,000,512 | 599,624 |
| Number of Farms | | | | | | | | 12,788 | | | | | 8,640 |

[1] Calculated yield by taking production and dividing it by planted acres.
Source: USDA- NASS and the Census of Agriculture

# APPENDIX D

# FARM PROGRAM PROVISIONS BY CROP

Table D1. Farm Program Provisions for Corn

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payment ($/ bu) | 0.51 | 0.41 | 0.73 | 0.28 | 0.57 | 0 | 0.251 | 0.486 | 0.564 | 0.726 | 0.697 | 0.58 | 0.28 |
| Target Price ($/ bu) | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | N/A | N/A | N/A | N/A | N/A | N/A | 2.6 |
| Loan Rate ($/bu) | 1.57 | 1.62 | 1.72 | 1.72 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.98 |
| Base Acres (1000) | 63,934 | 63,284 | 62,156 | 66,505 | 66,526 | 62,168 | 80,468 | 80,468 | 81,800 | 81,500 | 81,500 | 81,900 | 79,600 |
| Program Yield (Bushels per Acre) | 104.6 | 104.9 | 105.4 | 105.2 | 105.5 | 106.2 | 102.9 | 102.8 | 102.6 | 102.6 | 102.6 | 102.7 | 102.3 |
| Countercyclical Program Yield (Bushels per Acre) | | | | | | | | | | | | | 114.3 |
| Program Production (1000 Bushels) | 6,687,535 | 6,638,476 | 6,551,291 | 6,996,377 | 7,018,475 | 6,602,190 | 8,280,126 | 8,272,080 | 8,392,680 | 8,361,900 | 8,361,900 | 8,411,130 | 8,143,080 |
| Acreage Reduction Percentage | 0.1 | 0.075 | 0.1 | 0.1 | - | 0.1 | | | | | | | |

Source: USDA- FSA

Table D2. Farm Program Provisions for Cotton

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payment ($/lb) | 0.0678 | 0.101 | 0.203 | 0.186 | 0.046 | 0 | 0.0882 | 0.07625 | 0.12237 | 0.1576 | 0.1521 | 0.12 | 0.07 |
| Target Price ($/lb) | 0.729 | 0.729 | 0.729 | 0.729 | 0.729 | 0.729 | N/A | N/A | N/A | N/A | N/A | N/A | 0.7 |
| Loan Rate ($/lb) | 0.5027 | 0.5077 | 0.5235 | 0.5235 | 0.5 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.5192 | 0.52 |
| Base Acres (1000) | 12,436 | 12,173 | 13,206 | 13,702 | 13,660 | 12,247 | 16,128 | 16,210 | 16,260 | 16,440 | 16,440 | 16,490 | 17,080 |
| Program Yield (lbs/acre) | 594.8 | 588.5 | 601.8 | 604.5 | 606.0 | 600.1 | 600 | 600 | 600 | 600 | 600 | 605 | 604.3 |
| Countercyclical Program Yield (Pounds per Acre) | | | | | | | | | | | | | 638.9 |
| Program Production (1000 lbs) | 7,396,738 | 7,163,747 | 7,947,418 | 8,283,090 | 8,278,125 | 7,349,591 | 9,676,821 | 9,726,000 | 9,756,000 | 9,864,000 | 9,864,000 | 9,976,450 | 10,321,444 |
| Acreage Reduction Percentage | 0.125 | 0.05 | 0.1 | 0.075 | 0.11 | 0 | | | | | | | |

Source: USDA- FSA

Table D3. Farm Program Provisions for Rice

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payment ($/lb) | 0.0416 | 0.0307 | 0.0421 | 0.0398 | 0.0379 | 0.0322 | 0.02766 | 0.0271 | 0.04374 | 0.0564 | 0.0542 | 0.0449 | 0.0235 |
| Target Price ($/lb) | 0.1071 | 0.1071 | 0.1071 | 0.1071 | 0.1071 | 0.1071 | N/A | N/A | N/A | N/A | N/A | N/A | 0.105 |
| Loan Rate ($/lb) | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 |
| Base Acres (1000) | 3,890 | 3,947 | 3,989 | 4,000 | 3,969 | 3,962 | 4,158 | 4,157 | 4,166 | 4,153 | 4,151 | 4,141 | 4,180 |
| Program Yield (lbs/acre) | 4,848.9 | 4,848.5 | 4,842.8 | 4,851.6 | 4,863.4 | 4,859.50 | 4,827 | 4,817 | 4,817 | 4,815 | 4,815 | 4,815 | 4,816.40 |
| Countercyclical Yield (lbs/acre) | | | | | | | | | | | | | 5,123.60 |
| Program Production (1000 lbs) | 18,862,508 | 19,139,162 | 19,318,615 | 19,406,000 | 19,303,160 | 19,253,462 | 20,070,183 | 20,025,232 | 20,066,659 | 19,994,288 | 19,987,547 | 19,940,841 | 20,132,552 |
| Acreage Reduction Percentage | 0.200 | 0.050 | - | 0.050 | - | 0.050 | | | | | | | |

Source: USDA- FSA

Table D4. Farm Program Provisions for Sorghum

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payment ($/bu) | 0.560 | 0.370 | 0.722 | 0.252 | 0.588 | 0.000 | 0.323 | 0.544 | 0.677 | 0.870 | 0.835 | 0.694 | 0.353 |
| Target Price ($/bu) | 2.610 | 2.610 | 2.610 | 2.610 | 2.610 | 2.610 | N/A | N/A | N/A | N/A | N/A | N/A | 2.5424 |
| Loan Rate ($/bu) | 1.49 | 1.54 | 1.63 | 1.63 | 1.80 | 1.80 | 1.81 | 1.76 | 1.74 | 1.74 | 1.71 | 1.71 | 1.98 |
| Base Acres (1000 acres) | 10,821 | 10,398 | 10,673 | 10,988 | 10,927 | 10,250 | 13,009 | 13,100 | 13,500 | 13,600 | 13,600 | 13,800 | 12,000 |
| Program Yield (Bushels per Acre) | 57.7 | 58.0 | 59.1 | 59.0 | 59.2 | 59.2 | 57.3 | 57.3 | 56.9 | 56.8 | 56.8 | 57 | 56.4 |
| Countercyclical Program Yield (Bushels per Acre) | | | | | | | | | | | | | 58 |
| Program Production (1000 bushels) | 624,370 | 603,104 | 630,752 | 648,309 | 646,879 | 606,784 | 745,400 | 750,630 | 768,150 | 772,480 | 772,480 | 786,600 | 676,800 |
| Acreage Reduction Percentage | 0.1 | 0.075 | 0.05 | 0.050 | - | - | | | | | | | |

Source: USDA- FSA

Table D5. Farm Program Provisions for Oats

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payment ($/bu) | 0.32 | 0.35 | 0.17 | 0.11 | 0.19 | 0 | 0.033 | 0.031 | 0.047 | 0.06 | 0.058 | 0.05 | 0.02 |
| Target Price ($/bu) | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | N/A | N/A | N/A | N/A | N/A | N/A | 1.4 |
| Loan Rate ($/bu) | 0.81 | 0.83 | 0.88 | 0.88 | 0.97 | 0.97 | 1.03 | 1.11 | 1.11 | 1.13 | 1.16 | 1.21 | 1.35 |
| Base Acres (1000 acres) | 693 | 2,767 | 2,929 | 3,228 | 2,717 | 2,877 | 6,148 | 6,190 | 6,700 | 6,700 | 6,700 | 6,600 | 5,300 |
| Program Yield (Bushels per Acre) | 43.6 | 48.7 | 48.6 | 48.7 | 48.6 | 47.8 | 50.8 | 50.8 | 50.7 | 50.6 | 50.6 | 50.6 | 48.3 |
| Countercyclical Program Yield (Bushels per Acre) | | | | | | | | | | | | | 49.8 |
| Program Production (1000 Bushels) | 30,231 | 134,749 | 142,329 | 157,218 | 132,054 | 137,525 | 312,341 | 314,452 | 339,690 | 339,020 | 339,020 | 333,960 | 255,990 |
| Acreage Reduction Percentage | 0.05 | | | | | | | | | | | | |

Source: USDA- FSA

Table D6. Farm Program Provisions for Wheat

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payment ($/bu) | 1.28 | 1.35 | 0.81 | 1.03 | 0.61 | 0 | 0.874 | 0.631 | 0.993 | 1.274 | 1.225 | 1.01 | 0.52 |
| Target Price ($/bu) | 4 | 4 | 4 | 4 | 4 | 4 | N/A | N/A | N/A | N/A | N/A | N/A | 3.86 |
| Loan Rate ($/bu) | 1.95 | 2.04 | 2.21 | 2.45 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.8 |
| Base Acres (1000 acres) | 66,696 | 67,644 | 65,650 | 68,566 | 67,997 | 65,847 | 76,437 | 76,663 | 78,905 | 79,038 | 78,938 | 78,464 | 73,700 |
| Program Yield (Bushels per Acre) | 34.1 | 34.4 | 34.4 | 34.4 | 34.4 | 34.4 | 34.7 | 34.7 | 34.5 | 34.5 | 34.5 | 34.6 | 34.5 |
| Countercyclical Program Yield (Bushels per Acre) | | | | | | | | | | | | | 36.1 |
| Program Production (1000 bushels) | 2,274,346 | 2,326,957 | 2,258,375 | 2,358,663 | 2,339,093 | 2,265,120 | 2,652,355 | 2,660,192 | 2,722,216 | 2,726,815 | 2,723,354 | 2,714,858 | 2,542,650 |
| Acreage Reduction Percentage | 0.1 | 0.2 | 0.05 | | | | | | | | | | |

