

AEI Agricultural Policy Series

The 2007 Farm Bill and Beyond

Project Directors

Bruce L. Gardner and Daniel A. Sumner

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Overview and Acknowledgments

Congress reconsiders federal agricultural policy every few years when it drafts a new farm bill. In most years, this is a relatively uneventful process, but 2007 might prove to be different.

Budget deficits and PayGo rules are forcing lawmakers to closely examine all spending programs. Concerns about the security of oil imports and high energy prices are driving calls for expanded ethanol subsidies. International trade rulings and negotiations also call the structure of current farm programs into question.

To help inform these debates, the American Enterprise Institute asked two noted agricultural economists and former top United States Department of

Agriculture officials, Daniel A. Sumner of the University of California at Davis and Bruce Gardner of the University of Maryland, to direct a project examining the wide range of policies that comprise American agricultural policy. They brought together a collection of eighteen noted economists to study these issues and offer policy recommendations.

This document is a collection of short summaries of their research. The full papers may be found at www.aei.org/farmbill.

This publication, and the research and conference that led to it, were funded by the American Enterprise Institute's Inez and William Mabie Endowment for Agricultural Policy Research.

Key Findings and Policy Recommendations

Title 1 Commodity Subsidies

- Elimination of farm subsidies for corn, wheat, and soybeans would have little effect on farm production or commodity prices. These Title 1 subsidies are in effect “money for nothing.” (Babcock, p. 41)
- Farm households earn an average of 20 percent more than the average American household; the average income of commercial-scale farms (which receive the largest share of subsidies) is more than three times that of the average household; and the median net worth of farm households in 2005 was close to five times greater than average. (Gardner and Sumner, p. 7; Gardner, p. 24)
- Elimination of farm subsidies would not harm vulnerable farm families. Only 3 percent of all farm households have both low-income and low-net worth and these receive few payments. (Gardner, p. 26)
- Eliminating subsidies would negatively affect owners of cropland, but the losses in land value would be less than the annual value of cropland price appreciation in recent years. (Gardner and Sumner, p. 10)

- Loan deficiency, direct, and countercyclical payments may be in conflict with current WTO limits and these programs thwart progress in opening global markets. (Josling p. 87; Sumner, p. 95)
- Agriculture has continued to flourish in countries, such as Australia and New Zealand, which have made significant, market-friendly reforms to their agricultural policies. (Alston, p. 83)
- Payment limits on recipients of subsidies have been evaded because they were based on individual payments, rather than farm payments. The result has been needless restructuring of the ownership profile of farms. (Kirwan, p. 71)

Crop Insurance

- Taxpayers currently pay \$3 billion a year to subsidize crop insurance, in addition to \$2 billion for ad hoc disaster payments. In some cases farmers collect twice on the same loss. (Glauber, p. 79)
- Farmers receive between \$2.06 and \$2.73 for every \$1 they paid in crop insurance premiums. But it's a remarkably inefficient program: the

government pays \$1 for every 60 cents farmers receive. (Glauber, p. 77)

Sugar, Dairy, and Livestock

- The sugar program costs consumers hundreds of millions of dollars each year by keeping U.S. sugar prices at about double the world level. (Beghin, p. 49)
- Current dairy policy also transfers millions of dollars from consumers to dairy farmers; the cost to consumers and taxpayers far exceed the benefits to dairy farmers. (Balagtas, p. 56)
- The livestock industry is seriously disadvantaged by biofuel policies, which drive up the price of many feed grains. (Brester and Smith, p. 63)

International Food Assistance

- U.S. food aid programs are hugely wasteful. Logistical costs eat up 60 percent of the U.S. food aid budget; in contrast, Canada only spends 32 percent on logistics. These high costs are a result of requirements that food be purchased and transported from the United States, and shipping, bagging, and processing be undertaken by approved contractors. (Barrett, p. 99)
- Such mandates can produce absurd inefficiencies. For example, the 1986 Farm Bill stipulates that Great Lakes ports should retain their 1984 shares of food aid cargoes. But because no ships legally permitted to transport food currently serve Great Lakes ports, the stipulated share of aid must be moved by truck or rail through the Great Lakes region before it is then transported by land to another U.S. port for overseas shipment. (Barrett, p. 100)

Key Policy Recommendations

Title I Subsidies

- Eliminate Title I subsidies. American agriculture is financially healthy; farmers do not need subsidies to prosper; current subsidy programs are vulnerable to successful challenge before the WTO; and these programs serve no useful public purpose. (Gardner, p. 26; Sumner, p. 32 and p. 93; Antle, p. 111)
- Well-designed payments to farmers for ecosystem services could replace traditional subsidies and be WTO compliant. (Antle, p.112)
- As an alternative to a complete end to subsidies, Title I subsidy programs, disaster assistance, and crop insurance programs could be integrated into a more cost effective, nonduplicative, and transparent safety net for farmers. (Babcock, p. 42)
- Proposed subsidy payment limitations must clearly define a “farmer” and more closely scrutinize farm reorganizations to avoid wasteful farm reorganizations. (Kirwan, p. 71)
- Use of explicit and powerful transparency institutions, and temporary and limited adjustment assistance measures, may facilitate significant policy change. (Alston, pp. 84–85)

Crop Insurance

It makes little sense to have both recurring disaster programs and an expensive crop insurance program. Either eliminate the crop insurance program, or reform it to shrink program costs and reduce the need for ad hoc disaster payments. (Glauber, p. 78)

Sugar, Dairy, Livestock, and Specialty Crops

Dairy: Current dairy programs—the price supports, milk marketing orders, and the MILC program—should be repealed. Or, at the very least, subsidy programs should be replaced with direct payments that do not distort market prices or production. (Balagtas, p. 55)

Sugar: The sugar program should be eliminated. If politically necessary, sugar producers could be compensated for their losses, which would also make transparent the huge magnitude of the current transfer from consumers to a handful of large producers. (Beghin, p. 51)

Livestock: Be wary of increasing subsidies for bio-fuels; set a high standard of proof in unfair competition claims, and impose stringent sunset provisions on retaliatory actions where countervailing measures are justified; and explore whether a mandatory or voluntary animal identification program satisfies concerns about animal health (e.g., “mad cow disease”). (Brester and Smith, pp. 63–67)

Specialty Crops: Support the shift of funds in the general direction suggested by these industries, but closely examine new requests for assistance from the specialty crop industry to ensure they pass a public interest test. Increased funds for research and development, protection from invasive species, and programs that promote specialty crop consumption are most likely to pass such a test. (Paggi, p. 58)

Food Aid Programs

End requirements that food purchased with U.S. dollars be domestically produced, packed, and processed, and that only U.S.-flagged carriers ship food aid; permit the use of cash for local and regional food purchases. (Barrett, p. 101)

Conservation, Bioenergy and the Environment

Conservation: Redesign land retirement programs to achieve environmental goals in addition to wildlife habitat protection, and to permit non-intensive agricultural uses while protecting environmentally sensitive land. (Heimlich, p. 109)

Bioenergy: Tax fossil fuels or institute a cap-and-trade system for greenhouse gas emissions instead of expanding ethanol subsidies. Reconsider current ethanol mandates and tariffs that bias fuel choices and drive up food and livestock feed costs. Alternatively, adopt subsidies, alternative fuel mandates, and research and development programs that do not favor ethanol, permitting the market to identify the most cost-effective alternatives to fossil fuels. (Miranowski, p. 125)

Environment: Solve budget limits on farm environmental programs by taxing those management practices that negatively impact the environment rather than paying farmers to reduce polluting practices. Alternatively, if payments continue, link payments to measurable environmental outcomes and require farm subsidy recipients to document their environmental management practices. (Kuminoff, p. 117)

Rural Development: Federal investment in water treatment projects appears difficult to justify, but federal investments in broadband deployments could be justified if they have positive net social benefits. (Renkow, p. 137) Federal policymakers could also move rural development funds through the rural commercial banking system, find ways to promote rural liquidity as subsidy-inflated returns to farm land are reduced in future years, and stop providing outright grants and require rural communities to match federal funds for infrastructure. (Kilkenny and Johnson, p. 132)

These papers show that current agricultural policy is wasteful and often counter to national welfare. American consumers and taxpayers would benefit from a more market-friendly and cost-effective agricultural policy.

U.S. Agricultural Policy Reform in 2007 and Beyond

Bruce L. Gardner and Daniel A. Sumner

As U.S. agricultural policy is revisited in the 2007 Farm Bill debate, the occasion is ripe to reconsider whether our commodity programs and related legislation best serve agriculture and the economy, and what policies might do better. The studies in this working paper series demonstrate that the current programs serve neither the national interest nor the interests of rural people or agriculture as an industry. Congress and the president would do the country an economic favor by substantially reforming these policies.

We recommend a shift to a much reduced government role in markets now influenced by agricultural programs, along with an end to the substantial transfers to producers and other resource owners associated with the supported commodities. This is a less radical reform than it may appear to be. A large fraction of U.S. agriculture already operates in an approximately free market environment. Drawing upon a series of papers on particular policy issues commissioned by the American Enterprise Institute (AEI) in 2006, we provide evidence that the programs now in place have costs far in excess of the benefits they can reasonably be argued to provide, and that U.S. agriculture would prosper no less than at present, and with better long-term prospects for both farmers and the public generally, in the absence of these programs. Before developing

ideas for policy change, we outline some of the purposes that advocates have proposed for farm subsidy programs and provide some factual context about modern agriculture in the United States.

Purposes of Agricultural Policy

Agricultural policy can serve two broad objectives: the efficiency and prosperity of agriculture as an industry, and the well-being of farm and rural people.¹ These purposes are closely related but distinct, in that agriculture as an industry is important to the nation as a whole: to consumers of food, to earners of income from industries related to agriculture, and to taxpayers, in addition to farmers themselves. The well-being of farm households is related to agriculture as an industry, but is broader in that farm households receive a large fraction of their incomes from sources other than farming, and farming is even less important to rural welfare more broadly (see Kilkenny and Johnson 2007).

Broad national aspects of agriculture as an industry that have been advocated as giving purpose to agricultural policy are food security, food affordability, nutrition, competitiveness in international trade, and agriculture as a contributor to prosperity and income growth in rural areas. For American agriculture to

contribute to these purposes, farms must be economically viable, farmland must generate returns sufficient to keep it from conversion to other uses, returns to investment must be sufficient to keep the capital stock in agriculture at the technological frontiers, and investment in new technologies and the skills to implement them must be maintained. At the same time, with relatively open borders and competing uses for rural land and other resources, these broader purposes are not served by maintaining farms in particular commodity markets or in particular regions when market forces would otherwise signal a shift.

Federal commodity programs fit into these purposes through their contribution to the economic viability of farms balanced against their costs to consumers, taxpayers, the broader agricultural and non-farm economy, and other national objectives, such as the provision of rural environmental quality. The threats to farm viability that have made such programs attractive are low market prices of farm products, and variable prices and farm income because of weather shocks and market fluctuations. But if these prices and returns reflect market realities, what is the justification for commodity programs sending different signals to producers?

Answers given are market failures in the form of imperfect competition among the corporate buyers of farm products and sellers of inputs to them, as well as the actions of foreign governments that restrict the market access of U.S. products or subsidize their own production of competing products. Other market failures, which lie behind excessive soil degradation and environmental damages associated with unregulated agricultural production, are also seen as defects that can be remedied with commodity programs (for example, by requiring conservation practices by recipients of commodity support) or by conservation programs per se (for example, by idling environmentally sensitive acreage or subsidizing environmentally friendly practices) (see Heimlich 2007; Kuminoff 2007).

Poverty in rural America was a major force behind the original establishment of commodity programs in the 1930s. Rural poverty remains a blight in the American economy to this day, and the idea that

higher commodity prices could reduce that poverty attracts support to these programs. Evaluating farm policies therefore must be considered in light of their effects on farm and rural incomes, and especially on the effectiveness at dealing with rural poverty compared to other approaches to this concern.

Among the central questions addressed in the AEI studies are whether current U.S. agricultural commodity programs constitute good policy for achieving any of these purposes. To be good policy, a commodity program must, at least, generate benefits to U.S. society that exceed the costs incurred to pursue these goals.

For a fuller treatment of modern agricultural policy, it is important to go beyond the standard commodity programs to consider crop and revenue insurance, international trade, conservation and environmental concerns, bioenergy, and rural development. In each of these policy areas, the AEI studies ask whether the benefits of current policies and alternatives to them generate benefits that exceed the costs.

The Economic Situation in Agriculture Today

It is important to distinguish the economic situation of households that have some farming activities (classified in the data as farm households) and the economic situation of farming as an industry. These are quite different issues, although the answer in both cases is that they are doing quite well in general, and that pockets of concern are not those that can be remedied with commodity programs.²

For most of the twentieth century, farm household incomes averaged far below the incomes of non-farm households. Post-World War II prosperity spilled over to the farm economy and farm incomes rose significantly from the Depression-era lows, even relative to non-farm household incomes. Nonetheless the average farm household income was still less than 60 percent of the average of all U.S. households from 1945 to 1960, according to historical comparisons compiled by the U.S. Department of Agriculture (USDA) (see figure 1). In the 1960s farm incomes, relative to non-farm incomes, began a trend increase that continues to

the present. By 1990 farm incomes had gained equality with non-farm incomes, and in recent years farm incomes have been about 20 percent higher (Covey and others 2005). Given the variability of farm prices, this income picture has had its ups and downs, with a spike up in the early 1970s and a dip below trend in the early 1980s. An additional trend is the increasing importance of income from off the farm for farm households. In recent years 80 to 90 percent of farm household income has come from non-farm sources (Covey and others 2005). Indeed for most farm households, that is the income that matters most.³

FIGURE 1
FARM HOUSEHOLD INCOME AS A PERCENTAGE OF
U.S. HOUSEHOLD INCOME, 1930–2005



SOURCE: Covey and others (2005).

Small farms make up the bulk of all farms, but a much smaller percentage of farm output. Farms with gross revenue of less than \$25,000 per year comprise 70 percent of all farms but contribute only about 3.5 percent of U.S. farm output and report a negative net income from farming, according to the 2002 Census of Agriculture (USDA 2004, table 56).⁴ Yet the average income of the households operating these farms was well above the average of non-farm household income because of off-farm earnings—although about 3 percent of farms, classified by USDA as limited resource farms, report very

low average household incomes: a median of \$10,300 in 2004 (Covey and others 2005).

Family farms classified by USDA as commercial scale operations (those that have \$250,000 or more in sales) earned an average of \$145,300 net income from farming in 2004, plus \$46,038 from off-farm sources, for a total of \$191,338: higher than almost all non-farm households—notwithstanding that given farm price and yield variability, 10 to 20 percent of the farms in this sales category have negative incomes each year (see USDA 2005, p. 26; USDA 2004, table 56). These farms produced three-fourths

of U.S. farm output, according to the 2002 Census of Agriculture.

Net wealth data reinforce the income picture. Farmers tend to have low debt to asset ratios (an average of 13 percent debt to assets in 2005) and the smaller farms most often carry no debt (Covey and others 2005). Farm household wealth in all sales groups is much above the wealth of other American households (Hoppe and Banker 2006).

To consider the economic health of agriculture as an industry, one must focus on the sources of agricultural revenue, which are dominated by the 300,000 farms that produce almost all the farm output in the United States. In that context, is there any evidence

that agriculture is a troubled industry with fundamental economic problems that need government intervention? As noted, the farms that produce the great bulk of U.S. farm output are on average profitable, with net income of more than \$145,000 per commercial farm. In addition, farmland prices continue to increase, reflecting wealth growth for owners. This growth in farmland prices has occurred in all regions, including those with little or no influence from non-farm land uses. Therefore the growth in land prices reflects continued confidence in the future profitability of farming.

Farm output in the United States continues to expand, even as farm prices continue a secular decline relative to prices in the economy as a whole. The index of agricultural output has grown at 2 percent per year over the past fifty years (CEA 2007, table B-99). This growth of output continues despite gradual reductions in the amount of cropland and agricultural labor input. USDA's index of aggregate input quantities is unchanged between 1950 and 2002, implying that overall total factor productivity growth has proceeded at about 2 per year. This productivity growth has allowed agricultural exports to continue to expand at the same time that the U.S. population has increased and U.S. demand for food has expanded. Agricultural imports have also grown, reflecting a globalization of the food economy. Import data indicate that much of the expansion of agricultural imports is in highly processed products (beer, wine, processed specialty foods) imported from Europe, along with fruits and vegetables imported during off-seasons for U.S. produce.

The result of growing agricultural productivity, a competitive farm industry, and openness to imports has been continuing low food prices and a declining share of consumers' income spent on food. Thus the success of agriculture as an industry has provided benefits to producers and consumers alike.

The question remains however of the extent to which the economic success stories of commercial agriculture and farm households have been fostered by commodity support programs and other farm policies, and are now dependent upon them. As we will see, farm commodity programs have been aimed at a narrow group of commodities and have no particular linkage to farm productivity that underlies the success of agriculture or to alleviating America's remaining farm poverty.

What Would Happen Without the Commodity Programs: Short-term Impacts

Consider first the complete and rapid elimination of commodity programs. What would this entail? The government would cease a variety of activities that

differ greatly for different commodities. For most commodities (such as fruits and vegetables, hay, meat products, ornamentals), there is little government involvement or income support and little to eliminate. In the commodities where the government is active, its main roles are: intervention to support domestic commodity markets by adding to demand for products; regulation to support commodity prices by limiting supplies; payments made directly to commodity producers; and regulation of international trade in agricultural commodities, either to keep other countries' products out or to market more U.S. products in foreign countries.

Interventions by the U.S. government to acquire commodities when prices are low—either for later resale, as with classical grain stockpiling, or for redistribution through food aid programs—were once a central device of commodity support. While authorization of government commodity purchase remains for dairy products and for purchases of surplus commodities for food distribution by USDA, this approach has been abandoned as a means of support for the major crops. Even for dairy, its use is much reduced. The hoped-for benefits of price stabilization for both producers and consumers never materialized. Instead, the accumulation of stockpiles generated intolerable costs as the government's buying prices tended to be too high, and producers objected to the price-depressing effects of government sales.

Regulation of production, through acreage restrictions or production quotas, began in the 1930s for the major crops and persisted until the last decade for a few products such as peanuts. But this approach to commodity support has now been abandoned, again because of perceptions by both commodity buyers and producers that the costs were great but the gains small. Production restrictions create obvious costs to those who must buy at higher prices or are rationed out of the market. It often entailed idling productive land and other resources, with obvious waste and impacts on competitiveness. Producers were convinced by the growing response of competing agricultural exporting countries that expanded production as the United

States held its output in check. Congress removed the authority to implement annual acreage restricting programs in the “Freedom to Farm” Act of 1996.

Payments to producers of program crops and those who have a history of such production have been increasing in importance in recent decades. Since 1985 for cotton and rice, and the early 1990s for grains and oilseeds, “marketing loan” payments have gradually replaced government acquisition as a mechanism to guarantee minimum prices to farmers. This approach gives producers price protection, but without accumulating commodity stocks and without choking off market demand through higher market prices. Instead the costs of support are borne by taxpayers, who provide the funds for the payments. Previously existing support payments varied inversely with market price, were tied directly to current production, and required annual acreage idling. These were replaced in the 1996 Act by payments—renamed Direct Payments under the current 2002 Act—that are based on past acreage and yield of the program crop and do not vary from year to year. This form of payment goes some way to reduce the criticism of earlier price supports that they generated overproduction of supported commodities.

The Countercyclical Payments Program, introduced in 2002, is intermediate between the marketing loans and the “direct payments.” The countercyclical payments are tied to the history of production of the program crop and vary inversely with market price of that crop; however, like the direct payments, they are not tied to current production.

The many complexities of current programs and their national and international market consequences are discussed in the AEI papers by Alston (2007a), Babcock (2007), Balagtas (2007), Barrett (2007), Beghin (2007), Brester and Smith (2007), Kirwan (2007), Paggi (2007), and Sumner (2007b). The central issue we consider here is the implications for U.S. agriculture if these programs were to end. This issue is clouded by the fact that the consequences of an end to commodity support looks quite different for the immediate future than the consequences would have been in the immediate

past. The reason is that the immediate past includes several low-price years for major commodities from 1999 to 2005, when marketing loan programs as well as payments under the Countercyclical Payment Program were substantial. Market prospects for the next five years, at least, are much more favorable, according to the estimates of both USDA and private prognosticators (USDA 2007a; FAPRI 2007). Accordingly, payments under current programs would be much lower in the future than they have been in the past: reduced by roughly half, according to the baseline published by the U.S. Congressional Budget Office (CBO) in spring 2007 (CBO 2007).

Babcock (2007) considers the market situation for program crops without the full complement of commodity programs, under 2002–05 market conditions. When all programs are removed simultaneously, Babcock estimates that there would be relatively little readjustment in acreages for the grains and oilseeds and little overall reduction in production. The price of corn would have been 1.1 percent higher; the price of soybeans, 0.4 percent lower; the price of wheat, 0.6 percent higher; and the price of rice, 1.7 percent higher. Only for cotton would the effects remain relatively large: an increase in price of 9.7 percent. Overall, these are small effects for payments that averaged \$16 billion per year in this period, amounting to about 25 percent of the market value of the commodities supported. Prices rise as production falls in most cases, with a slight price decline for soybeans because of a shift of acreage from corn. The effects are small because of the presumed minimal supply response to them in the analysis carried out. This means that buyers of commodities that receive payments will not pay much more if commodity programs are ended. Taxpayers will pay much less, and the losses will accrue in the supply side of the markets.

