ESSAYS ON FOOD AND AGRICULTURAL POLICY

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ESSAYS ON FOOD AND AGRICULTURAL POLICY

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A Dissertation

Submitted to

the Graduate Faculty of

Auburn University

in Partial Fulfillment of the

Requirements for the

Degree of

Doctor of Philosophy

Auburn, Alabama
December 15, 2006

ESSAYS ON FOOD AND AGRICULTURAL POLICY

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DISSERTATION ABSTRACT

ESSAYS ON FOOD AND AGRICULTURAL POLICY

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Doctor of Philosophy, December 15, 2006
(M.S. Auburn University, 2003)
(B.S. University of Craiova, Romania 1997)

114 Typed Pages

Directed by Patricia A. Duffy

The study provides insight into the policy provisions that provide a safety net for low income families and agricultural producers in the United States. Private food assistance along with Food Stamp Program and Federal Crop Insurance program are considered.

Demographic characteristics and attitudes of food pantry directors and food-needy persons in a two-state region of the South (Alabama and Mississippi) are compared. Noteworthy differences in race, education, and religiosity emerge. Not significant differences in terms of key social attitudes are found. Directors responded with a mix of sympathy and suspicion when asked specifically about food pantry clients. While, a substantial portion of directors attribute poverty to structural causes, some consider the clients seeking food assistance as having unsavory motivations for doing so. Also, the effect of Food Stamp Program participation on food security is estimated. Results are

counterintuitive, Food Stamp Program participation and food insecurity being positively correlated.

Target-MOTAD was used to determine the optimal crop insurance options for nine representative cotton and peanut farms in southern Alabama. Results showed that, for five of the farms, no crop insurance option was risk reducing given their yield history. For other farms, given the target income assumed, risk reduction involved acquiring a higher level of insurance or decreasing the land used.

ACKNOWLEDGEMENTS

I would like to express deep appreciation to my advisor, Dr. Patricia Duffy for all her help, encouragement and patience during the whole process of my Ph.D. program at Auburn. Thanks to Dr. Novak, Dr. Abebe and Dr. Taylor for many insightful suggestions and kind help.

Special thanks go to my husband, Mihai, for his support throughout my graduate studies, to my son, Cristian for bringing happiness into the family, and to my parents and parents-in-law for their unconditioned help.

Also, acknowledgements are due to my friends, colleagues and faculty members that helped me along the years spend in Auburn. In the same time, I will never forget my Romanian teachers and professors that contributed to my education.

Finally, I would like to acknowledge the financial support from the Department of Agricultural Economics and Rural Sociology, Auburn University Environmental Institute and Department of Economics.

Style manual or journal used: American Journal of Agricultural Economics

Computer Software used: Microsoft Word, Microsoft Excel, SAS 9.1, SPSS 9.0, Limdep 7.0

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I. INTRODUCTION

The purpose of this study is to look into policy provisions that provide a safety net for low income families on one hand and agricultural producers on the other.

In mid-1960 the Census Bureau developed the methodology for calculating poverty thresholds used in measuring poverty rate in the US. Poverty thresholds represent minimal annual cash income required to support families of different sizes and varies according to the size of the family and the ages of the members. The 2004 poverty threshold for a single individual under 65 was $9,827, $13,020 for a single parent with one child and $15,205 for two adults and one child. The poverty thresholds are the same nationwide, with no differences among the states, Metropolitan areas and cities and are updated for inflation annually. A family is considered poor if it has a pretax income lower than the poverty threshold. Non-cash benefits such as Medicaid, public housing and food stamps are excluded from the income calculation.

The US poverty rate was over 22% in late 1950s and early 1960s and had decreased reaching a low of 11.1% in 1973. Afterwards, the beginning of each decade (early 1980s, early 1990s and early 2000s) was characterized by an increase in the poverty rate, reaching 12.7% in 2004. Poverty rates for children and single mother families have been consistently higher than the overall rate. Significant differences in poverty rates exist among races, with rates for blacks and Hispanics exceeding national

levels (24.7% and 21.9% respectively). The figures for 2004 for non-Hispanic whites and Asians were 8.6% and 9.8% respectively.

In terms of the age of poor people, under 10% of people 65 and over were poor in 2004, while just under 18% of children were in poverty. During the 2002-2004 time period, Arkansas, Louisiana, Mississippi and New Mexico had the highest poverty rates, over 17%, followed by District of Columbia, Texas and West Virginia. For the same time period the poverty rate in Alabama was 15.5%.

As expected, poor people face a wide array of difficulties ranging from food insecurity and hunger to lack of health insurance coverage. Governmental programs were created to alleviate the problems of low income families in the United States. Medicaid and Medicare were created in 1965 under Lyndon Johnson, and provide health insurance for specific categories of Americans. Medicaid, managed by the states and funded by federal and state governments, offers health insurance for individuals and families with low income. In 2003, Medicaid had 40.4 million enrollees and covered over 37% of the births in the United States. Medicare, administered by federal government and funded in part by payroll taxes (Federal Insurance Contribution Act, FICA), is available for people 65 and older and younger people with disabilities. In 2003, 41 million Americans were covered by Medicare.

Federal programs to address food insecurity have a fairly long history in the United States. The National School Lunch Program was signed by President Truman in 1946 and provides nutritional low-cost or free lunches to children at public and nonprofit private schools.

Special Supplemental Nutrition Program for Women, Infants and Children (WIC) was made permanent in 1975 and provides healthcare and nutrition for low-income mothers and children under the age of five.

The Food Stamp Program is the largest and most comprehensive among the governmental programs addressing food insecurity among low-income people in the United States. Its goal is to alleviate hunger and malnutrition, allowing low-income households to attain a nutritional diet through normal channels of trade. The maximum enrollment was reached in 1994, with over 27.4 millions people participating. While participation in the Food Stamp Program declined after the welfare reform of 1996, the demand for private food assistance programs (e.g. food pantries) increased. Food pantries receive some of their commodities from the U.S. government via The Emergency Food Assistance Program (TEFAP), but the food sources are mostly private donations. Situated in the communities and usually run by voluntary organizations, food pantries are believed to respond to the needs of local citizens in a friendlier and less formal manner than the Food Stamp Program. However, to some critics, the growth of food pantries is considered a failure rather than a success, as the pantries are serving chronic cases, as opposed to the emergency cases they were supposedly created to serve. Also, the increased bureaucracy, mandatory for food pantries that use TEFAP commodities, has led to more distance between volunteers and clients. Even if not generalized, in some instances, there have been reports that some clients faced stigmatization or humiliation from food pantry staff suspicious of the clients' needs.

Since the 1930s, a "safety net" has also been in place for agricultural producers, because of the riskiness involved. Reducing price and yield risk is especially important

for producers of high-value crops such as cotton and peanuts. Per acre variable costs of production for cotton and peanuts can be several times those incurred in the production of corn or small grains, resulting in significant financial risk to the farm operation. To protect against price and yield related losses producers have used various tools, including crop insurance, the futures market, forward contracting, and reliance on federal disaster programs.

Although not widely adopted, federal crop insurance protecting against individual farm losses has been available for a limited number of crops since 1938, when the Federal Crop Insurance Corporation was created. To address shortcomings, new crops and geographic areas were included through the 1980 Federal Crop Insurance Act. Polices based on yield losses at the county level were added in the late 1980s. Following the 1994 Crop Insurance Act, policies protecting against revenue losses and catastrophic losses, with high level of federally subsidized premiums, were introduced. At this time, participation in the crop insurance program became mandatory for eligibility in deficiency payments under price support programs and other federal farm programs.

The first part of this dissertation will focus on the safety net available to alleviate food insecurity for low income families in the United States: the Food Stamp Program and the private food assistance programs, mainly food pantries.

The dissertation is organized as follows. First I will present a history of the Food Stamp Program, private food assistance programs and crop insurance policies, followed by the current provisions of food and crop insurance policies. Then a short review of previous studies in each of these areas and in addition on the causes of poverty will be presented. After that, the various methods and sources of data used in this study will be

introduced. The first set of results will show our findings regarding comparisons between food insecure and food secure people and also between the food insecure population and food pantry directors in a two-state region of the South (Alabama and Mississippi). The relation between negative behavior in children and family food hardship will be tested. Additional results will contrast pantry directors' and food-needy persons' attitudes related to causes of poverty, the effect of social welfare programs and the character of those using the food assistance programs.

Data for food-needy people, potential food pantry and Food Stamp Program clients comes from the National Survey of America's Families (NSAF). In addition, information on food pantry directors in Alabama and Mississippi is primary survey data collected for this purpose from over 230 food pantries in both states in 2002. Also, the latest round of NSAF data (2002) is used to estimate factors affecting Food Stamp Program participation and the effect of Food Stamp Program (FSP) participation on food insecurity. Contingency tables, factor analysis, regression models, farm budgeting and mathematical programming are among the methods used.

The second part of the dissertation will look into the federal crop insurance program, a primary means to protect against losses from production and low prices. Cotton and peanut farm-level crop yields from Covington county, southern Alabama were used in the study. Mathematical programming techniques are employed to determine the optimal risk-reducing crop insurance options for representative south Alabama cotton and peanut producers. From the variety of crop insurance options available the study will focus on two types of insurance products popular in southern Alabama: Multi Peril Crop Insurance (MPCI) and Crop Revenue Coverage (CRC).

Multiple Peril Crop Insurance (MPCI) protects against unavoidable crop yield losses. Indemnity payments are made when the insured farm's yield falls below a yield guarantee. Farmers can choose to protect their crop yields against losses ranging from 50% to 75% (and depending on the crop and area up to 85%) of the farm units Actual Production History (APH). Indemnity payments are based on a price established by the Risk Management Agency (RMA) for each production season. Minimum prices are set for insurable crops and with the option of the RMA to increase them according to market conditions at harvest. Farmers can elect price protection levels of from 55% to 100% of the established price. Crop Revenue Coverage (CRC) is meant to protect against both yield and price risk by guaranteeing minimum revenue for the farm unit. CRC provides protection from low yield, low price, or a combination of low yield and price. CRC policies allow farmers to protect from 50% to 85% of APH. Prices are set as in MPCI but also increase if market prices rise by harvest. Farmers have the option of using the established price or harvest price for an insured crop. The higher of established base price or harvest price is used to determine indemnity payments. CRC price protection increases without any increase in premiums if the market price increases between planting and harvest. However, the level of price increase allowed in any one insurance year is limited.

Different coverage levels for MPCI and CRC insurance are considered in this analysis. Optimal insurance and crop rotations vary across farms. Reductions in the current premiums paid by farmers, based on the coefficient of variation of their crop yields are considered (or suggested) in order to make the crop insurance more appealing to farmers.

II. BACKGROUND

Food Assistance Programs

Food insecurity is widely defined as "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways" (Anderson, 1990). In the more extreme cases, food insecurity may be accompanied by moderate or severe hunger.

In the mid-1990s, the USDA and the National Center for Health Statistics developed a survey-based measure of household food security and hunger. The survey module, which is included in the Current Population Survey (CPS) conducted by the Census Bureau, contains 18 questions concerning household food security, ranging from worrying that food would run out to having household children unable to eat for a whole day because of lack of resources to get food (Bickel et al., 2000). Based on responses, households are characterized as food secure, food insecure without hunger, food insecure with moderate hunger, and food insecure with severe hunger.

Table 1 provides information on food security levels by region of the United States from the 2002 CPS. The South has the highest level of overall food insecurity, 12.4%. The most severe form of food insecurity, food insecurity with hunger, affected 3.6% of the population in the South. Governmental (Food Stamp Program, WIC, School Lunch Program) and private food assistance programs (food pantries, backpack program, kids café and so on) emerged over the years to alleviate the problems of low-income families.

History of the Food Stamp Program

Government food assistance programs, including the Food Stamp Program, the school lunch program and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) were created to address the problems of hunger and food insecurity among low-income families in the United States. Of the three programs, the Food Stamp Program extended nation wide in the 1970's is the largest and most comprehensive.

The original Food Stamp Program started in May 1939 and had multiple goals. The first goal was to help the farmers, by broadening the market for food products. The second goal regarded the needy family by providing adequate diets, while the third goal was to help the food retailers by moving surplus commodities through regular trade channels. The program permitted poor people to buy orange-colored stamps equal to their normal food expenditure. For every dollar of orange-colored stamps purchased, they received an additional 50-cents worth of blue stamps that could be used only for products that were considered by the government as "surplus." The Food Stamp Plan reached its peak in August 1942, when half the counties in the United States were served. The program ended in spring 1943, due to competing demand for government food during World War II by U.S. and Allied forces, although hunger in the US remained a problem.

In 1961, under President Kennedy, a pilot Food Stamp Program significantly different from the previous plan was initiated. The two-color stamps were eliminated and the stamps, even though still purchased, had higher purchasing power and were not restricted to surplus commodities.

The Food Stamp Act was passed by Congress in 1964 and the political support for the program was also intended to support agriculture. Since the food stamps continued to be paid for, many needy households were still not participating. In addition to that, residency requirements and complicated certification processes led to significant changes in the program in December 31, 1970, when the Food Stamp Reform Bill was passed. Guam, Puerto Rico and the Virgin Island were included in the program. Other changes were the national standard eligibility requirements, free food stamps for very low-income families and the indexation of food stamp allotment to the rate of food-price inflation.

Table 2 presents Food Stamp Program participation and benefits per person from 1969 to 2005. From 1970 to 1971, participation grew from 4.3 to 9.3 million. Participation reached 18.5 millions in 1976 in part due to the geographic expansion and to the declining economy.

The Food Stamp Act of 1977, passed during the Carter administration, eliminated the purchase requirement of food stamps and participation soared to 22.4 million in 1981. During the Reagan administration the Food Stamp Program was cut significantly by tightening eligibility and reducing the benefits. In 1981-1982 people with gross income above 130% of the poverty line became ineligible, regardless of their net income level. "The 1985 legislation also enacted a major new food stamp employment and training program, aimed at getting able-bodied food stamp recipients into the work force" (Ohls and Beebout, 1993).

In 1983 the Temporary Emergency Food Assistance Program (TEFAP) was established. Under TEFAP, charitable organizations distribute a large surplus of perishable commodities. Much of the food was distributed through food banks and food

pantries, which until that point relied on food donations from individuals and businesses. TEFAP pleased farmers also by assisting in stabilizing commodity prices. Throughout the latter part of the 1990s, participation in the Food Stamp Program declined markedly. Although part of the decrease in participation was attributable to the strong economy of this period, and another portion was attributed to rules changes under the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (i.e. "welfare reform") of 1996, about half the decline in participation remains unexplained (Wilde et al., 2000).

At the same time that food stamp enrollment among the eligible population was falling, the demand for private food assistance in the form of food banks/pantries, soup kitchens etc. appeared to be growing. Subsequently, participation in Food Stamp Program rose again. Food stamp participation increased from 17.2 million in 2000 to almost 25.8 million people in August 2005 (USDA) (See Table 2).

History of the Private Food Assistance Program

According to information provided by America's Second Harvest, the idea of food banking was initiated in the late 1960s in Phoenix, Arizona, by a retired businessman who coordinated a soup kitchen. As a response to his requests of donated food products, more food than the soup kitchen could handle was received. By setting up a warehouse for the food that was distributed to charities for hungry people, the first food bank was created. In the 1970's the food banks extended to other communities also. The 1976 Tax Reform Act made it more advantageous for companies to donate their products. Second Harvest, a central food bank system, was created in 1979, two years after the food stamp purchase requirement was eliminated. In 1984, Second Harvest moved from Fanes, Arizona, to Chicago, Illinois, closer to the national food industry. The number of food

banks affiliated with Second Harvest increased from 29 in 1980, to 185 in 1989. The most recent numbers show 200 food bank members that provide emergency food assistance to over 25 million hungry people through 50,000 local charitable agencies that include food pantries, soup kitchens, women's shelters and Kid's Cafes (America's Second Harvest).

Food banks are umbrella organizations that may receive food products from US government through The Emergency Food Assistance Program (TEFAP) and different private sources. Privately donated foods may come from growers, manufacturers, wholesalers, distributors, or individuals. Food banks then distribute these goods to member agencies, such as food pantries, meal programs, and shelters—all of which, in turn, provide it to low-income families.

Food pantries are local agencies, most of them associated with an area food bank, that provide groceries for clients to take away and prepare at home. There is no federal law regulating the distribution of privately donated food stuffs; however, emergency food assistance providers receiving TEFAP commodities must comply with state criteria for determining which households are eligible to receive food. Eligibility is usually set at a percentage of the federal poverty level, in the range of 100 to 185%. States may also allow participation in certain government welfare programs to automatically qualify a household for receipt of TEFAP items. Individual agencies that distribute TEFAP commodities are subject to audit to ensure they comply with State eligibility guidelines. Nevertheless, the degree of formality in checking recipient eligibility varies considerably among emergency food providers (Molnar et al., 2001). Further, individual agencies may set their own guidelines for assistance below the income level allowed by the state.