Source: USDA- FSA

Table D7. Farm Program Provisions for Barley

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payment ($/bu) | 0.5 | 0.62 | 0.56 | 0.67 | 0.52 | 0 | 0.33 | 0.28 | 0.43 | 0.54 | 0.52 | 0.44 | 0.24 |
| Target Price ($/bu) | 2.36 | 2.36 | 2.36 | 2.36 | 2.36 | 2.36 | N/A | N/A | N/A | N/A | N/A | N/A | 2.21 |
| Loan Rate ($/bu) | 1.28 | 1.32 | 1.4 | 1.4 | 1.54 | 1.54 | 1.55 | 1.57 | 1.56 | 1.59 | 1.62 | 1.65 | 1.88 |
| Base Acres (1000 acres) | 8,118 | 8,711 | 8,337 | 8,906 | 8,953 | 8,742 | 10,497 | 10,540 | 11,100 | 11,100 | 11,100 | 11,500 | 9,900 |
| Countercyclical Program Yield (Bushels per Acre) | | | | | | | | | | | | | 48.7 |
| Program Production (1000 Bushels) | 366,950 | 402,453 | 386,847 | 417,696 | 421,676 | 410,874 | 496,486 | 497,488 | 518,370 | 513,930 | 517,260 | 535,900 | 472,230 |
| Acreage Reduction Percentage | 0.1 | 0.075 | 0.05 | | | | | | | | | | |

Source: USDA- FSA

Table D8. Farm Program Provisions for Soybeans

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payments ($/ bu) | | | | | | | | | | 0.14 | 0.26 | | 0.44 |
| Target Price ($/ bu) | | | | | | | | | | | | | 5.8 |
| Loan Rate ($/ bu) | 4.5 | 4.92 | 4.92 | 4.92 | 4.92 | 4.92 | 4.97 | 5.26 | 5.26 | 5.26 | 5.26 | 5.26 | 5 |
| Base Acres (1000) | 52,789 | 52,789 | 52,789 | 52,789 | 52,789 | 52,789 | 52,789 | 52,789 | 52,789 | 52,789 | 52,789 | 52,789 | 65,400 |
| Program Yield (Bushels per Acre) | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 | 30.8 |
| Countercyclical Program Yield (Bushels per Acre) | | | | | | | | | | | | | 34.1 |
| Program Production (1000 bushels) | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 1,625,901 | 2,014,320 |
| Acreage Reduction Percentage | | | | | | | | | | | | | |

Source: USDA- FSA

Table D9. Farm Program Provisions for Peanuts

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Payment ($/lb) | | | | | | | | | | | | | 0.018 |
| Target Price ($/lb) | | | | | | | | | | | | | 0.2475 |
| Loan Rate ($/lb) | 0.3157 | 0.3214 | 0.3337 | 0.3337 | 0.3392 | 0.3392 | 0.305 | 0.305 | 0.305 | 0.305 | 0.305 | 0.305 | 0.1775 |
| Base Acres (1000) | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 | 1,470 |
| Program Yield (Bushels per Acre) | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 | 2,988.70 |
| Countercyclical Program Yield (Bushels per Acre) | | | | | | | | | | | | | |
| Program Production (1000 pounds) | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 | 4,393,389 |
| Acreage Reduction Percentage | | | | | | | | | | | | | |

Source: USDA- FSA

# APPENDIX E

## RESULTS OF EQUITABILITY MEASURE CALCULATIONS

Table E1. Results for Support per Base Acre Equitability Measures, by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 47.12 | 34.15 | 58.51 | 29.98 | 48.58 | 4.48 | 22.02 | 43.27 | 65.72 | 92.97 | 91.68 | 66.34 | 37.78 | 49.43 | 37.14 | 63.67 |
| Cotton | 36.64 | 94.09 | 160.97 | 127.58 | 31.32 | 24.50 | 56.94 | 43.11 | 135.97 | 204.39 | 159.32 | 257.44 | 190.55 | 117.14 | 79.19 | 142.86 |
| Rice | 191.72 | 141.95 | 220.94 | 205.35 | 170.01 | 119.56 | 109.48 | 108.93 | 177.42 | 330.48 | 360.64 | 354.89 | 348.71 | 218.47 | 174.92 | 240.31 |
| Sorghum | 31.17 | 18.50 | 30.99 | 15.46 | 26.86 | 6.12 | 17.98 | 25.90 | 41.13 | 52.81 | 49.94 | 38.65 | 32.92 | 29.88 | 21.52 | 37.73 |
| Oats | 19.55 | 12.04 | 5.26 | 3.99 | 5.96 | 2.83 | 1.70 | 1.79 | 4.96 | 7.18 | 9.32 | 2.82 | 3.70 | 6.24 | 8.27 | 4.63 |
| Wheat | 36.78 | 34.78 | 22.42 | 29.77 | 17.92 | 3.67 | 29.19 | 19.53 | 34.60 | 53.46 | 49.18 | 37.03 | 25.21 | 30.27 | 24.22 | 37.16 |
| Barley | 7.68 | 19.86 | 18.94 | 24.79 | 18.34 | 6.35 | 13.16 | 11.76 | 24.24 | 26.02 | 27.65 | 20.48 | 13.69 | 17.92 | 15.99 | 20.55 |
| Soybeans | 0.22 | 0.52 | 0.00 | 3.06 | 0.00 | 1.31 | 0.00 | 0.30 | 23.81 | 54.81 | 60.28 | 67.27 | 13.49 | 17.31 | 0.85 | 34.41 |
| Peanuts | 119.46 | 11.21 | 0.00 | 77.21 | 2.69 | 22.91 | 7.01 | 17.64 | 16.47 | 33.85 | 109.39 | 108.08 | 229.64 | 58.12 | 38.91 | 48.74 |

Equitability ratio defined as Total Annual Support divided by Annual Base Acreage
**Note: CCC Expenditures obtained from USDA- FSA. Base Acres obtained from FAPRI and USDA- FSA.

Table E2. Results for Support per Planted Acre Equitability Measures, by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 40.62 | 28.45 | 45.85 | 27.23 | 40.95 | 3.89 | 22.36 | 43.77 | 67.06 | 97.92 | 93.93 | 71.77 | 38.12 | 47.84 | 31.17 | 66.14 |
| Cotton | 37.61 | 82.98 | 163.82 | 131.96 | 31.57 | 17.95 | 63.80 | 51.21 | 169.22 | 230.40 | 170.67 | 273.91 | 237.32 | 127.88 | 77.65 | 159.87 |
| Rice | 257.44 | 194.30 | 277.51 | 281.29 | 201.25 | 151.78 | 161.19 | 144.92 | 224.99 | 388.65 | 489.24 | 440.83 | 449.88 | 281.79 | 227.26 | 308.30 |
| Sorghum | 32.02 | 17.39 | 25.10 | 17.19 | 29.99 | 6.65 | 17.86 | 33.75 | 57.68 | 77.32 | 73.86 | 52.04 | 41.20 | 37.08 | 21.39 | 52.09 |
| Oats | 1.30 | 3.85 | 1.94 | 1.62 | 2.44 | 1.31 | 2.25 | 2.18 | 6.80 | 10.31 | 13.96 | 4.23 | 3.92 | 4.32 | 2.08 | 6.62 |
| Wheat | 31.84 | 33.67 | 20.38 | 28.29 | 17.32 | 3.50 | 29.70 | 21.26 | 41.48 | 67.43 | 62.07 | 48.89 | 30.80 | 33.59 | 22.50 | 45.14 |
| Barley | 7.58 | 19.35 | 20.34 | 28.36 | 22.94 | 8.29 | 19.47 | 18.49 | 42.53 | 57.96 | 52.90 | 47.58 | 27.06 | 28.68 | 17.81 | 39.82 |
| Soybeans | 0.20 | 0.47 | 0.00 | 2.69 | 0.00 | 1.10 | 0.00 | 0.23 | 17.45 | 39.24 | 42.85 | 47.94 | 11.93 | 12.62 | 0.74 | 24.61 |
| Peanuts | 95.12 | 8.08 | 0.00 | 65.47 | 2.41 | 21.91 | 7.36 | 18.08 | 15.92 | 32.42 | 104.64 | 103.08 | 249.50 | 55.69 | 32.17 | 46.92 |

Equitability ratio defined as Total Annual Support divided by Total Annual Planted Acres
**Note: CCC Expenditures obtained from USDA- FSA. Planted acres obtained from USDA- NASS.

Table E3. Results for Support per Pound of Program Production Equitability Measures, by Commodity, Crop Years 1990 to 2002 Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Cotton | 0.06 | 0.16 | 0.27 | 0.21 | 0.05 | 0.04 | 0.09 | 0.07 | 0.23 | 0.34 | 0.27 | 0.43 | 0.32 | 0.19 | 0.13 | 0.24 |
| Rice | 0.04 | 0.03 | 0.05 | 0.04 | 0.03 | 0.02 | 0.02 | 0.02 | 0.04 | 0.07 | 0.07 | 0.07 | 0.07 | 0.05 | 0.04 | 0.05 |
| Sorghum | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Oats | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| Wheat | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | 0.03 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 |
| Barley | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Soybeans | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.03 | 0.03 | 0.04 | 0.01 | 0.01 | 0.00 | 0.02 |
| Peanuts | 0.04 | 0.00 | 0.00 | 0.03 | 0.00 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.04 | 0.04 | 0.08 | 0.02 | 0.01 | 0.02 |

Equitability ratio defined as Total Annual Support divided by total pounds of "Program Production". Program Production is program yield multiplied by base acres.
**Note: CCC Expenditures obtained from USDA- FSA. Program yield and base acres obtained from FAPRI and USDA- FSA.

Table E4. Results for Support per Pound of Actual Production Equitability Measures, by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Cotton | 0.06 | 0.14 | 0.28 | 0.23 | 0.05 | 0.04 | 0.10 | 0.08 | 0.34 | 0.43 | 0.32 | 0.45 | 0.41 | 0.23 | 0.13 | 0.29 |
| Rice | 0.05 | 0.04 | 0.05 | 0.05 | 0.03 | 0.03 | 0.03 | 0.02 | 0.04 | 0.07 | 0.08 | 0.07 | 0.07 | 0.05 | 0.04 | 0.05 |
| Sorghum | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 |
| Oats | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 |
| Wheat | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 | 0.02 | 0.01 | 0.02 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.01 | 0.02 |
| Barley | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 |
| Soybeans | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.00 | 0.01 |
| Peanuts | 0.05 | 0.00 | 0.00 | 0.03 | 0.00 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.05 | 0.04 | 0.10 | 0.02 | 0.02 | 0.02 |

Equitability ratio defined as Total Annual Support divided by total pounds of actual production.
**Note: CCC Expenditures obtained from USDA- FSA. Annual Production obtained from USDA- NASS.