On the supply side, losers include farmers, landowners, and owners of other resources used in farm production. Direct payments and countercyclical payments are directly tied to specific farms with program base. Therefore landowners would be expected to reap gains from these payments.

Subsidies to output are expected to accrue to suppliers of inputs according to the effects on the demand and supply of these inputs. Direct evidence of these incidence effects is not available, but from analysis of agricultural input markets Alston (2007a) estimates that 20 to 45 percent of output subsidies ends up in the pockets of landowners, many of whom are also producers. The findings of Kirwan (2007) on the effects on land rental rates of payments tied to land are consistent with this range: suggesting that, at least in the short run, each of the main forms of commodity program payments accrue significantly to producers and suppliers of other farm inputs, as well as landowners.

These considerations are important because they determine who will feel the economic pain were the commodity support programs to end. It is clear that operators that grow program crops and landowners with program crop base will bear the greatest losses, as they are the chief gainers from the existence of the programs. Would their losses trigger wider economic problems in rural areas? The possibility has been raised of bankruptcies among farmers and consequent problems for rural banks and others with whom farmers do business. Several factors indicate that the risks of financial calamity with an end to commodity programs are actually quite low.

First, the ratio of debt to assets in U.S. agriculture is now at a historical low, with total farm debt at 13 percent of farm assets in 2005, as mentioned earlier. Farm real estate debt is \$120 billion: just 7.5 percent of the \$1.63 trillion value of farm real estate. If we suppose that \$8 billion annually (half of the \$16 billion in program payments from 2002 to 2005) would translate to a decline in the rental value of land, and that this loss was capitalized at ten times the rental value, the \$1.63 trillion would be reduced by \$80 billion to \$1.51 trillion: the kind of losses that occur to some business sector every year without triggering a financial crisis.

Of course, much farm real estate is not cropland that has program base, nor is it in the part of the country where farm payments are most important. That suggests that any problems caused by the loss of farm real estate values would be regional. But,

even here the problems are limited. For example, in Iowa much of the cropland has program base. Iowa averaged \$1.3 billion in payments per year in 2002–05, which, using the ratios above, would translate into a loss of land values of about \$6.5 billion. The value of Iowa's farmland was about \$102 billion in 2006. So the estimated loss in land value would be about 6 percent. Even if the loss were twice that estimate, land values would decline by only a little over 10 percent of the 2006 level. Furthermore, given that land values in Iowa have risen by over 50 percent between 2002 and 2006, the loss would simply offset a single year's gains during those years.⁵

Second, the majority of cropland is not owned by the farm operator who grows crops on it. Thus the losses would be spread over a substantially larger population than the farmers who own cropland. And, the farmers who own the smallest percentage of the land they farm are the larger commercial grain producers. These are farmers who in some cases do have large debts: for machinery and operating funds, more than for real estate acquisition. But loss of payments tied to land would be a smaller loss for them. Losses in the value of land they own would be offset by reduction in their payment for land they rent from landlords.

Third, small farms, which are the ones where the farmer is predominantly also the landowner, have still less dependence on farm income and land as an asset in their total wealth position, and have less real estate debt, than the larger, commercial farms. So an end to commodity programs would not trigger financial stress for them either.

Fourth, it is important to remember that the farm community will not lose nearly as much as taxpayers gain when payments end. In part this is because market prices will rise when surplus production induced by the program ends. Moreover, the government's costs of operating the agencies that operate the payment and support programs and the crop insurance programs are approximately \$3 billion per year (Glauber 2007; USDA 2007b). This is spending that puts nothing in the pockets of farm operators, landowners, or other agricultural interests, and so will

not be missed by any of them. Still further, raising the taxes (or increasing the deficit that will have to be covered by future taxes) to fund commodity programs imposes costs on the economy through efficiency losses that are just as substantial for decoupled payments as for any other program spending. These “deadweight losses” of taxation at the margin have been estimated at 20 cents per dollar of revenue raised as a conservative estimate (Ballard, Shoven, and Whalley 1985). Thus an end to \$16 billion in annual budgetary cost of farm programs (including crop insurance) will generate an additional \$3 billion in real gains to the U.S. economy.

Fifth, the present time is propitious for an end to programs because of the strength of commodity markets and the expectation that the strength will continue over the next decade. The increased financial caution of farmers and other investors in agriculture since the 1980s has meant that land prices have only recently returned to their nominal levels of thirty years ago. From current levels, the projected strength of grain markets attributed to expected future demands for bioenergy is likely to increase the value of cropland. In this environment, an end to farm programs will not mean \$16 billion less per year, but rather less than half that, because the only loss is that of direct payments. This loss would perhaps place a damper on the enthusiasm with which current optimistic market expectations are raising already high land prices even higher. This last point is perhaps most important in sealing the case for reform now.

The Long Term with a Free-Market Agricultural Policy

Over the longer term (beyond the eight to ten years of the baseline projections discussed earlier), the downsides of an end to commodity programs will be lessened, and the upsides heightened, for all American economic interests. First, the United States would be in a better position to obtain improved access to foreign markets for U.S. agricultural products, a more promising source of income

for U.S. farming than government subsidies could hope to provide—as argued in the papers of Sumner (2007b) and Josling (2007).

Second, while current programs have already eliminated many of the inefficiencies generated by past excesses in commodity market management and supply control, these features persist in dairy and a few other commodity market interventions, and support prices still distort market signals significantly in sugar and cotton. An end to these relics of past mismanagement would permit improved efficiencies that would benefit consumers and taxpayers, and quite likely producers too. That U.S. farm commodity producers have nothing to fear from free markets has been demonstrated by the success of those parts of the U.S. agricultural economy that have never relied on commodity programs, notably livestock, hay, and the collection of fruits, vegetables, and other commodities that sometimes go under the label of specialty crops (see Paggi 2007). Farmers have responded to value-added and other sales opportunities such as organic production that have enabled them to prosper without any significant subsidies of the kind that commodity programs have provided.

Table 1, on the following page, shows that farming in states with high reliance on government payments—those states with agriculture production concentrated in grains, oilseeds, and cotton—is not more profitable than farming in states with little reliance on government payments. California and Florida produce relatively little of the program crops and receive little in government payments relative to the size of their agricultural output. Agriculture in Iowa, Mississippi, and North Dakota is devoted much more to grains, oilseeds, and cotton and receives a much larger share of government payments relative to the value of their farm output. But, agriculture is no better off in the states with high government payments in terms of net farm income relative to the value of total agricultural output, or in terms of net farm income per farm in the state.

Third, the funds now expended could be returned to taxpayers or turned to other public goods that have benefits greater than their costs.

TABLE 2

GOVERNMENT PAYMENTS AND NET VALUE ADDED, SELECTED STATES, 2000–05 AVERAGE

	California	Florida	Iowa	Mississippi	North Dakota
Share of value of ag. production from cotton, grains, and oilseeds	0.06	0.01	0.43	0.24	0.54
Ratio of government payments to gross value of production	0.02	0.02	0.12	0.16	0.19
Ratio of net farm income to gross value of production	0.25	0.36	0.21	0.32	0.25
Net income per farm (\$thousand)	95	60	33	31	33

SOURCES: USDA, Economic Research Service, Farm Income Data Files, <http://ers.usda.gov/data/FarmIncome/finfidmu.htm>. USDA, *2002 Census of Agriculture*, http://www.nass.usda.gov/Census_of_Agriculture/index.asp.

This could occur in the short run as well as the longer run, but in the long run agricultural policy reform would be notable as an element in a broader program of balancing the federal budget and returning to a more limited government that would involve reform in many areas of government spending. Agriculture is only a small part of the federal budget—but it is representative of, and a long-standing contributor to, a political culture of wasteful spending directed at special interests. The recent Iraq spending bill, which depended for passage in the House of Representatives on the inclusion of billions of dollars of special funding for peanut storage, Midwest drought payments, and spinach growers, among other agricultural interests, is an example of how individually small programs coalesce to a multibillion dollar aggregate of economic mischief. A principled end to commodity programs would over the longer term go a long way toward curing this economic ill.

Finally, the experience of other countries, as described in the paper by Alston (2007b), is heartening in its demonstration that the almost complete end of formerly highly protectionist policies in Australia and New Zealand has worked out well after a period of adjustment. These reforms have been in place for thirty years now in the case of New Zealand. Despite being implemented in a period of farm financial crisis, exacerbated by European and U.S. export subsidies depressing the

world markets for their farm products, the experience in both New Zealand and Australia has been positive. Consumers and taxpayers have clearly gained, and producers' incomes have grown, and they are not asking for a return of governmental protection from market forces. This is further support for the belief that after U.S. commodity support programs are gone for a time, our producers will not want them back either.

Answers to Some Objections

It is natural that proponents of current farm programs are plentiful, since payment recipients face potential losses if these programs were ended—at least in the short run. But, whether fueled by self-interest or public interest concerns, other participants in the political process have also voiced arguments in favor of retaining current U.S. farm programs. Sumner (2007a) outlines a dozen rationales for offered by farm program supporters; a few of these were introduced in the first section in this overview. They can be summarized as a list of alleged market failures: persistent characteristics of the market environment that warrant government intervention, some argue. These failures would negate the efficiency gains that this overview has suggested would flow from ending the programs, supporters of farm programs argue.

Supporters of the status quo argued the following points:

- Farmers cannot be expected to cope with the uncertainty and variability that unregulated markets generate.
- Food has special characteristics as a good necessary to health and survival that calls for a government regulatory role.
- Farmers cannot earn fair returns in unregulated commodity markets because of special characteristics of farming, the regulations they face, or the market power of companies that buy farm products.
- Foreign governments through their policies impose costs on U.S. agriculture that call for a U.S. policy response.
- In unregulated markets, only large, industrial farming would survive and there is social value in preserving small-scale, diversified, low-technology farming.

These objections are taken up in turn.

Dealing with Variability and Risks in Agriculture.

There is no doubt that agricultural prices and yields are variable from year to year. Farmers well understand such variability and take measures to reduce the implied income variability, including recognizing that low yields often engender higher prices—so for many farmers, market conditions create a natural hedge. Nonetheless, uncertainty and variability are undoubtedly serious issues for farmers for two reasons. First, variable returns can cause mistakes in allocating resources. Second, variable incomes can cause problems for household consumption. The question is whether remedies through farm policies are a better solution than private markets can provide. Those farm programs aimed at price variability have focused on government acquisition and storage of commodities at guaranteed minimum producer prices, idling acreage in years when commodity stocks have become large, and providing payments that establish a floor for producers, while letting

market prices decline to equate supply and demand. The first two of these approaches have already been deemed a failure by a sufficient political coalition of buyers and producers of farm products, for reasons described earlier. Payments to farmers in years of low prices are better accepted politically, but as discussed, their actual effect on stabilization of agriculture is limited and their economic costs are unacceptably high.

Insurance programs aimed at crop failure and other forms of output risk can be better targeted at risk management as opposed to income transfer, but, as discussed in depth in Glauber (2007), these programs have huge costs for the small risk reduction they have achieved. In 2005, farmers received \$3.1 billion in indemnity payments and paid \$2 billion in insurance premiums, so they experienced a net gain of \$1.1 billion in protection against risk from these programs. However, the government's premium subsidies, payments to insurance companies, and administrative costs added up to \$3.0 billion. So the taxpayers paid \$3 for every \$1 in protection given to producers. This experience is typical of recent years and can be expected in the future.

Not only are these programs hugely inefficient, but there are private insurance markets for many agricultural risks—and there would be more if government-subsidized and regulated insurance did not provide unbeatable competition. In addition, forward pricing and futures markets provide price risk protection that many farmers use. Perhaps the most effective risk management tools in commercial agriculture today are contracting arrangements with farm product buyers—prevalent in broilers, eggs, processed and fresh fruits and vegetables, and increasingly, in hogs and cattle—where growers are paid agreed-upon prices or service payments, plus incentive payments for delivery of specified commodities. Finally, there is no reason to believe that governmental provision of subsidized risk management is more appropriate or necessary for agriculture than for any other industry.

Food Security and Price Stability. The argument that food is special is associated with the fact that

U.S. farmers produce the raw materials for a low-cost, reliably supplied, and generally safe supply of food for consumers. This sterling performance is a fact, but the association of this success with commodity programs is not. Again there is abundant evidence, by contrast, between the large segments of U.S. agriculture that do not have program protections and the commodities that do. Supplies of unregulated crops and meats are no less reliable in supply or quality than the subsidized commodities. Furthermore, there is no evidence that imported foods are any less secure than domestically produced food. The United States has not been plagued with tainted coffee, bananas, or winter vegetables, nor are imported Canadian wheat or Mexican tomatoes any less reliable than supplies from North Dakota or California. The mantra of the United States in urging other nations to open their food markets to our exports is that imports are just as reliable as domestic production, and diversified imports are probably more reliable.

In addition, farm costs account for less than 10 percent of the retail value of food for the subsidized crops. The feed grains, such as corn and barley, and oilseeds, such as soybeans, enter the food supply only as feed for livestock or in highly processed food products. Wheat, the most important food grain, goes through the baking, pasta, or processed cereal industries before reaching the retail market and, of course, the cotton subsidy has no relation to food consumption. Finally, most of the consumer food budget is spent on foods that receive little or no support—and there is no more concern about security of access to oranges or pork chops than there is about access to corn flakes.

The general surge in farm prices in the mid-1970s raised alarms for some about the potential jump in food prices. What did the commodity programs—which at that time were more geared to stabilization and stockpiling than today, and so made more difference in the stability of food prices than today's payment programs—accomplish in this situation? Very little. The stocks did not appreciably slow the price rises, and U.S. policies quickly turned to grain export controls to keep commodities at home rather than

being shipped abroad. This had little effect, too, according to USDA's assessment after the fact (USDA, ERS 1986), but the farm community's spirited objection to policies that would attempt to hold prices down prevailed to an extent that "no grain embargoes" become a mantra of candidates for national political office for thirty years afterwards. In short, U.S. agricultural policy has never been effective at food price stabilization, and simply cannot do this job. We have learned not to rely on government to keep prices low when market conditions call for them to be high; now it is time for us to stop trying to keep prices high when market conditions call for them to be low.

Farmers' Lack of Market Power. A longstanding concern of farmers has been that agricultural product prices are lower than they should be because of the market power of processors and others who buy farm products. This concern has been recognized in the past by special allowances for farm marketing cooperatives and antitrust action against meatpackers and investigations of big grain companies. Brester and Smith (2007) review the area where these concerns have been expressed most intensely in recent years: in livestock slaughter and contracting of processing firms with livestock growers. The number of competing buyers for the output of a typical livestock producer is declining at many locations and for several categories of animals, but Brester and Smith show that the lower costs of larger firms offset any increase in marketing margins that lessened competition might have engendered. Nonetheless, there is a legitimate role for USDA's Grain Inspection and Packers and Stockyards Administration, along with the U.S. Department of Justice and the Federal Trade Commission to play in this area. It is not a promising approach, however, to have commodity support programs for livestock on this basis, and producers have no interest in such support. The existing commodity programs have no ability to target imperfect competition in the products they cover.

Harm to U.S. Agriculture Due to Other Countries' Actions. Foreign governments, more obviously than

domestic food processors, have taken actions that have harmed the interests of U.S. farmers by reducing market outlets for their products. They do this through import restrictions against products from the United States and domestic and export subsidies to favor their own. Combating these efforts is an important task for the U.S. government, as discussed further below, but maintaining our own restrictions and subsidies generates costs greater than the benefits, taking a bad situation and making it worse instead of better. Removing U.S. subsidies would remove one rationale that other countries use to justify their own subsidies and trade barriers. Furthermore, as other countries have challenged the price-depressing impacts of U.S. programs, the United States is also free to use World Trade Organization (WTO) procedures to challenge programs of other countries deemed to be in violation of their international obligations.

Promoting Small-scale Farming. The idea of agricultural policy to promote traditional small-scale family farming is often repeated but is unrelated to the farm programs that now operate in the United States. Hence even if one accepts the appeal of a return to some version of the historical roots of family farming, this line of objection to free market agriculture does not improve the case for current programs. As shown above and, for example in Kirwan (2007), the current farm programs reward farms roughly in proportion to their output and in most cases are roughly neutral to farm size and technology. They do tend to reduce the incentive for traditional livestock and crop mixed farming, and by leaving out specialty crops, reduce the further diversification of farms eligible for program payments. Of course, many participants in commercial agriculture would object strongly to farm programs that supported what they see as less efficient small-scale farm operations to the exclusion of the larger commercial farms.

Payment Limits and Means Testing. An often heard objection to current payment programs is that payments go to people who are rich and to farms that garner very large payments. This issue has been

a staple of farm policy debates for four decades. The 2007 Farm Bill proposal from the USDA and several prominent Representatives and Senators have proposed various forms of means testing or payment limits as reforms of existing programs. The reform has obvious appeal if one considered the proper role of commodity programs to be welfare programs to help the needy. But, as noted above, farm program payments would need to be completely recast to target the farm poor or the farms that are in severe financial risk. From an efficiency perspective, it makes no sense to support high-cost failing farms and implicitly penalize successful operations. Clearly, a policy to foster a strong industry and efficient resource use would try to encourage low-cost production—not high-cost production.

Furthermore, as documented above, given the income and wealth of farm households both large and small, no welfare objective for farm program payments makes sense. But a policy to reach the farm poor could use income categories, as in the tax code. Indeed, an appropriate policy reform from this perspective would be to end commodity supports and use some of these funds to provide payments along the lines of earned income tax credits for farm households with very low incomes. From that perspective, the cut off for payment eligibility would be in the range of \$20,000 to \$30,000 per household: not the \$200,000 adjusted gross income limit that Agriculture Secretary Mike Johanns has proposed. From the welfare perspective, why should farmers be treated differently from anyone else? That consideration leads back to agricultural policy as having industrial policy aims, not income redistributional aims. If the purpose of farm programs is to regulate industries, a focus on means tests or payment limits is a lame reform. The only sensible reform is a real one that eliminates the payments completely.

Some More Productive Roles for Government in Agriculture

Let us turn now to productive roles for government in agriculture, ones that have better prospects of

generating economic benefits that exceed their costs. Such efforts are now largely crowded out by the attention given to farm subsidies and the budget allocated to transfer payments.

Agent of U.S. International Trade Interests. Some other countries have hampered U.S. agriculture by placing restrictions on sales of U.S. farm products. The U.S. government has the crucial and difficult task of eliminating these barriers wherever possible. Steps in this direction have been taken in World Trade Organization negotiations and in bilateral trade agreements between the United States and countries such as Chile, and in regional agreements such as the North American Free Trade Agreement (NAFTA) with Canada and Mexico, and the Central American Free Trade Agreement (CAFTA). However, these agreements in total have taken only baby steps toward free trade as compared to what potentially could be accomplished, and they complicate broader free trade efforts. Of course, improvements in international trade arrangements cannot be accomplished without the United States being willing to remove or reduce its subsidies and allow foreign access to U.S. markets, notably the long-standing sugar import restrictions and the more recent tariff on imported ethanol.

Among the concerns are trade restrictions based on dubious claims of health or safety risks to plants, animals, or humans, such as bans on imports of beef and cattle from countries with minimal risk of mad cow disease and bans on genetically modified products in Europe and in developing countries. These are paralleled by U.S. insistence on modified domestic labor or environmental policies in other countries as a condition for importing their products into the United States. Reforms in these areas are important, but can be done only by improved federal policy, not a retreat from governmental involvement.

Conservation and Environmental Improvement. In the areas of conservation of soil and other natural resources such as endangered species, and environmental protection, the studies by Antle (2007), Heimlich (2007), and Kuminoff (2007) examine

aspects of these complex matters. Evaluation of the Conservation Reserve Program, currently the largest conservation and environmental program, show that it has generated substantial benefits whose estimated value exceeds the program's considerable costs. What is perhaps surprising is that the main benefits are not reduction of soil erosion or improvements in water quality, but rather the provision of wildlife habitat. Heimlich (2007) develops a set of recommendations for targeting funds better to achieve environmental goals. The recommendations focus on more precise identification of land parcels and practices in the context of surrounding ecological conditions, unifying the current splintered set of programs, and better judging whether acreage retirement or altered practices on cropped acreage is most appropriate. With respect to land retirement, the issue is one of transition from the existing 10- or 15-year contracts to a more lasting structure of conservation, perhaps through purchase of permanent easements by which farmers give up rights to grow crops on certain acreage.

Other environmental concerns—such as poor water quality in the Chesapeake Bay, the Sacramento River delta, and the Gulf of Mexico; and broad-based issues such as global climate change—also relate to agriculture and are less well addressed by idling cropland. In general, the measurement of positive or negative environmental services from agriculture, and how they should be subsidized or taxed, is still an area of conceptual, empirical, and political uncertainties. Considerable additional analysis of both the benefits and costs is needed to inform public policy choices. Antle (2007) argues for a system of payments for ecosystem services that would replace current subsidy approaches. This would move the basis for policy beyond the interest-group politics of redistribution, to take advantage of the desire of farmers and other citizens to do the right thing with respect to conservation and environment while directing such efforts in the most productive ways.

Advancing Bioenergy. Bioenergy has become a central focus of the 2007 Farm Bill and is likely to be an agricultural policy issue for years to come. As shown

in the paper by Miranowski (2007), the existing ethanol and biodiesel subsidies are not promising as a remedy for either the environmental or energy security objectives that have been used to justify them. Research and development spending in this area could prove productive, but should be undertaken with caution. The concern is that a new research and development focus on bioenergy would drain funds from research areas of demonstrated success. Moreover, short-run applied research and demonstration projects are too likely to devolve into support for dubious prospects that would garner private investment if they had a strong likelihood of success.