Table 3 provides information on use of food stamps and food pantries by households in 1999, based on Current Population Survey (CPS) data for that year. For those at or below 125% of poverty, food stamp use is highest in the Northeast (43%) and lowest in the Midwest (32%). Food pantry use is considerably lower than food stamp use in all regions. It is highest in the West (14%) and lowest in the South (9%). The distribution of those at or below 185% of poverty show similar patterns, but with lower take-up levels all around. Those above 130% of poverty would generally not be eligible for food stamps and may not be eligible for private food assistance use, depending on state rules.

Current Provision of Food Stamp Program

To be eligible for food stamp benefits, household must meet an asset and income test. For 2006, the asset limit is $2,000 for most households and $3000 if at least one person is age 60 or older, or is disabled. Countable assets include money in hand, checking and saving accounts, certificates of deposit, stock, bonds, IRAs. Non-countable assets include the house in which the applicant lives and its lot, household goods, income producing property, cash value of the life insurance, vehicles with equity value up to $1,500, and vehicles needed for generating income or to transport disabled family members. For other vehicles, fair market value in excess of $4,650 is a countable asset. Countable income includes wages, self-employment earnings, unemployment benefits, child support, pensions, Social Security and Supplemental Security Income (SSI). To qualify for food stamps, a family must have gross income below 130% of poverty level and a net income level below 100% of poverty level. The income limits for 2006 are presented in Table 4. The amount of benefits that a household receives is called an

allotment. The maximum monthly allotments for 2006 are presented in Table 5. First, the household's net monthly income is calculated, by subtracting from the gross monthly income the standard, shelter, dependent care and utility deductions. The net monthly income of the household is multiplied by 30% and the result is subtracted from the maximum allotment presented in Table 5. This is because food stamp households are expected to spend 30% of their income on food. Benefits are provided from the day the household submits the application.

The Electronic Benefit Transfer (EBT) program was implemented as a pilot program in selected states beginning in 1989 and it was targeted to be implemented nationwide by 2002. This program replaces the paper coupons by an EBT card which is similar to an ATM card and is intended to reduce the stigma associated with food stamp use in stores. The program also targeted the reduction of food stamp trafficking and therefore food stamp users that had sold stamps to obtain cash to pay for utilities are less likely to participate in the program. Since low-income households are less likely to have checking-accounts and hence be familiar with bank cards, the ATM-type technology may be a barrier for some households. (Figlio, Gundersen and Ziliak, 2000)

Crop Insurance

Crop Insurance History

Federal crop insurance was first authorized by the Congress in the 1930's, along with other initiatives to help agriculture recover from the effects of the Great Depression and Dust Bowl. In 1938 the Federal Crop Insurance Corporation (FCIC) was created to administer an experimental program, which was restricted to major crops in the main

producing areas. Crop insurance remained experimental and was little used until the passage of the Federal Crop Insurance Act of 1980. The Federal Crop Insurance Act extended the crop insurance program to more crops and regions of the country. Under this Act, a subsidy equal to 30% of the crop insurance premium but limited to a dollar amount estimated at 65% of APH yield was authorized to encourage participation in the new crop insurance program.

The program did not achieve Congress's expectations despite the increase in the number of farmers participating in the program. Ad hoc disaster bills, which competed with crop insurance, were passed in 1988, 1989, 1992 and 1993 because of severe weather related yield losses. Because of perceived shortcomings in the program and ad hoc assistance the crop insurance program was strengthened with the Federal Crop Insurance Reform Act of 1994.

Under the 1994 Act, participation in the crop insurance program became mandatory for farmers to be eligible for deficiency payments under price support programs, certain loans, and other federal farm programs. Also the catastrophic (CAT) coverage with completely subsidized premiums was created. Under CAT coverage farmers are compensated for losses at 60% of a price established for the crop for that year if the loss exceeded 50% of an average yield established for the eligible crop. Under the 1994 Act participants in CAT paid an administrative fee of $50 per crop per county, subject to maximum payment levels for multiple crops and counties insured by a single individual. Subsidies for higher coverage levels were increased.

The mandatory participation requirement for farm program payment was abandoned by the Congress in 1996. However, farmers who accepted disaster assistance

were required to purchase crop insurance or eligibility for disaster benefits would have been waived. These provisions are still in effect.

In 1996, the Risk Management Agency (RMA) was created to manage FCIC programs. New products which incorporated revenue insurance were introduced. In 2000, Congress passed legislation that expanded the role of the private sector in developing new insurance products. RMA was prohibited from developing new products but still maintains a role in conducting risk education programs, regulating, promoting and reporting on the performance of insurance products. Under the 2000 Agricultural Risk Protection Act (ARPA), premium subsides were increased to encourage producers to purchase higher insurance coverage levels and to make the insurance program more attractive to prospective producers. FCIC has the mission to stimulate the sale of crop insurance and to provide reinsurance (subsidy) to approved commercial insurers, which insure agricultural commodities using FCIC-approved acceptable plans.

Provisions of Current Crop Insurance Policy

The crop insurance program was enabled by Congress as a public and private sector partnership. Farmers contract with private sector providers to purchase coverage for their eligible crops to protect against unpreventable causes of yield loss such as from weather, disease, insects or other events. New revenue insurance products that also protect against price loss have been developed. Insurance products are developed by private product developers but are analyzed, approved and backed by the FCIC/USDA through reinsurance agreements with the private insurance providers. Premium rates are analyzed and approved by the FCIC.

The alternatives available to farmers regarding crop insurance include yield based Actual Production History (APH) insurance policies, Revenue Insurance policies and Policy Endorsements. Crop insurance policies are not available in every county and are not available for many crops.

Current yield based insurance policies include both Multiple Peril Crop Insurance (MPCI) and Group Risk Plan (GRP) policies. Indemnity payments are triggered by low yields on the individual producer's insured yield (APH/MPCI) or by low county-wide yields (GRP).

Revenue insurance policies provide indemnity payments for revenue losses either caused by low yields, low prices, or both. These include Group Revenue Insurance Policy (GRIP), Crop Revenue Coverage (CRC), Revenue Assurance (RA) and Income Protection (IP) policies. Under GRIP, indemnity payments are triggered by low average revenue for the crop in the county, while for the others indemnities are triggered by low revenues for the individual producer.

Individual (as opposed to Group) crop insurance coverage levels are based upon a farm's actual yield history, "Actual Production History" (APH) or a percentage of an established county yield or a combination of both depending on how many years of production records are available for the farm.

To establish a production history for a farm, APH yield calculation requires a minimum of four years and a maximum of ten years of crop history for each insurance unit. The record must be for contiguous years, starting with most recent year and going back in time. Once a missing year is reached, no history prior to that can be used.

Exclusion of yield from one year because of poor yields is not allowed. However, the substitution of 60% of T yield (defined below) is allowed for disaster years.

When at least four years of consecutive records are not available, a transition or "T" yield, which is based on county average yield, must be substituted for each missing year. The T yield is calculated as a county average yield for the past 10 years. Growers without any record are assigned 65% of the T yield as their APH. Growers with one year history receive 80% of the T yield for the other three years. Two years of history is accompanied by 90% of the T yield for the two missing year, while growers that have three year of history receive 100% of T yield for the fourth year needed to calculate four year average APH. If only a few years of yield record exist, buying Group Risk Protection (GRP) policy may be a good strategy, since GRP is based on county yields rather than individual farm yields. This alternative could provide a higher level of insurance at a lower premium level while building records for future yields. Once the four years or more production history is available, the APH is the simple average of all the annual yields. After ten years of history are reached, the APH becomes a moving ten-year average yield.

Multiple Peril Crop Insurance (MPCI) protects against crop yield losses by making an indemnity payment when an insured farm's actual yield falls below a yield guarantee. The yield guarantee is the product of insured level ranging from 50% to 85% of APH in five percent increments.

An alternative to individual yield based insurance policy is Group Risk Protection (GRP), when indemnity is paid when the county yield for the insured crop falls below a trigger level chosen by the farmer. Payments are not based on the individual farmer's loss

records. GRP involves less paperwork and costs less than the individual farm-level coverage (MPCI). This type of insurance is best for farmers whose crop yields follow the county yield pattern.

The Catastrophic Coverage (CAT) policy pays 55% of the RMA projected market price of the commodity on crop yield losses in excess of 50% APH. The premium on CAT is paid by the Federal Government. In 2005 producers paid a $100 per crop administrative fee for each crop insured in each county. This fee may be waived for limited-resources farmers. The CAT coverage is available for peanuts and cotton and must be purchased by March 15.

Buy-up coverage levels above the catastrophic level (50% of APH) are available up to a maximum of 85% of the APH yield for peanuts and cotton. Each year, the Risk Management Agency determines estimated market prices for insured crops and announces them in January. These prices are used to calculate dollar coverage levels for a crop based on yield protection levels chosen by a farmer.

Crop Revenue Coverage insurance (CRC) protects against revenue loss from both yield loss and/or low prices. Coverage levels are based on farm unit production history (APH) as with MPCI. Revenue guaranteed under CRC is increased by using the higher of a national harvest price or the base price announced by the FCIC prior to planting. CRC is not available for peanuts, but is available for cotton. Indemnity payments are equal to revenue guarantee minus gross revenue when gross revenue is greater then revenue guarantee and zero otherwise. A base CRC insurance price of $.50 per pound was established for cotton in the 2005 insurance contract.

Insurance premiums depend on the level of insurance chosen by the producer and the risk history of an individual farm unit. Although crop insurance premiums are subsidized by the federal government, the level of subsidy decreases with higher level of insurance. The subsidy level decreases from 67% for the 50% insurance level to 38% of the premiums for the 85% insurance level[1]. Depending on the risk protection level chosen, producers paid only a portion of the risk-based premium plus a $30 administrative fee per crop (in 2005). The U.S. government, through the Federal Crop Insurance Corporation pays the balance of the premium, including administrative overhead and a basic level of protection.

[1] Subsidy level are 67%, 64%, 64%, 59%, 55%, 48% and 38% for premiums for 50%, 55%, 50%, 65%, 70%, 75%, 80% and 85% coverage levels.

III. LITERATURE REVIEW

Food Assistance Programs

Food Security

Many previous studies have provided a good picture of the factors affecting food insecurity. Rose, Gunderson, and Olivera (1998) found that households with higher incomes, homeowners, households headed by someone who had completed high school, and households with elderly members were less likely than others to be food insufficient. Holding other factors constant, those in poverty were over 3.5 times more likely to be food insufficient. However, around 40% of food insufficient households did not fall below the poverty level and only about 10% of poor households were deemed food insufficient.

Frongillo et al. (1996) reported that the following factors are most heavily associated with food insecurity: use of a food pantry, unemployment of adults, job loss in the past year, family income of less than $10,000, and lack of medical insurance. Additional factors associated with food insecurity were single parenthood, borrowing money for food, applying for or receiving food stamps, having children receive free or reduced price lunch, high utility bills, and major medical problems. The Rhode Island Food Security Monitoring Project also found similar relationships between family circumstances and food insecurity (Rhode Island Department of Health, 1999).

The relationship between family food hardship and poor child outcomes is documented in previous research. Alaimo et al. (2001), using data from the third National Health and Nutrition Examination Survey, report that even after controlling for poverty status and other confounding factors, food-insufficient children were significantly more likely to have poorer health status than food-sufficient children.

Alaimo, Olson, and Frongillo (2002) found that family food insufficiency, but not low income, was positively correlated with depressive disorders and suicidal ideation among adolescents. Hamelin, Habicht, and Beaudry (1999) discussed the array of poor outcomes associated with food insufficiency among households in Quebec City, Canada: socio-familial perturbations, hunger and physical impairment, and psychological suffering. Murphy et al. (1998) found children who were hungry or at-risk for hunger twice as likely as other children to be classified as having impaired functioning by their parents. Further, according to this work by Murphy et al. (1998), teachers reported higher levels of hyperactivity, absenteeism, and tardiness among hungry/at-risk children.

Adams, Grunner-Strawn and Chavez (2003) examined the relationship between food insecurity and obesity for California women. They found obesity more prevalent in food insecure than in food secure women.

The effect of Food Assistance Programs on Food Security

Many studies have attempted to measure the effect on food security of food assistance programs in general and Food Stamp Program in particular. This has proven difficult given the unobserved factors that may influence both food security and Food Stamp Program participation.

Gundersen and Oliveira (2001) used the 1991-1992 Survey of Income and Program Participation (SIPP) to estimate the effect of food stamps on food insufficiency. Their results were counterintuitive since food stamp participants had higher food insufficiency rates than eligible nonparticipants after controlling for other factors. This finding can be explained by the fact that households more likely to be food insufficient are also more likely to receive food stamps.

Wilde and Nord (2005) used the December 2001 and December 2002 food security supplements from the Current Population Survey (CPS). They found that food insecurity is positively correlated with food stamp use, low income and household size. Having more children, being married or employed decreased food insecurity.

Many studies regarding governmental food assistance programs have been done, especially concerning food stamps. Butler, Ohls and Posner (1985) tested for the effectiveness of food stamps on a sample of elderly households. They concluded that food stamps did not lead to increased nutrient consumption and are not better suited to alleviate nutritional problems than a simple cash transfer.

Figlio, Gundersen and Ziliak (2000) analyzed the effects of the macro-economy and welfare reform on food stamp caseloads using data from all fifty states and the District of Columbia for fiscal years 1980 to 1998. They found important influence of economic factors on the decline of food stamp caseloads, while welfare reform (EBT card introduction and waivers for able-bodied adults without dependents) had no major effects.

While research about private food assistance is not so extensive, the literature in this area is growing. Hilton (1993) provided a critique of food banking, as she

considered that the increase in size and number of food banks, which were created originally as a short-term solution to the increasing number of people without adequate resources to feed themselves, is an indication of the failure of food banking to alleviate food insecurity rather than its success.

Similarly, Curtis (1997) concluded that the increase in the size of food pantries and in the number of people served has created more social distance between volunteers and clients. Also the adoption of "eligibility standards" in some food pantries driven by a large increase in demand, made the system less friendly and more bureaucratic. Poppendieck's (1998) study reached a similar conclusion that the social distance between volunteers and clients has contributed to the stigma associated with using food pantries.

Factors affecting the use of food pantries have also been explored. Daponte et al. (1998) compared a sample of food pantry users in Allegheny County, Pennsylvania, with a sample of low-income people in the area who did not use a food pantry. Respondents were interviewed between April and July 1993. All respondents were below 185% of the poverty level. Results showed that pantry users are more likely to have difficulty feeding their families, run out of money for food, and serve less nutritious foods than non-users. The median length of food pantry use was two years. Using the same data, in 2000 she found a preference among the nonelderly for the Food Stamp Program over food pantries and a reverse preference among the elderly. The elderly's preference for food pantries is justified through the informality of the system and by their possible ineligibility for food stamps since retirement savings are countable assets in the asset test.

Clancy, Bowering, and Poppendieck (1991), profiling the characteristics of food pantry clients in New York City and Upstate New York, found that clients in Upstate

New York were disproportionately white females with children. By contrast, the city sample had a larger percentage of older African-Americans without children at home. The Upstate sample had more long-term users (more than 3 years) than the city group. Bartfeld (2003), surveying single-mother food pantry users in Wisconsin, found that most had low education levels, low household income, and often experienced an array of hardships. For many of these respondents, food pantry use is an on-going strategy to meet food needs.

Daponte, Sanders and Taylor (1999) explored the non-participation of low-income households in the Food Stamp Program. They found that many households that appear to be eligible for food stamps in fact were not eligible and that ignorance about the program contributes to nonparticipation.

Bartkowski and Regis (2003) conducting ethnographic research on faith-based food assistance programs in Mississippi found that these programs are characterized by a mixed of judgment (in the form of eligibility requirements and screening procedures) and compassion (in the form of generous giving and close interpersonal relationship).

Duffy et al. (1999) in a study of the East Alabama Food bank clients found that stigma was not an obstacle to food pantry use in that area. Clients reported being treated by respect by pantry directors. Food-needy non-clients reported that lack of knowledge of pantry services, not stigma, was the primary reason they did not use a food pantry. Research investigating the causes of poverty can also shed light on food program because poverty is an important causal factor. Also, attitudes about poverty can affect the delivery of services by volunteers or staff at food pantries or welfare offices. Given the questions about the role stigma may play in preventing food needy individuals from

participating in services, investigating the attitudes of services providers may shed some light on this issue. Previous social studies reveal three key types of attributions of poverty: individualistic, situational (structural) and fatalistic. Individualistic attributions consider the cause of the social problem the person affected by those problems. (e.g. the individual's immoral behavior, financial irresponsibility and lack of initiative or laziness). Situational attributions place the cause of social problem beyond the control of the individual (e.g. macroeconomic shifts, low wages, inadequate schooling). Fatalistic attributions relate the poverty to bad luck, misfortune and poor health.