Table E5. Results for Per Acre Support Relative to Total Costs Equitability Measures, by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 0.14 | 0.10 | 0.15 | 0.09 | 0.13 | 0.01 | 0.06 | 0.12 | 0.19 | 0.27 | 0.25 | 0.21 | 0.12 | 0.14 | 0.10 | 0.18 |
| Cotton | 0.07 | 0.19 | 0.39 | 0.30 | 0.07 | 0.04 | 0.13 | 0.10 | 0.37 | 0.47 | 0.33 | 0.52 | 0.45 | 0.26 | 0.18 | 0.32 |
| Rice | 0.51 | 0.36 | 0.52 | 0.51 | 0.33 | 0.24 | 0.24 | 0.21 | 0.33 | 0.58 | 0.85 | 0.74 | 0.77 | 0.48 | 0.41 | 0.49 |
| Sorghum | 0.20 | 0.10 | 0.14 | 0.10 | 0.16 | 0.04 | 0.09 | 0.17 | 0.30 | 0.40 | 0.38 | 0.25 | 0.20 | 0.19 | 0.12 | 0.26 |
| Oats | 0.01 | 0.03 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.05 | 0.07 | 0.09 | 0.03 | 0.03 | 0.03 | 0.01 | 0.04 |
| Wheat | 0.21 | 0.25 | 0.14 | 0.18 | 0.11 | 0.02 | 0.16 | 0.12 | 0.25 | 0.41 | 0.36 | 0.27 | 0.18 | 0.20 | 0.15 | 0.26 |
| Barley | 0.05 | 0.12 | 0.13 | 0.18 | 0.13 | 0.04 | 0.10 | 0.09 | 0.23 | 0.31 | 0.27 | 0.24 | 0.14 | 0.16 | 0.11 | 0.21 |
| Soybeans | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.07 | 0.16 | 0.17 | 0.18 | 0.04 | 0.05 | 0.00 | 0.10 |
| Peanuts | 0.14 | 0.01 | 0.00 | 0.09 | 0.00 | 0.03 | 0.01 | 0.03 | 0.02 | 0.04 | 0.15 | 0.14 | 0.38 | 0.08 | 0.05 | 0.06 |

Equitability ratio defined as Total Annual Support per planted acre divided by Total Costs per planted acre.
**Note: CCC Expenditures obtained from USDA- FSA. Total Costs obtained from USDA- ERS.

Table E6. Results for Per Acre Support Relative to Total Variable Costs Equitability Measures, by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 0.27 | 0.18 | 0.30 | 0.18 | 0.25 | 0.02 | 0.14 | 0.27 | 0.43 | 0.62 | 0.57 | 0.45 | 0.27 | 0.30 | 0.20 | 0.41 |
| Cotton | 0.12 | 0.29 | 0.58 | 0.46 | 0.11 | 0.06 | 0.20 | 0.17 | 0.64 | 0.82 | 0.56 | 0.85 | 0.75 | 0.43 | 0.27 | 0.54 |
| Rice | 0.75 | 0.54 | 0.82 | 0.81 | 0.55 | 0.41 | 0.40 | 0.37 | 0.60 | 1.02 | 1.58 | 1.36 | 1.46 | 0.82 | 0.65 | 0.89 |
| Sorghum | 0.40 | 0.21 | 0.29 | 0.20 | 0.33 | 0.09 | 0.22 | 0.41 | 0.69 | 0.93 | 0.84 | 0.52 | 0.47 | 0.43 | 0.25 | 0.60 |
| Oats | 0.02 | 0.08 | 0.04 | 0.03 | 0.04 | 0.02 | 0.04 | 0.04 | 0.12 | 0.19 | 0.25 | 0.07 | 0.07 | 0.08 | 0.04 | 0.12 |
| Wheat | 0.51 | 0.55 | 0.33 | 0.46 | 0.26 | 0.05 | 0.37 | 0.27 | 0.70 | 1.18 | 1.02 | 0.73 | 0.52 | 0.53 | 0.36 | 0.71 |
| Barley | 0.11 | 0.28 | 0.27 | 0.38 | 0.30 | 0.09 | 0.21 | 0.20 | 0.48 | 0.65 | 0.57 | 0.47 | 0.29 | 0.33 | 0.24 | 0.43 |
| Soybeans | 0.00 | 0.01 | 0.00 | 0.03 | 0.00 | 0.01 | 0.00 | 0.00 | 0.21 | 0.50 | 0.54 | 0.57 | 0.14 | 0.16 | 0.01 | 0.30 |
| Peanuts | 0.27 | 0.02 | 0.00 | 0.18 | 0.01 | 0.06 | 0.02 | 0.05 | 0.05 | 0.09 | 0.30 | 0.29 | 0.71 | 0.16 | 0.09 | 0.13 |

Equitability ratio defined as Total Annual Support per planted acre divided by Total Variable Costs per planted acre.
**Note: CCC Expenditures obtained from USDA- FSA. Total Variable Costs obtained from USDA- ERS.

Table E7. Results for Support per Unit Relative to Price Equitability Measure, by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 0.17 | 0.12 | 0.19 | 0.13 | 0.14 | 0.01 | 0.07 | 0.16 | 0.28 | 0.44 | 0.41 | 0.29 | 0.14 | 0.20 | 0.13 | 0.27 |
| Cotton | 0.09 | 0.24 | 0.52 | 0.40 | 0.06 | 0.05 | 0.15 | 0.12 | 0.57 | 0.95 | 0.65 | 1.51 | 0.92 | 0.48 | 0.23 | 0.66 |
| Rice | 0.71 | 0.46 | 0.83 | 0.66 | 0.50 | 0.30 | 0.27 | 0.26 | 0.45 | 1.12 | 1.40 | 1.61 | 1.54 | 0.78 | 0.58 | 0.85 |
| Sorghum | 0.28 | 0.15 | 0.20 | 0.14 | 0.21 | 0.04 | 0.13 | 0.24 | 0.64 | 0.77 | 0.76 | 0.54 | 0.47 | 0.35 | 0.17 | 0.51 |
| Oats | 0.03 | 0.11 | 0.04 | 0.05 | 0.06 | 0.03 | 0.03 | 0.04 | 0.18 | 0.30 | 0.38 | 0.10 | 0.09 | 0.11 | 0.05 | 0.17 |
| Wheat | 0.34 | 0.40 | 0.18 | 0.26 | 0.15 | 0.02 | 0.23 | 0.18 | 0.40 | 0.74 | 0.67 | 0.54 | 0.32 | 0.34 | 0.23 | 0.46 |
| Barley | 0.07 | 0.18 | 0.17 | 0.28 | 0.22 | 0.05 | 0.13 | 0.14 | 0.39 | 0.50 | 0.46 | 0.43 | 0.22 | 0.25 | 0.16 | 0.34 |
| Soybeans | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.24 | 0.25 | 0.28 | 0.06 | 0.07 | 0.00 | 0.14 |
| Peanuts | 0.14 | 0.01 | 0.00 | 0.11 | 0.00 | 0.03 | 0.01 | 0.03 | 0.02 | 0.05 | 0.18 | 0.16 | 0.56 | 0.10 | 0.05 | 0.07 |

Equitability ratio defined as Support per Actual Production divided by Price per unit. Support per Actual Production is Total Annual Support divided by Actual Production.
**Note: CCC Expenditures obtained from USDA- FSA. Price obtained from USDA- NASS.

Table E8. Results for Total Annual Support Relative to Total Value of Production Equitability Measure, by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 0.17 | 0.12 | 0.18 | 0.12 | 0.14 | 0.01 | 0.07 | 0.16 | 0.28 | 0.44 | 0.40 | 0.29 | 0.14 | 0.20 | 0.12 | 0.27 |
| Cotton | 0.09 | 0.24 | 0.52 | 0.40 | 0.06 | 0.05 | 0.15 | 0.12 | 0.56 | 0.95 | 0.64 | 1.50 | 0.93 | 0.48 | 0.23 | 0.65 |
| Rice | 0.71 | 0.46 | 0.83 | 0.66 | 0.50 | 0.30 | 0.27 | 0.26 | 0.45 | 1.11 | 1.43 | 1.59 | 1.49 | 0.77 | 0.58 | 0.85 |
| Sorghum | 0.28 | 0.14 | 0.20 | 0.14 | 0.22 | 0.05 | 0.12 | 0.24 | 0.61 | 0.77 | 0.80 | 0.54 | 0.45 | 0.35 | 0.17 | 0.51 |
| Oats | 0.03 | 0.11 | 0.04 | 0.04 | 0.05 | 0.03 | 0.03 | 0.04 | 0.17 | 0.27 | 0.36 | 0.10 | 0.09 | 0.10 | 0.05 | 0.16 |
| Wheat | 0.34 | 0.40 | 0.18 | 0.27 | 0.15 | 0.02 | 0.23 | 0.18 | 0.40 | 0.76 | 0.67 | 0.53 | 0.33 | 0.34 | 0.23 | 0.46 |
| Barley | 0.07 | 0.17 | 0.17 | 0.27 | 0.21 | 0.05 | 0.13 | 0.14 | 0.39 | 0.48 | 0.47 | 0.44 | 0.22 | 0.25 | 0.16 | 0.34 |
| Soybeans | 0.00 | 0.00 | 0.0000 | 0.0135 | 0.0000 | 0.0047 | 0.0000 | 0.0009 | 0.0932 | 0.2371 | 0.26 | 0.28 | 0.06 | 0.07 | 0.00 | 0.14 |
| Peanuts | 0.14 | 0.01 | 0.0000 | 0.1101 | 0.0032 | 0.0332 | 0.0100 | 0.0259 | 0.0215 | 0.0512 | 0.18 | 0.16 | 0.56 | 0.10 | 0.05 | 0.07 |

Equitability ratio defined as Total Annual Support divided by Total Annual Value of Production.
**Note: CCC Expenditures obtained from USDA- FSA. Total Value of Production obtained from USDA- NASS.