Promoting Rural Development. Rural development, in the form of maintenance or growth of both agriculture-related and non-agricultural enterprises, has been an important contributor to the historical rise in farm household incomes. Studies by Renkow (2007) and Kilkenny and Johnson (2007) have investigated the possibilities for public investment or other policies aimed at fostering rural development. Existing subsidy and investment programs have dubious prospects for meeting a benefit-cost test, as Renkow's paper shows. But Kilkenny and Johnson see scope for more productive federal efforts if they leverage rather than substitute for local funding of local public goods, which may encourage the small and most remote rural communities to recombine to achieve and sustain critical mass levels of population.

The possibilities for promoting traditional agriculture have been enlarged in the discussion of rural development to include direct sales of farm products to retail outlets or farmers' markets or buying clubs, value-added production on farms in which farmers take on some processing tasks, organic production, and increased roles for farmer cooperatives. Farms pursuing these paths are thriving in many parts of the country where consumers support the goods and services they provide. Should these sorts of activities be subsidized or promoted under federal farm policy? If reforms of current policies were to undertake these forms, the policies would not fit well under either of the two broad policy objectives stated ear-

lier: the prosperity of agriculture as an industry, and the well-being of farm people. The tradition-minded objectives have more in common with policy for the arts or historical preservation: cultural policy better suited to local or state preferences, or if federal, through grants to states or local institutions to promote the traditions they hold dear.

Enhancing Long-term Agricultural Productivity.

Some of the most cost-effective investments in U.S. agriculture have been in the areas of research and development and other services to protect and enhance agricultural productivity. Yet these investments have tended to be underfunded: in part because farm subsidy programs have captured the lion's share of the agriculture budget. Moreover, such areas are unlikely to receive adequate investment from the private sector: precisely because they have elements of public goods. Within the narrow political calculus of the Farm Bill reauthorization, the specialty crops industries have made additional investments in protection from invasive species and additional funding for research the central features of their claims to redress the balance of Farm Bill attention across commodities, and a more general case along these lines can be made. A positive farm policy for the United States would improve agricultural productivity and competitiveness by cost-effective funding of basic infrastructure that would not receive adequate private sector investments. Such a policy could benefit consumers, producers, and the economy at large.

Conclusion

The AEI studies have reviewed the evidence on commodity programs and other key elements of U.S. agricultural policy, and how these programs and policies fit in with the objectives of agricultural policy and the economic situation in rural America today. We conclude that while there are productive roles for government to play in U.S. agriculture, the current focus on commodity programs is misplaced as a solution to problems that exist, and has imposed

costs on taxpayers far in excess of the benefits they deliver to either rural America or the nation as a whole. The 2007 Farm Bill could take a significant step toward improving the nation's welfare by starting the process of eliminating those programs, and by adopting prudent reforms in crop insurance, conservation, bioenergy, and rural development.

Notes

Bruce Gardner is professor, Department of Agricultural and Resource Economics, University of Maryland. Daniel A. Sumner is director, University of California Agricultural Issues Center; Frank H. Buck, Jr. Professor, Department of Agricultural and Resource Economics, University of California, Davis; and member of the Giannini Foundation. Paper prepared for American Enterprise Institute project, *Agricultural Policy for the 2007 Farm Bill and Beyond*, directed by Bruce Gardner and Daniel A. Sumner. The views expressed here are those of the authors and not those of any institution with which they are affiliated.

1. For a fuller discussion and analysis of the purposes of agricultural policy, see Sumner (2007a).

2. For further details and discussion of the economic situation in U.S. agriculture, see Gardner (2007).

3. A farm is defined as an operation that produces or would normally produce \$1,000 worth of agricultural output, so clearly very small operations are included in the distribution.

4. For detailed sources, see Gardner (2007).

5. Data from Iowa State University's Farmland Value Survey, which estimated the average value per acre at \$2,083 in 2002 and \$3,204 in 2006.

References

Papers cited in this overview that were prepared for *AEI Agricultural Policy Series: The 2007 Farm Bill and Beyond*. American Enterprise Institute. <http://www.aei.org/farmbill>

Alston, Julian M. 2007a. "Who Really Benefits from U.S. Farm Subsidies?"

———. 2007b. "Lessons from Agricultural Policy Reform in Other Countries."

Antle, John. 2007. "Payments for Ecosystem Services and U.S. Farm Policy."

Babcock, Bruce A. 2007. "Money for Nothing: Acreage and Price Impacts of U.S. Commodity Policy for Corn, Soybeans, Wheat, Cotton, and Rice."

Balagtas, Joseph V. 2007. "U.S. Dairy Policy: Analysis and Options."

Barrett, Christopher B. 2007. "U.S. International Food Assistance Programs: Issues and Options for the 2007 Farm Bill."

Beghin, John C. 2007. "U.S. Sugar Policy: Analysis and Options."

Brester, Gary W., and Vincent H. Smith. 2007. "Agricultural Policy and the U.S. Livestock Industry."

Gardner, Bruce. 2007. "Does the Economic Situation of U.S. Agriculture Justify Commodity Support Programs?"

Glauber, Joseph W. 2007. "Double Indemnity: Crop Insurance and the Failure of U.S. Agricultural Disaster Policy."

Heimlich, Ralph E. 2007. "Land Retirement for Conservation: History, Analysis, and Alternatives."

Josling, Tim. 2007. "The Impact of the WTO and Bilateral Trade Agreements on U.S. Farm Policy."

Kilkenny, Maureen, and Stan Johnson. 2007. "Rural Development Policy."

Kirwan, Barrett. 2007. "Distribution of U.S. Agricultural Subsidies."

Kuminoff, Nicolai V. 2007. "Public Policy Solutions to Environmental Externalities from Agriculture."

Miranowski, John. 2007. "Biofuel Incentives and the Energy Title of the 2007 Farm Bill."

Paggi, Meckel S. 2007. "U.S. Specialty Crops and the 2007 Farm Bill."

Renkow, Mitch. 2007. "Infrastructure Investment and Rural Development."

Sumner, Daniel A. 2007a. "Farm Subsidy Tradition and Modern Agricultural Realities."

———. 2007b. "The Farm Bill and WTO Compliance and U.S. Farm Programs."

Other references cited in this overview:

Ballard, C.L., J.B. Shoven, and J. Whalley. 1985. "General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States," *American Economic Review* 75: 128–38.

- CBO (U.S. Congressional Budget Office). 2007. *The Budget and Economic Outlook: Fiscal Years 2008 to 2017*. U.S. Congress (January).
- CEA (Council of Economic Advisers). 2007. *Economic Report of the President*. Washington, DC: U.S. Government Printing Office.
- Covey, T., R. Green, C. Jones, J. Johnson, M. Morehart, R. Williams, C. McGath, A. Mishra, and R. Strickland. 2005. *Agricultural Income and Finance Outlook*. USDA, Economic Research Service (November).
- FAPRI (Food and Agricultural Policy Institute). 2007. Downloads available at <http://www.fapri.org>
- Hoppe, R. A., and D. E. Banker. 2006. "Structure and Finances of U.S. Farms." *Economic Information Bulletin* No. 12 (May). USDA, Economic Research Service.
- USDA (U.S. Department of Agriculture). 2004. *2002 Census of Agriculture*, Volume 1, Part 51, United States Summary. AC-02-A-51 (June).
- _____. 2007a. *USDA Agricultural Projections to 2016*. Long-Term Projections Report OCE-2007-1 (February).
- _____. 2007b. *2008 Budget of the U.S. Department of Agriculture*. <http://www.obpa.usda.gov/budsum/fy08budsum.pdf>
- USDA, ERS (U.S. Department of Agriculture, Economic Research Service). 1986. *Embargoes, Surplus Disposal, and U.S. Agriculture*. Agricultural Economic Report No. 564 (December).

JUSTIFICATIONS FOR EXISTING POLICY

Does the Economic Situation of U.S. Agriculture Justify Commodity Support Programs?

Bruce L. Gardner

There are two alternative views of the economic situation of American agriculture. One is that U.S. farming, despite periodic commodity booms, is in chronic economic trouble and government support is necessary to keep the sector viable; the other is that U.S. farming is basically strong and is receiving assistance it does not need. The preponderance of evidence favors the strong-agriculture view.

Income for all farm households is about a third greater than that of non-farm households; income for the large-scale farm households who receive the bulk of farm subsidy payments is over three times as large as non-farm households. Farm households are also an average of five times wealthier than their non-farm counterparts.

The implication is that current U.S. farm policies are satisfying political needs, not economic ones, and ending them would not be damaging to agriculture as some fear.

Economic Trends and the Situation in Agriculture

Farm Output, Inputs, and Productivity Growth.

U.S. agriculture has become ever more productive as new technology and capital have substituted for labor. While labor use on farms has declined

substantially since 1950, cropland and traditional capital are roughly constant over the longer term, and the use of material inputs (fertilizers, fuels, purchased feed additives) has about doubled. Agricultural output has continued to grow at a steady clip so that total factor productivity shows an impressive trend rate of 1.9 percent, as continuing advances in technology have kept the real cost of U.S. farm products on a pronounced downward path. There is no evidence of a slowdown in this trend in recent years despite energy price shocks, environmental constraints, and concerns about exhaustion of productivity gains attributable to earlier technological innovations.

These cost declines have been largely reflected in lower prices of farm products and hence lower costs of raw materials for foods. The average price of farm products rose 40 percent between 1978 and 2005, an annual rate of increase of about 1.2 percent. However the overall price level rose at an annual rate of 3.2 percent. Thus the real price of agricultural output fell by an average of 2.0 percent during this period—essentially the same as the rate of productivity growth.

Farm Income and Wealth. The parallel declines in farm prices and cost decreases indicate that farmers have had to have greater than average cost

reductions in order to profit from farm productivity growth. This has occurred for larger, commercial-scale farms, but not for small farms, on average. Yet the incomes of people living on both large and small farms have in fact grown in real dollar terms. Moreover, farm incomes on average have grown faster than the incomes of the non-farm population, and now exceed non-farm incomes regardless of farm size.

From the 1930s Depression/Dust Bowl years through the 1960s, farm households could be reasonably categorized as a low-income population. Farm family incomes reached sustained equality with their non-farm counterparts by the 1990s, however, and since 2000 farm household incomes have been significantly higher than nonfarm incomes.

A key factor in this pervasive income increase is the economic integration of farm households into the non-farm economy. In recent years off-farm income sources account for 80 percent or more of average farm household incomes. In 2004, the mean income of farm households was \$14,000 from farming and \$67,000 from off-farm sources, for a total of \$81,000. The comparable figure for non-farm households: \$60,000.¹

These data suggest that income from farming itself may indeed be quite low. However, a full understanding of the farm income data requires consideration of differences between farms of different sizes. A majority of farms, 87 percent of them in 2004, have less than \$25,000 annually in sales. The costs of farming at this scale are such that these farms on average earned only \$1,020 from farming, and more than half are estimated to have losses from their farm enterprises.² Nonetheless, the average household income of these farms is \$71,500 thanks to off-farm income.

It might be thought that this situation describes a troubled agriculture rather than a prosperous one—farmers can't make money farming so they have to take off-farm jobs. This is a fair characterization for some mid-size farms, but not for these small-scale farms. There is no practically conceivable reduction in costs or rise in commodity prices that could make these farms profitable enough to generate household incomes equal to the U.S. average. These farms are

more properly considered, for the most part, as avocational farms. The people who live on them are dedicated to farming and the rural life, but do not want to expand to the scale and commercial orientation necessary to achieve an enterprise that will itself support a household at the U.S. average income level. The benefit of off-farm earning opportunities is that they permit such avocational farms to survive and at the same time provide the operator's family with an income that, on average, exceeds that of the average non-farm household.

Family farms classified by USDA as commercial scale operations (those which have \$250,000 or more in sales) were even healthier. Households on these large-scale farms earned an average of \$145,300 from farming plus \$46,038 from off-farm sources—over three times that of the average non-farm household.

With respect to the balance sheet of farm enterprises, the financial health of the farm sector is also excellent. The overall ratio of debts to assets in 2005 is estimated by USDA at 13.4 percent, and lower in the 2000–2005 period than in any other period in which comparable estimates have been made. About 60 percent of farms were debt-free in 2005, compared to 40 percent in 1985. The median net worth of farm households, including the smallest farms, was estimated at \$460,000, close to five times the \$92,000 estimated for all U.S. households.

Relation of Farm Commodity Programs to the Farm Economy

U.S. commodity programs were introduced in the 1930s when farm incomes were low. How much of the improvement since then can be attributed to these programs? And, if the programs were to be greatly cut back or eliminated, what would happen to farm household incomes and wealth?

USDA payments to producers averaged \$16 billion annually during 2002–2005. These payments are concentrated on a subset of commodities. Commodities accounting for 58 percent of the value of U.S. farm output in these years received no

payments at all. The top four commodities in receipts of payments (corn, wheat, cotton, and rice) received 79 percent of all commodity payments although they accounted for only 18 percent of the value of farm output.

Payments are also concentrated on relatively few farmers. In the 2002 Census of Agriculture, only one-third of farm operators reported receiving any government payments at all, and 3 percent of the farms received 52 percent of the total payments.

Table 1 shows payments by type of farm. Grain/oilseed and cotton farms get far more government assistance than the other three categories of crop farms. However, they do not have higher net cash incomes than other farms. Dairy farms do get higher incomes than beef and hog farms, and have higher net cash incomes on average, but poultry farms have still higher incomes with the least government support among livestock farms. Overall these data give no indications that production of the supported commodities is more profitable than production of non-supported commodities.

This is not to say that the removal of current programs would have no effects upon the economic situation of the farms that now benefit from those programs. Other papers in this project provide evidence on that issue.³ The conclusion is that owners of land who now get commodity program payments for the grains, cotton, and rice would experience losses of wealth, as land values would decline, which could be as much as 20 percent of a farmer's wealth for farmers whose assets are very largely undiversified and tied up in program cropland. But income flows to producers would not be greatly affected. And the wealth losses would not generate appreciable increases in the risk of bankruptcies or severe financial stress because of the low debt-to-asset ratios that now prevail in U.S. agriculture.

Not surprisingly, eliminating current Title 1 programs would have different effects on different farmers in different situations. Those who are part-time farmers relying primarily on off-farm sources of income undoubtedly experience some loss of revenues when payments are reduced or market prices

fall. But they are only rarely at risk of bankruptcy or foreclosure on mortgaged land, and when they are at severe financial risk, their low share of commodity returns in their total financial picture means that no conceivable level of price support could make them solvent. Larger, highly leveraged farms appear more likely to be at risk of financial harm. But their costs are typically lower, so they have more of a cushion to take some reduction in commodity returns without generating negative net income.

The variety of economic situations of U.S. farms is the basis for an analysis by the Economic Research Service of USDA based on the joint distribution of income and wealth of farm operator households on family farms. ERS considered four categories of

TABLE 1
GOVERNMENT PAYMENTS AND NET CASH INCOME (\$)

NAIC category*	Per Farm			Payments per dollar sales
	Payments	Net cash income	Value of sales	
Grain and oilseeds	8,404	28,146	107,567	0.078
Cotton	26,552	56,552	261,379	0.102
Vegetables	2,919	121,705	379,913	0.008
Fruits and nuts	721	35,695	140,951	0.005
Greenhouse and nursery	157	76,134	233,944	0.001
Beef (ranching)	1,136	2,186	28,883	0.039
Beef (feedlots)	2,739	17,261	412,523	0.007
Dairy	9,724	71,559	313,628	0.031
Hogs	2,926	37,359	366,113	0.008
Poultry	943	161,878	552,285	0.002

SOURCE: 2002 Census of Agriculture, U.S. Summary, Table 59.

NOTE: North American Industry Classification System. To qualify, half of a farm's sales must be from product category.

TABLE 2
FARM HOUSEHOLD INCOME/WEALTH CATEGORIES

Category	Low income high wealth	Low income low wealth	High income low wealth	High income high wealth
Median income (\$)	23,171	13,461	69,533	85,781
Median wealth (\$)	397,700	52,031	42,675	571,823
Number of farms (th.)	803	63	40	1,154
Ave. payment (\$)	3,643	1,301	3,537	5,846

SOURCE: Tovey et al., 2005, Table 9.

farms: those with high income and high wealth, high income and low wealth, low income and high wealth, and low income and low wealth. The criterion for “high” versus “low” is being above or below the U.S. average (both farm and non-farm) levels of income or wealth. The farms with low income are the prime candidates for financial stress if commodity subsidies were to end. But those with low income and high wealth are better positioned to adjust to an absence of subsidy support. Data for this group are shown in the first column of Table 2. The removal of support would have an income effect and a wealth effect, reducing the value of land that qualifies for payments.

Note first that the removal of \$1,000 would not mean that net farm income would decline by \$1,000. Taking that much from commodity revenues would cause less production, and that would mean higher commodity prices.

Consider the low income, high wealth category of farms, which received \$3,643 on average in government payments. These farms account for 24 percent of the value of U.S. agricultural production, which is about \$50 billion as of 2004, or \$62,000 per farm. The elimination of payments amounts to 5.9 percent of revenues. With reasonable market price adjustments, the reduction in net farm income would be about \$1,700, or 7 percent of the median farm household income of the low-income group. On the wealth side, the capitalization of the loss depends on the relevant discount rate. Supposing a 10 percent discount rate, the average household in this category would lose \$17,000, or

4 percent, of wealth, leaving the households with a \$380,000 average net worth.

The situation for the low income, low wealth group is different. They get less government payments, \$1,300 on average, and have only slightly lower median household incomes, so their income would decline by a smaller percentage, about 2 percent; but their losses of wealth

would be more noticeable, perhaps 15 percent, or \$7,000. But here, too, it is hard to see how many farm households would be placed at higher risk of severe financial stress. Note also that the low income, low wealth group is a small fraction of U.S. farm households, 3.1 percent of them.

The higher income groups would see slightly larger losses, but have much higher initial situations of both income and wealth, so the financial pain would be significantly less for them.

Conclusion

If farm commodity program payments were to end, farm households would experience losses, but these losses would be far less than the costs to taxpayers who underwrite these payments and have on average lower incomes than the farm households who receive them. An end to payments would not generate significant risks of financial failure among farm enterprises or damage to rural economies. The preceding conclusions are based on conditions of 2002–05, when payments averaged \$16 billion annually. The consequences of reform would be even less for the conditions projected in 2007–2015, when current programs would cost about half that much. The main effects of an end to the commodity programs in the 2007 Farm Bill would be a substantial permanent gain to taxpayers and consumers at the cost of substantially smaller and transitory losses to farmers and non-farm owners of agricultural assets.

Notes

This policy brief draws on the author's longer paper "Does the Economic Situation of U.S. Agriculture Justify Existing Farm Programs?" available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Gardner is a distinguished professor in the Agriculture and Resource Economics Department, University of Maryland. He is co-director of the AEI agricultural policy project. The views expressed here are those of the author and not those of any institution with which he is affiliated.

1. USDA, Economic Research Service, Agricultural Outlook Tables, ERS website.

2. The data underlying this and subsequent information about farm household economics are developed by the Economic Research Service of USDA, using their

Agricultural Resource Management Survey of about 10,000 farms annually. Estimates reported here use data from Covey et al., 2005.

3. Alston, Julian. 2007. "Who Really Benefits from U.S. Farm Subsidies?" AEI Agricultural Policy Series: The 2007 Farm Bill & Beyond. American Enterprise Institute. <http://www.aei.org/farmbill>. Babcock, Bruce. 2007. "Money for Nothing: Acreage and Price Impacts of U.S. Commodity Policy for Corn, Soybeans, Wheat, Cotton and Rice." AEI Agricultural Policy Series: The 2007 Farm Bill & Beyond. American Enterprise Institute. <http://www.aei.org/farmbill>. Balagtas, V. Joseph. 2007. "U.S. Dairy Policy: Analysis and Options." AEI Agricultural Policy Series: The 2007 Farm Bill & Beyond. American Enterprise Institute. <http://www.aei.org/farmbill>. Beghin, C. John. 2007. "U.S. Sugar Policy: Analysis and Options." AEI Agricultural Policy Series: The 2007 Farm Bill & Beyond. American Enterprise Institute. <http://www.aei.org/farmbill>.

Farm Subsidy Tradition and Modern Agricultural Realities

Daniel A. Sumner

Over the decades, farm bills have become ever more comprehensive and complex, yet the commodity programs remain the core of the legislation and continue the tradition of subsidy begun with the New Deal. The federal government has sought to increase farm incomes through price and income supports for selected program crops (and dairy) since 1933. Advocates have proffered many rationales for why such transfers from consumers and taxpayers might be justified, but these are simply not consistent with the facts of modern agriculture.

For example, it is impossible to explain the current farm program payments as helping needy farmers when most of the payments go to the larger and more successful farms and when farm households have higher incomes and far higher wealth than non-farm households. Furthermore, most farmers do not receive subsidies: farm subsidies are distributed roughly in proportion to output of program crops, and these program crops comprise only about 30 percent of U.S. agriculture. Finally, the economic evidence shows that U.S. agricultural production overall would be only slightly reduced by elimination of the programs, while farmers shifted some acreage and other resources from that part of agriculture that gets most of the support toward those enterprises that are largely unsubsidized.