General Social Survey data regarding explanations for poverty reveal that about 75% of adults attribute poverty to loose morals such as drunkenness, while approximately 90% believe a lack of effort evidenced among the poor is a significant cause of poverty (Bobo and Smith, 1994).

Studies have look at the differences across social groups regarding the attributions of poverty (e.g. class, race-ethnicity, gender, region, religion). They found that whites, men and middle-income Americans embrace individualistic attributions of poverty at significantly higher rates than do African-Americans, woman and low-income populations (Bullok, 1999: Feagin, 1975; Hunt, 1996; Kluegel and Smith, 1986; Seccombe, 1999). Emerson, Smith and Sikkink (1999) found that whites affiliated with conservative protestant faiths (e.g. Southern Baptist) tend to be more inclined toward individualistic attributions then adherents in other religious traditions.

Bullock (2004) compared social workers' and poor persons' explanations of poverty and perception of welfare programs. She found that welfare recipients identified prejudice as a cause of poverty more than social workers did. The study explains this

through the different social and economic positions and also the different experiences of poverty. Social workers have a second-hand experience of poverty through the population they serve. At the same time, the poor enjoy less class privileges and have first-hand experience with poverty.

Not all poor individuals attribute poverty to situational causes. Studies have shown that poor individuals are more likely to attribute their own poverty to situational causes and the poverty of others to individual causes. (Coley, Kuta, Chase-Lansdale, 2000; Seccombe, 1999). Also, not all social workers believe in the individualistic causes of poverty. Social workers are inclined to embrace structural attributions of poverty (Bullock, 2004; Jones, 1994). Also there is some evidence that future social workers (majors in the field) are more inclined toward fatalistic explanations of poverty (Schwartz and Robinson, 1991).

Identifying the attributions is important because of real-world consequences. Because individualistic attributions of social problems tend to "blame the victim", anti-hunger programs would be likely to receive less support among groups that embrace individualistic attributions. Those that support situational attributions would be more inclined to support social programs that are meant to alter the structural causes of social problems. Therefore support for the existence and expansion of anti-hunger programs would likely be more evident among those that believe poverty has structural causes such as racial prejudice or unequal opportunity (see Bartkowski and Regis, 2003; Bullock, 1999; Bullock et al., 2003; Kluegel and Smith, 1986).

Through previous work, there has emerged a good understanding of many factors affecting food insecurity and food program use. However, questions remain about the

effectiveness of food assistance in alleviating food insecurity and also on the role stigma may play in deterring program use. In this dissertation, these questions will be addressed.

Crop Insurance

Adverse selection and moral hazard are believed to pose significant problems for the current crop insurance program. Adverse selection arises because farmers with high relative yield-risk can buy insurance at the same cost as farmers who have lower relative yield-risk (Skees and Reed, 1986). Moral hazard occurs when producers, after purchasing insurance, alter their production or harvest practices to increase the chance of collecting crop insurance. To combat moral hazard, federal crop insurance requires a deductible of at least 25% of the producer's normal yield.

In 1949, Halcrow proposed a crop insurance program based on area yields rather then expected farm yields. Under an area-yield plan, the participant would receive an indemnity equal to the positive difference between the area yield and some predetermined critical yield level. The producers from a given area would have the same indemnity per acre insured and would pay the same premium rate, regardless of their own crop yield. Halcrow believed that individual crop insurance would not work in a satisfactory way because of adverse selection.

Other analysts have evaluated the effectiveness of the area-yield plan. Miranda (1991) analyzed Halcrow's Group Risk Plan using farm-level data from 102 western Kentucky soybean farms. He concluded that an area-yield design would be capable of providing effective yield-loss coverage.

Carriker et al. (1990) compared the effectiveness of reducing yield and income variation for individual farm-yield and area-yield insurance. They conclude that

individual farm-level insurance provides more farm income risk reducing, although it is complex and suffers from adverse selection and moral hazard problems.

Using primary yield data and second-degree stochastic dominance analysis, Carriker et al. (1991) examined the effectiveness of several crop insurance and disaster assistance designs for reducing income and yield risk. Results showed that risk-averse wheat producers and corn producers would prefer an actuarially fair individual-farm-yield insurance program with a 100% coverage level over either an area-insurance plan with 100% coverage or the free disaster assistance design with 65% coverage. Williams et al. (1993) also found that individual crop insurance is preferred to area crop insurance and a subsidy is required for area crop insurance to be preferred to individual crop insurance.

In another study, Mahul (1999) found that the optimal area-yield crop insurance contract depends on the individual beta coefficient, which measures the sensitivity of farm yield to area yield. Goodwin, Vandeveer and Zeuli (2002) found that there is a correlation between a farm's historical yield on other crops and a newly produced crop and stated that in such cases the premium rates may not reflect the producer's actual risk preference for a new crop. Barnett et al. (2005) compared risk reduction from MPCI and GRP crop insurance contracts and found that at least for some crops and regions GRP is a viable alternative to MPCI. By subsidizing the premium on higher coverage levels, the Agricultural Risk Protection Act of 2000 gave farmers the incentive to buy crop insurance coverage at levels higher than 65% (Babcock and Hart, 2005). Looking at county data for corn, soybeans and wheat and MPCI and CRC insurance plans, they estimate that decoupled subsidies would decrease farmers' high-coverage purchase by an

average of 36%. Goodwin, Vandeveer and Deal (2004) focused on corn and soybean in the Corn Belt and wheat and barley in the Upper Great Plains and found that crop insurance programs had a statistically significant response to additional land being brought into production. Also, 30% decreases in premiums due to subsidies resulted in acreage increases ranging from 0.2% to 1.1%.

Sherrick et al. (2004) analyzed the factors influencing the farmer's crop insurance decisions. Higher likelihood of crop insurance usage was found for those farmers who were larger, older, less tenured, more highly leveraged and with higher perceived yield risk farms.

IV. METHODOLOGY

Data

Pantry Directors

Primary data for pantry directors were obtained from a survey done at Auburn University. Using a list compiled from food bank organizations within Alabama and Mississippi, 250 food pantries were selected at random from each state. The survey examined demographics of pantry directors, their knowledge of charitable choice, and their attitudes about poverty, welfare and food pantry clients, and was mailed in January 2002, to all 500 randomly selected locations. Return envelope were provided and coded to decrease second mailing attempts. Envelopes returned as undeliverable were checked for forwarding addresses. If no forwarding address was on the envelope, follow-up phone calls were made to the agency based on the original list. Those that indicated that they were not food pantry director at that time were omitted. There were three mailings completed and a total of 235 surveys were returned.

Food Needy Population

Data for the needy population comes from two different sources. The first one is a subset of the 1999 National Survey of America's Families (NSAF), conducted by Westat for the Urban Institute. The entire NSAF sample is representative of the civilian, non-institutionalized population under age 65. The main sample consists of a random-

digit dial survey of households with telephones. Some important segments of population (e.g. the homeless) could not be sampled because of their living arrangements. Also, the small portion of the sample that was not English or Spanish speakers was eliminated. More detailed information on the NSAF can be found in Wang, Candor, and Vaden-Kiernan (1999). Over 42,000 households were interviewed, providing information on more than 109,000 people. Because some of segments of the population were over-sampled, sampling weights are provided with the data. One of the limitations of this data is the exclusion of individuals over 65 years of age. The subsets of data used in this study consist of the "Focal Child Public Use Data Set", "Adult Pair Public Use Data Set" and "Family Respondent Public Use Data Set". The data sets were merged by the variable RESPID, an identifier unique to each respondent. Since one respondent may answer for two children, only one observation per respondent was retained at random.

Respondents identified as food-needy were those who replied affirmatively to the question: "In the last 12 months, since (name of current month) of last year, did you or other adults in your family ever cut the size of your meal or skip a meal because there wasn't enough money for food?" A positive answer to this question would indicate a moderately high level of food insecurity. These individuals would be the type of persons food pantries are designed to serve.

NSAF respondents were asked questions about their demographic characteristics, family income, economic hardship and their use of government programs. In addition, they were asked to respond to a series of questions designed to measure their attitudes toward poverty, welfare and related social concerns.

Given the lack of information on the use of private food assistance program in the 1999 round of the NSAF, a different source, the Current Population Survey (CPS) of 1999 was necessary. Unlike NSAF, CPS data does not provide information on respondents' attitudes toward poverty and related social concerns, but it does provide information on use of private food assistance and detailed demographic data.

CPS data are collected monthly on about 55,000 housing units with observations on each individual in the household. A sample household is interviewed for four consecutive months, and then, after an 8-month rest period, for the same four months a year later. Thus, about 75% of the sample is common from month to month. There were 134,951 and 132,324 CPS observations on individuals in March and April, 1999, respectively. Full documentation on the design and methodology of the survey can be found in Technical Paper 63 from the U.S. Department of Labor. March CPS data hold information on government program use, while the April data provides the food security supplement. The latest contains the level of food insecurity of the household and the use of private food assistance. Data for the two months were merged using an identification number created by concatenating state code, household ID, and number of people in households. To ensure matching across months, we retained only the households that did not change size over the time period. We retained a single observation per household (the "household reference person") from the CPS data files for demographic information. Households that were part of an experimental survey design in the April 1999 supplement (about 1/8th of the sample) and thus not comparable to other households were eliminated, as were those lacking valid answers to questions about food assistance program use. Screening for all these variables resulted in a final data set of 3,059.

Food Stamps and Food Insecurity

To analyze the effects of the Food Stamp Program on food insecurity, data from the 2002 round of the NSAF were used. As mentioned before, one limitation of this data is the exclusion of individuals over 65 years of age. In addition to the previous round, the 2002 data contains information related to private food assistance programs (emergency food). The data used were obtained by merging seven data sets: "Focal Child," "Adult Pair," "Family Respondent", "Childless Adult", "Social Family", "Person" and "Household". The key variables were RESPID, UFAMID, PERSID and HHID, unique identifiers to each respondent, social family, person and household respectively. The sample analyzed in this study is reduced to NSAF respondents with reported income below the poverty line. Information regarding their demographic characteristics, family income, structure, housing and economic hardship and FSP participation is used.

The questions used to determine the family's food insecurity were: "I/ we worried whether our food would run out before we got money to buy more," "The food that we bought didn't last and we did not have money to buy more" and "In the last 12 months did you ever cut the size of your meals and skip meals because there wasn't enough money for food?" Answering "Often True" or "Sometimes True" to any of the first two questions, or "Yes" to the last question implies some sort of food insecurity. The scale for food insecurity represents the total number of positive responses to the above questions, where higher values indicate higher levels of food insecurity.

Crop insurance

Yields from nine farms in Covington county, southern Alabama were used in this study. The crop yields and their descriptive statistics for each farm and crop are presented

in Table 6 and Table 7. Number of years of yield data available varied from six to twelve among the nine farms. Farm-level yield was used in this study because regional yields, which are averages, typically will show less variability than farm-level yields and thus would underestimate actual risk. The net returns above variable cost were determined for each farm using these farm-level historical yields to represent expected yield outcomes. Published area prices were used for expected price outcomes as farm-level prices were not available. Operating expenses from cotton and peanut enterprise budgets of the Alabama Cooperative Extension System were used because farm-level cost data were not available for these crops. Variable costs were $315 and $400 per acre for cotton and peanuts respectively.

Methods

Various methods were used for the different analyses. These methods are discussed briefly, below, with more detail given in subsequent chapters concerning the analyses for the problems.

Contingency tables are used to compare two or more population proportions. In this study, contingency tables were used to test the hypothesis that the personal characteristics (race, education, and church attendance) of directors differ from those of their potential client base. Also, directors' attitudes toward welfare and family structure are compared to those of potential clients.

The chi-square statistic, $\chi 2$, is used to test the null hypothesis of equal proportions among the populations. For a table with *r* rows (categories) and *c* columns (populations) the chi-square statistic, $\chi 2$ is calculated as follows:

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{c}\frac{(x_{ij}-e_{ij})^2}{e_{ij}} = \sum_{allcells}\frac{(observed-\exp ected)^2}{\exp ected}$$

where the *expected* cell counts are given by

$$e_{ij} = \frac{\sum_{i=1}^{r} x_{ij} \times \sum_{j=1}^{c} x_{ij}}{\sum_{i=1}^{r}\sum_{j=1}^{c} x_{ij}} = \frac{(row\ total) \times (column\ total)}{(table\ total)}$$

The calculated χ^2 is compared to the critical value for the corresponding number of degrees of freedom, given by the product *(r-1)×(c-1).* The null hypothesis is rejected when calculated χ^2 does not exceed the critical χ^2.

A correlation analysis of the responses to questions about welfare and food pantry users was performed. Directors were asked several additional questions about their attitude toward food pantry clients and about poverty in general. Responses to these questions were given a weight from 1 (strongly agree) to 5 (strongly disagree) or in the reverse order depending on whether agreement with the statement indicated a "judgmental" attitude toward the poor. Higher weights are associated with more a judgmental attitude.

The factor analysis model expresses each variable as a function of factors common to several variables and a factor unique to the variable. The objective is to find the smallest set of m common factors such that the correlations among the components of *X* are completely accounted for by theses factors. The observed variable X_j can be expressed as

$$X_j = a_{j1}F_1 + a_{j2}F_2 + \ldots\ldots + a_{jm}F_m + \varepsilon_j$$

where F_i are the common factors, m is the number of factors common to all the variables ε_j is the factor unique to variable X_j, a_{ji} are the factor loadings. The model assumes that common factors are standardized and uncorrelated $(E(F)=0$ and $Cov(F)=E(FF)=I)$, specific factors have zero mean and are uncorrelated $(E(\varepsilon)=0)$. In addition, the common and specific factors are independent $(Cov\ (F, \varepsilon)=0)$.

The steps necessary for factor analysis are:

1. Calculation of unit eigenvectors of the correlation matrix;
2. Descending sorting of the eigenvectors by their corresponding eigenvalue which gives the order of significance of the common factors;
3. Estimation of the factor loadings;
4. Rotation of the factor loadings;
5. Computation of factor scores used as input in regression analysis.

Food stamps and Food Insecurity

The effect of food stamps on food insecurity was analyzed using econometric techniques. Both an ordered probit model and a selectivity model were fitted to the data from the 2002 NSAF round.

The ordered probit model, similar to those previously used for assessing the effects of Food Stamp Program participation on food insecurity levels, can be represented by:

$$Y=X\beta+\alpha I+u,$$

where Y is the outcome, X is the vector of exogenous personal characteristics and I is a dummy variable ($I=1$ if the individual participates in the program and $I=0$ otherwise) In this case, the effect of the program would be measured by the estimate of α.

Since the decision of an individual to participate or not participate in the program is based on self-selection, the dummy variable *I* probably cannot be treated as exogenous. The Self-selection model, used to evaluate the benefits of social programs is described by Maddala (1983). The first step in the estimation process is the selection probit that uses the entire sample.

$I^*_i = Z_i\gamma + \varepsilon_i$ *(participation decision function)*

$I_i = 1$ *iff* $I^*_i > 0$

$I_i = 0$ *iff* $I^*_i \leq 0$

The second step uses an ordered probit model to estimate food insecurity for each of the two groups (FSP participant and FSP non-participants)

$Y_{1i} = X_i \beta_1 + u_{1i}$ *(if* $I_i = 1$*)*

$Y_{2i} = X_i \beta_2 + u_{2i}$ *(if* $I_i = 0$*)*

The matrix X_i includes the selection correction term $\lambda_i = \phi(Z_i\gamma)/(1-\Phi(Z_i\gamma))$ for FSP participants and $\lambda_i = -\phi(Z_i\gamma)/\Phi(Z_i\gamma))$ for FSP non-participants.

Target MOTAD

A mathematical programming procedure, Target-MOTAD, was used to assess economically optimal crop insurance alternatives using varying target income and risk levels.

Target-MOTAD as described by Tauer (1983) is a modification of MOTAD (minimization of total absolute deviations) that generates solutions meeting the second-degree stochastic dominance (SSD). The advantage of stochastic dominance techniques is that only the utility function properties are required, rather than a specific form.

Let u be an individual's utility function. First-degree stochastic dominance (FSD) assumes nonsatiation i.e., that more is preferred to less ($u'(x) > 0$ for all x). In addition to non-satiation, SSD assumes diminishing marginal utility and risk aversion ($u''(x) < 0$ for all x).