Table E9. Results for Target Price Relative to Total Economic Costs Equitability Measure, by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 1.11 | 1.02 | 1.20 | 0.96 | 1.19 | 0.94 | N/A | N/A | N/A | N/A | N/A | N/A | 1.02 | 1.06 | 1.07 | N/A |
| Cotton | 0.91 | 1.09 | 1.20 | 0.99 | 1.11 | 0.77 | N/A | N/A | N/A | N/A | N/A | N/A | 0.89 | 0.99 | 1.01 | N/A |
| Rice | 1.17 | 1.14 | 1.14 | 1.07 | 1.05 | 0.96 | N/A | N/A | N/A | N/A | N/A | N/A | 1.18 | 1.10 | 1.09 | N/A |
| Sorghum | 1.79 | 1.63 | 1.89 | 1.57 | 1.77 | 1.39 | N/A | N/A | N/A | N/A | N/A | N/A | 1.13 | 1.59 | 1.67 | N/A |
| Oats | 0.62 | 0.53 | 0.64 | 0.52 | 0.57 | 0.57 | N/A | N/A | N/A | N/A | N/A | N/A | 0.53 | 0.57 | 0.57 | N/A |
| Wheat | 1.06 | 1.02 | 1.04 | 1.00 | 0.97 | 0.84 | N/A | N/A | N/A | N/A | N/A | N/A | 0.77 | 0.96 | 0.99 | N/A |
| Barley | 0.85 | 0.81 | 0.91 | 0.86 | 0.78 | 0.72 | N/A | N/A | N/A | N/A | N/A | N/A | 0.63 | 0.79 | 0.82 | N/A |
| Soybeans | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.83 | 0.83 | N/A | N/A |
| Peanuts | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.97 | 0.97 | N/A | N/A |

Equitability ratio defined as Annual Target Price per unit divided by Total Economic Costs per unit. Economic costs per unit calculated by taking Total Economic Costs per planted acre divided by yield in units per acre.
**Note: Target Price obtained from FAPRI. Total Economic Costs obtained from USDA- ERS. Actual Yield obtained from USDA- NASS.

Table E10. Results for Target Price Relative to Total Variable Costs Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 2.16 | 1.93 | 2.34 | 1.84 | 2.34 | 1.78 | N/A | N/A | N/A | N/A | N/A | N/A | 2.34 | 2.10 | 2.07 | N/A |
| Cotton | 1.50 | 1.65 | 1.80 | 1.51 | 1.74 | 1.22 | N/A | N/A | N/A | N/A | N/A | N/A | 1.49 | 1.56 | 1.57 | N/A |
| Rice | 1.72 | 1.72 | 1.81 | 1.71 | 1.74 | 1.63 | N/A | N/A | N/A | N/A | N/A | N/A | 2.24 | 1.80 | 1.72 | N/A |
| Sorghum | 3.69 | 3.34 | 3.96 | 3.22 | 3.69 | 3.40 | N/A | N/A | N/A | N/A | N/A | N/A | 2.61 | 3.41 | 3.55 | N/A |
| Oats | 1.66 | 1.44 | 1.83 | 1.59 | 1.49 | 1.46 | N/A | N/A | N/A | N/A | N/A | N/A | 1.43 | 1.56 | 1.58 | N/A |
| Wheat | 2.54 | 2.23 | 2.58 | 2.47 | 2.22 | 1.88 | N/A | N/A | N/A | N/A | N/A | N/A | 2.27 | 2.31 | 2.32 | N/A |
| Barley | 1.93 | 1.87 | 1.98 | 1.89 | 1.71 | 1.54 | N/A | N/A | N/A | N/A | N/A | N/A | 1.32 | 1.75 | 1.82 | N/A |
| Soybeans | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.66 | 2.66 | N/A | N/A |
| Peanuts | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.82 | 1.82 | N/A | N/A |

Equitability ratio defined as Annual Target Price per unit divided by Variable Costs per unit. Variable costs per unit calculated by taking Total Variable Costs per planted acre divided by yield in units per acre.
**Note: Target Price obtained from FAPRI. Total Variable Costs obtained from USDA- ERS. Actual Yield obtained from USDA- NASS.

Table E11. Results for Loan Rate Relative to Total Economic Costs Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 0.64 | 0.60 | 0.75 | 0.60 | 0.81 | 0.64 | 0.69 | 0.66 | 0.71 | 0.70 | 0.69 | 0.76 | 0.78 | 0.69 | 0.67 | 0.70 |
| Cotton | 0.62 | 0.76 | 0.86 | 0.71 | 0.76 | 0.55 | 0.73 | 0.67 | 0.70 | 0.63 | 0.63 | 0.68 | 0.64 | 0.69 | 0.71 | 0.67 |
| Rice | 0.71 | 0.69 | 0.69 | 0.65 | 0.64 | 0.58 | 0.59 | 0.56 | 0.54 | 0.57 | 0.71 | 0.71 | 0.73 | 0.64 | 0.66 | 0.61 |
| Sorghum | 0.57 | 0.54 | 0.66 | 0.55 | 0.68 | 0.53 | 0.61 | 0.60 | 0.61 | 0.63 | 0.53 | 0.49 | 0.49 | 0.58 | 0.59 | 0.58 |
| Oats | 0.35 | 0.30 | 0.39 | 0.32 | 0.38 | 0.38 | 0.41 | 0.43 | 0.45 | 0.47 | 0.50 | 0.49 | 0.51 | 0.41 | 0.35 | 0.46 |
| Wheat | 0.52 | 0.52 | 0.58 | 0.61 | 0.63 | 0.54 | 0.52 | 0.57 | 0.67 | 0.66 | 0.62 | 0.57 | 0.56 | 0.58 | 0.57 | 0.60 |
| Barley | 0.46 | 0.45 | 0.54 | 0.51 | 0.51 | 0.47 | 0.45 | 0.46 | 0.50 | 0.50 | 0.51 | 0.47 | 0.53 | 0.49 | 0.49 | 0.48 |
| Soybeans | 0.81 | 0.86 | 0.91 | 0.79 | 0.93 | 0.79 | 0.80 | 0.83 | 0.83 | 0.77 | 0.79 | 0.79 | 0.71 | 0.82 | 0.85 | 0.80 |
| Peanuts | 0.94 | 1.06 | 1.20 | 0.97 | 1.22 | 1.11 | 1.16 | 1.06 | 1.15 | 1.13 | 1.04 | 1.25 | 0.70 | 1.08 | 1.08 | 1.13 |

Equitability ratio defined as Annual Loan Rate per unit divided by Total Economic Costs per unit. Economic costs per unit calculated by taking Total Economic Costs per planted acre divided by yield in units per acre.
**Note: Loan Rate obtained from FAPRI. Total Economic Costs obtained from USDA- ERS. Actual Yield obtained from USDA- NASS

Table E12. Results for Loan Rate Relative to Total Variable Costs Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 1.23 | 1.14 | 1.47 | 1.15 | 1.61 | 1.23 | 1.50 | 1.48 | 1.61 | 1.61 | 1.57 | 1.63 | 1.78 | 1.46 | 1.30 | 1.57 |
| Cotton | 1.04 | 1.15 | 1.29 | 1.09 | 1.20 | 0.87 | 1.14 | 1.13 | 1.21 | 1.10 | 1.06 | 1.12 | 1.07 | 1.11 | 1.10 | 1.13 |
| Rice | 1.04 | 1.04 | 1.10 | 1.04 | 1.06 | 0.99 | 1.00 | 0.97 | 0.97 | 1.00 | 1.32 | 1.30 | 1.39 | 1.09 | 1.05 | 1.09 |
| Sorghum | 1.18 | 1.10 | 1.38 | 1.13 | 1.42 | 1.31 | 1.51 | 1.48 | 1.41 | 1.46 | 1.19 | 1.03 | 1.14 | 1.29 | 1.25 | 1.35 |
| Oats | 0.93 | 0.83 | 1.11 | 0.97 | 1.00 | 0.98 | 1.03 | 1.10 | 1.19 | 1.26 | 1.32 | 1.23 | 1.38 | 1.10 | 0.97 | 1.19 |
| Wheat | 1.24 | 1.14 | 1.42 | 1.52 | 1.43 | 1.21 | 1.18 | 1.27 | 1.87 | 1.93 | 1.79 | 1.54 | 1.64 | 1.48 | 1.33 | 1.60 |
| Barley | 1.05 | 1.05 | 1.17 | 1.12 | 1.12 | 1.01 | 0.96 | 0.99 | 1.06 | 1.05 | 1.06 | 0.96 | 1.12 | 1.05 | 1.08 | 1.01 |
| Soybeans | 1.85 | 1.91 | 2.15 | 1.88 | 2.29 | 1.91 | 1.95 | 2.51 | 2.52 | 2.46 | 2.53 | 2.48 | 2.29 | 2.21 | 2.00 | 2.41 |
| Peanuts | 1.75 | 1.86 | 2.27 | 1.83 | 2.29 | 2.29 | 2.31 | 2.19 | 2.37 | 2.37 | 2.15 | 2.56 | 1.31 | 2.12 | 2.05 | 2.33 |

Equitability ratio defined as Annual Loan Rate per unit divided by Variable Costs per unit. Variable costs per unit calculated by taking Total Variable Costs per planted acre divided by yield in units per acre.
**Note: Loan Rate obtained from FAPRI. Total Variable Costs obtained from USDA- ERS. Actual Yield obtained from USDA- NASS.

Table E13. Results for Target Price Relative to Price Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 1.21 | 1.16 | 1.33 | 1.10 | 1.22 | 0.85 | N/A | N/A | N/A | N/A | N/A | N/A | 1.12 | 1.14 | 1.14 | N/A |
| Cotton | 1.09 | 1.28 | 1.36 | 1.25 | 1.01 | 0.97 | N/A | N/A | N/A | N/A | N/A | N/A | 1.63 | 1.23 | 1.16 | N/A |
| Rice | 1.60 | 1.41 | 1.82 | 1.34 | 1.58 | 1.17 | N/A | N/A | N/A | N/A | N/A | N/A | 2.34 | 1.61 | 1.49 | N/A |
| Sorghum | 2.20 | 2.08 | 2.46 | 2.01 | 2.19 | 1.46 | N/A | N/A | N/A | N/A | N/A | N/A | 1.96 | 2.05 | 2.07 | N/A |
| Oats | 1.27 | 1.20 | 1.10 | 1.07 | 1.19 | 0.87 | N/A | N/A | N/A | N/A | N/A | N/A | 0.77 | 1.07 | 1.12 | N/A |
| Wheat | 1.53 | 1.33 | 1.23 | 1.23 | 1.16 | 0.88 | N/A | N/A | N/A | N/A | N/A | N/A | 1.08 | 1.21 | 1.23 | N/A |
| Barley | 1.10 | 1.12 | 1.16 | 1.19 | 1.16 | 0.82 | N/A | N/A | N/A | N/A | N/A | N/A | 0.81 | 1.05 | 1.09 | N/A |
| Soybeans | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.05 | 1.05 | N/A | N/A |
| Peanuts | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.36 | 1.36 | N/A | N/A |

Equitability ratio defined as Annual Target Price divided by Price
**Note: Target Price obtained from FAPRI. Price obtained from USDA- NASS.

