

U.S. Agricultural Commodity Policy and its Relationship to Obesity

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INTRODUCTION

Over the last several years, those concerned with the increasing prevalence of obesity in the US population have raised the issue of the possible connections between obesity and US agricultural policy. In particular, it has been asserted that recent commodity policy affecting the eight “major crops”¹ has had the effect of keeping commodity prices, and thus the price of processed food ingredients, artificially low compared to less calorie dense foods like fruits and vegetables.

In particular, it is asserted that there is a close correlation between the drop in corn and soybean prices and the, increasing use of fats and oils in processed foods and the increase in US obesity.² Many community based food cooperatives such as the Community Food Security Coalition and producers of “specialty crops”³ are advocating for a farm bill that allocates farm support in ways that reflect the recently revised food pyramid from the USDA, allocating less support to the crops associated with the growth in obesity and relatively more support for specialty crop growers and local farm-to-market programs.⁴

These proposals imply that since it appears that farm policy has contributed to the obesity epidemic by subsidizing elements of crop agriculture resulting in major increases in production and low prices for calorie dense oilseeds and grains, the inverse is also true—reducing subsidies for major crops will result in reduced crop production in the US. This lower production, in turn will raise commodity prices making high-nutrition, less calorie dense foods like fruits and vegetables more price competitive. As a result, it is expected that consumers will eat more fruits and vegetables

¹ Eight major crops, normally referred to as program crops or program commodities—corn, soybeans, wheat, grain sorghum, barley, oats, cotton, and rice—account for about 74 percent of total cropland in the US. These same crops are the primary “program” crops and receive about 70-80 percent of all government payments. Five crops—corn, wheat, cotton, soybeans, and rice—figure prominently in world export markets and account for over 75 percent of total US crop exports.

² Schnoover, H., *Food Without Thought: How US Farm Policy Contributes to Obesity*; March 2006; Institute for Agriculture and Trade Policy.

³ Specialty crops are defined as fruits and vegetables, tree nuts, dried fruits, and nursery crops (including floriculture).

⁴ Center for Nutrition and Policy Promotion, USDA: <http://www.cnpp.usda.gov/>

and less high fat and oil, starch and sugar dense foods, leading to a decrease in obesity, or at least the rate of increase of obesity in the US.

Additionally, it should be noted with regard to the above proposals, that if the rationale for farm programs is simply the distribution of a pot of money among agricultural producers, then a movement toward a more balanced distribution of the funds has some merit. On the other hand, if the purpose of farm programs is to moderate the effects of a structural issue, then this relocation of funds may not achieve the desired results.

Before tackling the question of whether US agricultural policy is an important contributor to the growing levels of obesity across the US, we briefly examine the economic nature of crop agriculture and provide an overview of agricultural policy.

Background: Economic nature of crop agriculture

There are a number of things about the economic nature of agriculture and agricultural markets that are well known. Farmers are price takers not price makers. Once a crop is planted, relatively little can be done to adjust production. Farmers continually search out new technologies to reduce per unit costs as means to improve net income since they cannot influence prices. Because of weather and pests, individual farmers and the agricultural sector experience an inordinate degree of supply variability compared to firms and industries of other sectors.

These characteristics would contribute to farmers' price and income problems even if agricultural markets had the ability to quickly correct after a disturbance in supply or demand. But the reality is that aggregate agricultural markets do not correct as quickly or completely as the markets for other product-producing sectors. In fact, understanding that self-correction for total crop agriculture is sluggish and why that is true is the key to understanding how agricultural reacts to policy as well as economic conditions.

One way to bring this home is to compare how agricultural crop producers and consumers react to drop in the general price level of all major crops and how the producers and consumers of a non-agricultural product would react to price decline of the same magnitude.

In the case of a typical non-agricultural product sector—whether it be houses, clothes, DVDs—low prices induce consumers to buy more while at the same time causing producers to make less. The responses of consumers and producers work in concert to relatively quickly restore the market to an equilibrium in which price equals the cost of producing an additional unit of the product.

Now consider food and agriculture. Consumers do not switch from eating three meals a day to four or five in response to a dramatic decline in food/agricultural prices. Lower food prices may make it possible for consumers to eat out more often and purchase more expensive food products, but aggregate food consumption remains relatively flat.

Total changes in food demand in response to a price change is somewhat analogous to the way a diabetic reacts to a change in the price of insulin. A diabetic will pay whatever it takes to purchase the required quantity of insulin, but a drop the price of insulin, no matter how large, would not persuade the diabetic to purchase more. Food behaves very much like insulin does for diabetics. The amount that is needed is relatively fixed and remains stable over a wide range of prices.

When considering aggregate crop production, a very similar phenomenon is evident. Crop farmers reduce their production little in response to declines in major-crop price levels, particularly if the price remains above the variable cost of production. Some farmers will continue to operate as long as the bank will let them. Whether owner or renter, operators not only have no incentive to let land lie idle, they most generally don't do it. Also, since the quantity they produce does not affect price, they tend not to scrimp on yield-determining inputs in face of declining output prices. On-farm expenditures likely would be cut but compromising seeding rates and application rates for fertilizer and pesticides generally "costs" too much in lost revenue to be a significant source of reduced expenditures.

Changes in the relative prices of farm commodities cause farmers to change their mix of crops, but they produce something. A change in crop mix continues to add to the overall level of total agricultural output. Even in the longer run, when a farmer goes out of business, the land generally remains in agricultural production as part of another farmer's operation. In another industry under conditions of sustained low prices and excess production capacity, plants are shut down and the assets shift for use in a different industry.

Since neither agricultural producers nor agricultural product consumers respond very much to the signal that markets use to self-correct—price—the result, quite understandably, is that aggregate agriculture does not self-correct in a reasonable length of time. Lack of price responsiveness would not be a problem for agriculture if the combination of domestic and export demand expanded as fast or faster than the expansion in aggregate supply. If, on the other hand, aggregate supply expands faster than demand, price declines and, because of lack of aggregate responsiveness to price, crop agriculture continues to produce at essentially full productive capacity.

In addition to this effect, the lack of price responsiveness causes wide swings in prices when weather and other uncontrollable factors cause random or sudden shifts in either domestic supply or (historically, export) demand. These random shifts in supply and demand have always been a feature of agriculture and will continue to be a feature.

What about the rates of growth in supply and demand? Does agriculture's productive capacity and, therefore, its supply tend to grow faster than demand? It has been a societal policy to make public investments to continually expand agriculture's productive capacity and ensure supply growth. Over time, growth in productive capacity has tended to exceed total growth in domestic and export demand, largely because of public policy.