The Target-MOTAD model is:

Max *Return* = $\sum_{j=1}^{n} C_j X_j$ subject to

$$\sum_{j=1}^{n} A_{ij} X_j \leq B_i$$

$$T - \sum_{j=1}^{n} C_{tj} X_j - d_t \leq 0$$

$$\sum_{t=1}^{s} P_t d_t = K$$

$i=1,2,\ldots,m$

$K = M$ to 0 and

$X_j, d_t \geq 0$, where

Return is the expected income above variable cost of the solution; C_j is the expected return from activity j; X_j is the level of activity; A_{ij} is the technical requirement of activity j for resource i; B_i is the level of resource i; L is the land available; T is the target level of return; C_{tj} is the return of activity j for period t; d_t is the deviation below T for period t; P_t is the probability of the state of nature occurring at time t; K is a risk constant parameterized from M to 0; m is the number of resource constraint equations; s is the number of observations or states of nature; and M begins as an arbitrary large number. Risk is measured in dollars as the expected sum of negative deviations of the optimal solution from some target income level.

V. RESULTS

Food Pantries

Food Insecurity in the South

Demographic characteristic, welfare participation and negative behavior in minor children of people living in the South are profiled using 1999 NSAF data. Table 8 contrasts the characteristics of people suffering from severe food insecurity versus others. To make the results representative of the region, the raw responses for race, age, social family income, and welfare and food stamp use were weighted by the NSAF survey weight assigned to each sampled adult. For negative behavior of children, results were weighted by the NSAF focal child weight. For each variable analyzed, responses for food-needy respondents and others were different statistically, based on a Chi-Square test. Of those reporting food insecurity 34% were black compared to 18% black for others. Those not suffering food insecurity were somewhat more likely to have an older adult respondent (55 to 65 years old) than those suffering food insecurity. Social family income as a percentage of poverty, not surprisingly, tended to be lower among those suffering food insecurity.

What is surprising is that 20% of respondents reporting food insecurity indicated having an income greater than or equal to 300% of the poverty level. The food insecurity in a relatively high-income household might be explained by uneven income during the

year or by a change in household composition in that period, but the data do not provide information that would clarify these results.

Reported cash welfare receipt was low among all respondents. Of those skipping or cutting meals, 4% received cash welfare compared to 1% of other respondents. Food stamps were used by 16% of those experiencing food insecurity and 3% of other respondents. Because many families with food insecurity have incomes above the food stamp threshold (gross income of 130% of poverty), they would not be eligible to receive food stamps. Others that appear eligible based on gross income might not be eligible on the grounds of net income or the asset test. Consistent with findings in other studies, children in families experiencing food insecurity exhibit significantly more negative behavior. In families experiencing food insecurity, 10% of the most knowledgeable adults reported high levels of negative behavior for children 6 to 11 compared to half that amount (5%) in other families. For older children, aged 12 to 17, 18% of those in families with food insecurity were reported to have high levels of negative behavior compared to 8% of other families.

Because differences in poverty may be driving the differences in negative behavior in children between the two groups, we re-tested the differences in reported negative behavior for children between those reporting food insecurity and others only for those at or below poverty level. Food insecurity among adults continued to be associated with higher levels of reported behavioral problems for children 6 to 11 (16% versus 9%). For older children, however, the food insecurity group had lower reported negative behavior than others (14% versus 17%). Because the food insecurity variable is measured for the adult respondent, and not the child, older children, who spend more

time out of the home with peers, may not be as affected by indirect food insecurity (food insecurity affecting adult caregivers) than the younger children in the family.

In summary, families experiencing food insecurity are more likely to be poorer than other families, but the correspondence is not one to one. Many families experiencing food insecurity have relatively high levels of income. Blacks are over-represented among families experiencing food insecurity, but this result is linked to higher levels of poverty in that group. Older adults are less likely to report food insecurity than are those of younger ages. Use of welfare and food stamps is more common among families experiencing food insecurity than other families, but the levels of use are low among both groups. Negative behavior of children appears to be a bigger problem in families experiencing food insecurity, but for older children, this characteristic may be related to poverty in general, rather than to food insecurity. For younger children living in poverty, however, increased reports of negative behavior are associated with adults in the family experiencing food insecurity.

Demographic profile of food pantry directors

The survey data collected at Auburn University in 2002 indicate that two-thirds of the food pantries in Alabama and Mississippi are faith-based organizations (often church-sponsored). Additional pantries, even though not sponsored by a church, were affiliated with one, bringing the total percentage of pantries to around 75%. In terms of location, 70% of pantries identified themselves as serving rural area, while 30% indicated existing in a metropolitan statistical area (MSA). The majority of directors were women (64%). When comparing directors and food needy people, only those NSAF respondents

identified as living in Alabama and Mississippi were retained for analysis to better match our director sample.

Table 9 compares the race, education and church attendance of the food pantry directors and food needy people. Less than two-thirds (63%) of the directors identified themselves as white and the rest self-identified as African-American. The racial composition of the food needy population was significantly different, with half white, 48% black and 2% of other racial background.

Unsurprisingly significant difference is found in terms of education also. Directors have higher levels of education, with only 4% having less than high school compared to 45% of the needy people. Forty-four percent of the directors held a college or graduate school degree compared to 11% of the possible pantry clients. Both groups reported high levels of religious involvement. Eighty-six percent of the directors indicated that they attend church one a week or more, which is not surprising, given the high level of religious affiliation of the pantries.

In summary, food pantry directors in Alabama and Mississippi are more likely than their potential clients to be white, far more educated and much more engaged in religious activities.

Attitudes toward Welfare Programs and Family Structure

Four items regarding the attitude toward welfare and family structure were identically worded in both surveys. These are: "Welfare helps people get on their feet," "Welfare makes people work less," "People who want children should marry," and "Mothers of young children should not work." The response frame was slightly different in the two surveys, with pantry directors being allowed to answer "Unsure" as well as

“Strongly agree”, “Agree”, “Disagree” and “Strongly disagree," the four responses allowed in the NSAF survey. For comparison purposes, all responses to both surveys were collapsed into two categories, “Agree” and “Other.” For both sets of respondents, “Agree” consists of answers “Strongly agree” and “Agree.” For food-needy respondents, “Other” was “Disagree” or “Strongly Disagree.” For pantry directors, the “Other” category includes those two responses and “Unsure.”

Table 10 features a series of comparisons of survey responses provided by food-needy NSAF respondents and food pantry directors. The survey item, “Welfare helps people get on their feet when facing difficult situations such as unemployment, a divorce, or a death in the family,” yielded responses that were statistically identical across both groups, with about three-quarters reporting agreement in some form (agree or strongly agree). Responses to the statement, “Welfare makes people work less than they would if there wasn’t a welfare program,” indicate that the food-needy population was statistically more likely to agree with this statement (68%) than were the directors (48%).

In response to the statement, “People who want children ought to get married,” there was a statistically significant, though small, difference in responses. Over 70% (77% for directors and 72% for food-needy respondents) of both groups agreed with the statement. By contrast, there was a fairly substantial difference between groups in response to the statement, “When children are young, mothers should not work outside the home.” Just under half (49%) of the food-needy population agreed with this statement, compared to about one-third (32%) of pantry directors.

In general, pantry directors do not have harsher attitudes toward welfare than members of the food-needy population that they wish to serve. In fact, respondents from

the food-needy population were more likely to agree that welfare reduces work effort than were the pantry directors. This finding is in line with previous research concerning the suspicion that some poor persons harbor toward others who are impoverished (Coley, Kuta, and Chase-Lansdale, 2000; Seccombe, 1999). The attitudes of both groups toward unwed motherhood are similar, with over 70% of all respondents saying that people who want children should marry. When it comes to mothers of young children working outside the home, pantry directors tend to be less socially conservative than the food-needy population.

Our results indicate that the typical food-pantry director in Mississippi or Alabama is a well-educated white woman whose attitude toward welfare either mirrors or is less judgmental than that of her potential client base. The director is less likely than her clients to believe that mothers of young children should not work (perhaps a product of a higher education level) but expresses a similar view that people who want children should marry.

Regional Differences in Attitudes

The NSAF data were collected from a national sample, allowing a comparison of responses to the four attitude items by the food-needy population in different regions of the country. Consistent with sociological convention, regions were defined following standard census definitions: Midwest, Northeast, South, and West. Table 11 provides the results of this analysis.

For each attitude item, there was a significant difference in response across regions, although the differences in most cases were not large. The majority of respondents in all regions agreed both that welfare lets people get back on their feet and

also that it makes people work less. Hence, respondents could apparently see both a positive and a negative impact of welfare programs. Respondents in the South had the highest rate of agreement with the statement, "Welfare makes people work less than they would if there wasn't a welfare program."

Over 60% of the respondents in all regions agree that those who want children should marry, with respondents in the South having the highest rate of agreement. The majority of respondents in all regions agreed with the item, "When children are young, mothers should not work outside the home." Respondents in the South were somewhat less likely than those in other regions to agree with this statement. Hence, those in the South were somewhat less accepting than those in other regions of unwed motherhood, but more tolerant of mothers of young children working outside the home.

Directors' Attitudes toward Poverty and Food Pantry Clients

Directors were also asked several questions about their attitudes toward poverty in general and food pantry clients in particular. Responses to statements about the causes of poverty are summarized in Table 12. No statement about the cause of poverty received strong support from food pantry directors. About 15% of directors agreed or strongly agreed that poverty was caused by prejudice and discrimination. A slightly higher percentage, 23%, agreed or strongly agreed that poverty is caused by a lack of good schools for many citizens. Around 27% of directors agreed or strongly agreed that poverty was caused by a lack of ability or talent in poor people. Eleven percent agreed or strongly agreed that poverty is caused by drunkenness or loose morals. Less than a third (27%) of the directors agreed or strongly agreed that we are spending too little money on welfare in this country. Most disagreed or strongly disagreed with this statement.

Table 13 provides the summary of responses to statements about food pantry clients. Only 18% of directors agreed that food pantry use was caused by mere bad luck, and no directors strongly agreed with that statement. A little over half of the directors saw physical disability or sickness as a frequent cause of food pantry use. This result is in line with the self-identified causes for food pantry use in the East Alabama area (Duffy et al., 1999), where about one-third of the interviewed food pantry clients said they were disabled.

Nearly 60% of directors agreed or strongly agreed that food pantry clients who are able to work are trying to find work. Around 32% of respondents, on the other hand, agreed or strongly agreed that there are too many people using food pantries who should be working. Whether these directors believe that the respondents are responsible for not finding jobs, or whether they believe the problem lies in macroeconomic conditions (e.g. high unemployment) cannot be determined from the response to this question alone. In response to the statement, “Many people getting food are not honest about their need,” 49% of the directors agreed or strongly agreed. Only 3% strongly disagreed. Hence, about half the directors responding to this survey indicate a substantial level of distrust of their clients’ honesty. Some 66% of directors believed low wages in some businesses and industries precipitated food pantry use, thus placing the cause for food neediness outside the individual.

Correlation Analysis

A correlation analysis of directors' responses to the questions about poverty and food pantry use provides additional information. Results are presented in Table 14. For this analysis, responses were given a value from 1 (strongly agree) to 5 (strongly

disagree) or in the reverse order depending on whether agreement with the question indicated a "judgmental" attitude toward the poor-i.e., one that expresses suspicion about the motivations, initiative, or morals of the poor. Higher values are associated with a more judgmental attitude. Hence, items 4-1, 4-2, 4-5, 5-3, 5-4, 5-5, and 5-6 were coded so that "1" represented "strongly agree." In general, these items reflect structural or fatalistic attributions of poverty, which places blame for the situation in factors beyond the individual's control. By contrast, "1" represents "strongly disagree" for items 4-3, 4-4, 5-1, and 5-2. These measures generally reflect individual attributions of poverty and suspicion toward food pantry clients. Because of the coding, it was hypothesized that all significant correlation would be positive.

The responses to items 4-1, 4-2, and 4-5 (structural attributions) are significantly correlated in the expected direction. Directors who believe that poverty is caused by discrimination are also likely to believe that society fails to provide good schools for many citizens and that we are spending too little money on welfare. Directors who disagree with questions 4-1 and 4-2 (statements that attribute poverty to societal causes), thereby embracing individual attributions of poverty, are not inclined to believe that we are spending too little money on welfare.

Item 4-3 places the cause of poverty in a lack of ability and talent among poor people (typically interpreted as an individual attribution of poverty). Responses to question 4-3 were significantly negatively correlated with responses to both 4-1 and 4-2. Because of the way responses were coded, a negative correlation for these items means that directors who agreed with item 4-3 were also likely to agree with items 4-1 and 4-2. While this result may seem somewhat contradictory, perhaps directors who agreed with

all three statements may believe that societal failure, in terms of prejudice and poor schooling, results in the subsequent lack of talent and ability among those in poverty. Or, those who disagree with all three statements may believe that poverty stems from a cause (e.g., "divine will") not presented in the survey.

Few directors agreed with the statement that poverty is caused by loose morals or drunkenness. The responses to this statement were positively correlated to responses to the statement linking poverty to lack of ability and talent.

Directors who agreed with statements 4-3 or 4-4, that poverty results from some individual failing, were also likely to take a more judgmental attitude toward their clients, as indicated by the significant correlation between responses to this statement and responses to statements 5-1 and 5-2. (Items 5-1 and 5-2 are also significantly correlated with each other.) Those who express suspicion toward their clients were likely to view welfare allocations as overspending, as shown by the significant correlations between item 4-5 and items 5-1 and 5-2.

Item 5-3, that food pantry use is caused by sickness or handicaps, was negatively and significantly correlated with items 4-3 and 4-4, which placed the blame for poverty on lack of ability and talent or loose morals. Because of the way values were assigned, this negative correlation indicates that directors who agreed with item 5-3 were more likely than others to agree with items 4-3 and 4-4. Item 5-3 was also significantly correlated (with the expected positive sign) with item 5-4, which blamed food pantry use on bad luck.

Directors who agree that food pantry clients who can work are trying to find jobs (item 5-5) are likely to agree with statements 4-1 and 4-2, placing the blame for poverty

on society, and with item 4-5, that we are spending too little money on welfare. Those who agree with item 5-5 are likely to disagree with question 4-4, placing the blame for poverty on loose morals and drunkenness, and with items 5-1 and 5-2, which express suspicion toward clients.

Item 5-6, which relates food pantry use to low wages in some industries, is significantly correlated with items 4-1 and 4-2, which link poverty to societal failures. It is also significantly correlated with statement 5-3, linking pantry use to sickness and disability, and to item 5-5, which states that pantry clients who can work are trying to find jobs.

Factor Analysis

A factor analysis was also conducted. Principal component method was used for extracting the factors. Using the screen plot criteria, two factors were retained and rotated using varimax rotation method. Factor rotation is necessary to make larger loadings larger and smaller loadings smaller than their unrotated values. Table 15 displays coefficients (or loadings) that relate the variables to the two rotated factors. These rotated loadings are the correlations of the variables with the factors. The rotated loadings were sorted for easier naming of the factors.

Moderate to high loadings (.451 to .715) exist between items 4-3 (poverty is caused by lack of ability and talent), 4-4 (poverty is caused by loose morals and drunkenness) (both individual attributions), items 5-1 (many pantry clients should be working), and 5-2 (many pantry clients are not honest) and factor 1. Since the first two items above point to individual attributions of poverty, while the latter items point to director suspicion of the clients' motives and situation, factor 1. Moderate to high

loadings (.513 to .711) also exist between items 4-1(poverty is caused by prejudice and discrimination), 4-2 (poverty is caused by bad schools), and 5-6 (poverty is caused by low wages), all of which place the cause of poverty or food pantry use in societal failures (discrimination, poor schools, and lack of good wages) and factor 2. Factor 1 is called "Suspicion", while factor 2 is called "Societal failure". Together, the two factors accounted for 39% of the variance.

Regressions relating director characteristics (race, education, income, gender, and church attendance rates) and community type (metro area versus rural areas and small towns) to factor scores were performed. The results are reported in Table 16. Both regressions had low R-square values but the F test was significant at the 5% level in both cases. For factor 1, which represents individual attributions of poverty and suspicion of clients, race was the only significant variable. Hence, the results indicate that African American directors are less likely than white directors to harbor individual attributions of poverty and suspicion of their clients. In the second regression, relating characteristics to a factor that measure the degree to which directors place the causes of poverty on societal failure, race, education, household income, and church attendance were significant. Because of the scoring of the variables, a negative parameter indicates a higher level of agreement that poverty is linked to societal failure, while a positive coefficient represents a lower level of agreement.