Table E14. Results for Loan Rate Relative to Price Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 0.69 | 0.68 | 0.83 | 0.69 | 0.84 | 0.58 | 0.70 | 0.78 | 0.97 | 1.04 | 1.02 | 0.96 | 0.85 | 0.82 | 0.72 | 0.91 |
| Cotton | 0.75 | 0.89 | 0.97 | 0.90 | 0.69 | 0.69 | 0.75 | 0.80 | 0.86 | 1.15 | 1.04 | 1.74 | 1.17 | 0.96 | 0.82 | 1.06 |
| Rice | 0.97 | 0.86 | 1.10 | 0.81 | 0.96 | 0.71 | 0.65 | 0.67 | 0.73 | 1.10 | 1.16 | 1.53 | 1.45 | 0.98 | 0.90 | 0.97 |
| Sorghum | 0.70 | 0.69 | 0.86 | 0.70 | 0.84 | 0.56 | 0.77 | 0.79 | 1.05 | 1.11 | 0.91 | 0.88 | 0.86 | 0.83 | 0.73 | 0.92 |
| Oats | 0.71 | 0.69 | 0.67 | 0.65 | 0.80 | 0.58 | 0.53 | 0.69 | 1.01 | 1.01 | 1.05 | 0.76 | 0.75 | 0.76 | 0.68 | 0.84 |
| Wheat | 0.75 | 0.68 | 0.68 | 0.75 | 0.75 | 0.57 | 0.60 | 0.76 | 0.97 | 1.04 | 0.98 | 0.93 | 0.79 | 0.79 | 0.70 | 0.88 |
| Barley | 0.60 | 0.63 | 0.69 | 0.70 | 0.76 | 0.53 | 0.57 | 0.66 | 0.79 | 0.75 | 0.77 | 0.74 | 0.69 | 0.68 | 0.65 | 0.71 |
| Soybeans | 0.78 | 0.88 | 0.88 | 0.77 | 0.90 | 0.73 | 0.68 | 0.81 | 1.07 | 1.14 | 1.16 | 1.20 | 0.90 | 0.92 | 0.82 | 1.01 |
| Peanuts | 0.91 | 1.14 | 1.11 | 1.10 | 1.17 | 1.16 | 1.09 | 1.08 | 1.07 | 1.20 | 1.11 | 1.30 | 0.98 | 1.11 | 1.10 | 1.14 |

Equitability ratio defined as Annual Loan Rate divided by Price
**Note: Loan Rate obtained from FAPRI. Price obtained from USDA- NASS.

Table E15. Results for Support per Farm Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1997 | 2002 | Average |
|---|---|---|---|
| Corn | 8,084 | 8,627 | 7,976 |
| Cotton | 22,192 | 131,206 | 71,488 |
| Rice | 47,041 | 181,158 | 114,099 |
| Sorghum | 6,671 | 11,910 | 9,291 |
| Oats | 117 | 307 | 212 |
| Wheat | 5,919 | 10,959 | 7,304 |
| Barley | 2,865 | 5,476 | 4,170 |
| Soybeans | 49.73 | 2,778 | 943 |
| Peanuts | 2,028 | 39,071 | 20,550 |

Equitability ratio defined as Total Annual Support divided by number of farms.
**Note: CCC Expenditures obtained from USDA- FSA. Number of farms obtained from the US Census of Agriculture.

Table E16. Results for Effective Benefits Relative to Effective Costs Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 1.02 | 0.96 | 1.09 | 0.91 | 1.13 | 1.06 | 1.05 | 0.97 | 0.86 | 0.88 | 0.85 | 0.94 | 0.98 | 0.98 | 1.03 | 0.92 |
| Cotton | 0.85 | 0.94 | 1.09 | 0.98 | 1.09 | 0.80 | 1.06 | 0.92 | 0.94 | 0.80 | 0.78 | 0.80 | 0.85 | 0.91 | 0.96 | 0.88 |
| Rice | 0.98 | 1.02 | 1.02 | 1.07 | 0.93 | 1.00 | 1.08 | 1.00 | 1.01 | 0.91 | 1.09 | 1.02 | 1.02 | 1.01 | 1.00 | 1.02 |
| Sorghum | 0.92 | 0.85 | 0.94 | 0.82 | 0.96 | 0.95 | 0.86 | 0.89 | 0.78 | 0.85 | 0.80 | 0.72 | 0.63 | 0.84 | 0.91 | 0.82 |
| Oats | 0.55 | 0.54 | 0.63 | 0.52 | 0.53 | 0.65 | 0.79 | 0.62 | 0.47 | 0.48 | 0.52 | 0.65 | 0.56 | 0.58 | 0.57 | 0.59 |
| Wheat | 0.91 | 0.95 | 0.97 | 1.01 | 0.95 | 0.96 | 1.01 | 0.84 | 0.87 | 0.89 | 0.84 | 0.77 | 0.76 | 0.90 | 0.96 | 0.87 |
| Barley | 0.83 | 0.83 | 0.90 | 0.90 | 0.79 | 0.88 | 0.86 | 0.76 | 0.73 | 0.78 | 0.77 | 0.73 | 0.66 | 0.80 | 0.85 | 0.77 |
| Soybeans | 1.03 | 0.97 | 1.03 | 1.02 | 1.04 | 1.08 | 1.18 | 1.02 | 0.83 | 0.79 | 0.82 | 0.79 | 0.81 | 0.95 | 1.03 | 0.90 |
| Peanuts | 1.03 | 1.06 | 1.20 | 0.97 | 1.22 | 1.11 | 1.16 | 1.06 | 1.15 | 1.13 | 1.04 | 1.25 | 0.79 | 1.09 | 1.10 | 1.13 |

Equitability ratio defined as Effective Benefits divided by Effective Costs. Effective benefits include direct payments, market price or loan rate, payment fractions, and for 2002, countercyclical payments. Effective costs include variable costs, fixed costs, and ARP costs.
**Note: Actual Yield and price obtained from USDA- NASS. Farm bill payment provisions obtained from USDA- FSA. Effective Costs obtained from USDA- ERS.

Table E17. Results for Effective Benefits Relative to Effective Variable Costs Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 2.07 | 1.89 | 2.18 | 1.82 | 2.23 | 2.09 | 2.28 | 2.16 | 1.97 | 2.02 | 1.94 | 2.01 | 2.26 | 2.07 | 2.05 | 2.06 |
| Cotton | 1.48 | 1.45 | 1.68 | 1.53 | 1.79 | 1.26 | 1.66 | 1.55 | 1.64 | 1.39 | 1.31 | 1.31 | 1.42 | 1.50 | 1.53 | 1.48 |
| Rice | 1.56 | 1.57 | 1.61 | 1.74 | 1.53 | 1.75 | 1.82 | 1.73 | 1.81 | 1.60 | 2.03 | 1.86 | 1.93 | 1.73 | 1.63 | 1.81 |
| Sorghum | 1.98 | 1.80 | 2.01 | 1.73 | 2.01 | 2.32 | 2.14 | 2.19 | 1.80 | 1.96 | 1.77 | 1.51 | 1.46 | 1.90 | 1.98 | 1.90 |
| Oats | 1.51 | 1.49 | 1.81 | 1.59 | 1.40 | 1.68 | 1.99 | 1.60 | 1.22 | 1.31 | 1.36 | 1.66 | 1.53 | 1.55 | 1.58 | 1.52 |
| Wheat | 2.23 | 2.22 | 2.44 | 2.50 | 2.18 | 2.14 | 2.28 | 1.90 | 2.41 | 2.59 | 2.41 | 2.10 | 2.23 | 2.28 | 2.28 | 2.28 |
| Barley | 1.98 | 1.98 | 1.99 | 1.95 | 1.74 | 1.89 | 1.84 | 1.62 | 1.53 | 1.65 | 1.61 | 1.46 | 1.39 | 1.74 | 1.92 | 1.62 |
| Soybeans | 2.36 | 2.16 | 2.43 | 2.44 | 2.55 | 2.61 | 2.89 | 3.09 | 2.52 | 2.50 | 2.61 | 2.48 | 2.61 | 2.56 | 2.42 | 2.68 |
| Peanuts | 1.93 | 1.86 | 2.27 | 1.83 | 2.29 | 2.29 | 2.31 | 2.19 | 2.37 | 2.37 | 2.15 | 2.56 | 1.47 | 2.15 | 2.08 | 2.33 |

Equitability ratio defined as Effective benefits divided by effective variable costs. Effective benefits include direct payments, market price or loan rate, payment fractions, and for 2002, countercyclical payments. Effective variable costs include variable costs and ARP costs.
**Note: Actual Yield and price obtained from USDA- NASS. Farm bill payment provisions obtained from USDA- FSA. Effective variable costs obtained from USDA- ERS.

Table E18. Results for Effective Benefits Relative to Effective Fixed Costs Equitability Measure by Commodity, Crop Years 1990 to 2002 and Selected Periods.