Overview of US Agricultural Policy

Developmental Agricultural Policies

From its earliest colonial beginnings, agriculture policy in the US has functioned in ways that have expanded farmers' capacity to produce. In colonial times, lands beyond the settled perimeter were made available for settlement and conversion to farmland. The end of the American Revolutionary saw the granting of Western lands to war veterans and the establishment of the Northwest Ordinance of 1787 which opened up the land north and west of the Ohio River for settlement setting the pattern for incorporating new lands and states into the US. For the next century land distribution was a significant component of agricultural policy. The opening up of new lands and the resulting increase in agricultural production placed a downward pressure on prices and farm income. Providing education and enabling farmers to produce crops and livestock more efficiently was a logical response to the price/income pressures facing individual farmers. To help with this process "The U.S. Congress created the Department of Agriculture in 1862. In this same period, it also enacted the Morrill Land-Grant College Act, commonly considered the most important piece of agricultural legislation in American history, which provided for the appropriation of public land for the establishment of agricultural and industrial colleges in each state."⁵

The new technologies and techniques which resulted from the work of these institutions were quickly disseminated throughout the country, eventually through a system of extension offices

⁵ Tillotson, J.E.: AMERICA'S OBESITY: Conflicting Public Policies, Industrial Economic Development, and Unintended Human Consequences; Annual Review of Nutrition, 2004. 24:617-43. p. 627.

associated with the land grant institutions and agricultural schools.⁶ This system was a tremendously successful investment in many ways.

To date, largely because of this system, each new generation of Americans has had access to ample quantities of safe food at reasonable prices. Farmers were pressured to adopt the next new technologies and practices in order to “stay up to date” and remain competitive with other farmers who were adopting the new techniques. In recent years, privately funded research and development has been supplanting dwindling government support.

Investments in agricultural productivity will continue in the U.S. and other developed countries. While technological advances in the U.S. have been a primary driver of increases in agricultural production in the past, in the decades ahead technology adoption and addition of new acreage in developing countries will be increasingly important sources of worldwide supply expansion. The explosion in crop currently demand for ethanol dominates the headlines, but the longer-term outlook may be no different than in the past. That is, after demand spurts, the rate of growth in supply reverts back to outstripping the rate of growth in demand. This leaves agriculture in a chronically precarious situation since, as just discussed, the self-correction feature that works so well in the markets for most other sectors falters for aggregate crop agriculture. It is this lack of timely self-correction that brought about commodity programs in the first place.

Compensation Policy and Commodity Programs

Traditional Supply Management Programs

The origin of the commodity programs can be traced to the situation agriculture found itself in the years following World War I. During the war, government policies stimulated agricultural production using the slogan “food will win the war” (Schapsmeier and Schapsmeier, p. 40). Following the 1918 armistice, European demand for food imports began to wane. By 1921, dwindling exports and burgeoning supplies drove down farm prices triggering an agricultural recession. Agrarian calls for help went largely unheeded until 1929 when a newly created Federal Farm Board was authorized to use \$500 million dollars to bolster prices by acquiring excess supplies. But the farm price and income problem was too severe to be brought under control by the purchase of \$500 million dollars of grains and other commodities. In 1932 the Farm Board was dissolved. Its parting observation was that legislation was needed to control agricultural supply.

Farmers were in their thirteenth year of woe and mortgage foreclosures were at record levels as the Franklin D. Roosevelt took office in early 1933. Roosevelt was inaugurated on March 3,

⁶ Ray, Rethinking U.S. Agricultural Policy

1933; the Agricultural Adjustment Act of 1933 was introduced in Congress on March 16, 1933 and signed into law less than two month later on May 12. The triple-A of 1933 and subsequent farm legislation through 1990 included price support and supply control provisions. Supply control mechanisms used at various times over the six decades included 1) paid land diversion in which farmers were paid to divert land to soil conserving uses such as legumes and grasses, 2) marketing quotas in which farmers were assigned a fixed quantity of a crop to market at a guaranteed price, 3) acreage allotments in which farmers were allocated or allotted a certain number of acres of a crop, and 4) setaside in which farmers would agree not to plant a specified percentage of their cropland in order to be eligible for price supports and other government program benefits.

In addition to the annual supply management/production control programs, multiyear acreage withdrawal programs were established in 1956 and again in 1985 to address agriculture's excess production capacity and long-term conservation issues. The former was called the Soil Bank and the latter, which is still in use, is the Conservation Reserve Program.

During most of their history, commodity programs have used supply management programs and price supports to raise and stabilize crop prices as the primary means to prop-up and stabilize farm incomes. As originally implemented, price supports were price floors. Prices were supported by offering farmers non-recourse loans using the farmers' storable commodities as collateral. The loan was with the Commodity Credit Corporation (CCC) of the U.S. Department of Agriculture. The amount of the loan is determined by valuing the physical quantity of the commodity collateral (10,000 bushels of corn, say) at the government's announced loan rate or support price. The support price became the floor because the government had no recourse but to accept the commodity collateral as full payment of loan principal and interest when the loan was due.

Grain and other commodities accumulated by the government under the non-recourse loan programs, beginning in 1977 and ending in 1996, and in a separate Farmer Owned Reserve, served as sources of reserves or buffer stocks which could be used during years of severe production shortfalls. For example, in 1983 and 1988, corn yields were nearly 30 percent below previous-year levels. The CCC and Farmer-Owned-Reserve stocks, depending on the philosophical bent of the administration in power, provided an important measure of supply-reliability to the domestic livestock industry and major corn import customers.

Programs to Stabilize Farm Income

Over time and especially since the 1980s, US farm commodity programs have shifted from the use of price supports to the use of government payments to stabilize farm income. Several

elements contributed to this payment trend in the 1980s that affected all major crops such as the target-price based deficiency payment program. Other changes during this time affected a few crops early-on, but later were applied to all program crops.

The marketing loan program, including Loan Deficiency Payments and Marketing Loan Gains, (LDP/MLGs), was initiated in the mid-1980s as a means of making US cotton and rice prices more competitive in the world market. The theory at the time was that US loan rates had been too high—above world prices—pricing US commodities out of the world market and forcing the US to become the residual supplier. The LDP/MLG was established to allow the commodity to be sold at a price below the loan rate—the world price—with the US government making up the difference. Over the years this program was extended to other program crops and was made fully functional for all crops in the 1996 Farm Bill.

It was the establishment of this program and the elimination of the effectiveness of the non-recourse loan rate that allowed US farm production to be sold into the world market—as well as the US domestic market—at fire sale prices. These fire sale prices were well below the cost of production, opening up the US to charges of dumping.

