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Farm Subsidies and Obesity in the United States

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The claim that farm subsidies have contributed significantly to making Americans fat by making fattening foods relatively cheap and abundant has become accepted as "fact" in the popular media. We show that there is no evidence to support this claim. While many arguments can be made for changing farm subsidies, even entirely eliminating the current programs would not have any significant influence on obesity trends.

Also in this issue

Obesity has increased rapidly in the United States (Figure 1) and the related health concerns are priority issues for the U.S. government and the medical community. Many health professionals now consider excessive body weight to be *the* key health problem in the United States today. The high and rising rate of obesity among children is of particular concern (Figure 2). In addition to contributing to soaring health care costs, obesity reduces worker productivity and imposes other private and social costs.

The U.S. government has a stated objective of reducing obesity and has considered a number of strategies. Options include ever-more-vigorous public education programs and regulatory or fiscal instruments that attempt to discourage "unhealthy" consumption choices and encourage "healthy" ones. For instance, analysts have discussed banning certain types of advertising, taxing certain foods, or subsidizing healthy food choices.

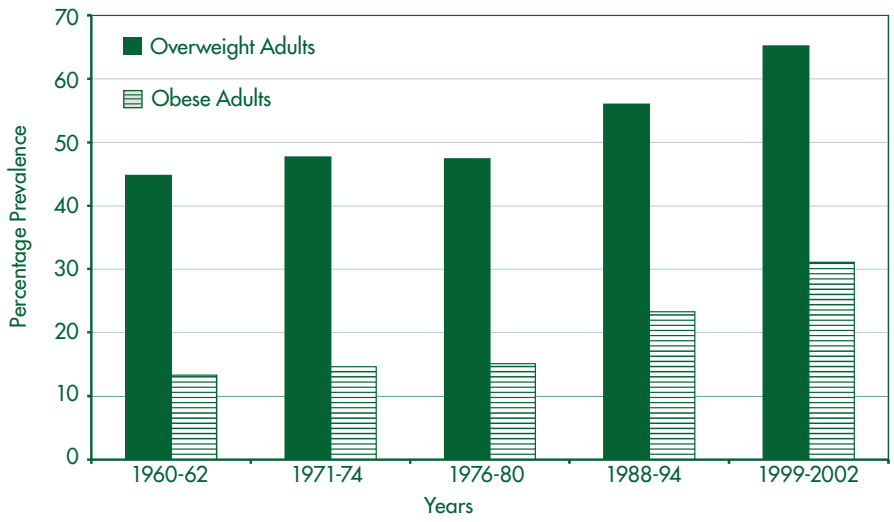
One popular idea is that American farm subsidies contribute significantly to obesity and that reducing these subsidies will go a long way toward solving the problem. For instance, writing in the New York Times, October 12, 2003, Michael Pollan claimed:

> "[Our] cheap-food farm policy comes at a high price: …[with costs including] the obesity epidemic at home – which most researchers date to the mid-70s, just when we switched to a farm policy consecrated to the overproduction of grain. Since that time, farmers in the United States have managed to produce 500 additional calories per person every day; each of us is, heroically, managing to pack away 200 of those extra calories per day. Presumably the other 300 – most of them in the form of surplus corn – get dumped on overseas markets or turned into ethanol."

Pollan and others making such claims generally treat the issue as self-evident, and do not present details on the mechanism by which farm subsidies are supposed to affect obesity, nor evidence about the size of the impact.

U.S. farm subsidy policies include both farm bill programs and trade barriers that raise U.S. farm prices and incomes for favored commodities. These policies support farm incomes either through transfers from taxpayers, or at the expense of consumers, or both. Thus, they might make agricultural commodities cheaper or more expensive and might therefore increase or reduce the cost of certain types of food.

Figure 1: Percentage of U.S. Adults Who Are Overweight or Obese



Source: www.cdc.gov/nchs/about/major/nhanes/datatblelink.htm

Nevertheless, the idea that farm subsidies have contributed significantly to the problem of obesity in the United States has been reported frequently in the press and has assumed the character of a stylized fact. Given the importance of the issue and the potential significance of the claim, we initiated a project jointly with colleagues from the Department of Nutrition at UC Davis and the Department of Economics at Iowa State University to examine the links between farm commodity subsidies and obesity. This article presents a summary of our findings.