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 1.98 | 1.96 | 2.16 | 1.81 | 2.30 | 2.13 | 1.93 | 1.77 | 1.53 | 1.55 | 1.52 | 1.76 | 1.75 | 1.86 | 2.06 | 1.68 |
| Cotton | 1.97 | 2.67 | 3.05 | 2.69 | 2.76 | 2.19 | 2.91 | 2.24 | 2.22 | 1.87 | 1.91 | 2.03 | 2.10 | 2.35 | 2.56 | 2.19 |
| Rice | 2.62 | 2.91 | 2.75 | 2.77 | 2.34 | 2.35 | 2.64 | 2.35 | 2.29 | 2.12 | 2.34 | 2.25 | 2.14 | 2.45 | 2.63 | 2.33 |
| Sorghum | 1.69 | 1.59 | 1.75 | 1.56 | 1.84 | 1.60 | 1.44 | 1.50 | 1.38 | 1.51 | 1.44 | 1.37 | 1.11 | 1.52 | 1.67 | 1.44 |
| Oats | 0.87 | 0.86 | 0.97 | 0.78 | 0.85 | 1.06 | 1.31 | 1.02 | 0.75 | 0.77 | 0.84 | 1.08 | 0.90 | 0.93 | 0.90 | 0.96 |
| Wheat | 1.51 | 1.62 | 1.59 | 1.69 | 1.70 | 1.74 | 1.80 | 1.52 | 1.36 | 1.35 | 1.29 | 1.22 | 1.15 | 1.50 | 1.64 | 1.42 |
| Barley | 1.41 | 1.40 | 1.62 | 1.65 | 1.44 | 1.66 | 1.60 | 1.43 | 1.39 | 1.48 | 1.47 | 1.44 | 1.27 | 1.48 | 1.53 | 1.47 |
| Soybeans | 1.82 | 1.76 | 1.79 | 1.76 | 1.75 | 1.84 | 2.00 | 1.53 | 1.23 | 1.15 | 1.19 | 1.16 | 1.18 | 1.55 | 1.79 | 1.38 |
| Peanuts | 2.23 | 2.48 | 2.56 | 2.04 | 2.60 | 2.17 | 2.31 | 2.05 | 2.22 | 2.15 | 2.01 | 2.44 | 1.69 | 2.23 | 2.35 | 2.20 |

Equitability ratio defined as Effective Benefits divided by Effective Costs. Effective benefits include direct payments, market price or loan rate, payment fraction, and for 2002, countercyclical payments. Effective total economic costs include fixed costs reduced by ARP percentage and ARP costs.
**Note: Actual Yield and price obtained from USDA- NASS. Farm bill payment provisions obtained from USDA- FSA. Effective fixed costs obtained from USDA- ERS.

# APPENDIX F

## RANKED RESULTS FROM EQUITABILITY MEASURES CALCULATIONS

Table F1. Ranked Results of Support per Base Acre Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 7 | 6 | 7 | 6 | 8 | 4 | 6 | 8 | 7 | 7 | 6 | 5 | 6 | 6.4 | 6.3 | 6.5 |
| Cotton | 5 | 8 | 8 | 8 | 7 | 8 | 8 | 7 | 8 | 8 | 8 | 8 | 7 | 7.5 | 7.3 | 7.8 |
| Rice | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9.0 | 9.0 | 9.0 |
| Sorghum | 4 | 4 | 6 | 3 | 6 | 5 | 5 | 6 | 6 | 4 | 4 | 4 | 5 | 4.8 | 4.7 | 4.8 |
| Oats | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1.9 | 2.7 | 1.3 |
| Wheat | 6 | 7 | 5 | 5 | 4 | 3 | 7 | 5 | 5 | 5 | 3 | 3 | 4 | 4.8 | 5.0 | 4.7 |
| Barley | 2 | 5 | 4 | 4 | 5 | 6 | 4 | 3 | 4 | 2 | 2 | 2 | 3 | 3.5 | 4.3 | 2.8 |
| Soybeans | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 6 | 5 | 6 | 2 | 2.3 | 1.0 | 3.7 |
| Peanuts | 8 | 2 | 1 | 7 | 2 | 7 | 3 | 4 | 2 | 3 | 7 | 7 | 8 | 4.7 | 4.5 | 4.3 |

Equitability ratio defined as Total Annual Support divided by Annual Base Acreage
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Base Acres obtained from FAPRI and USDA- FSA.

Table F2. Ranked Results of Support per Planted Acre Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 7 | 6 | 7 | 4 | 8 | 4 | 6 | 7 | 7 | 7 | 6 | 6 | 5 | 6.2 | 6.0 | 6.5 |
| Cotton | 6 | 8 | 8 | 8 | 7 | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7.6 | 7.3 | 8.0 |
| Rice | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9.0 | 9.0 | 9.0 |
| Sorghum | 5 | 4 | 6 | 3 | 6 | 5 | 4 | 6 | 6 | 6 | 5 | 5 | 6 | 5.2 | 4.8 | 5.3 |
| Oats | 2 | 2 | 3 | 1 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1.7 | 2.2 | 1.3 |
| Wheat | 4 | 7 | 5 | 5 | 4 | 3 | 7 | 5 | 4 | 5 | 4 | 4 | 4 | 4.7 | 4.7 | 4.8 |
| Barley | 3 | 5 | 4 | 6 | 5 | 6 | 5 | 4 | 5 | 4 | 3 | 2 | 3 | 4.2 | 4.8 | 3.8 |
| Soybeans | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 1.7 | 1.2 | 2.2 |
| Peanuts | 8 | 3 | 1 | 7 | 2 | 8 | 3 | 3 | 2 | 2 | 7 | 7 | 8 | 4.7 | 4.8 | 4.0 |

Equitability ratio defined as Total Annual Support divided by Total Annual Planted Acres
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Planted acres obtained from USDA- NASS.

Table F3. Ranked Results of Support per Pound of Program Production Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 3 | 4 | 6 | 4 | 6 | 2 | 4 | 5 | 4 | 4 | 4 | 3 | 3 | 4.0 | 4.2 | 4.0 |
| Cotton | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9.0 | 9.0 | 9.0 |
| Rice | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7.8 | 7.8 | 8.0 |
| Sorghum | 4 | 3 | 5 | 3 | 4 | 4 | 5 | 6 | 6 | 5 | 3 | 4 | 5 | 4.4 | 3.8 | 4.8 |
| Oats | 5 | 5 | 3 | 2 | 3 | 5 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2.5 | 3.8 | 1.3 |
| Wheat | 6 | 7 | 7 | 6 | 7 | 3 | 7 | 7 | 7 | 6 | 5 | 5 | 6 | 6.1 | 6.0 | 6.2 |
| Barley | 2 | 6 | 4 | 5 | 5 | 6 | 6 | 3 | 3 | 3 | 2 | 2 | 2 | 3.8 | 4.7 | 3.2 |
| Soybeans | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 7 | 6 | 7 | 4 | 2.8 | 1.0 | 4.5 |
| Peanuts | 8 | 2 | 1 | 7 | 2 | 7 | 3 | 4 | 2 | 2 | 7 | 6 | 8 | 4.5 | 4.5 | 4.0 |

Equitability ratio defined as Total Annual Support divided by total pounds of "Program Production". Program Production is program yield multiplied by base acres.
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Program yield and base acres obtained from FAPRI and USDA- FSA.

Table F4. Ranked Results of Support per Pound of Actual Production Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 4 | 4 | 5 | 3 | 4 | 2 | 4 | 3 | 4 | 3 | 2 | 2 | 3 | 3.3 | 3.7 | 3.0 |
| Cotton | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9.0 | 9.0 | 9.0 |
| Rice | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7.8 | 7.8 | 8.0 |
| Sorghum | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 6 | 7 | 5 | 5 | 3 | 6 | 5.0 | 4.7 | 5.2 |
| Oats | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2.0 | 2.7 | 1.5 |
| Wheat | 6 | 7 | 7 | 6 | 6 | 4 | 7 | 7 | 6 | 7 | 6 | 6 | 5 | 6.2 | 6.0 | 6.5 |
| Barley | 3 | 6 | 6 | 5 | 7 | 6 | 6 | 4 | 5 | 6 | 4 | 4 | 4 | 5.1 | 5.5 | 4.8 |
| Soybeans | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 4 | 3 | 5 | 2 | 1.9 | 1.0 | 2.8 |
| Peanuts | 8 | 2 | 1 | 7 | 2 | 7 | 3 | 5 | 1 | 2 | 7 | 7 | 8 | 4.6 | 4.5 | 4.2 |

Equitability ratio defined as Total Annual Support divided by total pounds of actual production.
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Annual Production obtained from USDA- NASS.

Table F5. Ranked Results for Per Acre Support Relative to Total Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 5 | 4 | 7 | 4 | 6 | 3 | 4 | 7 | 4 | 4 | 4 | 4 | 3 | 4.5 | 4.8 | 4.5 |
| Cotton | 4 | 7 | 8 | 8 | 4 | 7 | 7 | 5 | 9 | 8 | 6 | 8 | 8 | 6.8 | 6.3 | 7.2 |
| Rice | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 9 | 9 | 9 | 9 | 8.9 | 9.0 | 8.8 |
| Sorghum | 7 | 5 | 6 | 5 | 8 | 6 | 5 | 8 | 7 | 6 | 8 | 6 | 6 | 6.4 | 6.2 | 6.7 |
| Oats | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 2.0 | 2.3 | 1.8 |
| Wheat | 8 | 8 | 5 | 7 | 5 | 4 | 8 | 6 | 6 | 7 | 7 | 7 | 5 | 6.4 | 6.2 | 6.8 |
| Barley | 3 | 6 | 4 | 6 | 7 | 8 | 6 | 4 | 5 | 5 | 5 | 5 | 4 | 5.2 | 5.7 | 5.0 |
| Soybeans | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 2 | 1.8 | 1.2 | 2.3 |
| Peanuts | 6 | 2 | 1 | 3 | 2 | 5 | 2 | 3 | 1 | 1 | 2 | 2 | 7 | 2.8 | 3.2 | 1.8 |

Equitability ratio defined as Total Annual Support per planted acre divided by Total Costs per planted acre.
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Total Costs obtained from USDA- ERS.

Table F6. Ranked Results per Acre Support Relative to Total Variable Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 6 | 4 | 6 | 4 | 5 | 2 | 4 | 7 | 4 | 4 | 6 | 3 | 3 | 4.5 | 4.5 | 4.7 |
| Cotton | 4 | 7 | 8 | 7 | 4 | 5 | 5 | 4 | 7 | 6 | 4 | 8 | 8 | 5.9 | 5.8 | 5.7 |
| Rice | 9 | 8 | 9 | 9 | 9 | 9 | 9 | 8 | 6 | 8 | 9 | 9 | 9 | 8.5 | 8.8 | 8.2 |
| Sorghum | 7 | 5 | 5 | 5 | 8 | 7 | 7 | 9 | 8 | 7 | 7 | 5 | 5 | 6.5 | 6.2 | 7.2 |
| Oats | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 2.2 | 2.7 | 1.8 |
| Wheat | 8 | 9 | 7 | 8 | 6 | 4 | 8 | 6 | 9 | 9 | 8 | 7 | 6 | 7.3 | 7.0 | 7.8 |
| Barley | 3 | 6 | 4 | 6 | 7 | 8 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 5.2 | 5.7 | 5.0 |
| Soybeans | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 6 | 2 | 1.9 | 1.0 | 2.8 |
| Peanuts | 5 | 2 | 1 | 3 | 2 | 6 | 2 | 3 | 1 | 1 | 2 | 2 | 7 | 2.8 | 3.2 | 1.8 |

Equitability ratio defined as Total Annual Support per planted acre divided by Total Variable Costs per planted acre.
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Total Variable Costs obtained from USDA- ERS.