Unrecognized with this policy change was the reality that the US is the oligopoly price leader in most major crops. Under these conditions, competitors who want to move their product price it just under that of the oligopoly price leader and float their product out of their ports. Price-followers can successfully engage in this marketing strategy to clear their markets. If the price of corn is \$2.80, the price followers sell their corn for \$2.60 a bushel. Likewise, if the price of corn is \$1.85 a bushel, the price followers have no choice but to sell their corn for \$1.65 a bushel if they want to clear their markets and make room for next year's production.

Three things became apparent. One was the explicit or implicit assumption of US policy makers that \$1.65 corn would force others in the world to reduce production, allowing the price to increase. They didn't. Like farmers in the US, they planted in hopes that others would either make the acreage adjustment or experience a crop failure. When neither happened, crop prices remained in a sub-\$2.00 trough for four years.

A second unrealized assumption was that low prices would dramatically increase export demand, bringing additional consumers into the market and sop up any excess production and with the excess production out of the market, prices would rise and farmers would be back in a profitable production situation. While exports and total demand may have increased some in response to the low prices, the adjustment was not nearly enough to return crop markets to profitability as US

farmers came to depend on LDP/MLGs not only to provide some net farm income, but also to help them cover some of their production expenses.

The third was a reminder that a lowering-the-price strategy benefits price-followers but not the price-leader. The price-leader is unable to get under his own price. When the price leader reduces the price everyone goes down in tandem retaining the same relative price position. When you play limbo with yourself, you lose every time. And that is what happened to the US's use of LDP/MLGs.

The direct payments, in the form of decoupled AMTA payments, were established in the 1996 Farm Bill as means of “weaning farmers off farm programs” in a new economic environment that some said made farm programs unnecessary and counter-productive. The idea was to reduce the AMTA payments over a series of years until they reached zero. That never happened. The AMTA payments were decoupled from crop allocation decisions—farmers no longer had to worry about base acres—but they were not decoupled from farm profitability. Farm programs in this era were also decoupled from the reasons we have farm programs in the first place.

They provided an advance payment that allowed farmers to pay their rent without having to sell corn or take out an operating loan at the local bank. The AMTA/direct payments allowed some farmers to offer higher rental rates to landlords in hopes of increasing the size of their operation so they could spread their fixed costs out over greater production. At the aggregate level, the AMTA/direct payments also allow US producers to sell their crop into world markets at prices below the cost of production, because they include these payments as part of their gross income.

By 1998, even backfilling with AMTA and LDP/MLG payments was not enough to keep the US crop sector afloat as corn prices plunged to sub-\$2.00 price levels. And, compared to pre-1996 legislation, the list of available policy options to address the situation was indeed short. There was no Farmer-Owned-Reserve to take excess supplies off the market nor was there a setaside program to reduce excess supplies in succeeding years. Congress, without taking the underlying cause—lack of timely price correction—into consideration, responded by legislating emergency payments each of four successive years. This led to an early replacement of the 1996 legislation with the 2002 Farm Bill. The new bill included a counter-cyclical payment program much like the deficiency payment program that was cancelled in 1996—a program that, in effect, institutionalized the emergency payments.

Present payment programs do nothing to reduce production when prices fall so farmers continue to use all their acreage and other resources to produce one crop or another full-out, no matter what. That works fine when demand is exploding but can require a lot of taxpayer backfill

when total crop production outstrips demand. Backfilling with money has been the choice of late to deal with agriculture's undeniable inability to self-correct on its own in a reasonable time frame. As mentioned, policy tools that could be used to adjust market supplies when demand falters are no longer legislatively authorized.

In general, farmers do not voluntarily idle productive cropland and food consumers do not increase total food consumption much with a general drop in food prices. Those are, of course, the two primary market-based ways to activate self-correction when prices plummet.

During free extension agent seminars and lectures from senior research scientists and an occasional lunch with corporate sales folks where the topic of conversation is focused on the company's latest "improvements," farm educators, like any of us, will certainly begin to talk about what they are most familiar with, what is exciting, and what they are most comfortable talking about—ways of increasing production and reducing crop loss. Manufacturers become the primary beneficiaries of this process, sharing the benefits of low commodity prices with meat producers who love extremely low priced feed; processed food producers who love low priced inputs; and the patented seed developers that require farmers to sign a contract in order to obtain the seed license.⁷

Since the 1930s, US policies have included a variety of programs that have attempted to address the price and income problems of farmers that arise out of our immense and ever growing productive capacity and the inelasticity of demand in crop agriculture. We should also remember that commodity policies and programs have done much more than simply encourage ever-increasing production and ever more technology-based, industry-like farming.

Until recent years, one of the major roles of the federal government was to manage productive capacity to provide sustainable and stable prices and incomes from the 1930s through the early 1980s. Until the mid-1980s (and beyond, in some cases), the primary focus of US agricultural policy was on production management programs and price support and stabilization programs.⁸

For decades the commonly understood and popularly represented goals of agricultural policy and programs have been:

- The production of a healthful, abundant supply of food, at reasonable prices, for all Americans;

⁷ Gardner, B. L.: American Agriculture in the Twentieth Century. How it Flourished and What it Cost; 2002. Harvard Univ. Press., Cambridge MA.

⁸ Ray, Rethinking U.S. Agricultural Policy; p. 1.

- Maintaining a prosperous and productive economic climate for the commercial farmer producers of that food supply;
- Protecting the remaining small to medium-sized family farm units from disappearing from the face of the earth; and
- The realization of a high quality of life for all people living in rural areas, together with a vibrant physical environment.⁹

Programs designed to reach these goals historically involved some combination of income support, price support and stabilization, production and other forms of supply management, demand enhancement, import restriction, or conservation.¹⁰

About 35 years ago the official goals of government agriculture policy as promoted by the USDA departed from those popularly held ideas above for a more free market oriented set of goals. A 1985 USDA summary of agricultural policy goals embodied the USDA's new free market views:

- Helping farmers maintain themselves as free, independent business people, control their means of production, make their own decisions, and benefit from their own labor and management abilities;
- Maintaining an adequate supply of high quality food at reasonable prices; and
- Encouraging agricultural exports as a way to pay for the industrialization of the Nation and for imports.¹¹

The new focus of agricultural policies, and particularly those relating to commodity program crops, were on the independent, entrepreneurial, self-reliant, and go it alone mythic hero of neo-classical economic orthodoxy. Government was to provide technological development and open new markets. The rest is up to the farmer-businessman and the infallible operation of the market, freed from government intervention.