Despite the lack of convincing rationales for their continuation, after seven decades, farm programs are well entrenched politically. For decades skeptics have advanced arguments for fundamental policy change, and yet the subsidy programs remain. Nonetheless, there are reasons to think the 2007 Farm Bill may be different. Drivers of policy change include federal budget pressures, heightened demands for farm conservation and environmental programs, growing claims for more attention from growers of unsubsidized crops, pressures to comply with international trade rules, and forecasts of unusually high commodity prices over the next five years. Hence, 2007 may well offer some unique opportunities for substantial reform.

The Long Tradition of Farm Commodity Programs

Major agricultural policy innovations occurred in 1862, during the administration of Abraham Lincoln, with the founding of land grant universities, the establishment of the U.S. Department of Agriculture (USDA), and the implementation of the Homestead Act. The federal government continued to stimulate agricultural productivity growth by creation of agricultural experiment

stations in 1887 and agricultural extension services in 1914.

This emphasis on enhancing productivity changed with the Agricultural Adjustment Act (AAA) of 1933, which created supply controls, price supports, and income supports to respond to a collapse of commodity prices and farm incomes. But the New Deal programs for agriculture did not solve low price problems. Agriculture remained depressed—with some price relief because of bad weather—until World War II shifted out demand and curtailed supply. Despite the massive government intervention, it took World War II to bring cash farm income back to the (already depressed) 1929 level. Despite their general inability to enhance the general prosperity of U.S. agriculture, Farm Bill commodity programs have continued for 75 years.

During this long history, U.S. agriculture has continued to evolve substantially even while subsidy programs have supported dairy, grains, oilseeds, cotton, and a few other crops, accounting for about 30 percent of agricultural output, with most livestock products, fruits, vegetables, and many other crops largely outside the subsidy web. Agriculture's share of the total economy has declined to about 1 percent of gross domestic product as labor shifted out of farming. Productivity growth has occurred faster in agriculture than in the rest of the economy, and farm prices have fallen relative to other prices. The share of farms deriving most of their income from farming has declined to well less than half of the total. For commercial-sized farms, which produce the great bulk of agricultural output, the gross sales per farm have grown rapidly. One of the most important changes in the past half century is that incomes of farm operators have increased from about 40 percent of the national average to about 120 percent of the national average.

Reasons, Rationales, and Rationalizations for Farm Commodity Programs

Attempts to explain or justify farm programs include rationales that have become clearly outmoded, such

as the claim that farm income subsidies are needed to support farm incomes and combat rural poverty. Others raise issues for which current programs are clearly ill suited, such as the claim that farm subsidies are needed to combat market power by commodity buyers. Some rationales raise economic arguments that do not fit the economic data, such as the argument that farm subsidies are responsible for keeping the American food supply affordable. Subsidies for grains, oilseeds, and cotton do reduce market prices of bulk commodities by a few percentage points (and, indeed this is a major complaint of international competitors, especially in poor countries), but import protection programs for dairy products and a few other commodities raise prices. The net effect on retail prices is very small, in part because the share of bulk commodity prices in the retail food budget is so small and in part because most of U.S. agricultural and most imported food products are outside the reach of U.S. farm subsidies. Table 1 shows the relationship between farm program payments and value of agricultural output by commodity. Differences are stark and reinforce the point that farm programs are specific to a relatively small share of U.S. agriculture.

We should also ask: Why would it be appropriate to use tax funds to lower the market prices of selected commodities, rather than allow food prices to be determined by market forces? Food stamps and other food assistance programs respond to concerns of consumption of the poor. Agricultural research and development has been a much more effective tool for lowering food prices for American and others over many decades because they increase agricultural productivity. Hence, to continue the long-term path of lower food prices suggests expanded investments in agricultural R&D, perhaps tailored to products that improve nutrition, rather than continued subsidy of program crops.

Farm programs shift income from taxpayers and consumers to farmers and other owners of farm resources that are especially useful in production of program crops. If farm programs were removed, recipients would lose income and asset values that have been propped up by government transfers

TABLE 1
SHARES OF U.S. CASH RECEIPTS AND PROGRAM PAYMENTS^a
FOR SELECTED AGRICULTURAL COMMODITIES, CROP YEARS
2002–2005 AVERAGE (percent)

	Share of total value of production	Share of individual commodity payments in total outlays
Upland cotton	1.9	22.3
Rice	0.6	7.3
Wheat	3.0	9.5
Corn	8.7	43.5
Soybeans	7.2	5.5
Other grains/oilseeds ^b	1.3	4.2
Horticultural crops ^c	21.3	~0.0 ^e
Meat animals ^d	37.8	~0.0 ^e
Dairy	10.8	5.1 ^f
Other commodities ^g	7.4	2.5
Total	100.0	100.0

SOURCE: U.S. cash receipt data are available from the USDA Economic Research Service, Farm Income Data, accessible at: <http://www.ers.usda.gov/Data/FarmIncome/finfidmu.htm>. The commodity payment data are available from the USDA's Farm Service Agency, Budget Division, "Commodity Estimates Book for FY 2007 President's Budget" (for crop years 2002 and 2003 data) and available at http://www.fsa.usda.gov/dam/bud/CCC%20Estimates%20Book/estimatesbook_PresBud.htm, and the "Commodity Estimates Book Material for FY 2007 Mid-Session Review" (for crop years 2004 and 2005) and available at http://www.fsa.usda.gov/dam/bud/CCC%20Estimates%20Book/estimatesbook_MSR.htm.

NOTES:

a. Included in the total are production flexibility contract payments, direct payments, counter-cyclical payments, loan deficiency payments, marketing loan gains, and certificate exchange gains. For the dairy sector, the figure consists of payments under the Milk Income Loss Contract (MILC) Program.

b. Includes barley, oats, sorghum, millet, flaxseed, peanuts, sunflowers, safflower, and miscellaneous oil seeds.

c. Includes fruits, tree nuts, vegetables, melons, and greenhouse/nursery.

d. Includes cattle/calves, hogs, sheep, lambs, and poultry/eggs.

e. Program payments for the meat animal and dairy sector are very small and given here as approximately zero.

f. The data for the Milk Income Loss Contract Payment are available only by fiscal year. The share given is based on the average payment budgeted during fiscal years 2003–06.

g. Includes figures for tobacco, sugar, honey, wool, and mohair.

would fall. But these losses are actually quite small. For example, the price of land in Iowa would likely fall by a few percentage points, much less than the increase in land prices that has occurred in just the past year due to the ethanol-fueled corn price boom. A similar point applies to the economic health of rural communities. Farm income is such a small

share of rural incomes in almost all areas that loss of farm programs would have tiny impacts. For many reasons, farm subsidies are not targeted and are not effective as rural development policy.

A few points resonate through all the economic rationales suggested for commodity programs. First, none of the arguments for subsidy programs account for the current distribution of support across commodities. If they apply at all, each of the rationales would seem to apply to many non-program commodities just as much as to the program crops. Second, even if they suggest a rationale for some government involvement in markets, none of the arguments account for the form of price and income support programs now used in the United States. Third, neither commodity programs nor arguments for them suggest that a goal is long-term productivity or long-term health of the industry. In fact, there is no evidence that the subsidized commodity industries are more innovative or successful on any dimension than those parts of agriculture with little or no subsidy. Thus, whatever the appropriate rationale for commodity programs, it is hard to claim that they solve any long-run problems of farm commodity industries.

So, why do the familiar farm commodity programs continue? The strongest rationale may be that we continue to have farm programs mostly because we have had them for three or four generations. For the supported commodities, the programs have been so thoroughly imbedded into all aspects of the industry that producers and others find it hard to

imagine how the industry would adjust to a market without the programs. Adjustment is complex. When support has been a part of an industry for, literally, longer than anyone can remember, it is not surprising that industry participants would resist change. Eliminating farm programs may be appropriate policy reforms for consumers, taxpayers, non-subsidized producers, and the economy as a whole, but will naturally be resisted by those who currently receive the benefits.

Current Forces for Farm Bill Reform

Throughout 2006 and early 2007, farm organizations and other groups have laid out Farm Bill positions, with most organizations representing subsidized farmers suggesting that the farm commodity subsidies be extended, perhaps with modifications that would increase benefits for their group, for as many years as possible. Given the long history of policy success by commodity interests, are there forces for change in 2007? Several current drivers for market-oriented changes in farm subsidy programs can be identified.

First, the budget deficit and congressional budget rules will limit projected spending on farm subsidies, and there are many demands on the funds allocated for the Farm Bill by congressional budget committees. However, with current forecasts of high grain and oilseed prices, projected outlays from current farm programs are low relative to the recent history and this relieves some of the budget pressures on the programs because even eliminating the price-contingent subsidies would save little in projected outlays.

Second, environmental interests have pushed to replace commodity subsidies with support for farm-provided conservation and environmental services. The Conservation Security Program created by the 2002 Act was a small and awkward step in that direction that tied payments to approved practices on farms.

Third, most payments go to those who produce most of the program commodity output, and so,

by design, most farm program payments go to a comparatively small number of relatively wealthy farm operators and owners. Those who wish farm programs were targeted to aid the poor express dismay at the obvious fact that current programs cannot possibly serve this purpose.

Fourth, growers of horticultural crops have begun to argue aggressively for more support that targets research, nutrition education, protection from invasive species, and opening international markets. These groups directly challenge spending such a high proportion of the agriculture budget on income transfers that do little to improve productivity or competitiveness.

Fifth, Congressional leadership and the Secretary of Agriculture have pointed out that rulings in the WTO dispute over the U.S. upland cotton program suggest that other U.S. farm programs also may be vulnerable to WTO challenges, and therefore it is prudent to modify the program now before change is mandated by external forces. Finally, economists and advocates for market forces stress the negative consequences of farm subsidy programs for resource allocation and note that some of the most dynamic, innovative, and successful agricultural industries are found among those that are not encumbered by subsidy programs.

Conclusion

Farm commodity programs have long been an established part of the American agricultural landscape. However, it is difficult to find any convincing rationale for continuing the current farm programs, other than that they are popular among those who receive the benefits.

Once commodity programs are gone, other programs affecting agriculture and rural affairs can be considered on their individual merits. Agriculture involves some broad public goods and industry collective goods that would not be supplied appropriately without some government involvement, and perhaps funding. Examples include agricultural research, information services, efforts to improve

international market access, and control of harmful invasive species. There is also widespread support for using public policy to respond to rural environmental externalities.

The 2007 Farm Bill is being developed during a period of particular attention to the problems of the current programs and unmet goals that could be addressed by alternatives. Whether these alternatives replace or significantly alter the historic commodity support programs is the primary issue before Congress and the public.

Notes

This policy brief draws from the author's longer paper, "Farm Subsidy Tradition and Modern Agricultural Realities," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Sumner is the director of the University of California Agricultural Issues Center and Frank H. Buck, Jr. Professor, Department of Agricultural and Resource Economics, University of California, Davis. The author thanks Robert Thompson, Julian Alston, and other AEI project participants for useful comments. The views expressed here are those of the author and do not represent those of any organization with which he may be affiliated.

EFFECTS OF EXISTING POLICY

Who Really Benefits from U.S. Farm Subsidies?

Julian M. Alston

While a variety of reasons for farm commodity programs have been put forward, their fundamental result is to transfer income from other sectors to agriculture. In the case of commodities protected by import barriers, like beef, sugar, and dairy products, the transfers come at the expense of domestic and foreign consumers of the food and fiber products those commodities are used to make; in the case of commodities supported by subsidy programs the transfers are financed from government revenues, ultimately at the expense of U.S. taxpayers.

When subsidies to farmers result in changes in farm input use and production, and in prices of farm inputs and outputs, some of the benefits will be shifted from farmers to suppliers of farm inputs, consumers of farm outputs, and other agribusiness interests. The ultimate distribution of benefits (and costs) of farm subsidies thus depends on the nature of the subsidies, the extent to which they are coupled to production and influence inputs and outputs, and the conditions of commodity supply and demand. The policies also involve deadweight losses, in the sense that the costs to taxpayers and consumers exceed the sum of benefits to farmers, landowners, and other agribusiness interests, but the redistributive consequences generally are measured on a larger scale.

These distributional and economic efficiency consequences of policies are typically not directly

observable. Instead, they must be inferred using economic models, intuition, and insight, combined with data and measures of those aspects that can be observed directly. This policy brief presents ideas and evidence about the distribution of benefits from U.S. farm subsidies. Particular attention is paid to two popular but competing ideas: (a) that the benefits from farm subsidies accrue to farm operators, (b) that the benefits from farm subsidies ultimately accrue to landowners (and not to farmers).

Many economists have argued that all farm subsidies are ultimately capitalized in land values. This paper shows, both theoretically and empirically, that this is not so, although there is much room for disagreement as to the precise shares that accrue to landowners, farmers, and consumers. Careful review of the econometric and other evidence leads to the conclusion that perhaps 40–60 percent of subsidy payments accrues to landowners, 15–35 percent accrues to farmer operators, and 20 percent accrues to consumers, leaving a 5 percent deadweight loss to the economy as a whole. Given that farmers own about half the land they farm, perhaps 20–30 percent of the subsidy accrues to non-farmer landowners, and 45–55 percent accrues to farmers.

Using 2005 values, the paper estimates that the elimination of subsidies for program crops—in particular corn, soybeans, upland cotton, wheat, and

rice—would result in a decline in program crop output by about 7.3 percent, and would save a deadweight loss of about \$400–800 million per year. The full social costs of distortions from the subsidy expenditure of \$16.5 billion may be five to ten times greater than this amount, in the neighborhood of \$4 billion per year. The opportunity cost of such expenditure (i.e., forgone investment alternatives) is likely to push the total societal cost of U.S. farm subsidies even higher still.

Why Do Economists Disagree About Farm Program Impacts?

Support among economists can be found for both of the extreme positions, as well as the in-between idea that both landowners and farm operators benefit from subsidies. This mixture of views reflects the fact that any estimates of the effects of policies involve measurement error and many of the determinants of findings themselves have to be estimated. But it also reflects more fundamental factors. In conducting analysis of farm programs and measuring the consequences of a change in a policy or set of policies, economists have to make a lot of choices, including which factors to hold constant in the analysis and which ones may vary, with the appropriate choice depending on the purpose of the analysis. Different studies may report different results because they are using different modeling approaches, assumptions, or data, or because they are applying their analysis to a different question (and therefore holding different things constant). It is important, then, to make these aspects clear when discussing results from policy models.

This brief refers to analysis of the likely consequences from a comprehensive, fully anticipated, and permanent elimination of U.S. farm program policies; holding the policies of all other countries constant; in a medium- to long-term scenario (i.e., allowing several years for adjustment to a change in policy); looking forward from a baseline consistent with 2005; and keeping the Conservation Reserve Program in force. The qualifications in this paragraph

illustrate just a few of the things that may differ among studies, giving rise to different results. In addition, findings depend on producers' and consumers' responsiveness to price changes, and economists have different views about relevant behavioral parameters, which cannot be measured with perfect precision. Further, the distribution of benefits depends on specific details about the subsidies and how they are represented in the analysis.

A Theoretical Analysis

Simple theoretical models can be used to illustrate how different types of subsidies have different incidence. Analysis with such models indicates that we should expect a fully decoupled payment attached to land to be reflected entirely in land rents (one dollar of additional land rent paid and earned per dollar of additional subsidy payments). Under extreme assumptions (such as a fixed supply of land) the same would be true of an input subsidy on the use of land. More generally, however, even a subsidy on land will have some effects on input combinations and output, and thus the incidence will be shifted partly to suppliers of non-land inputs and consumers. A subsidy on output is expected to have even less of its incidence on land and more of it on consumers and suppliers of non-land inputs, but still it will have a disproportionate incidence on landowners as the suppliers of the least elastic factor of production.

The longer paper reports results from a simple, but powerful and useful, static model in which land and other inputs are used to produce a single aggregate output. Application of this model, which is conventional and has been widely applied in agricultural economics, indicates that, depending on specific values for the key parameters but allowing some elasticity of supply of land to agriculture, landowners would receive the following approximate shares of benefits from subsidies: (a) decoupled direct payment tied to land, 100 percent; (b) land input subsidy, 45–77 percent; (c) output subsidy, 19–44 percent. The specific details of actual policies matter for incidence. Real-world policies are typically not pure output subsidies

or pure input subsidies, often combining multiple instruments together. Still, the theoretical analysis of stylized policies provides some guidance as to the range of incidence outcomes we might expect from real-world policies, and it gives a basis for interpretation of the results from empirical work with models of land markets.

A Sector Model of U.S. Agriculture

U.S. agricultural policies involve a mix of subsidies that are decoupled to different degrees. To measure the consequences we must make assumptions about the extent to which farmers respond to the payments. The impacts of subsidies on program crops (including corn, soybeans, upland cotton, wheat, rice, and other program crops) were quantified in a simulation model, with different forms of subsidies represented as equivalent fractions of a pure decoupled payment and a fully coupled output subsidy. The fractions were 40 percent coupled for “direct payments,” 50 percent coupled for “countercyclical payments,” and 100 percent coupled for “loan program payments.” Applying those fractions in a model of U.S. program crop production as a whole in 2005, the total subsidy of \$16.52 billion was equivalent to a decoupled transfer of \$5.56 billion, 100 percent of which accrues to land, combined with a pure output subsidy of \$10.96 billion, 30 percent of which accrues to land. The overall incidence was therefore about \$8.85 billion on land and \$7.65 billion on consumers and suppliers of non-land inputs, including farm operators who supply labor and management among other things.

Taking this approach, the subsidy spending worth 28.6 percent of the total value of program crop production had incentive effects equivalent to an output subsidy of 19.0 percent. Applying the subsidy rate of 19.0 percent in the simple static model, the implied effect of eliminating the programs would be a reduction in production of program crops in aggregate by 7.3 percent. If the CRP were eliminated along with crop subsidies, the effects would be smaller—an output reduction of around 5.0 percent.

The Australian Bureau of Agricultural and Resource Economics (ABARE) has recently published results from an analysis of the consequences of elimination of U.S. farm commodity programs, using a much more detailed model that included equations for supply and demand for individual commodities in other countries, trading with one another and the United States. They predicted consequences over time, allowing full adjustment to complete elimination of the policies by 2016. Their estimates of effects on production ranged from 2.9 to 13.9 percent for the program crops considered in the simple model, but were only 2.9 and 3.8 percent for soybeans and maize, which represent two-thirds of the value of production. Thus, the implications are similar: the total output effects of elimination of subsidies would be modest, even in the most-subsidized parts of the agricultural industry; as would be the deadweight losses associated with subsidy-induced distortions in commodity markets (or net gain from eliminating them).

Synthesis

Combining the results from a review of econometric models in the literature, multi-market simulations, and the application of a sector model of U.S. agriculture yields a range of results about the share of subsidy payments going to land. The truth probably lies in between the results from the static theoretical models with full adjustment and the general run of the econometric evidence: that a significant share of even the so-called “decoupled” transfers goes to farmers rather than landowners, and that both landowners and farm operators receive a significant share of the net benefits from subsidies. The simulation results presented here correspond to an in-between case, perhaps reflecting an intermediate run scenario with incomplete adjustment to subsidies. They also reflect the inherent uncertainty about the issue.

To make matters concrete, in broad terms the results presented here suggest that 40–60 percent of subsidy payments accrues as benefits to landowners, 20 percent accrues as a benefit to consumers, and

15–35 percent accrues as a benefit to farm operators per se, with a modest amount, roughly 5 percent, wasted as a deadweight loss (more if we count benefits to foreign consumers as a loss to the United States). In round figures, then, perhaps 75 percent of the subsidy expenditure accrues as a benefit to farm operators and landlords. Given that farmers collectively own about half the land that they farm, farmers receive about half of the total that goes to landowners, leaving 20–30 percent to non-farmer landlords. Thus, 45–55 percent of the total subsidy expenditure accrues as a benefit to farm operators.

In short, for every dollar of government spending on farm subsidies, farmers receive about 50 cents, landlords receive about 25 cents, domestic and foreign consumers receive about 20 cents, and 5 cents is wasted. Additional amounts are wasted collecting

the taxes to finance the spending and in administering the policies—perhaps another 20 cents. If the purpose is to transfer income to farmers, the mechanism is very inefficient, with less than half of the amount taken from taxpayers ending up with the intended recipients.

Note

This policy brief draws on the author's longer paper "Benefits and Beneficiaries from U.S. Farm Subsidies," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Alston is a Professor in the Department of Agricultural and Resource Economics, University of California, Davis. The views expressed here are those of the author and not those of any institution with which he is affiliated.

Money for Nothing: Acreage and Price Impacts of U.S. Commodity Policy for Corn, Soybeans, Wheat, Cotton, and Rice

Bruce A. Babcock

Changes to commodity programs in the 2002 Farm Bill reversed a trend of declining government intervention in U.S. agriculture. This trend began with the 1985 Farm Bill, which brought a freeze on program acres and yields along with dramatically lower guaranteed prices. Some thought that the Uruguay Round Agreement that formed the World Trade Organization together with the 1996 Farm Bill signaled the beginning of the end to U.S. support of agriculture. But low prices from 1998 to 2001 motivated farm supporters in Congress to give farmers emergency, supplemental payments (Market Loss Assistance payments), thereby signaling Congressional intent to switch direction with the 2002 Farm Bill.

The 2002 Farm Bill reversed direction in a number of ways. Minimum price floors for feed grains and wheat were increased. Price floors were created for pulse crops (peas and lentils), and a new program that gave out payments when prices were low was adopted for all program crops. And instead of allowing the fixed, declining payments to disappear, the payments were frozen through the life of the Bill. All of these changes worked to significantly increase support for producers of program crops.