Table F7. Ranked Results of Support per Unit Relative to Price Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 6 | 4 | 6 | 4 | 5 | 2 | 4 | 6 | 4 | 4 | 4 | 4 | 3 | 4.3 | 4.5 | 4.3 |
| Cotton | 4 | 7 | 8 | 8 | 4 | 7 | 7 | 4 | 8 | 8 | 6 | 8 | 8 | 6.7 | 6.3 | 6.8 |
| Rice | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 7 | 9 | 9 | 9 | 9 | 8.8 | 9.0 | 8.7 |
| Sorghum | 7 | 5 | 7 | 5 | 7 | 6 | 5 | 8 | 9 | 7 | 8 | 6 | 6 | 6.6 | 6.2 | 7.2 |
| Oats | 2 | 3 | 3 | 2 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 2.7 | 2.8 | 2.7 |
| Wheat | 8 | 8 | 5 | 6 | 6 | 3 | 8 | 7 | 6 | 6 | 7 | 7 | 5 | 6.3 | 6.0 | 6.8 |
| Barley | 3 | 6 | 4 | 7 | 8 | 8 | 6 | 5 | 5 | 5 | 5 | 5 | 4 | 5.5 | 6.0 | 5.2 |
| Soybeans | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 1 | 1.4 | 1.0 | 1.8 |
| Peanuts | 5 | 2 | 1 | 3 | 2 | 5 | 2 | 2 | 1 | 1 | 1 | 2 | 7 | 2.6 | 3.0 | 1.5 |

Equitability ratio defined as Support per Actual Production divided by Price per unit. Support per Actual Production is Total Annual Support divided by Actual Production.
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Price obtained from USDA- NASS.

Table F8. Ranked Results of Total Annual Support/ Total Value of Production Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 6 | 4 | 6 | 4 | 5 | 2 | 4 | 6 | 4 | 4 | 4 | 4 | 3 | 4.3 | 4.5 | 4.3 |
| Cotton | 4 | 7 | 8 | 8 | 4 | 7 | 7 | 4 | 8 | 8 | 6 | 8 | 8 | 6.7 | 6.3 | 6.8 |
| Rice | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 7 | 9 | 9 | 9 | 9 | 8.8 | 9.0 | 8.7 |
| Sorghum | 7 | 5 | 7 | 5 | 8 | 6 | 5 | 8 | 9 | 7 | 8 | 7 | 6 | 6.8 | 6.3 | 7.3 |
| Oats | 2 | 3 | 3 | 2 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 2.7 | 2.8 | 2.7 |
| Wheat | 8 | 8 | 5 | 6 | 6 | 3 | 8 | 7 | 6 | 6 | 7 | 6 | 5 | 6.2 | 6.0 | 6.7 |
| Barley | 3 | 6 | 4 | 7 | 7 | 8 | 6 | 5 | 5 | 5 | 5 | 5 | 4 | 5.4 | 5.8 | 5.2 |
| Soybeans | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 1 | 1.4 | 1.0 | 1.8 |
| Peanuts | 5 | 2 | 1 | 3 | 2 | 5 | 2 | 2 | 1 | 1 | 1 | 2 | 7 | 2.6 | 3.0 | 1.5 |

Equitability ratio defined as Total Annual Support divided by Total Annual Value of Production.
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Total Value of Production obtained from USDA- NASS.

Table F9. Ranked Results of Target Price Relative to Total Economic Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 5 | 3 | 5 | 3 | 6 | 5 | N/A | N/A | N/A | N/A | N/A | N/A | 7 | 4.9 | 4.5 | N/A |
| Cotton | 3 | 5 | 6 | 4 | 5 | 3 | N/A | N/A | N/A | N/A | N/A | N/A | 5 | 4.4 | 4.3 | N/A |
| Rice | 6 | 6 | 4 | 6 | 4 | 6 | N/A | N/A | N/A | N/A | N/A | N/A | 9 | 5.9 | 5.3 | N/A |
| Sorghum | 7 | 7 | 7 | 7 | 7 | 7 | N/A | N/A | N/A | N/A | N/A | N/A | 8 | 7.1 | 7.0 | N/A |
| Oats | 1 | 1 | 1 | 1 | 1 | 1 | N/A | N/A | N/A | N/A | N/A | N/A | 1 | 1.0 | 1.0 | N/A |
| Wheat | 4 | 4 | 3 | 5 | 3 | 4 | N/A | N/A | N/A | N/A | N/A | N/A | 3 | 3.7 | 3.8 | N/A |
| Barley | 2 | 2 | 2 | 2 | 2 | 2 | N/A | N/A | N/A | N/A | N/A | N/A | 2 | 2.0 | 2.0 | N/A |
| Soybeans | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4 | 4.0 | N/A | N/A |
| Peanuts | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6 | 6.0 | N/A | N/A |

Equitability ratio defined as Annual Target Price per unit divided by Total Economic Costs per unit. Economic costs per unit calculated by taking Total Economic Costs per planted acre divided by yield in units per acre.
*Note: 1 denotes the least amount of support and 9 the most amount of support
**Note: Target Price obtained from FAPRI. Total Economic Costs obtained from USDA- ERS. Actual Yield obtained from USDA- NASS.

Table F10. Ranked Results of Target Price Relative to Total Variable Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 5 | 5 | 5 | 4 | 6 | 5 | 5 | N/A | N/A | N/A | N/A | N/A | 7 | 5.3 | 5.0 | N/A |
| Cotton | 1 | 2 | 1 | 1 | 4 | 1 | 1 | N/A | N/A | N/A | N/A | N/A | 3 | 1.9 | 1.7 | N/A |
| Rice | 3 | 3 | 2 | 3 | 3 | 4 | 3 | N/A | N/A | N/A | N/A | N/A | 5 | 3.3 | 3.0 | N/A |
| Sorghum | 7 | 7 | 7 | 7 | 7 | 7 | 7 | N/A | N/A | N/A | N/A | N/A | 8 | 7.1 | 7.0 | N/A |
| Oats | 2 | 1 | 3 | 2 | 1 | 2 | 2 | N/A | N/A | N/A | N/A | N/A | 2 | 1.9 | 1.8 | N/A |
| Wheat | 6 | 6 | 6 | 6 | 5 | 6 | 6 | N/A | N/A | N/A | N/A | N/A | 6 | 5.9 | 5.8 | N/A |
| Barley | 4 | 4 | 4 | 5 | 2 | 3 | 4 | N/A | N/A | N/A | N/A | N/A | 1 | 3.3 | 3.7 | N/A |
| Soybeans | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 9 | N/A | N/A | N/A |
| Peanuts | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4 | N/A | N/A | N/A |

Equitability ratio defined as Annual Target Price per unit divided by Variable Costs per unit. Variable costs per unit calculated by taking Total Variable Costs per planted acre divided by yield in units per acre.
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: Target Price obtained from FAPRI. Total Variable Costs obtained from USDA- ERS. Actual Yield obtained from USDA- NASS.

Table F11. Ranked Results of Loan Rate Relative to Total Economic Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 6 | 5 | 6 | 4 | 7 | 7 | 6 | 6 | 7 | 7 | 6 | 7 | 9 | 6.4 | 5.8 | 6.5 |
| Cotton | 5 | 7 | 7 | 7 | 6 | 5 | 7 | 7 | 6 | 5 | 5 | 5 | 5 | 5.9 | 6.2 | 5.8 |
| Rice | 7 | 6 | 5 | 6 | 4 | 6 | 4 | 3 | 3 | 3 | 7 | 6 | 8 | 5.2 | 5.7 | 4.3 |
| Sorghum | 4 | 4 | 4 | 3 | 5 | 3 | 5 | 5 | 4 | 4 | 3 | 3 | 1 | 3.7 | 3.8 | 4.0 |
| Oats | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1.2 | 1.0 | 1.2 |
| Wheat | 3 | 3 | 3 | 5 | 3 | 4 | 3 | 4 | 5 | 6 | 4 | 4 | 4 | 3.9 | 3.5 | 4.3 |
| Barley | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 2.0 | 2.0 | 1.8 |
| Soybeans | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7.9 | 8.0 | 8.0 |
| Peanuts | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 6 | 8.8 | 9.0 | 9.0 |

Equitability ratio defined as Annual Loan Rate per unit divided by Total Economic Costs per unit. Economic costs per unit calculated by taking Total Economic Costs per planted acre divided by yield in units per acre.
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: Loan Rate obtained from FAPRI. Total Economic Costs obtained from USDA- ERS. Actual Yield obtained from USDA- NASS

Table F12. Ranked Results of Loan Rate Relative to Total Variable Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 6 | 5 | 7 | 6 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 8 | 6.3 | 6.2 | 6.2 |
| Cotton | 2 | 7 | 4 | 3 | 4 | 1 | 4 | 4 | 4 | 3 | 1 | 3 | 1 | 3.2 | 3.5 | 3.2 |
| Rice | 3 | 2 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 4 | 5 | 6 | 2.5 | 2.2 | 2.3 |
| Sorghum | 5 | 4 | 5 | 5 | 5 | 7 | 7 | 7 | 5 | 5 | 3 | 2 | 3 | 4.8 | 5.2 | 4.8 |
| Oats | 1 | 1 | 2 | 1 | 1 | 2 | 3 | 3 | 3 | 4 | 5 | 4 | 5 | 2.7 | 1.3 | 3.7 |
| Wheat | 7 | 6 | 6 | 7 | 6 | 5 | 5 | 5 | 7 | 7 | 7 | 6 | 7 | 6.2 | 6.2 | 6.2 |
| Barley | 4 | 3 | 3 | 4 | 3 | 4 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2.5 | 3.5 | 1.7 |
| Soybeans | 9 | 9 | 8 | 9 | 9 | 8 | 8 | 9 | 9 | 9 | 9 | 8 | 9 | 8.7 | 8.7 | 8.7 |
| Peanuts | 8 | 8 | 9 | 8 | 8 | 9 | 9 | 8 | 8 | 8 | 8 | 9 | 4 | 8.0 | 8.3 | 8.3 |

Equitability ratio defined as Annual Loan Rate per unit divided by Variable Costs per unit. Variable costs per unit calculated by taking Total Variable Costs per planted acre divided by yield in units per acre.
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: Loan Rate obtained from FAPRI. Total Variable Costs obtained from USDA- ERS. Actual Yield obtained from USDA- NASS.