Beginning in the late 1980s and finally embodied in the 1996 Farm Bill, the official goal of US commodity crop policy has been to permit, even encourage, "a free fall in domestic farm prices while simultaneously promoting free-trade oriented approaches that were supposed to open new markets for US products."¹² It is ironic that the high crop prices that preceded the 1996 Farm Bill probably encouraged reluctant farm organizations and members of Congress to support the "Freedom to Farm" bill. For the first two years of the 1996 farm program implementation, prices

⁹ Cochrane, W: *A Food and Agricultural Policy for the 21st Century*; Institute for Agriculture and Trade Policy

¹⁰ For a partial list, please see Appendix A and for a description of the main elements see Appendix B.

¹¹ Rasmussen, Wayne: *Historical Overview of U.S. Agricultural Policies and Programs*; Agricultural Economic Report No. (AER530), USDA, July 1985; p. 3. Available at <http://www.ers.usda.gov/Publications/aer530/aer530b.pdf>.

¹² Ray, *Rethinking U.S. Agricultural Policy*; p. 1.

remained at tolerable levels. This was mainly due to the empty bins left by the previous two years of low stocks reached under the previous Farm Bill.¹³

The 1996 Farm Bill implemented fixed payments on a six-year transition schedule. Proponents were sure these decreasing payments would lead to the eventual elimination of all government farm support. The “free market,” it was said would set prices appropriately if we would only remove the “heavy hand of government” from the farmers’ shoulders. One of the arguments used to support the free market policies embodied in the 1996 bill was that farmers would certainly leave land idle on their own since “farmers would receive the decoupled payments whether or not they produced on the land.”¹⁴

Policy makers discovered, of course, that they were wrong. The inelasticity of demand in crop agriculture and the lack of any mechanisms to buffer supply or maintain prices meant quite literally that farmers had to become “the free, independent business people” official USDA policy proclaimed them to be. However they had no means to exercise their “management abilities” since no one farmer can control the price.

As long as the market price of a farm commodity remains above the variable cost of production, farmers have an economic incentive to produce. Any income above the variable cost of production can be applied to fixed costs. So, in the absence of a government instituted supply management program after the adoption of the 1996 Farm Bill, farmers knew what to do. They planted nearly every square foot available to them. It didn’t matter if land was previously a part of a set-aside. Within two years, as prices fell from their historic highs in 1995, even some advocates of the 1996 reforms had to finally accept that plummeting prices, increasing costs, and declining government payments was a one way road to bankruptcy for too many farmers. By 1998 prices dropped below the loan rate, farmers began to collect massive Loan Deficiency Payments and Marketing Loan Gains (LDP/MLGs), and unpurchased crops remained in the commercial marketplace further depressing prices. As a result farm income began to plummet and farmers began to seek a political solution. In response to this pressure, Congress began passing annual emergency payment legislation to bail out farmers devastated by the new policies. By 2000 government payments accounted for nearly half of all money made by farmers. In eight states—including four in the corn belt—government agricultural program payments accounted for more

¹³ Ray, Daryll E., *Impressions vs. reality: A look at the first two years of the FAIR Act*, policy column, January 26, 2001. Available at <http://www.agpolicy.org>.

¹⁴ Ray, Daryll E.: *Current commodity programs: Are they for the producers or the users?*; Delta Farm Press; December 20, 2003.

than 100% of net farm income. These emergency payments were formalized in the form of a Counter-Cyclical Payment program when Congress passed a new farm program a year early in 2002.¹⁵ For at least the 1998-2001 period, 40 percent of the US net farm income came from government payments. It's no mystery why this occurred. The 10 to 15 million acres that were periodically "set-aside" became permanently available for production with the 1996 farm bill. And produce they did.

By establishing policies that allowed the free fall in commodity prices without regard for the market or other conditions, government policies have enabled farmers to produce all they can, whenever they can in order to just keep one foot on the treadmill. This, of course, has been very profitable for the primary users of US commodity crops: integrated livestock producers, food processors, manufacturers, and importers have been enjoying a 40 to 50 percent discount on one of their most important raw materials.

Just as Wal-Mart's profits are subsidized when its low wage employees apply for government provided health insurance, users of bulk commodities have the US taxpayer footing the bill when they purchase farm commodities at prices well below the cost of production. At the same time, on the input side, agribusinesses are more than eager to provide—at a very profitable price—the patented seed, fertilizer, herbicides, transportation, handling, and whatever else is required to keep their profits climbing.

Current Lay of the Land

With the 1985 Farm Bill, farmers were promised that lower loan rates¹⁶ would open up export markets by making the US more price-competitive in international markets. Policy tools in subsequent legislation like Loan Deficiency Payments (LDPs) were supposed to open up export markets by making the US more price competitive internationally. None of these changes produced the promised "surge" in exports. By eliminating set-asides, the 1996 Farm Bill was supposed to slow down the rate of growth of our export competitors' productive capacity but they took no heed of the change.

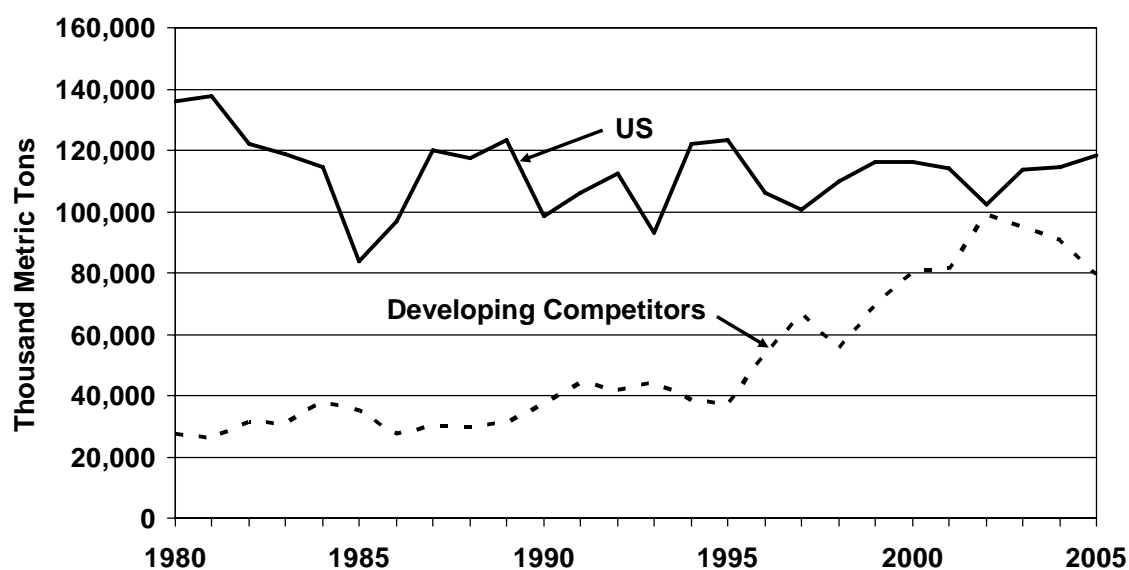
Free market advocates' promises notwithstanding, US exports for the eight major commodity crops have hovered around 80 to 85 percent of their 1980 levels for the last 25 years. Interestingly, global exports of fifteen major crops—wheat, corn, rice, grain sorghum, oats, rye,