Conceptual Links between Farm Subsidies and Obesity

The cause of obesity is simple and not disputed: people consume more food energy than they use. Of course, both consumption and use sides of the equation involve complex dynamics, and many aspects of the relationships are not clearly understood. But clearly obesity relates to food consumption, and nutritionists highlight the role of certain types of foods. The quantities demanded of these foods depend primarily on food preferences, incomes, and relative prices. No one claims that farm subsidies affect food preferences or average per capita incomes. Farm subsidies do, however, affect markets for farm commodities, and thereby—through the effects on commodity prices—indirectly affect food prices and thus may affect food consumption choices. Consequently, farm subsidy policies could contribute to lower relative prices and increased consumption of fattening foods by making certain farm commodities more abundant and therefore cheaper. However, each of several component elements must be true for farm subsidies to have had a significant effect on obesity rates. First, farm subsidies must have made farm commodities that are important ingredients of relatively fattening foods significantly more abundant and cheaper. Second, the lower commodity prices caused by farm subsidies must have resulted in significantly lower costs to the food industry, and cost savings to the food marketing firms must have been passed on to consumers in the form of lower prices of relatively fattening foods. Third, food consumption patterns must have changed significantly in response to these policy-induced changes in the relative prices of more-fattening versus less-fattening foods.

In fact, the magnitude of the impact in each of these steps is zero or small. Let us consider each step briefly. First, the evidence indicates that farm subsidies have had very modest (and mixed) effects on the total availability and prices of those farm commodities that are the most important ingredients in more-fattening foods. (More on this evidence is provided below.) Second, such small commodity price impacts would imply very small effects on costs of food at retail, which, even if fully passed on to consumers, would mean even smaller percentage changes in prices faced by consumers. (The cost of farm commodities as ingredients represents only a small share of the cost of retail food products; on average about 20 percent, and much less for products such as soda and for meals away from home, which are often implicated in the rise in obesity. Hence, a very large percentage increase in commodity prices would be required to have an appreciable percentage effect on food prices.) Third, given that food consumption is relatively unresponsive to changes in market prices, very small food price changes induced by farm subsidies could not have had large effects on food consumption patterns. In what follows we emphasize the first step in the chain, the effect of farm subsidies on farm commodity prices since, if these effects are small, the subsequent impacts must be very small.

Farm Subsidies and Commodity Prices in Reality

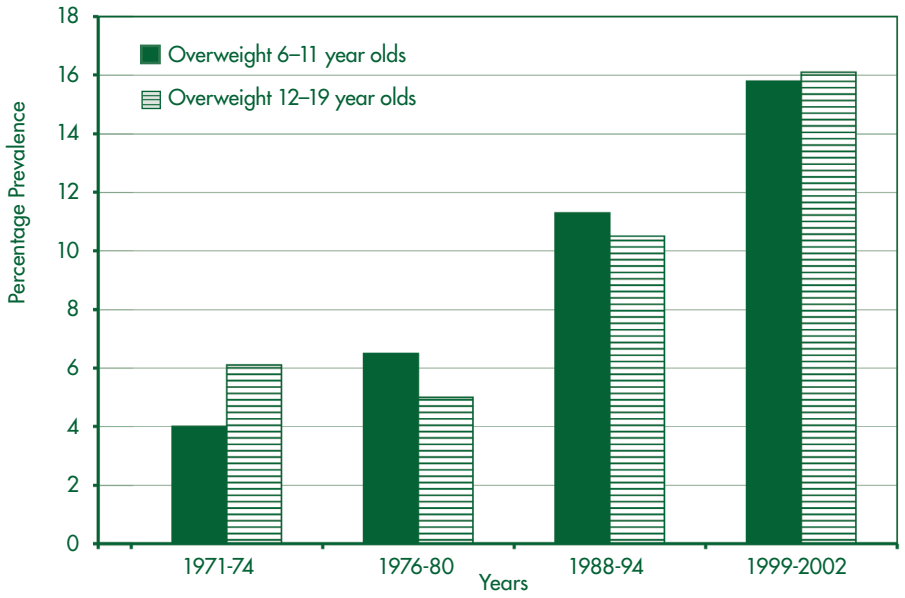
A simplistic model of farm subsidies and obesity, which is implicit in some writings on the subject, presumes a text-book subsidy policy that results in an increase in both production and consumption of the subsidized good by increasing the net return to producers (the market price plus the subsidy) and lowering the market price paid by consumers. If such subsidies had been applied more generously to more-fattening foods or their main ingredients (say sugars, starches, and fats) compared with less-fattening foods (say fresh fruits and vegetables) then

it follows that the subsidy policy was fattening; the only remaining issue would be the magnitude of the effect.