Table F13. Ranked Results of Target Price Relative to Price Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 3 | 2 | 4 | 2 | 5 | 2 | N/A | N/A | N/A | N/A | N/A | N/A | 5 | 3.3 | 3.0 | N/A |
| Cotton | 1 | 4 | 5 | 5 | 1 | 5 | N/A | N/A | N/A | N/A | N/A | N/A | 7 | 4.0 | 3.5 | N/A |
| Rice | 6 | 6 | 6 | 6 | 6 | 6 | N/A | N/A | N/A | N/A | N/A | N/A | 9 | 6.4 | 6.0 | N/A |
| Sorghum | 7 | 7 | 7 | 7 | 7 | 7 | N/A | N/A | N/A | N/A | N/A | N/A | 8 | 7.1 | 7.0 | N/A |
| Oats | 4 | 3 | 1 | 1 | 4 | 3 | N/A | N/A | N/A | N/A | N/A | N/A | 1 | 2.4 | 2.7 | N/A |
| Wheat | 5 | 5 | 3 | 4 | 2 | 4 | N/A | N/A | N/A | N/A | N/A | N/A | 4 | 3.9 | 3.8 | N/A |
| Barley | 2 | 1 | 2 | 3 | 3 | 1 | N/A | N/A | N/A | N/A | N/A | N/A | 2 | 2.0 | 2.0 | N/A |
| Soybeans | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3 | 3.0 | N/A | N/A |
| Peanuts | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6 | 6.0 | N/A | N/A |

Equitability ratio defined as Annual Target Price divided by Price
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: Target Price obtained from FAPRI. Price obtained from USDA- NASS.

Table F14. Ranked Results of Loan Rate Relative to Price Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 2 | 3 | 4 | 2 | 5 | 5 | 6 | 5 | 5 | 3 | 4 | 5 | 4 | 4.1 | 3.5 | 4.7 |
| Cotton | 6 | 8 | 7 | 8 | 1 | 6 | 7 | 7 | 3 | 8 | 5 | 9 | 8 | 6.4 | 6.0 | 6.5 |
| Rice | 9 | 6 | 8 | 7 | 8 | 7 | 4 | 2 | 1 | 5 | 9 | 8 | 9 | 6.4 | 7.5 | 4.8 |
| Sorghum | 3 | 4 | 5 | 4 | 6 | 2 | 8 | 6 | 7 | 6 | 2 | 3 | 5 | 4.7 | 4.0 | 5.3 |
| Oats | 4 | 5 | 1 | 1 | 4 | 4 | 1 | 3 | 6 | 2 | 6 | 2 | 2 | 3.2 | 3.2 | 3.3 |
| Wheat | 5 | 2 | 2 | 5 | 2 | 3 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 3.4 | 3.2 | 3.7 |
| Barley | 1 | 1 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1.6 | 2.0 | 1.3 |
| Soybeans | 7 | 7 | 6 | 6 | 7 | 8 | 5 | 8 | 8 | 7 | 8 | 6 | 6 | 6.8 | 6.8 | 7.0 |
| Peanuts | 8 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 7 | 7 | 7 | 8.5 | 8.8 | 8.3 |

Equitability ratio defined as Annual Loan Rate divided by Price
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: Loan Rate obtained from FAPRI. Price obtained from USDA- NASS.

Table F15. Ranked Results of Support per Farm Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1997 | 2002 | Average |
|---|---|---|---|
| Corn | 7.0 | 4.0 | 5.0 |
| Cotton | 8.0 | 8.0 | 8.0 |
| Rice | 9.0 | 9.0 | 9.0 |
| Sorghum | 6.0 | 6.0 | 6.0 |
| Oats | 2.0 | 1.0 | 1.0 |
| Wheat | 5.0 | 5.0 | 4.0 |
| Barley | 4.0 | 3.0 | 3.0 |
| Soybeans | 1.0 | 2.0 | 2.0 |
| Peanuts | 3.0 | 7.0 | 7.0 |

Equitability ratio defined as Total Annual Support divided by number of farms.
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: CCC Expenditures obtained from USDA- FSA. Number of farms obtained from the US Census of Agriculture.

Table F16. Ranked Results of Effective Benefits Relative to Effective Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 7 | 6 | 7 | 4 | 8 | 7 | 5 | 6 | 5 | 6 | 7 | 7 | 8 | 6.4 | 6.5 | 6.0 |
| Cotton | 3 | 4 | 8 | 6 | 7 | 2 | 6 | 5 | 7 | 4 | 3 | 6 | 7 | 5.2 | 5.0 | 5.2 |
| Rice | 6 | 8 | 5 | 9 | 3 | 6 | 7 | 7 | 8 | 8 | 9 | 8 | 9 | 7.2 | 6.2 | 7.8 |
| Sorghum | 5 | 3 | 3 | 2 | 5 | 4 | 3 | 4 | 3 | 5 | 4 | 2 | 2 | 3.5 | 3.7 | 3.5 |
| Oats | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 1.0 | 1.0 |
| Wheat | 4 | 5 | 4 | 7 | 4 | 5 | 4 | 3 | 6 | 7 | 6 | 4 | 4 | 4.8 | 4.8 | 5.0 |
| Barley | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2.3 | 2.3 | 2.2 |
| Soybeans | 8 | 7 | 6 | 8 | 6 | 8 | 9 | 8 | 4 | 3 | 5 | 5 | 6 | 6.4 | 7.2 | 5.7 |
| Peanuts | 9 | 9 | 9 | 5 | 9 | 9 | 8 | 9 | 9 | 9 | 8 | 9 | 5 | 8.2 | 8.3 | 8.7 |

Equitability ratio defined as Effective Benefits divided by Effective Costs. Effective benefits include direct payments, market price or loan rate, payment fractions, and for 2002, countercyclical payments. Effective costs include variable costs, fixed costs, and ARP costs.
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: Actual Yield and price obtained from USDA- NASS. Farm bill payment provisions obtained from USDA- FSA. Effective Costs obtained from USDA- ERS.

Table F17. Ranked Results of Effective Benefits Relative to Effective Variable Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 7 | 6 | 6 | 5 | 7 | 5 | 7 | 6 | 6 | 6 | 5 | 6 | 8 | 6.2 | 6.0 | 6.0 |
| Cotton | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 3 | 2 | 1 | 1 | 2 | 1.6 | 1.7 | 1.5 |
| Rice | 3 | 3 | 1 | 4 | 2 | 3 | 2 | 4 | 5 | 3 | 6 | 5 | 6 | 3.6 | 2.7 | 4.2 |
| Sorghum | 5 | 4 | 5 | 3 | 5 | 8 | 5 | 7 | 4 | 5 | 4 | 3 | 3 | 4.7 | 5.0 | 4.7 |
| Oats | 2 | 2 | 3 | 2 | 1 | 2 | 4 | 2 | 1 | 1 | 2 | 4 | 5 | 2.4 | 2.0 | 2.3 |
| Wheat | 8 | 9 | 9 | 9 | 6 | 6 | 6 | 5 | 8 | 9 | 8 | 7 | 7 | 7.5 | 7.8 | 7.2 |
| Barley | 6 | 7 | 4 | 7 | 3 | 4 | 3 | 3 | 2 | 4 | 3 | 2 | 1 | 3.8 | 5.2 | 2.8 |
| Soybeans | 9 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 8 | 9 | 8 | 9 | 8.6 | 8.5 | 8.7 |
| Peanuts | 4 | 5 | 7 | 6 | 8 | 7 | 8 | 8 | 7 | 7 | 7 | 9 | 4 | 6.7 | 6.2 | 7.7 |

Equitability ratio defined as Effective benefits divided by effective variable costs. Effective benefits include direct payments, market price or loan rate, payment fractions, and for 2002, countercyclical payments. Effective variable costs include variable costs and ARP costs.
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: Actual Yield and price obtained from USDA- NASS. Farm bill payment provisions obtained from USDA- FSA. Effective variable costs obtained from USDA- ERS.

Table F18. Ranked Results of Effective Benefits Relative to Effective Fixed Costs Equitability Measure, Crop Years 1990 to 2002 and Selected Periods

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Average | 90-'95 Average | 96-'01 Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn | 7 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 6 | 6 | 6 | 6 | 7 | 6.1 | 6.2 | 5.8 |
| Cotton | 6 | 8 | 9 | 8 | 9 | 8 | 9 | 8 | 7 | 7 | 7 | 7 | 8 | 7.8 | 8.0 | 7.5 |
| Rice | 9 | 9 | 8 | 9 | 7 | 9 | 8 | 9 | 9 | 8 | 9 | 8 | 9 | 8.5 | 8.5 | 8.5 |
| Sorghum | 4 | 3 | 4 | 2 | 5 | 2 | 2 | 3 | 4 | 5 | 4 | 4 | 2 | 3.4 | 3.3 | 3.7 |
| Oats | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 1.0 | 1.0 |
| Wheat | 3 | 4 | 2 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3.3 | 3.3 | 3.3 |
| Barley | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 5 | 4 | 5 | 5 | 5 | 3.4 | 2.5 | 4.0 |
| Soybeans | 5 | 5 | 5 | 5 | 4 | 5 | 6 | 5 | 2 | 2 | 2 | 2 | 4 | 4.0 | 4.8 | 3.2 |
| Peanuts | 8 | 7 | 7 | 7 | 8 | 7 | 7 | 7 | 8 | 9 | 8 | 9 | 6 | 7.5 | 7.3 | 8.0 |

Equitability ratio defined as Effective Benefits divided by Effective Costs. Effective benefits include direct payments, market price or loan rate, payment fraction, and for 2002, countercyclical payments. Effective total economic costs include fixed costs reduced by ARP percentage and ARP costs.
*Note: 1 denotes the least amount of support and 9 denotes the most amount of support
**Note: Actual Yield and price obtained from USDA- NASS. Farm bill payment provisions obtained from USDA- FSA. Effective fixed costs obtained from USDA- ERS.

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