¹⁵ Egan, T.: Failing Farmers Learn To Profit From Federal Aid; New York Times. December 24, 2000

¹⁶ See Appendix B for descriptions of these programs.

barley, millet, soybeans, peanuts, cottonseed, rapeseed, sunflower, copra, and palm kernel—have grown substantially since 1980, but as Figure 1 demonstrates, it has been our export competitors—Argentina, Brazil, China, India, Pakistan, Thailand, and Vietnam—who have reaped the benefits as their exports of the fifteen crops has risen from 27 million tonnes to 80 million tonnes. In that same time period the US export of those crops has declined from 136 million tonnes to the range between 110 and 120 million tonnes per year.

Figure 1. Fifteen crop (wheat, corn, rice, grain sorghum, oats, rye, barley, millet, soybeans, peanuts, cottonseed, rapeseed, sunflower, copra, and palm kernel) exports for the US and seven developing country competitors (Argentina, Brazil, China, India, Pakistan, Thailand, and Vietnam), 1980-2005. Source: Calculated from USDA PS&D.



The current mantra from advocates of increased international trade is market access. It is, they argue, the real magic potion that will cause exports to finally skyrocket, justifying proposed reductions in farm support levels proposed by US trade negotiators and the administration. Currently it is not exports, but rather the domestic demand for corn and soybeans as biofuel feedstocks that is pushing corn and soybean prices to record or near record levels. Traditional commodity policy has had little to do with this price jump. Rather, in response to perennially low corn prices, farmers began to invest in farmer-owned ethanol production plants to sop up excess production while allowing them to benefit from the further processing of the raw material they were producing—corn. At the same time, they lobbied for legislation favorable to the production and consumption of ethanol. Currently, a large number of the operational ethanol plants are farmer-owned. The “USDA 2007 Agricultural Baseline” projects corn prices in the \$3.30-\$3.75 range

through 2016. Over this period, with this level of prices, there would be little need for direct program payments¹⁷ outside of disaster payments brought on by weather, pest, or disease disasters.

It is possible that this demand will be short lived. Because of higher prices it is reasonable to expect that additional resources, both in the US and internationally, will be invested in the crop and biofuel sectors. In the crop sector, the present high prices will result in US farmers converting some pasture land into cropland and countries like Brazil bringing new land into production. That additional production would then exert downward pressure on crop prices, raising the possibility of higher than projected government payments. With regard to crop yield research, it is clear that the current high prices may speed up the development and introduction of higher yielding varieties. The current emphasis on ethanol production and the potential for is drawing additional research and development money into the development of cellulosic ethanol production systems. From a theoretical standpoint cellulosic ethanol has the potential to be more profitable than ethanol made from corn. As a result it is expected that cellulosic ethanol will become the primary ethanol source in a few years. The key to this shift in production systems is the development of an enzyme or other bio-active entity that can convert the cellulosic biomass to fermentable sugars. Taken together—additional acreage, increased yields and an earlier than projected introduction of cellulosic ethanol production—the return of low crop prices is a distinct possibility.¹⁸

Recently, the Administration announced its proposals for the 2007 Farm Bill. It did not propose the much feared—or much hoped for, depending upon one’s perspective—major overhaul in farm programs. The commodity title proposal is virtually a continuation of the 1996 and 2002 bills and has no new provisions that would encourage reduced production or attempt to manage markets or prices. There are some changes proposed to specific programs, but overall, USDA’s proposed changes would leave most commodity producers with generous payments when prices are high and astronomical payments when prices are very low. Support for farmers experiencing crop failure would be shifted off to government subsidized crop/revenue insurance programs. The actual magnitude of these impacts on individual commodity producers is unknown.

Included among the changes proposed by the administration is elimination of the restriction that has kept farmers participating in the commodity program from growing “specialty crops”¹⁹ on any acreage included in the commodity program “base” used to calculate various payments. Earlier

¹⁷ Expected high demand for corn, soybeans and other program crops useful in biofuel production will undoubtedly “lift all boats” as crops and rotations are modified to chase the prices, leaving all crops competing for acreage.

¹⁸ Ray, Daryll E.: *Is ethanol the exploding demand that will save crop agriculture?*; policy column, January 12, 2007. Available at <http://www.agpolicy.org>.

¹⁹ Typically fresh fruits and vegetables.

estimates given by the head of the Specialty Crops Farm Bill Alliance during congressional testimony of the impact such an action might have on specialty crop producers were as much as a \$3 billion loss.

While specialty crops are not included in the commodity title, these crops are not without support in US farm policy. One of the most important instruments is the Agricultural Marketing Agreement Act of 1937 as amended which provides specialty crop producers with a set of policy tools to manage the supply and distribution of their crop. With a majority vote of the producers of a given crop, marketing agreements and orders provide a variety of tools that can be used by producers to provide for the orderly marketing of products, the establishment of product standards, the collection of check-off money among other things. In addition, specialty crop producers benefit from USDA funded research.

It is important to note that “USDA directly purchases and then donates a variety of non-price support commodities, including fruit, vegetable, and tree nut products, for consumption through domestic nutrition and food assistance programs. “These purchases and donations...[help] to balance supply and demand.”²⁰ These purchases have helped reduced the potential for the oversupply of fresh fruit and vegetable supplies, thus influencing the market price of these products.

It is, however, nearly impossible to determine if the prohibition of fruit and vegetable production by commodity program participants or any other component of the farm program has had any significant causal relationship to recent dietary changes—more restaurants, more fast food, more sugars, fats, and starches together with portion sizes that seem to increase in ever growing weekly increments. Eating and behavior patterns in the US have changed dramatically in the last forty years. If we are old enough, we may remember the seven ounce bottle of “pop” we used to buy for a dime as kids at the corner store in the 1950s and 1960s. Well that “treat” has now grown to the “Humongous Gulp”—64 ounces of drink that probably provide a minimum of 200 grams of sugar and 700 nutrition-free calories at your local convenience store for a buck and a half.