In our sample, African American directors are significantly more likely than white directors to see societal failure (poor schools, discrimination, and low wages) as a cause of poverty and food pantry use. Higher levels of education are also associated with a structural attribution of poverty. Directors with higher household income and those who

attend religious services frequently are less likely than others in the sample to agree that societal failures cause poverty.

Because race was a significant variable in both regressions, we performed an item-by-item comparison of directors' attitudes by racial identification. The directors' answers to all items reported in Table 10, Table 12 and Table 13 are compared by race. Items with statistically significant differences in response by race are reported in Table 17. In our survey, 215 directors reported their race. Of the directors reporting their race, almost all provided an answer to the attitudinal questions. The lowest response rate for an attitudinal item was 206 and the highest 213.

African American directors are less likely than white directors to agree that welfare makes people work less than they would in the absence of a welfare system (37% versus 55%). They are also less likely to agree that people who want children ought to get married (67% versus 83%). African American directors were more likely than white directors (29% versus 6%) to view poverty as caused by discrimination (structural attribution) and more likely than white directors (39% versus 20%) to agree we are spending too little money on welfare. They are less likely than white directors (19% versus 41%) to agree that there are too many people using food pantries who should be working. African Americans are less likely than white directors to agree that food pantry clients are not honest about their needs (42% versus 55%) and more likely to agree that food pantry clients who can work are trying to find jobs (72% versus 55%). Compared to white directors, African American directors are less likely to believe that food pantry use is caused by sickness and disability of the clients (37% versus 63%) and are also less

likely to believe that people who use food pantries are just having bad luck (10% versus 26%).

Given that about half the food-needy people in these two Deep South states are African American and that only about a third of directors are African American, racial biases may factor into an atmosphere that may make some clients or potential clients uncomfortable. Without further research, however, it is impossible to judge the extent of that problem. Further, based on the results of previous research, directors in our sample appeared to be less likely to attribute poverty to individual failings and thus less judgmental than does the population as a whole (Bobo and Smith, 1994).

Food stamps and Food Insecurity

The latest round of NSAF data (2002) is used to assess the effect of FSP on food insecurity. Only 4952 observations remained when the sample was reduced to the respondents that are below poverty level. Their demographics, family structure and economic situation are presented in Table 18. Most respondents are white, have not completed high school, have problems with mortgage, rent or utilities, are food insecure and participate in the FSP. Around 40% are homeowners and have income even lower than 50% of poverty level.

The scale for food insecurity represents the number of positive answers to the following three questions: "I/ we worried whether our food would run out before we got money to buy more", "The food that we bought didn't last and we did not have money to buy more" and "In the last 12 months did you ever cut the size of your meals and skip meals because there wasn't enough money for food?" For the first two questions, "Often True" and "Sometimes True" were considered affirmations. Therefore, the food

insecurity measure is a discrete variable that can take values 0, 1, 2 and 3, with higher values indicating higher levels of food insecurity.

Results of the ordered probit model having food insecurity as a dependent variable are presented in Table 19. Food insecurity increases with age, but at a decreasing rate. Education beyond high school and owning a home significantly decreases the probability of being food insecure. Also, singles (with or without children) and persons having rent, mortgage and utility problems are more likely to suffer food insecurity. As in previous studies cited in the literature the positive association between FSP participation and food insecurity is seen in these results. The most likely explanation for the positive and significant coefficient is that higher level of food insecurities drive people to participate in the Food Stamp Program.

Because participation in the Food Stamp Program is an individual choice and is related to the level of food insecurity, a simple ordered probit model is unlikely to give good results for the relationship between food stamp use and alleviation of food insecurity. Hence, the selectivity model may provide a better model of behavior in this situation. The results for the first stage of the selectivity model presented in Table 20 imply that married couples without children and singles without children are less likely to participate in the FSP. The probability of participating in the FSP increases in the case of single-parent families and for respondents who strongly agree with welfare helping people getting back on their feet when facing difficult situations. Table 21 shows results of the final stage of the selection model, for both groups: participants and non-participants in the Food Stamp Program. Statistically significant selectivity terms imply the expected selection bias. Again, food insecurity increases with age but at a decreasing

rate. Food insecurity is higher for people having a hard time paying for their utilities, mortgage or rent, and lower among homeowners. For those participating in food stamps, food insecurity is likely to be lower among the black population. For the other group, education higher than high school decreases the chances of being affected by food insecurity, while the persons that have not completed their high school tend to be more food insecure when all other things are held constant.

Crop Insurance

Crop insurance premiums for 2005, corresponding to each farm and level of insurance, were determined using the Risk Management Agency/USDA crop insurance premium estimator (www.rma.usda.gov). The APH (actual production history) for each farm was determined as the average of the yields for the time period for which data were available. Net returns were estimated for different coverage levels of MPCI and CRC insurance for both peanuts and cotton. A $0.52 per pound base price for cotton was assumed. Market price for cotton reflected historical prices for 1991-2003, indexed to 2005 using the producer price index. Also, to account for the seed value, the cotton price was increased by 11%. Since historical price for peanuts could not be used given the previous quota program, a constant market price of $0.215 per pound was used for peanuts, based on current prices. The RMA/USDA MPCI price guarantee for peanuts was $0.1785 per pound. As with MPCI, variation in coverage level is allowed under the policy. Buy-up coverage guarantees from 50% to 85% of APH yield for both peanuts and cotton.

Price elections used in this analysis are the 2005 price elections. Under the policy, variations in price election level from $0.52 and $0.1785 are allowed ranging from 55%

to 100% of the established price. Although these variations are allowed, only 100% price election was assumed for this analysis since farmers seldom select less than 100% price coverage.

As an example, calculations of net returns for Farm 3 are presented in Table 22 and Table 23 for cotton and Table 24 for peanuts. The net returns for the case without insurance (row named Return 'No insurance') are determined by subtracting the variable costs from the production value (harvest price times actual yield). In the cases of insurance, the net returns are reduced by the corresponding premium and increased by the indemnity payment when the crop insurance triggers. The formula used in these cases is the following:

Net return=harvest price × actual yield – variable costs - premium + indemnity payment

For the MPCI insurance, indemnity payments are calculated when the actual yield is below the yield guaranteed for the corresponding insurance level. Therefore, as seen in Table 22, in year 2000, insurance would have triggered for any coverage level between 50 and 80%. The indemnity payments are determined using the formula:

Indemnity payments=price guaranteed × (yield guaranteed – actual yield)

For the 50%MPCI case, the indemnity payment of $125.91 is determined from the price guaranteed (0.52 $/lb) times the difference between the yield guaranteed (292.14 lb/acre) and the actual yield (50lb/acre).

For the CRC insurance, the guaranteed revenue is determined based on the higher of either the guaranteed or the harvest price and the guaranteed (indemnified) yield. Therefore,

Guaranteed revenue= max{guaranteed price, harvest price}×guaranteed yield

Indemnities are paid when the production value drops below the guaranteed revenue using the following formula:

Indemnity payments= revenue guaranteed - market price × actual yield

Table 23 shows the net results for alternative Crop Revenue insurance coverage levels for cotton. For example, in the year 2000, the revenue guaranteed for 50%CRC in the amount of $172.07 is used in determining the indemnity payment of $142.62. In the same manner when triggered by low price or yield, indemnity payments were estimated for the other coverage levels of CRC for cotton.

Table 24 presents the calculations of net returns for Farm 3 for peanuts using the methodology explained above for the MPCI coverage. A guarantee of 50% of the assumed APH for peanuts would result in an indemnified yield of 1302.5 pounds of production. The year 2000's estimated production of 552 pounds would result in payment for lost production up to 50% of APH or on 750.5 pounds of production.

For this analysis, technical resources for the farm consisted of 1000 acres of land, rotation constraints (peanuts, if planted, must be in a 3 year rotation with cotton) and allowed deviations from target income. Allowed maximum deviation can be considered a proxy for risk. Allowing larger deviation allows more risky alternatives to enter the solution. Integers were used to ensure discrete choices on crop insurance options. Although peanuts were restricted by rotation, no restriction was put on cotton planting, continuous cotton being allowed. Sections of the models are presented in Table 25 and Table 26 for Farm 3 and Farm 8 respectively. The expected return for each activity in the objective function is the average return over the time period.

Linear Programming (Risk Neutral) Results

The linear programming model results are presented in Table 27. These results would be optimal for a risk neutral producer. Optimal insurance solutions were different among the nine farms reflecting their unique risk situation. The net returns above variable costs and land allocation are presented along with the insurance options. No insurance for both cotton and peanuts was the best option for five farms. The solutions for the remainder of the farms were mixed too. Three farms selected no insurance for at least one of the crops, while only one selected insurance for both crops. For Farm 3, the return maximizing solution consisted of 750 acres of cotton insured at 50% CRC and 250 acres of peanuts insured at 60% MPCI. Farm 2 can achieve an income of $269,976 by planting 750 acres of uninsured cotton and 250 acres of 50% MPCI peanuts. Optimal solution for Farm 8 consisted of 750 acres of uninsured cotton and 250 acres of peanuts at 60% MPCI, with an income of $44,855. For Farm 9, no insurance for peanuts (250 acres) and 50% level of CRC insurance (750 acres) for cotton entered in the solution, with a return of $156,309. As expected, in general, the farms with high coefficient of variation for crop yields selected crop insurance. Comparing cotton yields and the farms that selected insurance for cotton, one can see that farm 3 and farm 9, the only farms that selected cotton insurance, have very high cotton yield coefficient of variation. On the other hand, the farm with the highest coefficient of variation for cotton yield, Farm 8, did not opt for cotton insurance. In this case, even though insurance would trigger in year 2000 and 2002, over all no insurance for cotton is the best option.

Similarly for peanuts, farms 2, 3 and 8 that selected peanut insurance have high coefficients of variation (29.95%, 41.47% and 37.31%). Farm 4 and farm 6 do not require

insurance despite their relatively high peanut yield coefficient of variation since even though indemnity payments would be received in some years, over the entire time period, insurance would not pay for itself.

Different levels of target income and risk are assumed for the farms that required some sort of insurance for at least one of the crops. The target income levels selected are based on the maximum income attainable according to the risk neutral case presented in Table 27. Also, the highest risk level for each target income is selected such that the return matches the return from Table 27.

Target MOTAD Results

Risk, measured in dollars, represents the negative deviations of the optimal solution from the target income level. A set of efficient farm plans is obtained for alternative levels of risk, where risk is decreased from an arbitrarily large number. Risk-returns for alternative target income levels are presented in Table 28 through Table 30. As tolerated risk decreases it is necessary to reduce the target income to obtain a feasible solution.

Results of the Target-MOTAD analysis for farm 3, with a target income of $80,000 showed that risk is reduced by decreasing proportionally the land used for cotton and peanuts. Income above variable cost decreases as land remains idle. Same levels of insurance enter the solution when target income is reduced to $60,000 but with lower allowed deviations (Table 28).

For Farm 8, 750 acres of cotton with no insurance coverage and 250 acres of peanuts with 60% MPCI enter the solution with maximum net return of $44,855 given

the 6 years of production history. As allowed variation from target income is reduced, the models became unfeasible (Table 29).

For farm 9, considering a target income of $140,000 and allowed risk of $60,000 the solution consisted of 750 acres of cotton with 50% CRC and 250 acres of peanuts without insurance with an expected return of $156,309. As allowed deviations decreased, the insurance level for cotton increased from 50% CRC to 60% CRC, followed by a decrease in income to $152,624 (See Table 30).

Given the large number of farms that did not select crop insurance, an alternative policy of offering lower insurance premiums for crops with low coefficients of variation will be analyzed. That is, crops with a history of low variations would receive discounted premiums so that the premium rates paid by the farmer would be discounted by 75% for the crops with a coefficient of variation less than 25%. In that case, farmer 7 would take advantage of insurance offered and would increase his return to $56,093, by purchasing 75% MPCI insurance for his 250 acres of peanuts (Table 31).

Further, decreasing the premiums by 50% for coefficients of variation lower than 40% would cause farmer 2 to buy a higher level of insurance for peanuts (from 50% MPCI to 70% MPCI), increasing his expected income to $271,706. Also, Farmer 6 would increase his income above variable cost to $104,503, acquiring 75% MPCI for his 250 acres of peanuts. Income could increase for Farmer 8 to $46,894 by purchasing a higher level of insurance for peanuts (from 60% MPCI to 70% MPCI) (See Table 32).

Higher discounts (75%) for coefficient of variation lower than 40% would make crop insurance more attractive for several other farmers (See Table 33). Farmer 2 would start buying 75% CRC for his 750 acres of cotton and increase his coverage from 70%

MPCI to 75% MPCI for his 250 acres of peanuts. Farmer 4 and 7 would start buying high level of peanuts insurance, 80% MPCI and 75% MPCI respectively, while farmers 6 and 8 would increase the existing insurance levels to 80% MPCI.

VI. CONCLUSIONS

The social positions, poverty attributions, and welfare attitudes of food pantry directors were compared with those of the food-needy population. Highly religious and well-educated white women comprise the majority of pantry directors in Alabama and Mississippi. The religiosity of pantry directors is probably influenced by the fact that faith-based organizations undertake most food assistance in this region (Cashwell et al., 2004).

Directors, as a group, do not appear to differ strongly from the low-income food-needy population in these two states in terms of their attitudes toward welfare, unwed motherhood, or mothers working outside the home. No statement in our questionnaire about the causes of poverty received strong agreement or disagreement, leaving the possibility that directors believe poverty is caused by factors not mentioned in the survey or by a combination of factors.

Despite the generally wide-ranging views about the causes of poverty, few directors believed that food pantry use is caused by sheer bad luck (fatalistic attribution). Just over half of all directors saw physical illness or disability as a significant reason for food pantry use. An even larger percentage, about two-thirds of our respondents, saw low wages as a cause of food pantry use. Because pantry clients would not be viewed as responsible for either of these conditions, these responses appear to indicate a structural

attribution of poverty, which is coupled with a sympathetic or non-judgmental attitude toward their clients. At the same time, nearly half the directors supported the statement that many pantry clients are not honest about their needs, indicating that suspicion about client honesty is widespread in the two states covered by this sample. While a majority of directors believed that the clients who could work were trying to find work, a sizable minority of nearly one-third of respondents believed that there are too many people at the pantry who should be working. African American pantry directors were less likely than white directors to express suspicion of their clients' honesty, and more likely to view discrimination as a cause of poverty, although even among African American directors agreement with this statement was not high.

Additional research on the attitudes of pantry directors, and the ways in which those views influence the director-client relationship, is needed. Research in which pantry workers' attitudes about clients are matched explicitly with their clients' perception of either being stigmatized or respected would be useful to shed additional light on how stigma might influence pantry use. Given that the majority of food pantries are faith-based, policy makers need to reserve judgment on how directors' attitudes will impact the implementation of policies such as accessing provision under the "Charitable Choice" provision of 1996 Personal Responsibility and Work Opportunity Reconciliation Act (faith-based initiatives) or other food-related policies.

The divergence of directors' attitudes along racial lines may be especially important in regions of the country, such as the deep South, where providers of private-sector services are far more likely to be white than are their potential clients. Further, the apparent link between increased religious service attendance and lack of agreement with

societal failure as a cause of poverty among this population could use more analysis in this age of faith-based initiatives. If increasing government resources for the provision of anti-poverty services are to be given to faith-based organizations, then more needs to be known about the individuals running these organizations, especially in comparing their attitudes toward their clients' circumstances with those of employees in the public sector who have traditionally provided such services.

The relationship between food insecurity and Food Stamp Program participation was estimated. Higher education and home ownership significantly decreases the probability of being food insecure. Persons having rent, mortgage and utility problems are more likely to suffer food insecurity. The positive association between FSP participation and food insecurity can be explained by the fact that food insecurity drives people to Food Stamp Program participation. In addition to the ordered probit model, a selectivity model, meant to estimate food insecurity for each group of the population (participants and non-participants) was estimated. Education significantly affects the respondents' food insecurity level among the FSP non-participants.

Crop insurance was not risk reducing for five out of the nine farms included in this study at current costs. Only one farm selected insurance for both crops, while three farms used insurance for only one crop. In these cases higher levels of variation in cotton or peanuts yield were present. As allowed deviation from target income fell, insurance level increased and/or land became unused.

Very high premium discounts (50-75%) would need to be offered for crop insurance to become attractive for several farms in this study. In those cases where increased subsidies were offered, farmers would increase their level of insurance or

would start purchasing crop insurance. These additional discounts might be very unlikely to be practical given the already high level of subsidies for the crop insurance premium. The fact that crop insurance was not risk-reducing for the majority of the cotton-peanut farms analyzed in this study has implications for the existing program. This study implies that crop insurance is not an optimal risk reducing tool for all farms. Tying federal disaster assistance to participation in the existing crop insurance program may result in some risk-averse producers participating in crop insurance even though it would actually increase the risk they face in a typical year. CAT coverage might be a useful alternative for these producers as a disaster hedge even though our example from Farm 1, 4 and 5 would not have triggered CAT coverage in the past years.