The changes in farm policy were projected to give farmers about \$5 billion in additional payments per year. Critics of U.S. farm policy include those who

believe that our farm programs impoverish farmers in poor countries, cause obesity, and support large agribusiness corporations. These criticisms rely on the presumption that U.S. farm programs decrease the market prices of supported commodities because they induce U.S. farmers to produce more than they otherwise would have. Farm bill supporters add credence to these criticisms when they justify payments by the need to keep farmers in business and the reliance of rural economies on maintenance of planted acreage.

This analysis obtains insight into the extent to which U.S. farm programs actually have the effects that both its supporters and critics say it has: namely, whether production levels are higher and crop prices are lower than they would be without the program. The approach taken is to assume that farm programs and the evolution of U.S. agriculture were what they were until 1998, at which time farm programs were eliminated. The resulting picture of agriculture from 2002 to 2005 is then compared to what actually happened during this period to measure the impacts of farm programs.

The analysis finds that production and prices for the three largest program crops—corn, wheat, and soybeans—would have been virtually unchanged if all major farm programs had been eliminated in 1998. Rice production was significantly larger, and

prices slightly lower, than would otherwise have been the case. The greatest price effect was found for cotton, the most heavily subsidized crop; world cotton prices would have been 10 percent higher in the absence of U.S. subsidies.

Given political realities, a status quo farm program seems the most likely outcome for this year's farm program. Nonetheless, a more ambitious objective would be for Congress to pass a new set of commodity programs that would integrate traditional commodity programs, disaster assistance, and crop insurance into a more cost-effective, nonduplicative, and transparent safety net for farmers.

Modeling Program Supply Effects

How Main Farm Programs Work. The first step to estimating the impact of farm programs on production levels is to understand how the main programs work. Three payment programs—direct payments, countercyclical payments, and marketing loans—are designed to protect crop-specific target prices.

The first tier of support for farmers is direct payments. The level of these payments is determined by multiplying a crop-specific direct payment rate by 85 percent of a farm's direct payment base acres and payment yields. Payment rates, base acres, and payment yields are fixed. Hence farmers know precisely their payment levels each year. Furthermore, payments are unaffected by farmers' planting decisions, by production levels, or by the level of market price.

The second tier of support for farmers is the countercyclical payment program (CCP). Payments under this program are triggered whenever the season-average price, as measured by the National Agricultural Statistics Service (NASS) is less than the effective target price. The maximum payment rate is achieved when the season average price falls below the "loan" rate (defined next) for each crop. The amount of payment equals 85 percent of the product of the payment rate, a farm's program yield, and a farm's program acreage. Thus the CCP provides farmers with support on a fixed amount of production, with a cap on the amount that can be paid out.

Farmers also receive countercyclical payments regardless of what they plant.

The third tier of support is the marketing loan program. Loan programs in the form of non-recourse loans have long been part of U.S. farm programs. With non-recourse loans, producers have to put their harvested production under loan: that is, they must fill out a loan application and take a loan from the government. The amount of the loan equals the product of the loan rate and harvested production. If market price does not rise above the loan rate during the loan period, then the producer does not pay back the loan. Rather, the crop as collateral is forfeited to the government.

Marketing loans differ from standard non-recourse loan programs in two ways. First, a producer still has the option of taking out a loan from the government at harvest, pledging harvested production as collateral. But marketing loans offer another option. If market price does not rise above the loan rate during the loan period, the producer can choose either to forfeit the crop or repay the loan at the loan repayment rate. The producer will choose to pay back the loan at the repayment rate if the market price is greater than the repayment rate because the producer can receive the difference between the two. If the repayment rate is greater than the market price, then the producer will forfeit the crop.

Marketing loans are designed to guarantee that farmers can always receive a price equal to the loan rate for their crop without the need for the government to actually take possession of crops. This means that market prices are free to adjust downward to clear domestic and international markets. Thus in bumper crop years, market prices are free to fall to whatever level is needed to balance supply and demand. In short crop years, market prices will rise to higher levels because traders know that there are no government stocks that are waiting to be sold. With marketing loans, USDA writes checks to support the loan rate rather than taking ownership of crops.

Table 1 reports average annual marketing loan, countercyclical, and direct payments by crop from the 2002 through the 2005 marketing year. Also

shown are the average payments per acre and the average payments expressed as a percent of market revenue. Corn farmers received the most aggregate payments, followed by cotton, wheat, rice and soybeans. On a per-acre basis and as a percent of market revenue, rice and cotton farmers received by far the most payments. Figure 1 shows the share of payments received for each crop from the three programs. As shown, almost all the support for wheat and soybeans came from direct payments. Direct payments also make up the largest share of corn payments. But marketing loan and countercyclical payments for corn also make up significant shares. Rice and cotton have significant payment shares from all three programs.

Two main conclusions can be drawn from table 1 and figure 1. First, the subsidies for wheat and soybeans have been relatively small in size and the subsidies they have received are primarily direct payments. This suggests that any positive acreage effects of farm programs on soybean and wheat are likely small, and they are positive only to the extent that farmers increase planted acreage in response to direct payments. Second, cotton payments are large and mostly comprised of the payments that likely induce farmers to increase planted acreage. Hence significant acreage impacts are likely to come from cotton, rice, and perhaps corn.

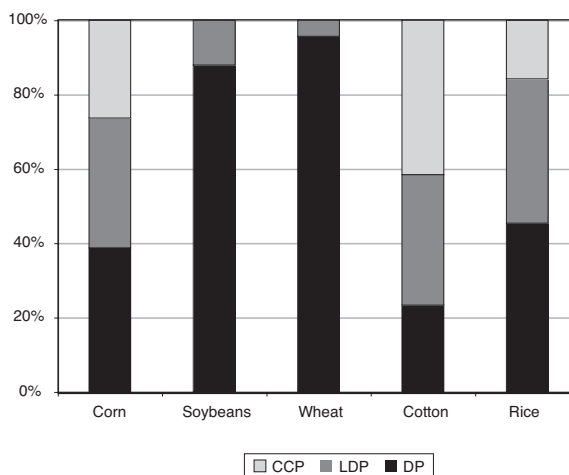
The model used to estimate what agriculture would have looked like without the program payments was originally developed in the early 1980s by researchers at Iowa State University and the University of Missouri to simulate how future agricultural

TABLE 1
AVERAGE ANNUAL PROGRAM PAYMENTS, 2002–2005

Crop	Marketing loan (\$ million)	Countercyclical (\$ million)	Direct (\$ million)	Average annual aggregate payment (\$/acre)	Payment as a percent of market revenue (%)
Corn	1,904	1,436	2,116	55	24
Soybeans	83	0	608	7	4
Wheat	52	0	1,151	16	17
Cotton	953	1,125	633	156	59
Rice	368	150	431	240	62

Source: Food and Agricultural Policy Research Institute. 2006. Agricultural Outlook. Staff Report 1-06 University of Missouri, Columbia, MO, and author's calculations.

FIGURE 1
RELATIVE IMPORTANCE OF DIFFERENT PROGRAM PAYMENTS, 2002–2005 (percent)



Source: Author's calculations.

prices and quantities would change under alternative policy regimes. The current model is updated annually by FAPRI (Food and Agricultural Policy Research Institute) analysts at the University of Missouri, but it no longer serves as the primary policy simulation tool for forward-looking policy analysis. This model was updated late in the fall of 2005. Hence it provides up-to-date information about market conditions through the 2005 crop year.

The model assumes that farmers make their planting decisions based on information available to them when those decisions are made. Thus, expected price

and farm program payments rather than actual prices and farm program payments drive planting decisions. This means that in 2004 corn farmers did not know that they were going to harvest a record crop that would drive down market prices and drive up government payments. And corn farmers in 2005 did not know that Hurricane Katrina would damage Gulf grain handling, thereby temporarily driving down harvest time prices and creating windfall government payments.

Effects of Program Elimination on Prices and Output.

Tables 2 and 3 show the impact of program elimination on acreage and prices. The acreage impacts of farm programs for corn, soybeans, and wheat have been quite modest. The programs changed corn, soybean, and wheat acreage by an average of less than 1 percent from 2002 to 2005. The reason why the acreage effects are so modest is that expected marketing loan payments for these three crops were relatively modest in size, and the decoupled countercyclical and direct payments had little impact on crop acreage. Furthermore, because these three crops compete with one another for acreage, elimination of the marketing loan program reduces net revenue for all three crops (especially corn and soybeans), which left expected relative net returns largely unchanged. Comparing the average corn and soybean estimates, the programs slightly favored corn, so corn acreage was a bit higher than it otherwise would have been but for the programs, and soybean acreage was a little lower than what it would have been.

The largest impacts of the programs were on cotton and rice acreage. But for the farm programs, cotton acreage have been 12.1 percent lower on

TABLE 2
SIMULATED PLANTED ACREAGE WITH PROGRAM ELIMINATION
(MILLION ACRES) AND PERCENT DIFFERENCE
FROM HISTORY, 2002–2005

Crop	2002	2003	2004	2005	Average
Corn	77.5 –1.8%	78.3 –0.3%	81.2 0.3%	81.0 –0.8%	79.5 –0.7%
Soybeans	73.7 –0.2%	73.9 0.8%	74.7 –0.6%	72.7 0.7%	73.8 0.2%
Wheat	60.1 –0.3%	61.0 –1.7%	59.5 –0.3%	58.0 1.3%	59.6 –0.3%
Cotton	10.0 –26.9%	12.8 –3.6%	14.0 4.5%	11.6 –16.5%	12.1 –10.8%
Rice	2.2 –30.8%	1.9 –37.9%	2.9 –14.4%	3.2 –3.6%	2.6 –21.2%
Total	223.5 –2.8%	227.9 –1.0%	232.2 –0.1%	226.6 –0.8%	227.6 –1.2%
11-crop	248.1 –2.7%	251.6 –1.1%	252.2 –0.2%	246.2 –0.9%	249.5 –1.2%

SOURCE: Author's calculations.

TABLE 3
SIMULATED CROP PRICES WITH PROGRAM ELIMINATION
AND PERCENT DIFFERENCE, 2002–2005

Crop	2002	2003	2004	2005	Average
Corn (\$bu)	2.37 1.9%	2.44 0.9%	2.05 –0.2%	1.89 1.7%	2.19 1.1%
Soybeans (\$bu)	5.57 0.7%	7.28 –0.8%	5.73 –0.2%	5.24 –1.1%	5.95 –0.4%
Wheat (\$bu)	3.59 1.0%	3.44 1.2%	3.41 0.2%	3.37 0.1%	3.45 0.6%
Cotton (\$lb)	0.54 22.1%	0.65 5.7%	0.40 –2.7%	0.55 14.1%	0.54 9.7%
Rice (cwt)	4.68 4.1%	8.43 4.3%	7.20 –1.8%	8.01 0.8%	7.08 1.7%

SOURCE: Author's calculations.

average across this time period, and rice acreage would have been 21.2 percent lower. As has been stated so many times by the cotton industry, cotton is a costly crop to grow and cotton farmers need farm programs to cover their costs.

A Look Forward

The recent sharp increase in the demand for corn by ethanol plants has dramatically increased corn and soybean prices. These high prices are projected to continue throughout the period covered by the 2007 Farm Bill. Projected high prices are having a number of ramifications for the new Farm Bill. Projected expenditures for the marketing loan and countercyclical programs for corn, soybeans, wheat, and rice over the 2008 to 2012 period are less than \$300 million per year. In contrast, expenditures for cotton are projected to be about \$1.3 billion per year. This disparity in projected expenditures has led the soybean and wheat commodity associations to call for adjustments in target prices that favor their farmers. Corn growers have proposed a program that would replace marketing loans and countercyclical programs with a new revenue insurance approach that is integrated with the crop insurance program.

The problem facing these groups is that any adjustment in target prices or program reform will likely result in an increase in projected program costs because program costs are projected to be so low. New Congressional budget rules require proponents of cost increases to pay for the increases by offsets somewhere else in the budget.

The most straightforward way of paying for program modifications would be to reduce direct payments. Another source of funds that could be tapped is the crop insurance program. However, both programs have strong advocates, so the odds are growing that the politically easy path of not changing programs for the 2007 Farm Bill will be taken. By definition, a simple extension of current programs will require no budget offsets. Because of high projected prices, an extension of 2002 farm programs for corn, soybeans, wheat, and rice largely represents a free market outcome because projected marketing loan and countercyclical payments are so low.

However, such an extension does not mean that a better outcome is not possible. Continuation of direct payment amid high prices really does mean that farmers will be receiving money for nothing. Furthermore, cotton loan rates and target prices continue to encourage cotton plantings, although USDA's

March prediction of a 21 percent drop in intended cotton acreage suggests the beginning of an adjustment in U.S. cotton. And the WTO compliance panel may rule this summer that the United States needs to make further changes to the cotton program to bring it into compliance with the WTO cotton decision.

Another area of farm policy that is in need of reform is the recurring intervention of Congress in offering farmers disaster payments, despite record participation in the crop insurance program. The most common justification for the buildup in taxpayer support for the crop insurance program is to mitigate the need for ad hoc disaster assistance. Inclusion of yet another agricultural disaster bill in the recently vetoed supplemental appropriations bill for the Iraq war is yet another example of the failure of an expanded crop insurance program to meet this basic policy objective. It makes little policy sense to have recurring disaster programs and an expensive crop insurance program that is soon projected to cost more than the direct payment program. It also makes little sense not to account for commodity programs when considering how a rationalized crop insurance and disaster program would work.

Although a status quo farm program seems the most likely outcome for this year's farm program, a more ambitious objective would be for Congress to pass a new set of commodity programs that would integrate traditional commodity programs, disaster assistance, and crop insurance into a more cost-effective, non-duplicative, and transparent safety net for farmers.

Note

This policy brief draws on the author's longer paper "Money for Nothing: Acreage and Price Impacts of U.S. Commodity Policy for Corn, Soybeans, Wheat, Cotton, and Rice," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Babcock is a professor of economics and the director of the Center for Agricultural and Rural Development, Iowa State University. The author is grateful for comments by Howard Leathers and others. The views expressed here are those of the author and not those of any institution with which he is affiliated.

U.S. Sugar Policy: Analysis and Options

John C. Beghin

The U.S. sugar program is inefficient and benefits sugar producers and growers at the expense of sugar users by keeping U.S. sugar prices at about double the world level. Studies estimate sugar producers gain hundreds of millions of dollars per year under the program, while sweetener users lose over one billion dollars per year. Net welfare losses to society are significant but much smaller than are the transfers. Thus, the U.S. sugar program induces substantial waste of resources and large transfers from U.S. sugar users to U.S. sugar producers, sugar-crop growers, and select foreign producers.

The sugar program is also a costly way to transfer income to sugar exporters in developing countries because under the current system of bilateral import tariff rate quotas (TRQs), the sugar program encourages sugar exports by high-cost producers rather than low-cost producers, a form of trade diversion.

The current sugar program is endangered by sugar imports progressively entering the U.S. market through global and regional trade agreements. These imports will either induce large sugar inventories, or contract domestic production to unpalatable low levels. The program is also a potential target for reform because of likely reductions in Amber Box limits under a potential Doha Agreement of the World Trade Organization (WTO). The current WTO accounting favors abandoning the current program.

There are two ways to reform the current program short of simply abolishing it. The current sugar program could be bought out, under a system that compensates all or some current sugar productions for their losses under a program repeal. Alternatively, it could be changed to a standard crop program, removing the domestic supply controls (allotments), lowering the loan rate, implementing countercyclical and direct payments, but preserving significant trade protection. Both alternatives would induce large fiscal outlays, but would produce significant gains for U.S. consumers. In a buy-out, developing countries would also gain via expanded sugar exports to the United States.

Background on the U.S. Sugar Program

The sugar program has been functioning as a price floor with the so-called loan program. A loan rate guarantees a minimum price to sugar producers, which is shared between processors and sugar-crop farmers (beet and cane). Controls on domestic production and trade actually keep prices slightly above the loan rate. This system of price supports is made possible by a tight restriction on imports of sugar through a set of bilateral TRQs managed by the Office of the U.S. Trade Representative and the U.S. Department of Agriculture (USDA), as described below.

Domestic supply is managed with “allotments,” or production quotas, such that the U.S. market prices of raw cane sugar and beet sugar remain above the loan rates. USDA then avoids having to buy sugar forfeited under the loan program. Equilibrium in the U.S. sugar market is reached when U.S. quantity demanded at a price just over the loan rate is equal to the sum of the production allotment, imports under the TRQ system, NAFTA-authorized out-of-quota imports from Mexico, and change in stocks. Out-of-quota imports from Mexico, when they take place, determine the U.S. market price of sugar at the margin.

The current sugar program under the 2002 Farm Bill maintains loan rates to processors of 18¢ per pound for cane sugar and 22.9¢ per pound for refined beet sugar. For reference, the world price of raw sugar has averaged less than 10¢ per pound in the last 10 years. The provision of previous sugar programs which forbids direct federal outlays was reinstated in 2002 to avoid a likely unsustainable expansion of production generated under the 1996 Farm Bill. Supply controls by means of a marketing allotment system were reinstated. The allotment can only be applied when imports for domestic consumption are less than 1.532 million short tons raw value (strv), the so-called trigger level. This way, sugar processors buy and process no more sugar than they can sell domestically at prices no lower than the loan rate. In recent years, the allotment has been set at around 9.35 million strv.

Under the 1994 Uruguay Round Agreement on Agriculture (URAA) of the WTO, the U.S. agreed to allow market access to a minimum quantity of 1,117,195 metric tons (mt) of raw sugar each marketing year (October–September), and 22,000 mt of refined sugar at a preferential near zero tariff (the in-quota tariff rate). Many countries avoid the small duty because of the General System of Preference or Caribbean Basin Initiative (CBI) programs. U.S. imports have systematically exceeded this minimum market access commitment since 1994, but declined in the late 1990s to accommodate increases in domestic production. The raw sugar TRQ has been allocated to 40 quota-holding countries based on their historical export shares during the 1975–81 period, when

trade was relatively unrestricted. The WTO commitment on market access put a lower bound on the import volume allowed under the TRQ system. Hence, import-contraction has run its course, as no further contraction could take place while meeting the WTO market access commitment.

The duty above quota on raw and refined sugar reached 15.36¢/lb and 16.21¢/lb, respectively, in 2000. These tariffs remain prohibitive, except for imports coming from Mexico under the North America Free Trade Agreement (NAFTA). The relevant sugar tariff for Mexican sugar has been falling since 1995, and is scheduled to fall to zero in 2008. As a result, Mexican sugar exports will be able to compete with U.S. sugar. Out-of-quota imports from Mexico have already been occurring since 1998–99, depending on the relative attractiveness of the Mexican and U.S. markets.

The prospect of competition from Mexican sugar is limited by Mexico’s significant trade barriers and high domestic prices of sugar, which reduce the attractiveness of exports to the world markets. However, Mexico will provide reciprocal unlimited duty-free access for High Fructose Corn Sweetener (HFCS) from the United States starting in 2008. Depending on the price of corn as a feed stock for HFCS, about 250 thousand metric tons (tmt) to 300 tmt of U.S. HFCS could go to Mexico and displace Mexican sugar, which would then likely be exported to the United States. This would double Mexican sugar exports to the U.S., from roughly 250 tmt to 500 tmt. There is the credible threat that U.S. sugar could be exported to Mexico, especially if Mexican prices are higher than U.S. market prices. Policymakers in both countries are aware of these arbitrage opportunities and their potential to disturb current market conditions.

Several recent opportunities to open the sugar market to freer trade were missed because U.S. sugar interest groups were effective at opposing the trade openings such as in the U.S.-Australia Free Trade Agreement. Under the Central American-Dominican Republic Free Trade Agreement (CAFTA-DR), the U.S. has established additional TRQs, starting at a collective gain in access of only 107 tmt, with the

gain growing to just over 151 tmt in year 15, thereafter growing by 2 percent a year (simple growth) into perpetuity. The United States also establishes a quota for specialty sugar goods of Costa Rica, but in the amount of a minuscule 2 tmt annually. Provisions will ensure that only net surplus exporting countries in the region have increased access, and provisions have been made to allow alternative forms of compensation to be established to facilitate sugar stock management by the United States.

There are several free trade agreements being considered by the U.S. government, including the Free Trade Agreement of the Americas (FTAA), and agreements with Brazil, Colombia, Thailand, and others. The potential for expanded trade from Latin American exporters is large in the context of an FTAA that would include Brazil, or even in the simpler context of a bilateral agreement with Colombia. Brazil and Thailand are major world sugar exporters and larger countries than CAFTA member countries. They are less dependent on the United States, and less likely to bow to pressure to accommodate U.S. sugar interests. These FTAs represent the best opportunity to drive a change in sugar policy. However, the failure of the U.S.-Australia FTA to allow even tiny gains in U.S. sugar imports is a bad omen for any sugar reform in future FTAs.

Winners and Losers under The U.S. Sugar Program

The sugar program and associated trade restrictions have significant effects on national income in the United States. They greatly tax U.S. users of sugar (final consumers and food processors). U.S. users of sugar have been paying between two and three times the world price of sugar, depending on world and domestic market conditions. Transfers have been larger than the associated deadweight losses, as is often the case in agricultural markets where consumer demand is relatively unresponsive to price. Studies estimate that U.S. sugar producers gain hundreds of millions of dollars each year from the program, while U.S. consumers would save between \$1.4 and

\$1.9 billion annually if the program were eliminated. The net deadweight loss of the program is about \$500 million and growing as U.S. population grows.

U.S. sugar production would decrease, but not disappear, in unfettered markets. Research shows that beet sugar production would be more affected than cane sugar, with larger price and output contractions if markets were freed.