Commodity Policy and Obesity – What We Can Say

With this background, let us now look at the arguments that is being made with regard to the link between agricultural policy and obesity. At it’s most basic the argument takes the form of two syllogisms:

20 Specialty Crops: 2007 Farm Bill Issues; Congressional Research Service, RL 33520.

1. The present set of farm policy subsidies for program crops result in the overproduction of crops like corn and soybeans.
2. This overproduction of corn and soybeans results in low prices for these crops.
3. The low price of corn and soybeans results in low price inputs (high fructose corn syrup and soybean oil) for the production of low-nutrition calorie-dense (LNCD) foods.
4. The low priced inputs for LNCD foods result in low prices for LNCD foods
5. The availability of low priced LNCD foods encourages the consumption of larger amounts of LNCD foods and lower amounts of relatively more expensive nutrition-dense (ND) foods like fruits and vegetables.
6. The increase in the consumption of LNCD foods results in more obesity.
7. Therefore, the present set of farm policy subsidies results in more obesity.

If the present set of farm policies results in an increase in obesity then it would seem logical that the elimination of subsidies would result in a decrease in the level of subsidies. The logic for that argument goes as follows:

8. The elimination of subsidies for major row crops including corn and soybeans would result in the elimination of the overproduction of corn and soybeans.
9. The reduced production of corn and soybeans would result in a higher price for those crops.
10. The higher price of corn and soybeans results in higher price inputs (high fructose corn syrup and soybean oil) for the production of LNCD foods.
11. Higher priced inputs for LNCD foods results in higher priced LNCD foods.
12. Higher priced LNCD foods encourages lower consumption of these foods and increased consumption of ND foods.
13. The decrease in the consumption of LNCD foods and an increase in the consumption of ND foods results in less obesity.
14. Therefore, the adoption of agricultural policies which eliminate subsidies for major row crops including corn and soybeans will result in less obesity.

The conclusion of the second syllogism—the adoption of agricultural policies which eliminate subsidies for major row crops including corn and soybeans will result in less obesity—is the inverse of the conclusion of the first syllogism—the present set of farm policy subsidies results in more obesity. In logic, a statement and its inverse do not necessarily have the same truth value,

one can be true and the other false so what we need to do is to examine the veracity of each line in the two syllogisms.

Lines 1 and 2. Taken together these two lines argue that the present set of subsidies resulted in low prices, especially for corn and soybeans. An examination of the record following the adoption of the 1996 Farm Bill which was adopted during a time of high prices indicates that it was the low prices that triggered the high subsidies and not the other way around.²¹ The subsidies were paid to farmers to mitigate the disastrous low-price consequences of a piece of legislation that eliminated all production management tools, allowing acreage and production to rise. In addition the legislation rendered ineffective the crop storage tools the USDA had historically used to even out the year-to-year variation in production that resulted from weather and disease. If anything, it was not the presence of subsidies, but rather the absence of production management and crop storage tools that brought about the low prices.

Lines 3 and 4. Certainly, low price inputs reduce the raw material costs for the processors of high fructose corn syrup and soybean oil. The extent to which these low costs are passed on to the consumer in the form of LNCD foods made using high fructose corn syrup and soybean oil depends upon a number of other factors.

Line 5. While there is some truth to this assertion, it must be remembered that consumer choice depends upon a number of factors of which price is only one.

Line 6. There is no doubt that the more calorie dense foods one eats the greater the risk of obesity.

Line 7. Given that the assertions made in lines 1 and 2 incorrectly portray the relationship between subsidies and the low prices of corn and soybeans following the adoption of the 1996 Farm Bill, this line of reasoning cannot be used to establish the conclusion of line 7.

As stated earlier, the truth value of a statement and its inverse are not necessarily the same. Therefore the syllogism for the second argument still needs to be examined because it can be true even if the first one is false.

Line 8 and 9. It was previously shown that crop farmers reduce their production little in response to declines in major-crop price levels, particularly if the price remains above the variable cost of production. The result of this behavior on the part of farmers means that the elimination of subsidies will not result in a significant decline in aggregate crop acreage and thus total production.

²¹ Ray, *Rethinking U.S. Agricultural Policy*; p. 19.

Absent an exploding demand—like ethanol—for corn, stable acreage and trendline yield increases will put a damper any increase in price.²²

Line 10. Higher costs for corn and soybeans certainly will result in higher prices for soybean oil and high fructose corn syrup.

Line 11. It is important to recognize that changes in the prices of commodities, particularly corn and soybeans, have little affect on the final retail product price. For example, the next time you or your children spend \$0.75 on a 12 ounce can of “Coke,” also, check the “nutrition facts” printed on the can. You will see that the soft drink contains about 40 grams of sweetener. These days that is almost certainly high fructose corn syrup. You should also see that it is listed first in the ingredient list (meaning it is the largest component of the product). So the price of corn should change the price of this can. A lot, right? I guess your answer depends on what a lot of money means to you. The cost of the \$4.00 per bushel corn that contributed to that can of soda was a grand total of one cent and that is double what it was before fall 2006 when the price of corn was \$2.00 per bushel! Doubling the price of corn made little difference in the retail price of a can of carbonated soda.

Well, maybe soft drinks are unique in this regard? Actually not. At \$4.00 per bushel, the cost of the corn in a box of \$3 or \$4 cornflakes is about 4.4 cents. On the high side, are French fries—a \$1.50 “medium” serving has about 15 cents worth of potatoes in them. But a one pound bag of potato chips at \$3.40 has a whopping 27 cents worth of potatoes. And corn has cost the makers of that \$4.00 bag of your favorite corn chips about 2.6 cents. And the one that shocked us since we love oatmeal for breakfast, that 42 ounce box of regular oatmeal that costs you \$2.70 brings the farmers 13 cents at the farm gate for their oats.

The cost of the packaging of many food products is often more than the farm gate price of the commodity that was used to produce the product inside. Given the large number of non-farm inputs that go into manufacturing LNCD foods, the doubling of the price of corn or soybeans will have a small impact on the food’s final price. This is not true for fruits and vegetables where the farm gate price is a much larger portion of the final retail price than it is with snack foods like soda and corn chips.

Lines 12 and 13. The discussion of these assertions is the same as the ones for lines 5 and 6.

Line 14. Not only is there no likelihood that the elimination of subsidies will lead to higher commodity prices, there is no guarantee that a doubling of the price of corn and soybeans will have a marked impact on the retail price of LNCD foods made from these inputs.