REFERENCES

Alabama Cooperative Extension System. Alabama Farm Analysis Association Summary Report 2002. Auburn, AL: Auburn University, Department of Agricultural Economics and Rural Sociology, ANR-1218, October 2002

Adams, E., L. Grummer-Strawn, G. Chavez. "Food insecurity is associated with Increased Risk Obesity in California women" American Society for Nutritional Sciences (2003),

Alaimo, K., C. M. Olson, and E. A. Frongillo. "Family food insufficiency, but not low family income, is positively associated with dysthymia and suicide symptoms in adolescents." Journal of Nutrition 132(2002):719-725.

Alaimo, K., C. M. Olson, E. A. Frongillo, and R. R. Briefel. "Food insufficiency, family income, and health in U.S. preschool and school-aged children." American Journal of Public Health 91(2001):781-786.

Anderson, S. A. "Core indicators of nutritional state for difficult-to-sample populations." Journal of Nutrition, 120 (1990):1557-1600.

Babcock, B.A., C. E. Hart. "Influence of the Premium Subsidy in Farmers' Crop Insurance Coverage Decisions" Iowa State University, Department of Economics, Staff General Research Papers (Working paper) http://www.econ.iastate.edu/research/webpapers/paper_12297.pdf

Bartfeld, J. “Single mothers, emergency food assistance, and food stamps in the welfare reform age.” The Journal of Consumer Affairs, 37(2003): 283-303.

Bartkowski, John P., and Helen A. Regis. “Charitable Choices: Religion, Race, and Poverty in the Post-Welfare Era.” New York: New York University Press (2003).

Barnett, Barry J.; J. Roy Black; Yingyao Hu; Jerry R.Skees. “Is Area Yield Insurance Competitive with Farm Yield Insurance?” Journal of Agricultural and Resource Economics 30(2005): 285-301.

Bobo, Lawrence, and Ryan Smith. “Antipoverty Policy, Affirmative Action, and Racial Attitudes.” Confronting Poverty: Prescriptions for Change, edited by Sheldon H. Danziger, Gary D. Sandefur, and Daniel H. Weinberg. Cambridge, MA: Harvard University Press. (1994) Pp. 365-395

Bullock, Heather E. “Attributions for Poverty: A Comparison of Middle Class and Welfare Recipient Attitudes.” Journal of Applied Social Psychology 29(1999): 2059-2082.

Bullock, Heather E. 2004. “From the Front Lines of Welfare Reform: An Analysis of Social Worker and Welfare Recipient Attitudes.” The Journal of Social Psychology 144: 571-588.

Bullock, Heather E., Wendy R. Williams, and Wendy M. Limbert. 2003. “Predicting Support for Welfare Policies: The Impact of Attributions and Beliefs about Inequality.” Journal of Poverty 7: 35-56.

Butler, J.S., J.C. Ohls, B. Posner. “The effect of the Food Stamp Program in the nutrient intake of the eligible elderly”. The Journal of Human Resources 20(1985):405-420

Carriker, G.L., J.R.Williams, G.A. Barnaby, J.K. Black . “Risk Reduction under an Area Yield-Based Crop Insurance Plan for Southcentral Kansas Winter Wheat” Department of Agricultural Economics Staff Papers. Kansas State University (1990): 90-9

Carriker, G.L., J.R.Williams, G.A. Barnaby, J.K. Black. “Yield and Income Risk Reduction under Alternative Crop Insurance and Disaster Assistance Design” Western Journal of Agricultural Economics. 16(1991):238-50.

Cashwell, Suzie T., J. P. Bartkowski, P. A. Duffy, V. Casanova, J. J. Molnar and M. Irimia-Vladu. "What Do Private Food Agency Directors Know about Charitable Choice?" Journal of Sociology and Social Welfare 31(2004): 157-77.

Clancy, Katherine L., Jean Bowering, and Janet Poppendieck. "Characteristics of a Random Sample of Emergency Food Program Users in New York: I. Food Pantries." American Journal of Public Health 81 (1991): 911-917.

Coley, Rebekah Levine, Ann M. Kuta, and P. Linday Chase-Lansdale. “An Insider View: Knowledge and Opinions of Welfare Reform from African American Girls in Poverty.” Journal of Social Issues 56(2000): 707-726.

Curtis, K.A. 1997. Urban poverty and the social consequences of private food aid. Journal of Urban Affairs 19(2): 207-226.

Daponte, B., G. Lewis, S. Sanders, L. Taylor. "Food Pantry Use among Low-Income Households in Allegheny County, Pennsylvania." Journal of Nutrition Education, 30(1998): 50-57.

Daponte, B.O., S. Sanders, L. Taylor. "Why Do Low-Income Households not Use Food Stamps? Evidence from an Experiment". The Journal of Human Resources 34(1999): 72-83.

Duffy, P., J. Molnar, L Claxton, G. Hallmark, C. Bailey, and S. Miklouchich.. "Private Food Assistance in East Alabama: Issues of Access and Need." Starkville, MS: Southern Rural Development Center, Project Report. (1999) http://ext.msstate.edu/srdc/activities/duffy_finalreport.htm

Emerson, Michael O., Christian Smith, and David Sikkink. "Equal in Christ, but Not in the World: White Conservative Protestants and Explanations of Black-White Inequality." Social Problems 46(1999): 398-417.

Feagin, Joe. "Subordinating the Poor: Welfare and American Beliefs". Englewood Cliffs, N.J.: Prentice-Hall (1975).

Figlio, D.N., C, Gundersen, and J.Ziliak. "The Effect of the Macroeconomy and Welfare Reform on Food Stamp caseloads." American Journal of Agricultural Economics 82(2000): 635-641.

Frongillo, E., B. Rauschenbach, C. Olson, A. Kendall, and A. Colmenares, "Estimating the prevalence of hunger and food insecurity: the validity of questionnaire based measures for the identification of households." Madison, WI: Institute for Research on Poverty, Discussion Paper No. 1083-96, (1996).

Goodwin B.K., A.M. Featherstone, K. Zeuli. "Producer Experience, Learning by Doing, and Yield Performance " American Journal of Agricultural Economics. 84(2002): 660-678.

Goodwin, Barry K.; Vandeveer, Monte L.; Deal, John L..“An Empirical Analysis of Acreage Effects of Participation in the Federal Crop Insurance Program.” American Journal of Agricultural Economics 86(2004):1058-77.

Halcrow, H.G. “Actuarial Structures for Crop Insurance” Journal of Farm Economics 21(1949): 418-43

Hamelin, A., J. Habicht, and M. Beaudry. “Food insecurity: consequences for the household and broader implications.” Journal of Nutrition 129(1999):525S-528S.

Hilton, Karla. “Close down the food banks.” Canadian Dimension 27(1993), 22-23.

Hunt, Matthew O. “The Individual, Society, or Both? A Comparison of Black, Latino, and White Beliefs about the Causes of Poverty.” Social Forces 75(1996): 293-322.

Kluegel, James R., and Eliot R. Smith. “Beliefs about Inequality: Americans’ View of What is and What Ought to Be” New York: Aldine de Gruyter(1986).

Maddala, G S. “Limited dependent and qualitative variables in econometrics” Cambridge, England: Cambridge University Press. (1983) 260-263.

Mahul, O. “Optimum Area Yield Crop Insurance.” American Journal of Agricultual Economics 81(1999):75-82.

Miranda, M.J.“Area-Yield Crop Insurance Reconsidered”. American Journal of Agricultural Economics 73(1991): 233-242

Molnar, J., P. Duffy, L. Claxton, and C. Bailey. “Private food assistance in a small metropolitan area: urban resources and rural needs.” Journal of Sociology and Social Welfare 28(2001):187-209.

Murphy, J., C. Wehler, M. Pagano, M. Little, R. Kleinman, and M. Jellinek. "Relationship between hunger and psychosocial functioning in low-income American children." Journal of the American Academy of Child and Adolescent Psychiatry 37(1998): 163-170

Ohls, James C. and H. Beebout. "The Food Stamp Program: Design Tradeoffs, Policy and impacts." A Mathematica Policy Research Study. (1993) Washington, DC: Urban Institute Press.

Poppendieck, J. "Sweet charity?: Emergency food and the end of entitlement." (1998) New York: Viking.

Rhode Island Department of Health. "Assessing the prevalence of hunger and food insecurity in Rhode Island, summary report." Providence, RI, Department of Public Health (1999), www.health.state.ri.us/family/rifsmp/hunger99.htm.

Risk Management Agency www.rma.usda.gov Crop insurance premium calculator

Rose, D., C. Gunderson, and V. Olivera, "Socio-economic determinants of food insecurity in the United States: evidence from the SIPP and CSFII datasets." Washington, D.C.: USDA, ERS, Technical Bulletin, No. 1869, (1998).

Schwartz, Sanford and Margaret M. Robinson. "Attitudes toward Poverty during Undergraduate Education." Journal of Teaching Social Work Education 27(1991): 290-296

Seccombe, Karen. "So You Think I Drive a Cadillac? Welfare Recipients' Perspectives on the System and Its Reform." Needham Heights (1999), MA: Allyn & Bacon.

Sherrick, Bruce J.; et al. "Factors Influencing Farmers' Crop Insurance Decisions." American Journal of Agricultural Economics 86(2004):103-114

Skees, J.R. and M.R. Reed. “Rate Making for Farm-Level Crop Insurance: Implications for Adverse Selection.” American Journal of Agricultural Economics 68(1986):653-59.

Tauer, LW . “Target MOTAD.” American Journal of Agricultural Economics 65(1983):606–610

Wang, Kevin, David Cantor, and Nancy Vaden-Kiernan. “The 1999 NSAF Questionnaire.” Washington, D.C.: The Urban Institute (2000). Retrieved from http://www.urban.org/UploadedPDF/1999_Methodology_1.pdf June 28, 2005.

Wilde, P., P. Cook, C. Gundersen, M. Nord, and L. Tiehen, “The Decline in Food Stamp Program Participation in the 1990’s.” Food Assistance and Nutrition Research Report No. 7. Washington, DC: 2000, USDA, ERS.

Wilde, P and M. Nord. “The Effect of Food Stamps on Food Security: A Panel Data Approach.” Review of Agricultural Economics 27(2005):425-432.

Williams, J.R., G.L. Carriker, G.A. Barnaby, J.K. Harper. “Crop Insurance and Disaster Assistance Design for Wheat and Grain Sorghum.” American Journal of Agricultural Economics 75(1993):435-447

Table 1 Food Insecurity by Region, 2002

		Food Insecure		
	Food Secure	Total Insecure	Without hunger	With hunger
Category	%	%	%	%
Region:				
Northeast	90.8	9.2	6.3	3.0
Midwest	90.4	9.6	6.4	3.3
South	87.6	12.4	8.8	3.6
West	87.9	12.1	8.1	3.9

Source: Calculated by ERS using data from the December 2002 Current Population Survey Food Security Supplement

Table 2 Food Stamp Program Participation and Benefit Per Person From 1969 to 2005

Fiscal Year	Average Participation (thousands)	Average Benefit per Person (dollars)
1969	2,878	06.63
1970	4,340	10.55
1971	9,368	13.55
1972	11,109	13.48
1973	12,166	14.60
1974	12,862	17.61
1975	17,064	21.40
1976	18,549	23.93
1977	17,077	24.71
1978	16,001	26.77
1979	17,653	30.59
1980	21,082	34.47
1981	22,430	39.49
1982	21,717	39.17
1983	21,625	42.98
1984	20,854	42.74
1985	19,899	44.99
1986	19,429	45.49
1987	19,113	45.78
1988	18,645	49.83
1989	18,806	51.85
1990	20,049	58.96
1991	22,625	63.87
1992	25,407	68.57
1993	26,987	67.95
1994	27,474	69.00
1995	26,619	71.27
1996	25,543	73.21
1997	22,858	71.27
1998	19,791	71.12
1999	18,183	72.27
2000	17,194	72.62
2001	17,318	74.81
2002	19,096	79.67
2003	21,259	83.90
2004	23,858	86.00
2005	25,682	92.69

Source: United States Department of Agriculture

Table 3 Food Assistance Participation across Regions by Poverty Level

Participation	Northeast	Midwest	South	West	Total
At or Below 125% Poverty Level					
Food Stamp	43.1%	31.9%	33.1%	33.0%	34.5%
Food Pantry	11.8%	13.4%	8.7%	14.0%	11.2%
At or Below 185% Poverty Level					
Food Stamp	24.2%	16.5%	19.6%	18.4%	19.5%
Food Pantry	8.1%	7.4%	5.8%	10.2%	7.4%

Data Source: CPS, 1999

Table 4 Gross and Net Monthly Income Limits of Food Stamp Participants

People in Household	Gross Monthly Income Limits ($)	Net Monthly Income Limits ($)
1	1,037	798
2	1,390	1,070
3	1,744	1,341
4	2,097	1,613
5	2,450	1,885
6	2,803	2,156
7	3,156	2,428
8	3,509	2,700
Each additional person	354	272

Source: Maryland Department of Human Resources

Table 5 Maximum Monthly Allotment of Food Stamp Benefits

People in Household	Maximum monthly allotment
1	$152
2	$278
3	$399
4	$506
5	$601
6	$722
7	$798
8	$912

Source USDA, Food and Nutrition Service, 2006

Table 6 Cotton Yields, lbs./Acre

Year	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8	Farm 9
1991	1292	1183							
1992	911	971							
1993	706	646							
1994	669	1106							
1995	629	475							
1996	911	965							
1997	1021	952	732	509					
1998	563	442	591	334	416	631	203	624	40
1999	799	792	580	482	977	781	510	625	811
2000	780	360	50	525	663	537	365	111	670
2001	891	1033	760	750	811	549	732	1082	731
2002	734	701	429	450	596	323	787	300	527
2003			948	505	696	800	723	605	921
mean	826	802	584	508	693	604	553	558	617
S.D.	198.22	275.53	287.12	124.62	190.59	177.17	234.69	332.27	312.05
Min	563	360	50	334	416	323	203	111	40
Max	1292	1183	948	750	977	800	787	1082	921
C.V.	24.01	34.35	49.14	24.54	27.50	29.36	42.41	59.56	50.60

Table 7 Peanuts Yields, lbs./Acre

Year	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8	Farm 9
1991	2737	3298							
1992	3251	3718							
1993	3101	2253							
1994	2826	3600							
1995	2772	3500							
1996	3196	4595							
1997	3423	3233	2976	2179					
1998	4064	3352	2708	2929	3567	3987	2701	2725	4404
1999	3294	3452	2716	2869	4306	2585	2756	2722	3696
2000	2911	772	552	1305	4094	2112	1439	1814	3827
2001	3678	4291	2817	1519	4298	4122	2977	3417	4116
2002	3536	4052	2286	1655	2931	1499	2999	896	2882
2003			4180	2861	2894	3234	2912	2558	3905
Mean	3232	3343	2605	2190	3682	2923	2631	2355	3805
S.D	400.82	1001.11	1080.33	771.63	653.72	1045.58	595.90	878.86	515.72
Min	2737	772	552	1305	2894	1499	1439	896	2882
Max	4064	4595	4180	2929	4306	4122	2999	3417	4404
C.V.	12.40	29.95	41.47	35.24	17.76	35.77	22.65	37.31	13.55

Table 8 Characteristics of People Suffering from Severe Food Insecurity versus Others

Variables	Food Insecure persons	Others
RACE**		
Black	34%	18%
White	63%	79%
Other	3%	3%
	n=1519	n=9540
AGE**		
18-24	13%	14%
25-34	25%	24%
35-44	31%	25%
45-54	21%	21%
55-65	10%	16%
	n=1516	n=9532
FAMILY INCOME AS % OF POVERTY**		
Less than 50%	14%	5%
50% to under 100%	20%	7%
100% to under 150%	19%	8%
150% to under 200%	11%	8%
200% to under 300%	16%	17%
300% or more	20%	55%
	n=1519	n=9540
CASH WELFARE RECEIPT**		
Receive cash welfare	4%	1%
Do not receive	96%	99%
	n=1518	n=9536
FOOD STAMP USE**		
Food stamps	16%	3%
No food stamps	84%	97%
	n=1517	n=9537
NEGATIVE BEHAVIOR CHILDREN 6-11**		
No Negative behavior	90%	95%
Negative behavior	10%	5%
	n=409	n=2407
NEGATIVE BEHAVIOR CHILDREN 11-17 **		
No negative behavior	82%	92%
Negative behavior	18%	8%
	n=429	n=2521