However, the main elements of U.S. farm subsidy programs are significantly different from simplistic textbook subsidy policies. Farm subsidies have resulted in lower U.S. prices of some commodities, such as food grains or feed grains, and consequently lower costs of producing breakfast cereal, bread, or livestock products. But in these cases, the price depressing (and consumption enhancing) effect of subsidies has been contained (or even reversed) by the imposition of additional policies (such as acreage set-asides) that restricted acreage or production. So the effects are smaller than the text-book model would suggest. In addition, for the past decade, about half of the total subsidy payments have provided limited incentives to increase production because the amounts paid to producers were based on past acreage and yields rather than current production. The effects of these payments are very muted compared with a text-book production subsidy at the same rate applied to current production. Finally, for some commodities (notably sugar, dairy products, and orange juice), the U.S. policy increases U.S. farm prices by restricting imports. For these commodities, the effect of the policy is to *increase* the consumer price and *decrease* domestic consumption.

Economists have modeled and projected the likely economic consequences of U.S. farm subsidies for prices and production. For instance, in 2006 the Australian Bureau of Agricultural and Resource Economics (ABARE) quantified the likely effects if U.S. farm subsidies (including import tariffs) were phased out over 10 years, 2007-2016. The ABARE estimates are summarized in Table 1. They showed that eliminating existing farm programs would have a very modest effect on farm prices and production of the main food commodities. Only sugar and rice would experience a reduction in production of more than 10 percent, and only sugar would see a price change of more than 10 percent. Importantly, the direction of the effect on price is mixed. Elimination of farm subsidies would result in increases in prices only for wheat and corn. For every other commodity the net effect of eliminating the subsidies would be to reduce the price, encouraging the consumption of meat and dairy products (albeit only modestly) along with fruit and vegetables (a price decrease of 5.2 percent associated with an increase in production of 4.4 percent), and sugar (the biggest effect, with a price decrease of 15 percent, that would be reflected more generally in the market for caloric sweeteners resulting in lower prices for all foods containing caloric sweeteners). Among all these effects, a reduction in farm prices of fruit and vegetables might have some favorable effects on nutritional outcomes, but it needs to be remembered that potatoes would account for a significant share of the increased production and consumption of fruit and vegetables; and, since almost 60 percent of potatoes are consumed as french fries or chips, the nutritional consequences may not be desirable.

Figure 2: Percentage of U.S. Children and Adolescents Who Are Overweight



Source: www.cdc.gov/nchs/about/major/nhanes/datatblelink.htm

The main message from Table 1 is that the effects of U.S. farm subsidies on commodity prices are mixed and mostly modest. Other studies have found somewhat larger effects. For instance, in a working paper prepared for the American Enterprise Institute project on the 2007 Farm Bill (see further readings), Alston estimated that eliminating U.S. program crop subsidies (but leaving other subsidies and tariffs in place) would result in an increase in U.S. crop

Table 1. Consequences in 2016 of a Complete Elimination of U.S. Commodity Protection and Subsidy Policies

	Production	Price
	(percent difference from baseline)	
Soybeans	-2.86	-1.14
Wheat	-7.58	1.52
Maize (Corn)	-3.79	0.26
Rice	-11.71	-3.87
Cane and beet	-33.31	-15.30
Fruit and vegetables	4.42	-5.16
Beef cattle	1.44	-3.31
Pigs and poultry	0.41	-0.01
Milk	-0.45	-0.01

Source: See Alston, Table 3, which was based on a table provided by Vernon Topp, ABARE, December 2006, personal communication. Effects refer to elimination of U.S. farm programs as represented in ABARE (2006) Research Report 06-10, Scenario 1.