²² Ray, *Rethinking U.S. Agricultural Policy*; p. 38-39.

Conclusions

The argument that “agricultural subsidies result in the widespread availability of low priced, low-nutrition calorie-dense foods leading to increased levels of obesity and thus the elimination of agricultural subsidies will reduce obesity levels” has some appeal. For the elimination of subsidies to have a dramatic impact on aggregate crop production, farmers have to respond to those prices by reducing production. However, one of the unique characteristics of crop agriculture is the low level of price responsiveness on the part of both producers. As a result farmers continually produce full-out, especially if the market price is above the variable cost of production. Because farmers are price takers, their strategy in the face of low prices is to maximize production in order to reduce the per unit cost of production by spreading the fixed costs out over more units.

The result, then, of eliminating subsidies in hopes of reducing production and increasing costs for high fructose corn syrup and soybean oil will not have the desired effect. The low-price problem is not with the subsidies per se but rather with the disconnect between the current form of farm subsidies and the long-term policies that were an integral part of traditional farm programs. For many years farm program payments were tied to policy instruments that controlled production acreage and took excess supplies off the market, leading to higher prices than the market would deliver. The extremely low prices of the past decade are the result of a policy shift away from an emphasis on supporting prices by controlling production to a focus on supporting farm income. The resulting low prices have been backfilled with massive government farm subsidies that have allowed farm commodity prices to plummet.

If the concern is cheap corn and soybeans, then the appropriate policy prescription would be to reinstitute supply management programs that impact farm income by focusing on raising commodity prices. But since farm ingredients make up such a small portion of low-nutrition calorie-dense foods like chips, soda and the like, even a major increase in the price of the corn, used to produce high fructose corn syrup, or soybeans, used for cooking oil, would justify at most a few-cent price increase for products that are retail-priced in dollars. Providing additional research and promotion budgets for nutrition dense foods like fruits and vegetables may be more effective in achieving the objectives of nutritionists and those concerned about the obesity epidemic than working through farm policy. Changes in farm policy can impact farm prices but it is relatively impotent to affect retail prices of low-nutrition calorie-dense foods.

Types of Farm Programs & Policy Instruments	Objective / Purpose	Program Examples	Description / How It Works
Income Support Programs			
Direct Payment Programs	Decoupled income support payments. Designed as a "transition" away from commodity payment programs.	Production Flexibility Contract (PFC or AMTA) Payments; Direct Payments	Lump-sum, decoupled payments to participants in previous farm programs; payments calculated on yield history and program-crop acreage.
Disaster / Emergency / Ad Hoc Payment Programs	Unscheduled assistance in response to weather or market or other unanticipated negative conditions.	Market Loss Assistance Payments; Crop Loss Assistance Payments; Livestock Disaster Payments	
Marketing Assistance Loans & LDPs	To provide producers with interim financing on their eligible production and prevent government acquisition of stocks.	Loan deficiency payments (LDPs); marketing loan gains	Producers receive a nonrecourse commodity loan which they may repay at less than principal plus interest when market prices are below the loan rate or they may choose to receive an LDP in lieu of securing a loan.
Deficiency / Target Price / Counter Cyclical Payment Programs	Crop-specific or decoupled income support payments paid when crop prices are below a target price; decline or disappear as market prices increase.	Deficiency payment program (also called target price program); counter cyclical payment program	Payments made based on the difference between an established target price and the higher of the commodity loan rate or the national average market price.
Price Support & Stabilization Programs			
Nonrecourse Loan Program	To provide a price floor at the loan rate, strengthen prices by withdrawal of commodities from the market, and even out marketings throughout the year.	Nonrecourse loan program	Provides commodity-secured loans to producers for a specified period of time, after which the producer may either repay the loan and accrued interest or transfer ownership of the commodity pledged as collateral to the CCC as full settlement of the loan.
Farmer-Owned Reserve (FOR) Program	To reduce price volatility and assure ample stocks in times of short supply through subsidized long-term storage of grain.	Farmer-Owned Reserve	Producers entered into a 3-year agreement receiving a nonrecourse commodity loan with the possibility of deferred interest and storage cost reimbursement in exchange for some restriction on the timing of grain removal from the reserve.
Marketing Orders	Specify minimum prices processors must pay for products within a specified area.	Federal milk marketing orders	
Production Management Programs			
Annual Acreage Reduction Programs	Raise crop prices by reducing production through annual land retirement.	Acreage reduction programs (ARPs); set-aside programs; paid land-diversion programs	Participating farmers idled a crop-specific, nationally set portion of their crop acreage base to be eligible for CCC loans and deficiency payments.
Multi-Year Acreage Reduction Programs	Long-term (10-15 year) retirement of environmentally sensitive cropland.	Conservation Reserve Program (CRP); Wetlands Reserve Program (WRP)	Landowner receives an annual rental payment to convert environmentally sensitive land to approved conserving uses for 10-15 years.
Marketing Quota or Allotment Programs	Raises crop prices by restricting supply below the market-clearing quantity.	Peanut marketing quota program; federal tobacco marketing quotas; sugar allotment program	Provide each processor or producer of a specified commodity a specific annual limit on sales, above which penalties would apply.
Demand Enhancement Programs			
Export Programs	Help US exporters meet competitors' prices in subsidized markets.	Export Credit Guarantee Program; Export Enhancement Program; P.L.480 (food aid)	Exporters receive subsidies based on the volume of exports to specifically targeted countries.
Domestic Programs	Subsidize or promote domestic purchase/use of commodities to increase domestic utilization and achieve social objectives.	Food Stamps; commodity distribution programs; commodity promotion programs	Distributes surplus government commodity stocks or subsidizes the purchase of qualifying commodities.
Import Restriction Programs			
Tariff & Quota Programs	Raise domestic crop prices by reducing the amount of lower priced imports allowed to enter the domestic market.	Non-tariff barriers; tariff-rate quotas (TRQ); fixed tariffs; bound tariffs; import quotas	Tariffs are surcharges applied to import commodities; quotas are import quantity restrictions; TRQs allow a predetermined quantity of imports to enter after payment of a relatively low tariff.
Conservation Programs			
Working Lands Programs	Improve the environmental performance of the agricultural sector.	Environmental Quality Incentives Program (EQIP); Conservation Security Program	Participating farmers receive cost-share or direct payments to address onsite and offsite problems with soil erosion, animal waste, and water quality.
Non-Working Lands Programs	Preserve and restore agricultural and environmental resources.	Farmland Protection Program; Conservation Reserve Program; Wetlands Reserve Program	Participating farmers receive cost-share or direct payments to remove environmentally sensitive lands from production or restore/preserve desirable habitats.
Other Government Programs			

*Source: Ray, Daryll E. et al, *Rethinking US Agricultural Policy: Changing Course to Secure Farmer Livelihoods Worldwide*; Agricultural Policy Analysis Center, University of Tennessee. Available at <http://www.agpolicy.org/blueprint.html>.