**Indicates significant difference at the 0.001 level. Percentage and significance (χ^2 test) are based on weighted values. Reported Number is actual number of observations

Source: Based on 1999 NSAF data

Table 9 Characteristics of Directors versus Food Needy Population

		Pantry Directors	Food Needy Population	χ^2
Race	Black	37%	48%	15.71**
	White	63%	50%	
	Other	0%	2%	
		n=215	n=580	
Education	Less than HS	4%	45%	339.43**
	HS Graduate	17%	24%	
	Some College/ Tech School	35%	20%	
	College Graduate	27%	7%	
	Graduate Degree	17%	4%	
		n= 231	n=580	
Church Attendance	Never	2%	16%	232.39**
	Occasionally	3%	22%	
	A few times a month	9%	24%	
	Once a week or more	86%	38%	
		n= 231	n=580	

Percentage and χ^2 for Food Needy Population based on weighted values
** Significant at 1% level
Source: Based on 1999 NSAF data and 2002 Food Pantry Director Survey

Table 10 Attitudes of Directors versus Food Needy Population in the South

	Pantry Directors	Food Needy Population	χ^2
"Welfare helps people get on their feet when facing difficult situations such as unemployment, a divorce, or a death in the family."			
Agree	76%	75%	0.35
Other	24%	25%	
	n= 232	n=580	
"Welfare makes people work less than they would if there wasn't a welfare system."			
Agree	48%	68%	43.42**
Other	52%	32%	
	n= 231	n=580	
"People who want children ought to get married."			
Agree	77%	72%	3.35*
Other	23%	28%	
	n= 228	n=580	
"When children are young, mothers should not work outside the home."			
Agree	32%	49%	27.31**
Other	68%	51%	
	n= 228	n=580	

**Significant at 1% level; *Significant at 10% level
"Agree" indicates a response of "Agree" or "Agree Strongly." "Disagree" indicates a response of "Disagree" or "Disagree Strongly" or (for directors) "Unsure."
Percentage and Chi-square for Food Needy Population based on weighted values.
Source: Based on 1999 NSAF data and 2002 Food Pantry Director Survey

Table 11 Responses of Food Needy Population to Attitudinal Questions by Region

Attitudinal Questions[a]	Midwest	Northwest	South	West	χ^2
Welfare helps people get on their feet	76%	81%	82%	81%	15.20**
Agree	24%	19%	18%	19%	
Other	n= 826	n=682	n=1007	n=772	
Welfare makes people work less	63%	64%	71%	68%	21.89**
Agree	37%	36%	29%	32%	
Other	n= 818	n=677	n=1006	n=759	
People who want children should marry	63%	62%	73%	72%	50.93**
Agree	37%	38%	27%	28%	
Other	n= 826	n=688	n=1024	n=790	
Mothers of young children should not work	57%	61%	54%	69%	66.8**
Agree	43%	39%	46%	31%	
Other	n= 831	n=690	n=1028	n=787	

[a]See Table 10 for exact wording
**Significant at 1% level
Percentage and Chi-Square for Food Needy Population based on weighted values
"Agree" indicates a response of "Agree" or "Agree Strongly".
"Disagree" indicates a response of "Disagree" or "Disagree Strongly"
Source: Based on 1999 NSAF data

Table 12 Director's Attitudes about Poverty

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	No Response
Poverty is caused by prejudice and discrimination against minority individuals.	3.4%	11.9%	14.0%	42.2%	24.7%	3.8%
Poverty is caused by the failure of society to provide good schools for many Americans.	3.8%	19.6%	14.9%	44.3%	14.9%	2.5%
Poverty is caused by the lack of ability and talent among poor people.	3.4%	23.4%	8.9%	41.7%	20.0%	2.6%
Poverty is caused by loose morals and drunkenness.	2.1%	8.5%	6.4%	40.9%	40.4%	1.7%
Generally speaking, we are spending too little money on welfare programs in this country.	7.7%	19.1%	24.3%	35.3%	11.5%	2.1%
N = 235						

Source: Based on 2002 Food Pantry Director Survey

Table 13 Director's Attitudes about Food Pantry Clients

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	No Response
There are too many people using food pantries who should be working.	11.5%	20.5%	17.0%	37.0%	12.3%	1.7%
Many people getting food are not honest about their need.	11.9%	37.0%	17.5%	28.1%	3.0%	2.5%
Food pantry use is often caused by the sickness and physical handicaps of poor people.	9.3%	43.0%	11.1%	28.5%	6.4%	1.7%
People who use food pantries are just having bad luck.	0.0%	18.3%	17.0%	44.7%	15.7%	4.3%
Most people who use food pantries and who are able to work are trying to find jobs so they can support themselves.	8.9%	50.6%	17.9%	17.5%	2.6%	2.5%
Food pantry use is caused by low wages in some businesses and industries.	11.5%	54.9%	12.3%	14.5%	2.1%	4.7%
N = 235						

Source: Based on 2002 Food Pantry Director Survey

Table 14 Correlations of Responses to Questions in Table 12 and Table 13

Item		4-1	4-2	4-3	4-4	4-5	5-1	5-2	5-3	5-4	5-5	5-6
4-1	Poverty is caused by prejudice and discrimination against minority individuals.	1										
4-2	Poverty is caused by the failure of society to provide good schools for many Americans.	0.48**	1									
4-3	Poverty is caused by a lack of ability and talent among poor people.	-0.12*	-0.15*	1								
4-4	Poverty is caused by loose morals and drunkenness.	-0.05	0.04	0.34**	1							
4-5	Generally speaking, we are spending too little money on welfare.	0.23**	0.20**	0.07	0.05	1						
5-1	There are too many people using food pantries who should be working.	0.05	0.11	0.15**	0.32**	0.16**	1					
5-2	Many people getting food are not honest about their needs.	-0.04	0.06	0.14**	0.28**	0.16**	0.55**	1				
5-3	Food pantry use is often caused by the sick-ness and physical handicaps of poor people.	0.06	0.11	-0.22**	-0.18**	-0.10	-0.04	-0.10	1			
5-4	People who use food pantries are just having bad luck.	0.11	0.16**	-0.06	-0.06	0.14**	-0.02	-0.05	0.12*	1		
5-5	Most people who use food pantries and who are able to work are trying to find jobs.	0.16**	0.24**	0.10	0.30**	0.25**	0.38**	0.26**	-0.08	0.06	1	
5-6	Food pantry use is caused by low wages in some businesses and industries.	0.27**	0.21**	-0.03	0.03	0.08	0.04	-0.07	0.20**	0.02	0.15**	1

Numerical coding (1 to 5) used in correlation calculations.
Items 4-3, 4-4 , 5-1 and 5-2 coded in reverse order from other items.
*Significant at 10% level; **Significant at 5% level
Source: Based on 2002 Food Pantry Director Survey

Table 15 Factor Loadings

Item		Factor1	Factor2
5-1	Many pantry clients should be working	0.71404	-0.10039
5-5	Pantry clients able to work try to find jobs	0.68652	0.15826
5-2	Many pantry clients are not honest about their needs	0.63915	-0.22782
4-4	Poverty is caused by loose morals	0.60683	-0.29992
4-5	Spending too little on welfare	0.45126	0.27567
4-3	Poverty is caused by lack of ability & talent	0.37186	-0.46212
4-2	Poverty is caused by bad schools	0.27270	0.71093
4-1	Poverty is caused prejudice & discrimination	0.22337	0.70885
5-6	Poverty is caused low wages in some industries	0.13847	0.51338
5-4	Pantry clients are just having bad luck	0.00902	0.33285
5-3	Poverty is caused sickness & handicaps	-0.22569	0.39085

Source: Based on 2002 Food Pantry Director Survey

Table 16 Factor Analysis Regressions

	Factor 1 "Suspicion"	Factor 2 "Non-Societal Failure"
Intercept	0.34	-0.47
Race	-0.58**	-0.36*
Education	-0.05	-0.10*
Income	-0.02	0.11**
Female	-.17	-0.02
Metro	0.21	0.07
Church	0.06	0.20*
F	3.01**	3.54**
R-square	0.1	0.11

*Significant at 5% level; **Significant at 10% level

Notes:

i. Race is a binary variable with 1 indicating "African American," 0 otherwise.
ii. Female is a binary variable with 1 indicating female, 0 otherwise.
iii. Education is treated as a continuous variable with higher values corresponding to higher education.
iv. Income is coded as a continuous variable, by categories.
v. Metro is a binary variable with a value of 1 if the pantry is located in an SMA or larger city.
vi. Church is coded as a continuous variable for the number of times per month the director attends church.

Because of the coding of responses, a negative coefficient in the regression for Factor 2 indicates a higher level of agreement that societal failure causes poverty.

Source: Based on 2002 Food Pantry Director Survey

Table 17 Director Attitudes by Race

	African-American	White	χ^2
Welfare makes people work less than they would if there wasn't a welfare system.			
Agree	37%	55%	6.42*
Other	63%	45%	
People who want children ought to get married.			
Agree	67%	83%	6.96**
Other	32%	17%	
Poverty is caused by prejudice and discrimination against minority individuals.			
Agree	29%	6%	19.82**
Other	71%	94%	
Generally speaking, we are spending too little money on welfare programs in this country.			
Agree	39%	20%	8.77**
Other	61%	80%	
There are too many people using food pantries who should be working			
Agree	19%	41%	10.65***
Other	81%	59%	
Many people getting food are not honest about their need.			
Agree	42%	55%	3.31*
Other	58%	45%	
Food pantry use is often caused by the sickness and physical handicaps of poor people.			
Agree	37%	63%	13.67***
Other	63%	37%	
People who use food pantries are just having bad luck.			
Agree	10%	26%	7.18***
Other	90%	74%	
Most people who use food pantries and who are able to work are trying to find jobs so they can support themselves			
Agree	72%	55%	5.93**
Other	28%	45%	
N	80	135	

***Significant at 1% level; **Significant at 5% level; *Significant at 10% level
"Agree" indicates a response of "Agree" or "Agree Strongly." "Other" indicates a response of "Disagree", "Disagree Strongly" or "Unsure"
Source: Based on 2002 Food Pantry Director Survey

Table 18 Characteristics and Hardships of People Below Poverty Level

Characteristics or Hardships	Proportion %
Race	
White, non Hispanics	59%
Black	27%
Hispanics	14%
Income	
0-50% of poverty level	38%
50-100% of poverty level	62%
Education	
Less than high school	52%
High school	15%
More than high school	33%
Family structure	
Single with no child	29%
Single with child(ren)	45%
Married with no children	8%
Married with child(ren)	18%
Homeowner	
Yes	40%
No	60%
Problems with mortgage, rent and utilities	
Yes	29%
No	71%
Food insecure	
Yes	54%
No	46%
Food Stamp Program participation	
Yes	30%
No	70%
N=4952	

Source: Based on 2002 NSAF data

Table 19 Ordered Probit Model for the Effect of Food Stamps on Food Insecurity

Independent variables	Coefficient	S.E.
Intercept	-1.555264	0.174
Age	0.062717**	0.008
Age squared	-0.000679**	0.000
Less than High School[a]	0.070070	0.046
More than High School	-0.194942**	0.050
Married with no child(ren)[b]	-0.065871	0.081
Single with child(ren)	0.158868**	0.050
Single without child(ren)	0.285584**	0.054
Hispanic	0.142087	0.053
Black	0.001119**	0.042
Rent, mortgage and utilities problems	1.002868**	0.039
Homeowner	-0.342122**	0.038
FSP Participation	0.265334**	0.039
N=4516		

**Significant at 1% level
[a]Omitted category is "High School Education"
[b]Omitted category is "Married with Children"
Dependent variable is food insecurity level, where 0 is food secure and 1, 2, and 3 represent increasing levels of food insecurity
Source: Based on 2002 NSAF data

Table 20 Selection Model First Stage Probit

Independent variables	Coefficient	S.E.
Intercept	-0.767568**	0.051125
Attitude towards welfare[a]	0.184572**	0.048571
Income less than 50% poverty	0.050367	0.042704
Married with no child(ren)[b]	-0.753516**	0.111536
Single with child(ren)	0.647217**	0.056953
Single without child(ren)	-0.105382*	0.062824
N=4516		

**Significant at 1% level; *Significant at 10% level
Dependent variable is participation in FSP which takes values 1 if the respondent participates in FSP and 0 otherwise.
[a] Takes value 1 if the respondent strongly agrees that welfare helps people getting back on their feet and 0 otherwise;
[b] Omitted category is "Married with children"
Source: Based on 2002 NSAF data

Table 21 Results for the Final Stage of the Selection Model

Independent variables	FSP participants	FSP non-participants
Intercept	-0.937418**	-1.435000**
	(0.336068)	(0.194062)
Age	0.051969**	0.054511**
	(0.015962)	(0.009902)
Age squared	-0.000545**	-0.000591**
	(0.000194)	(0.000119)
Less than High School [a]	-0.098136	0.172421**
	(0.077128)	(0.058983)
More than High School	-0.095694	-0.181032**
	(0.89079)	(0.061449)
Black	-0.119294*	0.070414
	(0.069372)	(0.055038)
Hispanic	0.064245	0.086730
	(0.086597)	(0.068626)
Rent, mortgage and utilities problems	0.803383**	1.039116**
	(0.063284)	(0.057341)
Homeowner	-0.222682**	-0.417348**
	(0.070614)	(0.047499)
Selectivity term	0.218176*	-0.313751**
	(0.117290)	(0.017863)
N	1378	2939

Dependent variable is food insecurity level, where 0 is food secure and 1, 2, and 3 represent increasing levels of food insecurity
**Significant at 1% level; * significant at 10% level;
[a]Omitted category is "High School Education"
Source: Based on 2002 NSAF data

Table 22 Estimated Net Returns for Selected Years for Farm 3 for Cotton (No Insurance, 50% MPCI – 85% MPCI)

Year		2000	2001	2002	2003
Actual Yield	lb/acre	50	760	429	948
Average Yield (APH)	lb/acre	584.29	584.29	584.29	584.29
Market Price (2005 dollars)	$/lb	0.589	0.517	0.533	0.788
Variable Cost (2005 dollars)	$/acre	315	315	315	315
Return 'No Insurance'	$/acre	-285.55	77.92	-86.34	432.02
Price guaranteed	$/lb	0.52	0.52	0.52	0.52
Yield guaranteed 50%APH	lb/acre	292.14	292.14	292.14	292.14
Premium 50%MPCI	$/acre	18.51	18.51	18.51	18.51
Insurance Triggers?		YES	NO	NO	NO
Indemnity payment	$/acre	125.91	-	-	-
Return 50%MPCI	$/acre	-178.15	59.41	-104.85	413.51
Yield guaranteed 55%APH	lb/acre	321.36	321.36	321.36	321.36
Premium 55%MPCI	$/acre	24.06	24.06	24.06	24.06
Insurance Triggers?		YES	NO	NO	NO
Indemnity payment	$/acre	141.11	-	-	-
Return 55%MPCI	$/acre	-168.50	53.86	-110.40	407.96
Yield guaranteed 60%APH	lb/acre	350.57	350.57	350.57	350.57
Premium 60%MPCI	$/acre	29.61	29.61	29.61	29.61
Insurance Triggers?		YES	NO	NO	NO
Indemnity payment	$/acre	156.30	-	-	-
Return 60%MPCI	$/acre	-158.86	48.31	-115.95	402.41
Yield guaranteed 65%APH	lb/acre	379.79	379.79	379.79	379.79
Premium 65%MPCI	$/acre	41.51	41.51	41.51	41.51
Insurance Triggers?		YES	NO	NO	NO
Indemnity payment	$/acre	171.49	-	-	-
Return 65%MPCI	$/acre	-155.57	36.41	-127.85	390.51
Yield guaranteed 70%APH	lb/acre	409.00	409.00	409.00	409.00
Premium 70%MPCI	$/acre	54.51	54.51	54.51	54.51
Insurance Triggers?		YES	NO	NO	NO
Indemnity payment	$/acre	186.68	-	-	-
Return 70%MPCI	$/acre	-153.38	23.41	-140.85	377.51
Yield guaranteed 75%APH	lb/acre	438.21	438.21	438.21	438.21
Premium 75%MPCI	$/acre	80.93	80.93	80.93	80.93
Insurance Triggers?		YES	NO	YES	NO
Indemnity payment	$/acre	201.87	-	4.79	-
Return 75%MPCI	$/acre	-164.61	-3.01	-162.48	351.09
Yield guaranteed 80%APH	lb/acre	467.43	467.43	467.43	467.43
Premium 80%MPCI	$/acre	103.43	103.43	103.43	103.43
Insurance Triggers?		YES	NO	YES	NO
Indemnity payment	$/acre	217.06	-	19.98	-
Return 80%MPCI	$/acre	-171.92	-25.51	-169.79	328.59
Yield guaranteed 85%APH	lb/acre	496.64	496.64	496.64	496.64
Premium 85%MPCI	$/acre	165.09	165.09	165.09	165.09
Insurance Triggers?		YES	NO	YES	NO
Indemnity payment	$/acre	232.25	-	35.17	-
Return 85%MPCI	$/acre	-218.39	-87.17	-216.26	266.93