production by 7.3 percent; 5.0 percent if the Conservation Reserve Program were eliminated at the same time. In a study published by the Cato Institute (see further readings), Sumner estimated that eliminating corn subsidies alone (i.e., leaving subsidies for other commodities in place) would result in a decrease in U.S. corn production of 9-10 percent. As would be expected, the estimated effects of eliminating subsidies for a subset of commodities are larger for those commodities (but smaller for the sector as a whole) than when eliminating subsidies for all commodities together, so the ranking of findings between ABARE, Alston, and Sumner is consistent with expectations. Even if the subsidies were responsible for reducing corn prices by as much as 10 percent, the effect on food prices and consumption would be very small. However, given that the appropriate measure should allow for the impacts of farm subsidies as a whole, the estimates at the lower end of the range are more relevant for present purposes. Alston's estimates imply program crop subsidies reduce program crop prices by 5-7 percent; ABARE's imply an even smaller price impact.

Most corn is actually consumed in the form of meat or dairy products. Corn and other feedstuff represent less than 40 percent of the farm cost of those items and the farm cost of livestock represents only about one-fifth of the retail cost of meat. Thus, even if retailers passed along all cost savings to their consumers, a 5 percent cut in the farm price of corn would imply at most a 0.4 percent reduction in the retail price of meat facing consumers. Similar calculations apply for other retail foods. Given that consumers generally show limited responses to retail food price changes, eliminating the corn subsidy would reduce corn-based food consumption by at most 0.2 percent. And remember, eliminating policies applied to other commodities would tend to reduce slightly the price of food at retail. Consequently, eliminating the policies could not be expected to have large and favorable effects on consumer incentives to eat more-healthy diets such that obesity rates would be meaningfully reduced.

The policy economics of the sweetener market raises some issues that merit some explicit discussion. Farm subsidies are responsible for the growth in the use of corn to produce high fructose corn syrup (HFCS) as a caloric sweetener, but not in the way it is often suggested. The culprit here is not corn subsidies; rather, it is sugar policy that has restricted imports, driven up the U.S. price of sugar, and encouraged the replacement of sugar with alternative caloric sweeteners. Combining the sugar policy with the corn policy, the net effect of farm subsidies has been to increase the price of caloric sweeteners generally, and to discourage total consumption while causing a shift within the category between sugar and HFCS. In this context, eliminating the subsidy policies would result in cheaper caloric sweeteners, and if anything more rather than less total consumption of sweeteners, with a switch in the mix back toward sugar.

Simple causation from farm subsidies to obesity is also inconsistent with international patterns across countries. For example, obesity trends for adult males and children in Australia are similar to those in the United States and the proximate causes (among them dramatic increases in fast food and soft drink consumption) are essentially the same, but Australia phased out its farm commodity programs over the 1980s and 1990s.

Implications for U.S. Policy

The important point of this brief article is that the magnitude of the effects of U.S. farm commodity subsidy policy on obesity must be very small. Farm subsidies have had small effects (up or down) on most farm commodity prices, much smaller effects on retail prices, and even smaller effects on consumption. Compared with other factors, the policy-induced differences in relative prices among various farm commodities have played only a tiny role in determining excess food consumption and obesity in the United States. U.S. farm subsidies have many critics. A variety of arguments and evidence can be presented to show that the programs are ineffective, wasteful, or unfair. Eliminating farm subsidy programs could solve some of these problems, but would not even make a dent in America's obesity problem.

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For additional information, the authors recommend the following:

Alston, J.M. "Benefits and Beneficiaries from U.S. Farm Subsidies." Paper 4 of *Agricultural Policy for 2007 Farm Bill and Beyond*, B.L. Gardner and D.A. Sumner, eds, presented at the AEI conference, Washington DC, December 5-6, 2006. (www.aei.org/research/farmbill/publications/pageID.1476,projectID.28/default.asp)

Alston, J.M., and D.A. Sumner. "Perspectives on Farm Policy Reform." *Journal of Agricultural and Resource Economics* 32 (1)(April 2007): 1-19.

Alston, J.M., D.A. Sumner, and S.A. Vosti. "Are Agricultural Policies Making Us Fat? Likely Links Between Agricultural Policies and Human Nutrition and Obesity, and Their Policy Implications." *Review of Agricultural Economics* 28(3)(Fall 2006): 313-322.

Sumner, D.A. "Boxed In: Conflicts Between U.S. Farm Policies and WTO Obligations." T*rade Policy Analysis* 32(December 2005) www.freetrade.org/pubs/pas/pas.html.