The historical import quota allocation provides another criticism of the sugar program. The import quotas do not allow the most efficient sugar exporters (Brazil, Thailand, Australia, among others) to exploit their low-cost potential to export to the United States. Furthermore, world prices are depressed because of the import TRQ system. The system is not an efficient way to transfer income to TRQ-right holders, as high-cost holders cannot sell these exporting rights to low-cost exporters. The exporting country under the TRQ could be made much better off by renting or selling its TRQ rights to Brazil or another low-cost producer, and have its sugar producers face a more relevant scarcity signal than the inflated U.S. prices.

The U.S. is a large country in world sugar markets and its imports influence world sugar prices. Hence, any change in the U.S. sugar program resulting in change in U.S. sugar imports would affect world prices. For example, following the removal of the U.S. sugar program and associated TRQ, the world price of sugar would increase by 14 percent to 17 percent. (Of course, even this new, higher world price represents a substantial reduction in the U.S. sugar price.) Further, under U.S. leadership global liberalization of sugar markets would be likely. Under global trade liberalization, the world price of sugar would increase by 40 percent to 60 percent depending on the modeling approach and would lower the adjustment cost faced by the U.S. sugar growers and producers.

Policy Options, Possible Reforms, and Their Effects

The Doha WTO Round could lead to changes in market access, export subsidies, and domestic

support, but based on current proposals, reform of domestic support is the only one that could lead to changes in the current U.S. sugar program. Likely reductions in domestic support as measured by the WTO agreements are likely to induce reforms of the sugar program, as they would constitute a convenient way to meet new WTO commitments on domestic box support. Removing the domestic component of the sugar program would eliminate the contribution of high sugar prices to the U.S.'s overall domestic support of agriculture while leaving trade barriers in place. The impact would be only moderate effects on actual market prices and producer incomes as long as border protection remains high.

One way to accomplish this is to shift sugar to a standard farm payment scheme with loan deficiency, direct and countercyclical payments. This has been considered a way to make the sugar program less of an outlier and to ensure that it is sustainable within NAFTA and a potential WTO Doha agreement, while preserving much of the income gains to producers and processors. However, shifting sugar policy to an on-budget government payment scheme creates a significant problem with payment limits, especially for the cane sugar industry, because farms are part of very large integrated firms. Even if delayed, future WTO agreements will eventually lead to meaningful market access expansions.

The contribution of sugar to the aggregate domestic support limits in the WTO agreement from 1995 to 2001 hovered around \$1.1 billion. Estimates for 2005 and 2006 give roughly comparable figures (\$1.2 to 1.3 billion). If the sugar program became a standard commodity program and if NAFTA trade did not surge, the potential contribution of sugar to this measure of domestic support would be zero. Higher imports from Mexico under NAFTA liberalization in 2008 translate into large government stock accumulation under the current sugar program. Under a standard farm subsidy payment scheme these large Mexican import supplies would decline with lower prices, but trigger only modest countercyclical payments (CCPs) and loan deficiency payments (LDPs). If sugar were eligible for direct payments (which do not vary with

market prices) as tailored for other program crops, the outlays would be large—\$463 million, but these may qualify as only minimally trade-distorting and not affect the U.S. maximum commitment for domestic farm support under the WTO agreement.

A radical reform of the sugar program would be to simply buy out the allotments and open the border. To leave producers and processors as well off as they are now, the buyout scheme would need to offer at least as much discounted income gain as the current program offers. One difficulty in designing a buyout of the sugar program is the absence of an established market price for rental or purchase of marketing allotments. To gauge the cost of a buyout, consider a limited increase of duty-free imports by about 1.3 million strv. That would induce the domestic price to fall by about 1.9¢ per pound. The resulting annual value of protection lost under this scenario is \$355 million, leading to a discounted lump sum value of \$1.887 billion for the 2002–2007 period of the 2002 Farm Bill (using a 5 percent discount rate). A buyout of 25 years of anticipated producer revenue loss has an annual cost of \$647 million if spread over 10 years. The cost of a more complete buyout allowing free trade would be much more expensive. Full buyouts would be more feasible in a context of rising world prices. These higher prices could be induced by meaningful multilateral trade liberalization in future WTO rounds.

A partial buyout on a regional basis would allow compensation of the least-efficient sugar beet producers by enticing them to exit. This approach might be politically acceptable, as beet growers are smaller than and not as visible as the large cane growers of the Southeast. Larger imports could take place and the most efficient producers could survive, although they are likely to oppose such policy. This path of reform would resemble the recent reform of EU sugar policy.

Conclusions

The current sugar program is slowly becoming unsustainable in its current form, because sugar

imports are entering the U.S. market through regional and bilateral trade agreements. Under NAFTA, both U.S. and Mexican governments are jointly managing trade integration in sweetener markets. After 2008, trade will be unrestricted, but the U.S. and Mexico have little to gain if trade surges occur. A convergence of producer protection levels could occur. What happens to sugar in any potential Free Trade of the Americas deal would be much more consequential.

Further, the sugar program in its current form is a potential target for reform because of likely reductions in domestic support limits under a potential WTO agreement. A possible response would be to change the current sugar program into a standard farm subsidy program, removing the domestic supply controls, lowering the loan rate, implementing the payment schemes available for program crops, but keeping the current trade protection nearly intact. Current WTO proposals are unlikely to change the border protection enjoyed by U.S. sugar producers. Payment limitations under a standard program would antagonize large cane producers. Some initial shift of high-cost farms out of sugar would likely occur, as prices would be lower.

A full buyout of the sugar program would be expensive. There is an intertemporal trade-off when considering a reform of the sugar program. One could wait for the current program to crumble under

increasing pressure from trade integration, or one could think of a buyout in the next farm bill. The high budget costs of a complete program buyout may help focus resources on a partial sugar buyout.

A partial buyout represents an opportunity to remove high-cost farms and processors from the industry. The most efficient farms could compete at prices close to recent world prices (12¢–14¢ per pound). U.S. sugar user and consumer gains would be sizable. However, even a partial buyout that fully compensates those who leave the industry is likely to be more expensive in budgetary terms than shifting sugar to a standard farm subsidy program.

Of course, the program that makes most economic sense in terms of maximizing net benefits to society at large is simple elimination of the sugar program, including both border barriers and domestic price supports and allotments.

Note

This policy brief draws on the author's longer paper "U.S. Sugar Policy: Analysis and Options," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Beghin is director of the Food and Agricultural Policy Research Institute at Iowa State University and Marlin Cole Professor in the Department of Economics, Iowa State University. The views expressed here are those of the author and not those of any institution with which he is affiliated.

U.S. Dairy Policy: Analysis and Options

Joseph V. Balagtas

Public policy plays a larger role in U.S. dairy markets than in any other agricultural market. Central elements of current dairy policy date back to the New Deal farm legislation of the 1930s, and although the original programs have evolved over time, they remain largely unchanged in their main economic implications as new programs have been added over time.

Meanwhile, the U.S. dairy economy has been transformed. U.S. dairy farms have become more specialized and productive, as technological advances have facilitated increased milk production per cow, rapid expansion of dairy farming in the West, and lower costs of transporting milk. The number of farms has declined and remaining farms have gotten larger, and individual dairy cooperatives have grown and merged so that the largest of them now represent significant shares of national milk production. Consumption patterns have also changed, as the largest share of milk no longer goes to fluid consumption but to manufactured dairy products which are increasingly traded in global markets. In short, today's dairy sector bears little resemblance to that of the 1930s, or even to that of the 1960s. Yet dairy policies designed for that earlier era are still in effect today.

In this policy brief I describe the economic effects of the main elements of current U.S. dairy policy, including the Milk Price Support Program (MPSP),

federal and state milk marketing orders, and the Milk Income Loss Contract (MILC) program. In short, the main effect of these programs is not to remedy some obvious market failure, but to transfer income to U.S. dairy farmers. As is the case with similar policies for other agricultural commodities, consumers and taxpayers bear significant costs for these programs. Moreover, cost-benefit analyses show that the costs to consumers and taxpayers exceed the benefits to dairy farmers.

Ironically, current dairy policy is not unambiguously beneficial for U.S. dairy farms. The MILC program and marketing orders actually harm clearly identifiable subgroups of dairy farms, and the MPSP reduces exports and innovation, with detrimental long-term effects for all U.S. dairy farms. The most direct solution to the problems with current policy is to repeal current legislation and to allow dairy markets to work. Clearly, consumers and taxpayers would benefit from such deregulation. In addition, deregulation can contribute to a healthier, more competitive U.S. dairy sector, and improve the outlook for many dairy farms—particularly the more efficient farms—that are harmed by the current policy regime.

Of course, many observers have pointed out that U.S. dairy policy is costly and often ineffective, yet the government continues to intervene in U.S. dairy markets. Thus, if wealth transfers to some dairy farms

continue to be politically popular, I explore ways in which government support for dairy farms can be achieved more effectively and at lower cost to consumers and taxpayers. The preferred policy is a direct payment that does not depend on market prices or production. Such a policy would reduce market distortions and improve program transparency.

Costs and Benefits of Current Dairy Policies

Central elements of current U.S. dairy policy include the Milk Price Support Program (MPSP), milk marketing orders, and the Milk Income Loss Contract (MILC). In addition, U.S. dairy markets are insulated from world markets by tariff-rate quotas that apply to a long list of dairy products.

The Milk Price Support Program (MPSP). The MPSP employs government purchases of wholesale butter, nonfat dry milk (NFDm), and cheese to establish minimum prices for these products. The primary economic effect of the MPSP is to raise the average wholesale prices of butter, NFDm, and cheese, thereby increasing production of these products. The MPSP benefits dairy farms indirectly by increasing processors' demand for milk used in supported products. Benefits to dairy farms come partly at the expense of consumers, who face higher prices for dairy products. Of course, the MPSP also imposes costs on taxpayers. Government expenditures for MPSP purchases averaged \$410 million per year during years 2000–2003, a figure that does not include significant administrative costs and costs of storage. The taxpayer and consumer costs of the MPSP exceed the benefits to dairy farms, generating a net loss to the U.S. economy.

Moreover, the MPSP is not unambiguously beneficial to dairy farms. The MPSP distorts dairy markets in a way that harms the long-run viability of the U.S. dairy sector. Artificially high U.S. prices for supported dairy products reduces domestic consumption as well as U.S. exports. The MPSP also stifles innovation as U.S. dairy manufacturers continue to produce the bulk commodities supported by the policy. Partly as a result, the U.S. dairy sector lags major exporting

regions (New Zealand, for example) in the development of high-value dairy ingredients, such as concentrated milk protein, where growth opportunities exist.

The MPSP also poses a significant obstacle to multilateral trade negotiations. The MPSP contributes more to the U.S. Aggregate Measure of Support (used by the WTO as a measure of trade-distorting farm policies) than any other U.S. commodity policy. Removal of the MPSP would help the United States to offer much more far reaching reductions in domestic support in WTO negotiations.

Milk Marketing Orders. Milk marketing orders regulate the sale of farm milk throughout most of the United States, setting minimum prices that processors must pay within specific geographic regions. The details of marketing order regulation have changed occasionally since they were first implemented in the 1930s, but the main policy instruments—price discrimination and revenue pooling—have remained mostly unchanged over time, as have the main economic effects.

Marketing orders raise the average producer price of milk by enforcing minimum prices for milk used in fluid and soft products (e.g., yogurt). U.S. dairy farmers as a group benefit from marketing order regulation, but the costs to consumers—in the form of higher prices for fluid milk and other dairy products—exceed farmer benefits. That is, marketing orders generate a net loss for the U.S. economy. Moreover, the consumer costs are borne disproportionately by families with children and low-income households. Nutrition also suffers, because beverage demand shifts to low-nutrition, low-priced alternatives.

Moreover, milk marketing order regulation actually harms dairy farms in low-cost regions. Milk prices in low-cost regions, including the Upper Midwest and the West, are kept artificially low by marketing order regulations that encourage production in high-cost regions such as the South and the Northeast and discourage milk shipments across regions. Also, the central justification for milk marketing order regulations—that the structure of dairy markets allowed processors to exercise market power against dairy farms—is not obviously relevant today because

of changes in dairy market structure. Taking advantage of the antitrust exemption granted to U.S. farms, dairy farmers have organized into dairy cooperatives that market more than 80 percent of all the milk produced in the United States. The large market share controlled by dairy cooperatives arguably makes marketing order regulation obsolete.

Milk Income Loss Contracts. The 2002 Farm Bill introduced a new payment scheme for U.S. dairy, the Milk Income Loss Contract (MILC), which provides a deficiency payment to dairy farmers. Payments are triggered in months when milk prices are low, and are made on current monthly production up to a quantity limit per farm of 2.4 million pounds per year (the annual output of about 120 cows). Because the target price is so high, the program has made payments frequently (in 39 of 61 months from December 2001 through 2006). The USDA paid out \$2.0 billion in MILC payments over the period FY2003–2005. Naturally, farms with 120 cows or more tend to receive larger total payments, but MILC payments are a more important source of revenue for smaller farms because of the quantity cap on payments per farm. During FY2003–2005, MILC payments were the equivalent of 1 percent of milk revenue on California farms, compared to more than 4 percent of milk revenue in the Upper Midwest, where average farm size is smaller.

Indeed, MILC payments actually reduce incomes for larger dairy farms, which account for 60 percent of the milk production. The payments induce more milk production from smaller farms, and more milk production lowers milk prices. The lost milk revenue due to lower milk prices exceeds the MILC payment for larger farms. Moreover, like the MPSP, the MILC program may prove to be an obstacle to freer agricultural trade because it is clearly a production enhancing and trade distorting subsidy that may be challenged in the WTO.

Reforming U.S. Dairy Policy

A report by the USDA showed that the combined effect of the various components of U.S. dairy policies

on the farm price of milk is nearly imperceptible; U.S. dairy policies raise average milk prices by about 1 percent and dairy farm revenue by about 3 percent. Thus, the benefits to U.S. dairy farms as a whole are modest. The same USDA report showed that consumer and government costs exceed the benefits to producers. Thus, U.S. dairy policy fails the cost-benefit test.

As discussed above, the aggregate benefits to dairy farms understate the benefits to some farms, and overstate the benefits to others. Yet there is no compelling reason for a regional bias in federal dairy policy, nor is it obvious that federal policy should favor smaller farms. In short, the social costs of U.S. dairy policy exceed the benefits, and regional and farm size biases inherent in specific dairy policy instruments are unjustified. Absent any obvious market failure, a reasonable approach to fixing these short-comings is to eliminate the current programs. Elimination of the status quo programs would yield savings for consumers and taxpayers, and would make some farms (those in the Upper Midwest and the West, as well as larger farms) better off. Elimination of the current programs would also make the U.S. dairy sector more competitive in export markets, and would encourage innovation.

Elimination of the dairy policies discussed here may not be politically feasible in the short run. However, the discussion above suggests that subsidies for dairy could be achieved in a less costly way than the status quo. Mainly, the policy should deliver revenue directly to dairy farmers, while minimizing market distortions. As an example of a policy that could increase returns to dairy farming while satisfying this rule of thumb, consider replacing the current set of policies with a direct payment per farm such that it does not depend on milk prices or production. Such a payment does not eliminate the supply response to the policy, as the payment will keep some dairy farmers in business who might otherwise exit. But removing the link between the payment and current production and prices would dampen the supply response compared to the current programs and lower overall costs for consumers and taxpayers. By raising dairy farm income, such a payment would

replace the income rationale for the MPSP and marketing orders, which achieve enhanced dairy farm income with more market distortions. In addition, the elimination of the MPSP and milk marketing orders eliminates the need for import restrictions, because at market-determined prices the U.S. dairy sector can be competitive in world dairy markets. In addition to being less distorting, such a policy is also more transparent, facilitating cost-benefit analysis.

Conclusion

The conceptual and empirical evidence on the economic effects of U.S. dairy policy is consistent and clear: the main elements of U.S. dairy policy transfer income from consumers and taxpayers to dairy farmers. Milk marketing orders and the MILC program also transfer income from some dairy farmers to others. Moreover, dairy policy distorts markets so that the net effect is to make society as a whole worse off. In light of these findings, this brief

identifies the potential benefits and costs of deregulating U.S. dairy markets. Dairy consumers and taxpayers clearly stand to gain. But some dairy farms—those in the Upper Midwest and the West, as well as larger dairy farms—also stand to gain.

Of course, some dairy farms would be worse off in a world without subsidies. Thus, I also discuss ways to continue to subsidize dairy farms at lower cost and with less market distortion. The preferred policy is a direct payment that does not depend on market prices or production. Such a policy would reduce market distortions and improve transparency.

Note

This policy brief draws on the author's longer paper "U.S. Dairy Policy: Analysis and Options," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Balagtas is an assistant professor in the Department of Agricultural Economics, Purdue University. The views expressed here are those of the author and not those of any institution with which he is affiliated.

Specialty Crops and the 2007 Farm Bill

Mechel S. Paggi

Specialty crops comprise a large share of U.S. agriculture but have been largely outside the major farm commodity programs that are a major focus of the Farm Bill. U.S. law defines the specialty crops as fruit, tree nuts, vegetables, and nursery crops. In 2005, production of these crops accounted for only 3.2 percent of the harvested cropland acreage but generated farm revenue of around \$50 billion—about 42 percent of the total crop revenues.

Of course, specialty crops do benefit from a number of farm policies such as research and development (R&D), conservation programs, and crop insurance, among others. The U.S. Department of Agriculture's (USDA) January 2007 Farm Bill proposal included increased financial support for specialty crops without creating any new subsidy programs. Agriculture Secretary Mike Johanns pointed to "broad, new efforts in the area of research and marketing and purchasing support to specialty crops . . . we identify \$5 billion over the next decade." An additional \$0.5 billion per year in dedicated funding would represent a significant increase in federal support for these crops, but does not begin to rival the \$10 to \$25 billion per year devoted to subsidies for program crops (e.g., corn, wheat, soybeans, and other grains; cotton; and oilseeds).

Specialty crops are produced throughout the United States, with the largest value of production in

California. Specialty crops cannot be treated as a single industry, like wheat or soybeans, because of the myriad of crops, marketing channels, seasonality, and local and farm characteristics. Their economic interests are also diverse, but these commodity industries do share a general antipathy to direct government subsidy payments and an interest in enhancing government funding for what they see as public goods to support demand enhancement and productivity growth.

Two major sets of policy questions surround the role of specialty crops in the 2007 Farm Bill. First, if the rules governing subsidies for program crops are changed to permit program crop growers to plant specialty crops on land eligible for program crop subsidies, should specialty crop growers receive new federal support to help level the playing field? If so, where should that extra money come from? Second, which of the many requests specialty crop growers are advancing for additional support are in the public interest?

Studies are mixed as to how much specialty crop growers would be harmed by removal of the specialty crop planting restriction. Some suggest a significant, multibillion-dollar impact, while others suggest the impacts will be small. Furthermore, recent projections of large reductions in program crop subsidies limit the ability to use these funds to compensate specialty crop growers.

R&D and programs that promote specialty crop consumption are two proposed areas of support that likely pass a public interest test. Other proposed outlays are less likely to do so.

Current Government Policy and Specialty Crops

While the traditional farm subsidy programs do not apply to specialty crops, the federal government undertakes a number of agricultural policies that support these crops. Such policies include subsidized crop insurance, general government-supported R&D, management of invasive species, government-facilitated promotion programs, purchases for school lunch and related food programs, government-sponsored international promotion programs, and occasional disaster assistance.

Indirect Support. Federally subsidized crop insurance applies for all the major program crops (mainly grains, oilseeds, and upland cotton). Crop insurance also applies to many of the specialty crops in at least some regions of the country. For example, government-subsidized insurance policies are utilized by around 44 different specialty crops. The subsidies for these crop insurance programs totaled about \$300 million, or 21 percent of the total crop insurance subsidy, in 2006.

Marketing assistance to specialty crop producers comes from (a) marketing orders and commodity check-off programs to fund domestic demand promotion, (b) funding to assist in the promotion of export sales, (c) direct government food purchases, and (d) increased sales resulting from public nutrition assistance programs. In some cases the government assistance programs and the related taxpayer or consumer costs are indirect and difficult to quantify. For example, marketing orders for certain fruits and vegetables allow industries to maintain quality and quantity controls and each of these has complex effects on producers and consumers. In other cases the subsidy is straightforward and government outlays are well documented. For example, the USDA,

Foreign Agricultural Service, Market Access Program provided around \$49 million (about 35 percent of the total) to promote export marketing efforts of 38 U.S. specialty crop commodity groups and related organizations in FY 2005. It is unclear, however, how much this program and others actually increased demand for the commodities affected and thus how much producers gained.

As with other food commodities, specialty crops also benefit from direct government purchases, or support for purchases, through a number of domestic food and nutrition assistance programs. The USDA administers 15 domestic food assistance programs for children and low-income adults which either provide food or the means to purchase food. The five largest programs—the Food Stamp Program, the National School Lunch Program, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the Child and Adult Care Food Program, and the School Breakfast Program—account for about 95 percent of the USDA's total expenditures for domestic food assistance. Food and nutrition programs accounted for about 59 percent of total USDA spending in 2005 (\$50 billion). It is, however, difficult to determine the exact amount which industry benefits from these programs. A 2002 report by the Food and Nutrition Service reported a total of around \$7 billion (20 percent) from all food assistance programs went to support the consumption of fresh and processed fruits and vegetables, but the degree to which this funding stimulated demand expansion is not clear.