MPCI= Multi Peril Crop Insurance

Table 23 Estimated Net Returns for Farm 3 for Cotton (50% CRC through 85% CRC in 5% intervals)

Premium 50%CRC	$/acre	20.25	20.25	20.25	20.25
Revenue guaranteed 50%CRC*	$/acre	172.07	151.91	155.71	230.21
Insurance triggers?		YES	NO	NO	NO
indemnity_C_50%CRC	$/acre	142.62	0	0	0
Return 50%CRC	$/acre	-163.18	57.67	-106.59	411.77
Premium 55%CRC	$/acre	26.38	26.38	26.38	26.38
Revenue guaranteed 55%CRC	$/acre	189.28	167.11	171.28	253.23
Insurance triggers?		YES	NO	NO	NO
indemnity_C_55%CRC	$/acre	159.83	0	0	0
Return 55%CRC	$/acre	-152.10	51.54	-112.72	405.64
Premium 60%CRC	$/acre	32.47	32.47	32.47	32.47
Revenue guaranteed 60%CRC	$/acre	206.49	182.30	186.86	276.25
Insurance triggers?		YES	NO	NO	NO
indemnity_C_60%CRC	$/acre	177.04	0	0	0
Return 60%CRC	$/acre	-140.98	45.45	-118.81	399.55
Premium 65%CRC	$/acre	45.46	45.46	45.46	45.46
Revenue guaranteed 65%CRC	$/acre	223.69	197.49	202.43	299.27
Insurance triggers?		YES	NO	NO	NO
indemnity_C_65%CRC	$/acre	194.24	0	0	0
Return 65%CRC	$/acre	-136.77	32.46	-131.80	386.56
Premium 75%CRC	$/acre	59.51	59.51	59.51	59.51
Revenue guaranteed 70%CRC	$/acre	240.90	212.68	218.00	322.29
Insurance triggers?		YES	NO	NO	NO
indemnity_C_75%CRC	$/acre	211.45	0	0	0
Return 75%CRC	$/acre	-133.61	18.41	-145.85	372.51
Premium 75%CRC	$/acre	87.82	87.82	87.82	87.82
Revenue guaranteed 75%CRC	$/acre	258.11	227.87	233.57	345.31
Insurance triggers?		YES	NO	YES	NO
indemnity_C_75%CRC	$/acre	228.66	0	4.91	0
Return 75%CRC	$/acre	-144.71	-9.90	-169.25	344.20
Premium 80%CRC	$/acre	118.75	118.75	118.75	118.75
Revenue guaranteed 80%CRC	$/acre	275.32	243.06	249.14	368.33
Insurance triggers?		YES	NO	YES	NO
indemnity_C_80%CRC	$/acre	245.87	0	20.48	0
Return 80%CRC	$/acre	-158.44	-40.83	-184.61	313.27
Premium 85%CRC	$/acre	178.26	178.26	178.26	178.26
Revenue guaranteed 85%CRC	$/acre	292.52	258.25	264.71	391.36
Insurance triggers?		YES	NO	YES	NO
indemnity_C_85%CRC	$/acre	263.07	0	36.05	0
Return 85%CRC	$/acre	-200.74	-100.34	-228.55	253.76

*Actual Yield, Average Yield (APH), Market Price and Variable costs used in calculations are the same as in Table 22.

CRC = Crop Revenue Coverage

Table 24 Estimated Net Returns for Selected Years for Farm 3 for Peanuts (No insurance and 50% MPCI through 85% MPCI)

Year		2000	2001	2002	2003
Actual Yield	lb/acre	552	2817	2286	4180
Average Yield(APH)	lb/acre	2605	2605	2605	2605
Market Price	$/lb	0.215	0.215	0.215	0.215
Variable Cost	$/acre	400	400	400	400
Price Guaranteed	$/lb	0.1785	0.1785	0.1785	0.1785
Return "No insurance"	$/acre	-281.32	205.66	91.49	498.7
Premium 50%MPCI	$/acre	9.12	9.12	9.12	9.12
50% of APH	lb/acre	1302.5	1302.5	1302.5	1302.5
Insurance Triggers?		YES	NO	NO	NO
Return 50%MPCI	$/acre	-156.48	196.54	82.37	489.58
Premium 55%MPCI	$/acre	11.86	11.86	11.86	11.86
55% of APH	lb/acre	1432.75	1432.75	1432.75	1432.75
Insurance Triggers?		YES	NO	NO	NO
Return 55%MPCI	$/acre	-135.97	193.80	79.63	486.84
Premium 60%MPCI	$/acre	14.59	14.59	14.59	14.59
60% of APH	lb/acre	1563.00	1563.00	1563.00	1563.00
Insurance Triggers?		YES	NO	NO	NO
Return 60%MPCI	$/acre	-115.45	191.07	76.90	484.11
Premium 65%MPCI	$/acre	20.46	20.46	20.46	20.46
65% of APH	lb/acre	1693.25	1693.25	1693.25	1693.25
Insurance Triggers?		YES	NO	NO	NO
Return 65%MPCI	$/acre	-98.07	185.20	71.03	478.24
Premium 70%MPCI	$/acre	26.88	26.88	26.88	26.88
70% of APH	lb/acre	1823.50	1823.50	1823.50	1823.50
Insurance Triggers?		YES	NO	NO	NO
Return 70%MPCI	$/acre	-81.24	178.78	64.61	471.82
Premium 75%MPCI	$/acre	39.89	39.89	39.89	39.89
75% of APH	lb/acre	1953.75	1953.75	1953.75	1953.75
Insurance Triggers?		YES	NO	NO	NO
Return 75%MPCI	$/acre	-71.00	165.77	51.60	458.81
Premium 80%MPCI	$/acre	62.26	62.26	62.26	62.26
80% of APH	lb/acre	2084.00	2084.00	2084.00	2084.00
Insurance Triggers?		YES	NO	NO	NO
Return 80%MPCI	$/acre	-70.12	143.40	29.23	436.44
Premium 85%MPCI	$/acre	99.53	99.53	99.53	99.53
85% of APH	lb/acre	2214.25	2214.25	2214.25	2214.25
Insurance Triggers?	$/acre	YES	NO	NO	NO
Return 85%MPCI		-84.14	106.13	-8.04	399.17

MPCI = Multi Peril Crop Insurance

Table 25 Selected Rows and Columns of Target-MOTAD Matrix for Farm 3.

MAX	cotton No Ins	cotton 50%MPCI	…	cotton 85%MPCI	cotton 50%CRC	…	cotton 85%CRC	Peanuts No Ins	Peanuts 50%MPCI	…	Peanuts 85%MPCI	d1	d2	…	d6	d7	sign	RHS
Return	77.51	76.99		-49.38	77.64		-58.02	160.08	170.09		102.93	0	0		0	0	MAX	.
land	1	1		1	1		1	1	1		1	0	0		0	0	le	1000
risk	0	0		0	0		0	0	0		0	0.14	0.14		0.14	0.14	le	47000
rotation	-0.333	-0.333		-0.333	-0.333		-0.333	1	1		1	0	0		0	0	le	0
y1997	308.66	290.15		143.57	288.41		130.40	239.84	230.72		140.31	1	0		0	0	ge	60000
y1998	105.20	86.69		-59.89	84.95		-73.06	182.22	173.10		82.69	0	1		0	0	ge	60000
y1999	-9.34	-27.85		-174.43	-29.59		-187.60	183.94	174.82		84.41	0	0		0	0	ge	60000
y2000	-285.55	-178.15		-218.39	-163.18		-200.74	-281.32	-156.48		-84.14	0	0		0	0	ge	60000
y2001	77.92	59.41		-87.17	57.67		-100.34	205.66	196.54		106.13	0	0		0	0	ge	60000
y2002	-86.34	-104.85		-216.26	-106.59		-228.55	91.49	82.37		-8.04	0	0		1	0	ge	60000
y2003	432.02	413.51		266.93	411.77		253.76	498.70	489.58		399.17	0	0		0	1	ge	60000

No Ins = No insurance
MPCI = Multi Peril Crop Insurance
CRC = Crop Revenue Coverage

Table 26 Selected Rows and Columns of Target-MOTAD Matrix for Farm 8.

MAX	cotton No Ins	cotton 50%MPCI	cotton 85%MPCI	cotton 50%CRC	…	cotton 85%CRC	Peanuts No Ins	Peanuts 50%MPCI	Peanuts 85%MPCI	d1	d2	d3	d4	d5	d6	sign	RHS
RETURN	24.08	20.12	-94.45	20.31	…	-103.06	106.40	112.50	120.01	0	0	0	0	0	0	MAX	.
land	1	1	1	1	…	1	1	1	1	0	0	0	0	0	0	le	1000
risk	0	0	0	0	…	0	0	0	0	0.17	0.17	0.17	0.17	0.17	0.17	le	9000
rotation	-0.333	-0.333	-0.333	-0.333	…	-0.333	1	1	1	0	0	0	0	0	0	le	0
y1998	128.66	110.15	-36.43	108.41	…	-49.60	185.88	183.60	160.99	1	0	0	0	0	0	ge	10000
y1999	14.38	-4.14	-150.72	-5.88	…	-163.89	185.23	182.95	160.35	0	1	0	0	0	0	ge	10000
y2000	-249.62	-180.81	-225.87	-170.97	…	-213.98	-9.99	-12.27	-1.31	0	0	1	0	0	0	ge	10000
y2001	244.39	225.88	79.30	224.14	…	66.13	334.66	332.38	309.77	0	0	0	1	0	0	ge	10000
y2002	-155.10	-173.61	-229.63	-175.35	…	-240.53	-207.36	-159.36	-34.82	0	0	0	0	1	0	ge	10000
y2003	161.74	143.23	-3.35	141.49	…	-16.52	149.97	147.69	125.09	0	0	0	0	0	1	ge	10000

No Ins = No insurance
MPCI = Multi Peril Crop Insurance
CRC = Crop Revenue Coverage

Table 27 Optimal Crop Insurance Levels for Each Farm Risk Neutral LP Solution

FARM	RETURN ($)	COTTON NO INS (acres)	COTTON 50%CRC (acres)	PEANUTS NO INS (acres)	PEANUTS 50%MPCI (acres)	PEANUTS 60%MPCI (acres)
Farm 1	271,553	750	.	250	.	.
Farm 2	269,976	750	.	.	250	.
Farm 3	101,043	.	750	.	.	250
Farm 4	23,497	750	.	250	.	.
Farm 5	172,460	750	.	250	.	.
Farm 6	103,734	750	.	250	.	.
Farm 7	54,614	750	.	250	.	.
Farm 8	44,855	750	.	.	.	250
Farm 9	156,309	.	750	250	.	.

No Ins = No insurance
MPCI = Multi Peril Crop Insurance

Table 28 Target MOTAD Solutions for Farm 3

TARGET INCOME ($)	RISK ($)	RETURN ($)	COTTON 50%CRC (acres)	PEANUTS 60%MPCI (acres)	PEANUTS 65%MPCI (acres)	UNUSED LAND (acres)
100,000	73,000	101,043	750	250		
90,000	68,000	101,043	750	250	.	.
90,000	65,000	95,228	707	236	.	58
80,000	68,000	101,043	750	250	.	.
80,000	61,000	98,608	737	.	246	18
80,000	60,000	94,917	709	.	236	55
80,000	59,000	91,225	681	.	227	91
80,000	58,000	86,206	640	213	.	147
60,000	55,000	101,043	750	250	.	.
60,000	52,000	97,026	725	.	242	34
60,000	50,000	89,643	670	.	223	107
60,000	49,000	85,952	642	.	214	144
60,000	48,000	82,261	614	.	205	181
60,000	47,000	78,570	587	.	196	217

No Ins = No insurance
MPCI = Multi Peril Crop Insurance
CRC = Crop Revenue Coverage

Table 29 Target MOTAD Returns and Acreage Solutions for Farm 8

TARGET INCOME ($)	RISK ($)	RETURN ($)	COTTON NO INS (acres)	COTTON 50%CRC (acres)	COTTON 60%CRC (acres)	PEANUTS 60%MPCI (acres)	UNUSED LAND (acres)
40,000	75,000	44,855	750	.	.	250	.
30,000	70,000	44,855	750	.	.	250	.

No Ins = No insurance
MPCI = Multi Peril Crop Insurance
CRC = Crop Revenue Coverage

Table 30 Target MOTAD Returns and Acreage Solutions for Farm 9

TARGET INCOME ($)	RISK ($)	RETURN ($)	PEANUTS NO INS (acres)	COTTON 50%CRC (acres)	COTTON 60%CRC (acres)
140,000	40,000	156,309	250	750	.
140,000	30,000	152,624	250	.	750
140,000	10,000	152,624	250	.	750
100,000	30,000	156,309	250	750	.
100,000	10,000	152,624	250	.	750
80,000	22,000	156,309	250	750	.
80,000	5,000	152,624	250	.	750
60,000	30,000	156,309	250	750	.

No Ins = No insurance
MPCI = Multi Peril Crop Insurance
CRC = Crop Revenue Coverage

Table 31 Solutions for the Case When Premiums are Discounted by 75% for CV less than 25%

Farm	RETURN ($)	COTTON No Ins (acres)	COTTON 50%CRC (acres)	PEANUTS No Ins (acres)	PEANUTS 50%MPCI (acres)	PEANUTS 60%MPCI (acres)	PEANUTS 75%MPCI (acres)
Farm 1	271,553	750	.	250	.	.	.
Farm 2	269,976	750	.	.	250	.	.
Farm 3	101,043	.	750	.	.	250	.
Farm 4	23,497	750	.	250	.	.	.
Farm 5	172,460	750	.	250	.	.	.
Farm 6	103,734	750	.	250	.	.	.
Farm 7	56,093*	750	.	.	.	.	250*
Farm 8	44,855	750	.	.	.	250	.
Farm 9	156,309	.	750	250	.	.	.

*Indicates a change from the base model in Table 27.
No Ins = No insurance
MPCI = Multi Peril Crop Insurance
CRC = Crop Revenue Coverage

Table 32 Solutions for the Case When Premiums are Discounted by 50% for CV less than 40%

Farm	RETURN ($)	COTTON No Ins (acres)	COTTON 50%CRC (acres)	PEANUTS No Ins (acres)	PEANUTS 60%MPCI (acres)	PEANUTS 70%MPCI (acres)	PEANUTS 75%MPCI (acres)
Farm 1	271,553	750	.	250	.	.	.
Farm 2	271,706*	750	.	.	.	250*	.
Farm 3	101,043	.	750	.	250	.	.
Farm 4	23,497	750	.	250	.	.	.
Farm 5	172,460	750	.	250	.	.	.
Farm 6	104,503*	750	.	.	.	.	250*
Farm 7	54,614	750	.	250	.	.	.
Farm 8	46,894*	750	.	.	.	250*	.
Farm 9	156,309	.	750	250	.	.	.

*Indicates a change from the base model in Table 27
No Ins = No insurance
MPCI = Multi Peril Crop Insurance
CRC = Crop Revenue Coverage

Table 33 Solutions for the Case When Premium are Discounted by 75% for CV less than 40%

Farm	RETURN ($)	Cotton No Ins (acres)	Cotton 50%CRC (acres)	Cotton 75%CRC (acres)	Peanuts No Ins (acres)	Peanuts 60%MPCI (acres)	Peanuts 75%MPCI (acres)	Peanuts 80%MPCI (acres)
Farm 1	271,553	750	.	.	250	.	.	.
Farm 2	280,286	.	.	750*	.	.	250*	.
Farm 3	101,043	.	750	.	.	250	.	.
Farm 4	24,531	750	.	.	.	.	.	250*
Farm 5	172,460	750	.	.	250	.	.	.
Farm 6	107,772	750	.	.	.	.	.	250*
Farm 7	56,093	750	.	.	.	.	250*	.
Farm 8	48,637	750	.	.	.	.	.	250*
Farm 9	156,309	.	750	.	250	.	.	.

*Indicates a change from the model in Table 32.
No Ins = No insurance
MPCI = Multi Peril Crop Insurance
CRC = Crop Revenue Coverage