Appendix B – Background of US Farm Bills*

The *US Farm Bill* is a collection of laws, policies and legislation related to agriculture production, food distribution and hunger. The bill focuses on basic farm programs within titles such as: farm payments, agricultural trade, conservation, food assistance, agricultural promotion, credit, rural development and research and education. While comprehensive and ever changing, the farm bill does not cover all policies that affect agriculture production, labor, trade, food distribution or rural community development. Immigration, labor, trade, environmental regulation, tax laws, and laws limiting market concentration and mergers are all examples of policies passed separate from the Farm Bill which directly impact agriculture. However, by packaging many elements of farm policy together in the *Farm Bill*, policy makers and the many interest groups who follow agriculture have faced both the opportunity and the challenge of addressing the state of food and farm policy more comprehensively.

The original *Farm Bill* was authorized in 1949. The mandatory commodity programs established then are considered “permanent law.” Any changes made to these mandatory, or entitlement, programs, or to other discretionary programs that have been added over the years, last for approximately 4 to 6 years, until such time as Congress specifies the next rewrite. The current farm bill was passed in 2002 and expires on September 30, 2007. Should an extension not pass, farm policy would revert to those permanent programs as established in the 1949 Farm Bill.

Commodity Programs - As in other New Deal era public support programs, the *Farm Bill* was established to protect farmers and stabilize rural economies. At the heart of this bill were policies to protect farm income and support commodity prices. The primary tool established to guarantee farm income was the use of *non-recourse loans* administered by the Commodity Credit Corporation (CCC).

Non-recourse loans allowed producers to take out loans at established levels to cover production costs. The *loan rate* effectively sets the floor on the market price of major commodities. When the market price available to dips below the loan rate, rather than repaying the loan, farmers could instead cancel their loan by forfeiting their grain to the CCC. The market price would not drop far below the loan rate because farmers would forfeit their grain before they would sell it at a

* Sources: Rural Coalition at <http://www.ruralco.org>, *Rethinking US Agricultural Policy...* and policy columns at <http://www.agpolicy.org>, *The 2002 Farm Bill Glossary*, Economic Research Service, USDA at <http://www.ers.usda.gov/features/farbill/2002glossary.htm>

loss in the market. Grain collected by the government was placed in reserves and used in commodity and food aid programs.

These programs have focused on a set group of basic commodities, including wheat, corn, soybeans, feed grains, cotton, tobacco, and rice). By establishing a price floor with the loan rate and utilizing grain reserves and other *supply management* mechanisms, the government was able to stabilize the supply of commodities and market price. The Farm Bill has also included similar programs related to livestock and dairy.

Over the years, farmers who participated in the commodity programs have also been either required to take steps or given incentives to moderate production and supply. Over the years these mechanisms have included acreage reduction programs, farmer owned grain reserves and other tools. While not all farmers participated, farmers who enrolled were willing to accept regulations requiring participation in acreage reduction and supply management in order to receive the price protection of the non-recourse loan.

Farm Policy, Food Security and the Export Market - The intricate balance sought in farm policy has been challenged over time. When supply management and reserve policies were inadequate to address either domestic and global market conditions, the resulting surpluses or shortages were often costly, upsetting a carefully constructed political balance. Global imbalances in food supply led policy makers to actively promote not only export sales but expansion of production to meet export sales. In the 1970's and 1980's, these increasingly globally-oriented incentives to US farmers, and direct subsidies for overseas sales, encouraged US production increases in a global market that remained erratic. The promotion of increased production, coupled with loosening of supply restrictions in place in previous decades also at times resulted in large and costly government-held surpluses.

Deficiency Payments - Over time, Congress has responded to growing political pressure by an increasing globalized agribusiness sector to cease protecting price with limits or restrictions on production. In recent decades, as growing imbalances and reductions in the loan rate resulted in huge losses in the number of farmers and in the rural economy as a whole, a more hybrid approach to policy emerged. To balance these competing demands, recent farm bills have set loan rates below what Congress knew to be the costs of production. In return, farmers received direct *deficiency payments* from the government to offset the widening difference between the loan rate and the government estimate of the cost of production for a particular commodity, called the *target price*. Because even these payments were often inadequate, commodity producers were rendered unable to

cover their costs in the marketplace and faced growing dependence on federal payments, and increasing debt.

Farm Credit - Farm policy has also long included *credit programs* that provided farmers both ownership and operating loans. The USDA Farmers Home Administration for many years served as “*the lender of last resort*” to the many minority and other small farmers who needed access to capital for both farm ownership and operating purposes. Credit programs were essential for many farmers, and the only government support for a whole group of producers who grew “non-program” crops such as vegetables. In 1987, Congress passed the landmark *Agriculture Credit Act* which began as a bailout for the Farm Credit System whose financial stability was greatly threatened by the collapse of the farm economy and the value of assets that serve as collateral for loans. In response to a massive lawsuit, borrowers in both the Farm Credit System and the Farmers Home Administration were finally also afforded borrowers rights that had long been provided to borrowers of commercial and other credit.

Equal Access to USDA Programs and Services - Since 1985, Congress has also begun to address longstanding inequities in the provision of programs and services for minority and other limited resource producers. In 1990, *minority farmers rights* provisions were added to the farm bill, as was a program to provide for the first time *Extension Agents on Indian Reservations*. In 1996, the United States Department of Agriculture officially admitted that minority producers had faced discrimination and revealed that from 1983 until 1996, its Civil Rights Office had failed to investigate any claims of discrimination filed. Congress took the unprecedented step of waiving a 2-year statute of limitations to allow settlement of these cases, and USDA settled a major lawsuit with African American producers called *Pigford v. Glickman* in 1999. To date, many claims remain under *Pigford v. Glickman* are not yet resolved. The House of Representatives, and more recently, the Senate Agriculture Committee, have also held hearings to continue action to eradicate structural inequities that still prevent equal access to agriculture programs and services.

Conservation - The expansion in production of the 1970’s and 80’s also took an increasing toll on the land and water resources. Conservation features, including incentive programs and the Conservation Reserve Program, and more recently the Environmental Quality Incentives Program, have been increasingly significant priorities in farm bill since 1985.

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