Agricultural research and extension sponsored by USDA also provide benefits to the specialty crop industry. About \$280 million in USDA research and extension funding is devoted to specialty crops, but of course, specialty crops also benefit from general research and extension that is not dedicated to these crops. Many of the activities of the USDA's Animal and Plant Health Inspection Service (APHIS) also provide benefits to the specialty crop industry. As with other components of government assistance to the industry, the amount of public funding devoted to specialty crops is not available. One exception is the fruit fly exclusion and detection program, with an annual appropriation of \$60 million.

Direct Support. Recently, a few small ad hoc programs have been specifically aimed at specialty crops. For example, the Emergency Agricultural Assistance Act of 2001 distributed about \$160 million through block grants for state-chosen programs to improve the competitiveness of U.S. specialty crops. The Specialty Crop Competitive-ness Act of 2004 was designed to provide substantial additional support for programs in research, marketing, education, pest and disease management, and food safety. The proposed legislation called for a mandatory appropriation of \$470 million annually; however, Congress appropriated only \$7 million in FY 2006.

Policy Issues for the Specialty Crop Industry

The Specialty Crop Farm Bill Alliance, composed of more than 70 organizations representing fruits, vegetables, tree nuts, nursery plants, and other specialty products, urges permanent and mandatory funding in the 2007 Farm Bill. One recent product of the Alliance's efforts is the proposed "Equitable Agriculture Today for a Healthy America Act," or the "EAT Healthy America Act," which proposes increased support for specialty crop block grants, R&D, invasive, disaster assistance, conservation, international trade promotion, pest and disease control, nutrition, and more. The Alliance claims this new support is all aimed at supporting the competitiveness of the specialty crop industry. The Alliance has been clear that it does not have interest in direct payment or price support programs, such as is provided for program crops.

A major issue for specialty crops in the 2007 Farm Bill relates to a specific provision of the commodity programs for grains, oilseeds, and cotton. Beginning with the 1990 Farm Bill, commodity program participants were allowed to plant other crops on a portion of their program base acres, but were generally prohibited from planting fruits, tree nuts, vegetables, including dry edible beans and potatoes, and (in a later amendment) wild rice. This disincentive to program participants has created a kind of supply control

measure for the specialty crop industry. Existing specialty crop producers benefit from the restriction on program base land entering specialty crop production; however, those benefits are gained through higher specialty crop prices at the expense of marketers and consumers of specialty crops.

In 2005, the WTO decision in the dispute brought by Brazil against the U.S. cotton program pointed to these planting restrictions in ruling that direct payments would be counted in the overall U.S. support for cotton. This indicated to many analysts that direct payments for program crops could not be counted as only "minimally trade distorting" because they restricted the subsidized base land from planting fruits, tree nuts, vegetables, melons, or wild rice. One proposed solution to this problem is to continue the direct payments to program crops but remove the planting restriction from program crop rules.

Specialty crop producers see this as a threat and have argued that a potential shift of program base acreage into specialty crops would depress prices for their crops, which are planted on relatively few acres compared to the program crops from which the acreage would be released. They also argue that it would be simply an unfair advantage if program base holders were allowed to switch into specialty crops and maintain their direct payments.

There is no question that if restrictions were lifted, some acreage would shift from program crops, or other payment-eligible land uses such as hay, to the restricted crops. Measuring the magnitude of the price impacts on individual crops, however, is quite difficult, and no consensus has emerged from the few studies that have taken a partial look at the issue. Much of the program crop base acreage is outside the regions where most specialty crops are grown. Moreover, where program base land does overlap with agronomic conditions suitable for high value per acre specialty crops, such as the Central Valley of California, much of the former base land has already shifted to specialty crops. Nonetheless, there are large potential price effects from even a small share of the 266 million acres of program crops shifting to individual small-acreage specialty

crops, where even a few thousand acres of new production can have large price impacts.

Evaluation of Policy Issues and Options for the 2007 Farm Bill

There are two major issues in the debate surrounding the 2007 Farm Bill of particular import to the specialty crop industry. First, what is the source of money to fund additional programs demanded by specialty crop advocates? Second, what, if any, additional support should be provided the specialty crop industry if the fruit and vegetable planting restrictions are eliminated? In addition, any proposed new programs in support of the specialty crop industry should be evaluated on their own merits relative to competing uses of the funds, including reducing the federal budget deficit.

With regard to budgetary considerations, it is unlikely that additional funds for specialty crops can come simply from diverting money from program crops. The USDA recently projected mandatory spending on farm programs to decline from a record \$32.3 billion in 2000 to \$11.7 billion in 2008, if the 2002 Act were to continue (which typically establishes the outlay baseline). Because prices for the major program crops are expected to remain high, baseline funds available for spending on (Farm Bill Title I) commodity programs were estimated to be about 42 percent less from 2008 to 2017 than was provided in the 2002 Farm Bill. In the absence of some additional funds, spending constraints of this magnitude would require diverting much of the remaining subsidy funding from existing programs (and their recipients) if significantly increased funding for specialty crops were to occur.

In addition, specialty crop producers will expect additional funds as compensation for their potential losses if planting restrictions on program crop base are eliminated. The amount of such losses has been estimated by some studies to initially be as high as \$2.4 billion, while others suggest overall market impacts are likely to be quite small.

Regardless of whether new funds for the specialty crop industry results from shift in policy direction or

from compensation for elimination of planting restrictions, any new spending should be evaluated for its contribution to the public good. For some policies, support of the specialty crop industry can be readily identified with such a goal. For example, agricultural R&D outlays have consistently shown high social rates of returns, and funds to support better environmental performance of specialty crops and additional effort to reduce vulnerabilities to invasive species may also have positive social returns. Programs that stimulate the consumption of fruits, vegetables, and nuts by those who would otherwise consume less than recommended amounts would contribute to a healthier overall diet, with the public benefit of potentially reduced national medical costs.

Other proposed outlays are less clearly in the public interest. For example, funds to promote export sales may provide benefits to growers of individual commodities, but they have at best uncertain returns to taxpayers. Industry-specific promotion programs that increase consumption of one specialty crop product at the expense of another also have questionable social benefits. Some R&D funding may also have questionable domestic social rates of return if, for example, beneficiaries are largely foreign consumers. Generally, proposed spending programs for specialty crops must be evaluated on their merits, not simply because they are labeled as specialty crop programs.

Summary and Conclusions

The debate surrounding a Farm Bill involves a large cast of characters with many different interests. In 2007, among the more notable voices in this group are representatives of the specialty crop industry—a part of agriculture that has traditionally received modest federal assistance compared to producers of commodities such as grains, oilseeds, and cotton. As described above, the specialty crop industry has always received some support from federal government programs. The total value of federal support for specialty crops is difficult to calculate, but that

support is mostly indirect and is quite small (relative to their market value of output) compared to subsidies for program crops.

As suggested by the comments of Agriculture Secretary Johanns, and provisions of the USDA's 2007 Farm Bill proposals, increasing government support for specialty crops is on the policy agenda. But, it is not a sufficient rationale for increased spending to observe that federal support for specialty crops is modest compared with support for program crops. If Congress decides to use taxpayer dollars to support specialty crops, then it makes sense to support

services that would not be provided by the private sector and that achieve positive net public benefits.

Note

This policy brief draws on the author's longer paper "U.S. Specialty Crops: Industry Structure and Linkages to Federal Farm Policy," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Paggi is director of the Center for Agricultural Business, California State University, Fresno. The views expressed here are those of the author and not those of any institution with which he is affiliated.

Agricultural Policy and the U.S. Livestock Industry

Gary W. Brester and Vincent H. Smith

Livestock production accounts for about one-half of total U.S. farm cash receipts, yet apart from milk and wool, livestock producers have not been direct recipients of agricultural support payments. However, many elements of U.S. agricultural policy do have consequences for livestock producers and meat consumers. This brief reviews those policies, assesses their consequences, and recommends areas for reform.

Recommendations for Reform

Biofuels: Congress should be aware of the adverse effects of subsidizing biofuels (ethanol) on the livestock sector. Biofuel production subsidies are likely to result in higher prices for consumer meat products that will have the largest adverse effects on the poorest U.S. households.

Grazing fees: Congress should consider changes in the allocation of grazing fee permits that allow agricultural and other interests to compete for the use of public lands.

Waste discharge: The environmental consequences of animal waste disposal have increased in recent years because of the relocation of some households to more rural areas. Congress should, therefore, closely examine who pays for agricultural compliance with waste discharge and other EPA mandates, and

consider paying for at least some mitigation costs where appropriate. Funding for the research and development of technologies that can economically mitigate these externalities could be an important policy contribution of the 2007 Farm Bill.

Tariffs and duties: Many industries, including the U.S. livestock sector, have tried to protect themselves from foreign competition by requesting antidumping tariffs and countervailing duties. While these actions may be appropriate in some situations, Congress should set a high standard of proof of unfair competition, and also impose stringent sunset provisions on retaliatory actions where countervailing measures are justified.

Animal identification: Congress should explore whether a mandatory or voluntary animal identification program satisfies domestic and foreign concerns about animal health (e.g., BSE¹ or “mad cow disease”).

Price reporting: Given that the fixed costs associated with mandatory price reporting (MPR) have already been incurred and variable costs are modest, reinstating MPR may be a reasonable course of action.

Review of Specific Policies

Feed Grain Policy. Between 2000 and 2005, U.S. feed grain production averaged 11.1 billion bushels,

of which 95 percent (10.3 billion bushels) consisted of corn. Over the same period, the U.S. imported less than 1 percent and exported about 19 percent of total domestic feed grain supplies. About 56 percent of domestic feed grain production was used domestically by the livestock industry and 26 percent by the food, industrial products (mostly ethanol), and seed industries.

In 2006, 2.15 billion bushels of corn (about 20 percent of the 2006 crop) were used to produce fuel alcohol (ethanol). New ethanol plants under construction will add an additional 2.1 billion gallons of capacity and, in 2010, ethanol production is expected to reach 7 billion gallons and use 25–30 percent of U.S. corn production.

Clearly, increased demand for corn by ethanol producers will increase corn prices, and increase both livestock production costs and consumer prices for meat products. Thus, energy policies that impact the feed grain industry should not be crafted within a vacuum by ignoring concomitant effects on the livestock sector.

Expansion of Crop Insurance to Livestock Production. The 2000 Agricultural Risk Protection Act (ARPA) expanded the scope of subsidized crop insurance by requiring the USDA Risk Management Agency (RMA) to develop insurance products specifically targeted toward livestock producers. Several such products have been developed (e.g., Livestock Risk Protection, Livestock Gross Margin) to provide insurance against downward future livestock price movements or increases in input costs. RMA also offers subsidized forage insurance products across the United States. In addition, a series of pilot area yield rangeland insurance products will be offered in parts of fourteen states in 2007. The premiums for these area yield products are subsidized between 55 and 64 percent, depending upon selected coverage levels. If offered on a national basis, these programs have the potential to expose the federal government to substantial subsidy outlays, perhaps in excess of \$2 billion annually.

Moral hazard and adverse selection problems are endemic in crop insurance programs. Consequently,

only a few crop insurance products have been offered by the private sector in the absence of federal subsidies. However, subsidized insurance programs generate well-known inefficiencies, inappropriate incentives, and fraudulent activities. Therefore, increasing the number of commodity offerings and/or the level of insurance subsidies is likely to cause additional misallocations of resources and waste.

Wool Program. The National Wool Act of 1954 and its amendments supported wool (and mohair) prices until 1995. Although the Act authorized the support of wool prices through loans, purchases, payments, and other means, the primary form of support actually consisted of direct payments to wool producers using a complex, parity-based formula. During 1990–1993, the value of U.S. wool production averaged almost \$54 million annually, while over the same period, direct wool support payments to producers averaged almost \$122 million annually and represented about 18.5 percent of the total value of sheep, lamb, and wool production.

The 1954 Act was repealed in 1993, and the program was phased out by 1996. However, following claims from domestic producers that imports were materially injuring their industry and the abandonment of tariffs on lamb imports, the 2002 Farm Security and Rural Investment Act re-introduced non-recourse marketing assistance loans and loan deficiency payments for wool and mohair production which had about the same producer price-supporting effect as the National Wool Act.

The lamb and wool industry is small relative to the beef, pork, and poultry industries. Nonetheless, the lamb industry has succeeded in lobbying for Section 201 trade resolutions, direct payments, and target prices. A standard economic welfare analysis would conclude that the wool program generates deadweight losses in several domains and transfers economic welfare from consumers and taxpayers to producers. Political economy models explain the re-emergence of support for wool prices. Individual consumers, who on average consume only 1.1 pounds of lamb meat each year and increasingly prefer non-wool textiles, bear only small costs. Sheep

production operations receive large benefits, and the aggregate cost to taxpayers is also small (a veritable drop in the 2.3 trillion dollar federal budget bucket). Therefore, it seems likely that a combination of target prices, marketing assistance loans, and LDP programs will continue in the future. The wool program provides a classic example of the efforts that are likely to be pursued by a variety of “small” agricultural industries throughout farm legislation discussions.

Land Use Policies and Public Lands Grazing.

Nearly 35 percent of the total land area in the United States is at least partially used for grazing. The 1934 Taylor Grazing Act, the basis for livestock grazing policies on public land, created exclusive livestock grazing rights on many tracts of land. Recreationists and conservationists have increasingly advocated that public lands be managed for increased non-grazing activities. However, the two groups disagree to some extent about how public land use should be changed.

Recreationists generally want public lands managed to increase wildlife and public access. In contrast, conservationists generally want less grazing and reductions in all types of human activities on public lands. These issues were explicitly addressed by the 1976 Federal Land Policy and Management Act, which added the goals of sustaining grazing yields and multiple land use to the management of public lands.

Public land use conflicts are likely to intensify, given competing interests of ranchers, recreationists, conservationists, and government agencies. Establishing bidding rights for the use of public lands for all of these groups may provide appropriate incentives for land stewardship and reduce conflicts over the allocation of these lands among competing uses.

Environmental Policies. Livestock production generates two primary environmental externalities—odor and surface water discharges—that involve both point-source and nonpoint-source pollution. The Clean Air Act (CAA) of 1970, as amended in 1990, established limits on particulate discharges. Confined Animal Feeding Operations (CAFOs) produce a variety of air pollutants including: (1) odiferous

gases that contain a variety of compounds, (2) hydrogen sulfide, (3) methane, and (4) ammonia. To regulate these emissions, the U.S. Environmental Protection Agency (EPA) established the Air Quality Compliance Agreement program under which Animal Feeding Operations (AFO) emissions are monitored.

Water pollution from CAFOs is treated as point-source pollution and regulated under the Clean Water Act of 1972. CAFOs larger than a minimum size are governed by the National Pollution Discharge Elimination System (NPDES). They must obtain NPDES permits by specifying waste management plans including nutrient management plans for the application of manure to land.

The Coase theorem provides no moral guidance as to who should pay for the mitigation of a negative externality. This is especially the case with respect to agricultural waste management, where, for example, markets for tradable pollution rights may be difficult to establish and may cause substantial regional pollution issues. In addition, if transactions costs are large, most economists agree that government intervention is necessary to establish property rights or provide regulatory oversight. Additional policies need to be developed that allow livestock feeding operations to internalize the negative externalities associated with odor and nutrient runoff associated with animal waste. Funding for the research and development of technologies that can economically mitigate these externalities could be an important policy contribution of the 2007 Farm Bill.

Animal Identification. In response to the discovery of BSE in the United States in December 2003, the Secretary of Agriculture declared that the USDA would develop a National Animal Identification System (NAIS) for all livestock species. In April 2004, the Secretary announced a framework for implementing an NAIS for premise verification of diseased animals.

Three overarching issues have surfaced in terms of the need for such systems. The first involves the need to protect public health by ensuring that safe meat products are provided for human consumption. The

second involves access to overseas markets, which increasingly require that source countries operate animal identification systems. The third concerns mitigating the potential for bio-terrorist activities that could affect the livestock sector. However, some livestock producers are concerned about the intrusive nature and costs of such systems. One important problem involves data management, data ownership, and potential product liability.

The livestock industry's need to maintain domestic consumer confidence and access to export markets has provided an impetus for the establishment of voluntary and/or private animal identification systems. However, government action may be necessary to address "free-rider" and credence problems to maintain the competitiveness of the U.S. livestock industry.

Antidumping/Countervailing Duties. Over the past decade, U.S. cattle producers have sought protection from foreign competition, but with limited success. Even when successful, as in the case brought by the Ranchers-Cattlemen Action Legal Fund (R-CALF), advocates sometimes suffer buyer's remorse as a result of the unintended consequences of such policy pursuits. Indeed, once a tariff is established, removing it is often politically difficult. Further, industries often claim economic losses from dumping when, in fact, such effects are the result of changes in global and local market conditions.

In general, it seems wise to require that an industry establish an indisputable body of evidence that dumping is taking place before any countervailing trade restriction is enacted. Further, antidumping policies should be subject to sunset provisions that require frequent reviews of whether or not the exporter is continuing the practice.

Country-of-Origin Labeling. Concerns about the adverse effects of U.S. meat and livestock imports on domestic livestock prices have also increased interest in country-of-origin labeling (COOL) legislation. Proponents of this legislation argue that: (1) consumers have the right to know and choose the source of their meat products, (2) COOL would enhance food safety and quality, and (3) COOL

would increase the demand for domestically produced products and improve domestic livestock prices. Opponents argue that implementation of COOL would be prohibitively expensive because of product blending, the number of ownership exchanges that occur in commodity livestock and meat markets, and the complexity of the meat supply chain.

The 2002 Food Security and Rural Investment Act added a new subtitle to the Agricultural Marketing Act of 1946 that instituted voluntary COOL in 2002 to be followed by mandatory COOL in 2004 for unprocessed fresh, frozen, and ground beef and pork. But since then, mandatory COOL has been delayed twice (except for wild and farm-raised fish and shellfish) and is now scheduled to be implemented in 2008.

Given that the U.S. meat industries are mature, expansion of the U.S. meat sector will likely hinge on foreign markets. The imposition of U.S. import trade barriers is likely to inhibit the industry's ability to access foreign markets. In addition, such actions must be viewed within the context of WTO obligations.

Mandatory Price Reporting. The use of spot markets has disappeared in the poultry industry, greatly diminished in the hog industry, and also become less important in the cattle and lamb industry over the past 15 years. Traditionally, spot market prices were voluntarily reported to the Agricultural Marketing Service's (AMS) Market News by buyers and sellers and often formed the basis for other negotiated and formula sales. Price, quantity, and quality information regarding alternative marketing arrangements were often considered proprietary. In 1999, the Livestock Mandatory Price Reporting Act (MPR) required that beef, pork, and lamb prices be reported over the 2001 to 2005 period by large meat packers and importers, including premiums and discounts for quality characteristics. Over 90 percent of commercial slaughter cattle prices were being reported when the MPR Act expired in 2005. Producer groups are seeking to reinstate MPR on the basis that it provides price and quantity information that: (1) can be readily understood by market participants,

(2) facilitates price discovery, (3) improves USDA price reporting services, and (4) encourages competition.

Most research indicates that the MPR Act provided much needed data for the analyses of market pricing efficiency within the livestock sector. Given that the fixed costs of developing the information technology for such reporting have already been incurred and that the variable costs of reporting are reasonably small, it appears that reinstating MPR would be a reasonable course of action.

Market Structures. The beef, pork, poultry, and lamb industries have experienced considerable structural change over the past 30 years. In general, each sector became more concentrated as firms adopted low-cost or differentiation business strategies. The extent of meat packing concentration varies among beef, pork, poultry, and lamb processing. Currently, the largest four packers in the beef industry currently slaughter and process about 80 percent of all cattle marketed in the United States compared to 40 percent in 1980. In the hog industry, the four largest packers slaughtered over 64 percent of all hogs in 2004. In the poultry processing industry, the four largest packers slaughtered 54 percent of all poultry in 2004. The lamb packing industry has also experienced substantial increases in concentration. The four-firm concentration ratio has increased from 25 percent in 1980 to 70 percent in 2005.

Increased packer concentration may be the result of scale economies obtained by larger plants, or operational efficiencies of multiple plants gained from the consolidation of existing assets, or both. If these effects are relatively large, then increased concentration is likely to lower consumer meat prices and/or raise livestock prices. However, increased concentration may also increase oligopoly selling power and/or oligopsony buying power. If this is the case, then increased concentration would increase retail meat prices and reduce livestock prices.

Over the past two decades, livestock producers have targeted meat packing concentration through legislative and judicial means. Nonetheless, most research suggests that the use of anti-trust regulation

to reduce packer concentration may be counterproductive, at least from the perspective of livestock producers and consumers. Any gains in the form of higher input prices and lower consumer prices from reduced packer concentration are likely to be offset by increased processing costs.

Marketing Arrangements and Captive Supplies.

Marketing arrangements refer to the methods by which livestock and meat are transferred through successive production and marketing stages and the method by which prices are determined for each transaction in a vertical supply chain. Historically, most of the meat industry relied upon negotiated agreements or spot (auction) markets for price discovery. Over time, the variety, complexity, and use of alternative livestock and meat marketing arrangements have increased. Currently, most livestock are transferred among production stages using a portfolio of forward contracts, formula prices, production contracts, marketing contracts, integrator alliances, and packer-ownership of livestock rather than auction markets. The use of these “alternative marketing arrangements” raises several questions about their effects on economic efficiency and welfare distributions among producers and consumers.

Food processor market power is detrimental to consumers and input suppliers if competition is reduced, entry barriers are increased, and industry output declines. However, vertical integration/coordination may or may not increase consumer prices and reduce livestock prices. Increased cost efficiencies, reduced uncertainty, and improved product quality may offset negative effects of increased market power. Vertical integration or coordination between adjacent upstream and downstream firms where each has market power can be welfare enhancing if market distortions between two adjacent firms are internalized.

Conclusion

In summary, the livestock sector, like most other sectors of U.S. agriculture, is affected by a plethora

of agricultural and other government policies—some of which are favorable while others are detrimental to livestock producers. Some involve income transfers that impose efficiency losses on markets, while others may improve economic efficiency by addressing distortions associated with externalities and/or market power. Clearly, considerable scope exists for policy analyses that improve economic efficiency. In this respect, the U.S. livestock sector has much in common with other components of U.S. agriculture and, for that matter, other sectors of the U.S. economy.

Note

This policy brief draws on the authors' longer paper "Agricultural Policy and the U.S. Livestock Industry," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Brester and Smith are professors in the Department of Agricultural Economics and Economics, Montana State University. The views expressed here are those of the authors and not those of any institution with which they are affiliated.

1. BSE is an abbreviation of Bovine Spongiform Encephalopathy.

The Distribution of U.S. Agricultural Subsidies

Barrett E. Kirwan

Equity concerns motivate most policies that aim to redistribute resources among the population. Equity concerns played a key role in the adoption of farm subsidies in the 1930s when urban interests joined farmers and rural legislators in order to give “agriculture a fair share in the national income.” By the 1960s, when the farm population had dwindled and subsidies were ballooning, equity concerns prompted cries to limit, reduce, or even eliminate farm subsidies. That debate over equity came to a head in the 1970 Farm Bill when Congress enacted payment limits on agricultural subsidies for the first time. Recently, in light of greater transparency in the subsidies received by individuals and against the backdrop of the World Trade Organization Doha Development Round negotiations, concerns about equity in farm subsidies have reemerged as a major policy issue. Indeed, U.S. Secretary of Agriculture Mike Johanns has repeatedly called for “equitable” farm policy.

An effective discussion of equity must consider who receives agricultural subsidies, who benefits from the subsidies, and how effective are regulations aimed at changing the distribution of agricultural subsidies. This paper presents evidence on each of these three equity considerations. It demonstrates first that, among subsidy recipients, the concentration of subsidies has changed little in 40 years, and subsidies *reduce* inequality among recipients.

Second, contrary to conventional wisdom among economists, landlords do not extract the full subsidy through higher rental rates. In fact, landlords extract only 25 cents from the marginal subsidy dollar. Finally, limits on total subsidy receipts appear to be ineffective as farms reorganize in order to maximize their subsidy payments.

Who Receives Farm Payments?

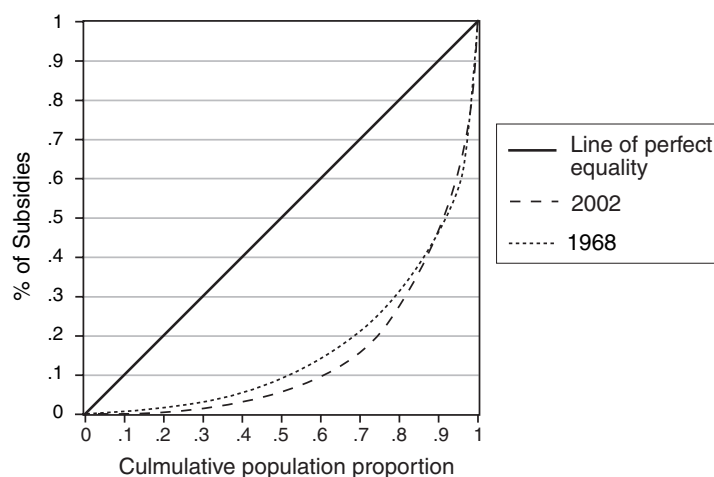
U.S. agricultural subsidies aim to increase the viability of U.S. farms by subsidizing qualified agricultural land (e.g., Direct Payments and Countercyclical Payments) and the production of major commodities (e.g., Loan Deficiency Payments and Marketing Loan Gains). Consequently, large, productive farms receive larger payments than small, less productive farms. In fact, 58 percent of subsidies go to just 8 percent of farms. Conversely, a majority of farms (57 percent) do not grow subsidized crops or farm subsidized land. These farms receive no farm payments at all.

The equity debate often focuses on the wellbeing of farm households, specifically subsidized farm households, relative to the general population. Historically, farm incomes have been far below those of the general population. Recently, the income distribution among farmers more closely resembles the

overall income distribution in the United States. Prior to receiving subsidies, the median (average) farm-household income from both farm and non-farm sources in 2003 was \$45,118 (\$63,844), while the median (average) U.S. income in 2003 was \$43,300 (\$59,200).¹ Subsidies contribute significantly to recipient income. Prior to receiving subsidies, subsidized farm households had a lower median income (\$43,656) than farm households that would receive no subsidy (\$47,282). Accounting for subsidies increases the median income of recipient households to \$48,520, and the median income of all farm households to \$47,620, resulting in farm-household income that is 10 percent higher than the median U.S. household income.

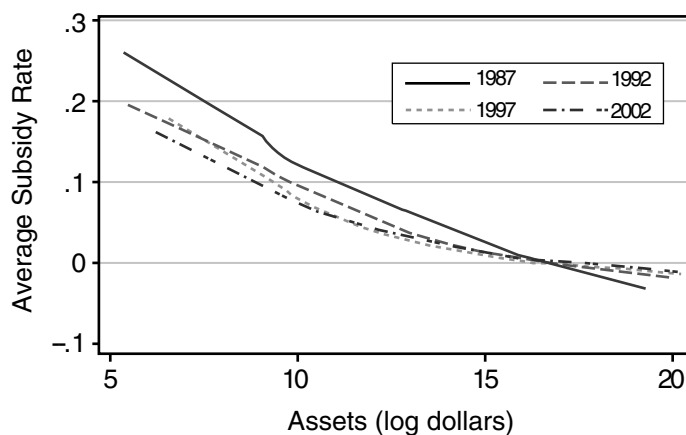
At least since the 1960's, the concentration of subsidies among the largest farms has been a feature of U.S. agricultural policy. This fact is most effectively illustrated using Lorenz curves. Lorenz curves, commonly used to illustrate the degree of income inequality within a country, illustrate the cumulative share of income across a population, moving from poorest to richest. A diagonal line illustrates perfect equality, while the farther the curve bows from the diagonal line, the greater the inequality in the income distribution. The Lorenz curves in figure 1 illustrate the subsidy distribution among subsidy recipients in 1968 and 2002. These curves reveal high subsidy concentration in 1968 and very little growth since then. Although not illustrated here, Lorenz curves over all farms, not just those receiving

FIGURE 1
SUBSIDY LORENZ CURVES



SOURCE: The 1968 Lorenz curve comes from Paulsen, Arnold. 1969. "Payment Limitations: The Economic and Political Feasibility." *American Journal of Agricultural Economics* 51(5) 1237-42. The 2002 Lorenz curve is the author's calculation using data from the USDA-National Agricultural Statistics Service's "U.S. Census of Agriculture."

FIGURE 2



SOURCE: Author's calculations using data from USDA-National Agricultural Statistics Service's "U.S. Census of Agriculture," 1987, 1992, 1997, 2002.

subsidies, portray a much greater degree of inequality because, as noted above, most farms receive no payments.

A criticism commonly heard in the media is that the U.S. system of subsidizing farmland and production leads to a situation where small farms that

might most benefit from subsidies receive the fewest subsidy dollars and seem to be treated unfairly. However, looking at subsidies relative to wealth or assets, much as we discuss taxes relative to income, reveals that small, subsidized farms receive higher subsidies relative to their assets than do large farms. Figure 2 illustrates the relationship between subsidies as a proportion of assets and total farm-level assets in 1987, 1992, 1997, and 2002. The downward sloping lines depict a negative relationship: the lower a farm's assets, the higher their subsidies are relative to those assets. In other words, agricultural subsidies appear to be progressive, in spite of a design agnostic to recipient wealth.

Who Benefits from Farm Subsidies?

Traditionally, economists have regarded landowners (including farmers that own their own land) as the ultimate beneficiaries of most agricultural subsidies. The story often told is that potential tenants compete against each other, bidding up the rent for subsidized land, until the rental rate fully reflects the subsidy. The landlord receives the subsidy through higher rental rates, and the tenant is in the same position as if there was no subsidy. Since non-farmers own 42 percent of all U.S. farmland and nearly all rented farmland, if the conventional wisdom holds true, nearly half of farm subsidies ultimately benefit non-farmers.

Recent analysis, however, reveals the conventional wisdom to be unfounded. Agricultural subsidies have a much smaller effect on rental rates than previously believed. According to recent evidence, landlords extract only 25 percent of the subsidy through higher rental rates, while tenants take home the remaining 75 percent.

These findings suggest that, for the most part, agricultural subsidies increase the cash-flow of recipient farmers. Although asset values might be inflated somewhat due to subsidies, eliminating agricultural subsidies will not have the dire consequences one would expect if the entire subsidy had been capitalized into farmland values. Removing subsidies will decrease farmers' cash-flow, but it will not result in

large capital losses in farmland values, even in regions with a high share of land devoted to program crops.

How Effective Are Regulations Aimed at Changing the Distribution of Agricultural Subsidies?

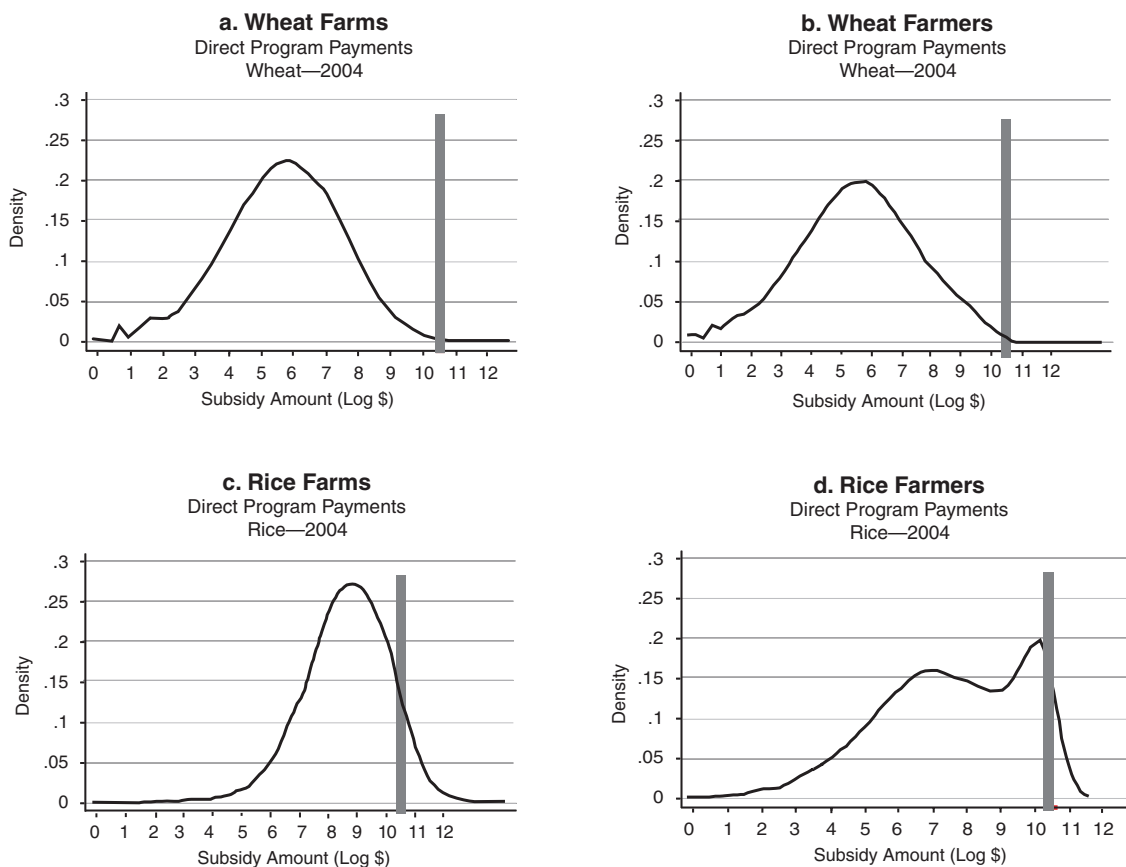
In the name of fairness, the 1970 Congress enacted limits on the total subsidy any single farmer could receive. Additionally, equity concerns prompted Congress to begin income-testing agricultural subsidies in 2002 by denying subsidies to individuals with an adjusted gross income greater than \$2.5 million. Current proposals seek to tighten payment limits and further decrease the income test. For example, the USDA has proposed excluding farmers with adjusted gross incomes greater than \$200,000 from most payments.

In spite of these efforts, critics claim that loopholes, lax enforcement, and a vague definition of a "farmer" allow farms to effectively avoid payment limitations and collect virtually unlimited subsidies. Figure 3, on the following page, presents evidence consistent with these claims. It illustrates that payment limitations may constrain the amount of subsidy an individual "farmer" receives but not the amount received by the farm.

Figure 3 illustrates the distribution of Direct Payment for wheat and rice in the 2004 crop year. Panels A and C illustrate the distribution of payments across FSA farms for wheat and rice, respectively. The crop-specific subsidy distributions over FSA farms are smooth and symmetric. Superimposed on each of the panels is a solid, vertical line depicting the \$40,000 payment limit for Direct Payments. At the FSA farm level, it appears that relatively few wheat farms receive subsidies above the cap. Yet a considerable portion of the rice-farm distribution lies above the payment cap.

Of course, payment limits apply to members of the farm organization, i.e., "farmers," not to the farm itself. Panels B and D, therefore, depict the distribution of direct payments across farm members for wheat and rice, respectively. The distribution for

FIGURE 3
COMPARISON OF PAYMENT DISTRIBUTIONS ACROSS FARMS AND FARMERS FOR WHEAT AND RICE



SOURCE: Author's calculations; data obtained through Freedom of Information Act Requests, USDA-Farm Services Agency.

wheat farm members in panel B is smooth and symmetric, reflecting the distribution across FSA farms, with relatively few people receiving payments above the limit.²

The rice subsidy distribution across farmers in panel D, however, tells an entirely different story. Rather than having a standard bell-curve shape, this distribution is bimodal, with a sharp peak just before the payment limit. The irregular shape of this distribution, the coincidence of the distribution peak for rice farm members just before the payment limit, and the relatively high proportion of FSA rice farms affected by the payment limit suggest that constrained rice farms restructure their organization in order to, essentially, bypass payment limits.

Implications for the 2007 Farm Bill

An effective discussion of fairness in the farm bill must consider who receives agricultural subsidies, who benefits from the subsidies, and how effective are regulations aimed at changing the distribution of agricultural subsidies. The answers to these questions presented above have the following policy implications.

The structure of agricultural subsidies reveals they are meant to subsidize farm *production*. In contrast, much of the equity debate focuses on subsidizing farms/farmers, *per se*. The research presented here underscores the long-heralded concentration of farm subsidies, yet it demonstrates that farm subsidies *reduce* inequality among recipients. In spite of this

finding, it stands to reason that policy would better address equity concerns directly rather than as an unintended side-effect of production subsidies.

A precipitous decline in farmland value is an oft-cited barrier to the removal of farm subsidies. Recent evidence suggests that the positive correlation between subsidies and farmland values is not causal, and removing farm subsidies will not cause large, widespread capital losses.

Finally, if payment limitations are meant to have teeth, policy must more clearly define a “farmer” and more closely scrutinize farm reorganizations in the face of binding payment limits. Otherwise, payment limits should be removed in order to avoid wasteful farm reorganizations.

Notes

This policy brief draws on the author’s longer paper “The Distribution of U.S. Agricultural Subsidies,” available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Kirwan is an assistant professor at the University of Maryland, College Park. The views expressed here are those of the author and not of any institution with which he is affiliated.

1. Substantial year-to-year variation in farm income results in extremely high and low income in any given year. The Winsorized mean, a measure of central tendency that accounts for extreme outliers, of farm income in 2003 is \$62,146.

2. Payments above the cap are possible through the “three-entity” rule.

Double Indemnity: Crop Insurance and the Failure of U.S. Agricultural Disaster Policy

Joseph W. Glauber

For the past 30 years, Congress has struggled with how best to provide protection against natural disasters to agricultural producers. In 1980, Congress replaced a standing disaster program with subsidized crop insurance delivered by the private sector.

Today, 27 years after the passage of the 1980 Act and two reform bills later, crop insurance has become a major fixture in the farm safety net, and by most measures of participation, crop insurance is a major success. Yet, despite participation rates for crop insurance that vastly exceed what was envisioned in 1980, Congress continues to pass ad hoc disaster bills.

Subsidies for crop insurance have averaged more than \$3 billion a year since 2002, and annual disaster payments have averaged more than \$2 billion. More-over, much of the disaster assistance goes to producers who are also receiving crop insurance indemnity payments. The result, as the title of this paper suggests, is “double indemnity.” For many producers, disaster assistance allows them to collect twice on the same loss.

The time is ripe to reconsider the federal crop insurance program, given its high costs, its failure to prevent disaster assistance, its potentially distorting effects on production and input use, and its relative inefficiency at transferring benefits. The following discussion considers five potential options: eliminate

the crop insurance program; increase crop insurance participation by making crop insurance purchases compulsory for producers who receive commodity program benefits; continue the current program, but provide supplemental coverage based on area-yield and revenue insurance plans; reduce program costs by reducing delivery costs; and allow the private sector companies who actually sell the insurance to compete more directly on rates.

The Rationale for Government Intervention

The failure of private agricultural insurance markets is a primary justification for government intervention. However, it is far from clear that this justification is sound.

Advocates of subsidized insurance often note that crop insurance faces problems of moral hazard, adverse selection, and a correlation of risk across farmers. Moral hazard occurs when an insured producer can increase his or her expected indemnity by actions taken after buying insurance, a practice which insurers typically combat through deductibles, co-payments, or other loss-sharing mechanisms. Adverse selection occurs when a producer has more information about the risk of loss than does the insurer, and is better able to determine whether

premium rates are fair. Finally, correlation of risks means that insurers cannot easily diversify their risks across space, and would have to hold large reserves in the event of a large crop loss, thereby making such insurance more expensive to purchase.

The problems of moral hazard, adverse selection, and correlated risks are certainly not unique to crop insurance. Other lines of insurance face similar problems, yet private markets exist. However, it is possible that the costs of addressing these problems in the crop insurance context are high enough to make the overall costs of insurance too high to support a viable market. Thus, the debate over the last 70 years has focused not on whether Congress should provide assistance to farmers who suffer disaster-related crop losses, but rather on the form such assistance should take.

Crop Insurance versus Disaster Assistance: Why Not Both?

The purpose of the 1980 Act was to make crop insurance the primary form of catastrophic loss protection for producers, but its success depended upon high participation rates. Yet, despite certain changes the Act made to the crop insurance program—barring receipt of aid from standing disaster programs if crop insurance were available in a producer's county, creating federal premium subsidies, and putting the delivery of crop insurance in the hands of private companies—participation rates grew very slowly. By 1988, only 25 percent of the eligible farm area was enrolled—far below the 50 percent Congress envisioned.

By the end of the 1980s, it was clear to policymakers that the subsidy levels provided were not sufficient to achieve 50 percent participation without either making insurance purchases compulsory or increasing the subsidy level. Congress enacted both provisions in 1994, creating a heavily subsidized catastrophic risk protection policy that producers were required to purchase if they participated in commodity price support and other farm programs. The 1994 Act also provided additional subsidies for coverage levels greater than 50 percent (buy-up levels). Responding to producer criticism, however,

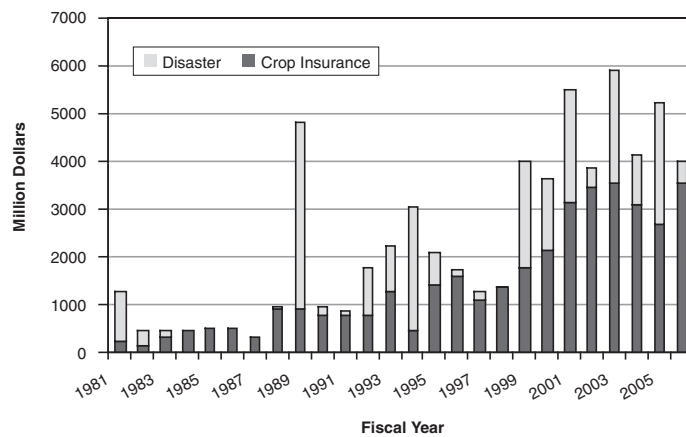
Congress repealed the compulsory purchase requirement in 1996. To further encourage enrollment in higher coverage levels,¹ Congress provided supplemental premium subsidies in the 1999 and 2000 crop years, and in 2000 increased subsidy levels for most buy-up levels. These provisions worked: by 2005, over 80 percent of eligible acres were enrolled, and over 64 percent of these were enrolled at 70 percent coverage levels or higher.

Increased subsidies and participation have resulted in a four-fold increase in the costs of the current program compared to average outlays in the early 1980s. From 1981 to 1993, annual federal crop insurance outlays (including delivery charges) averaged \$559 million. From 2001 to 2005, they have averaged almost \$3 billion.

Yet, as the last decade has shown, higher participation rates are no guarantee that Congress will refrain from passing supplemental legislation to provide disaster assistance. Since the passage of the 1980 Act, almost \$24 billion has been provided to producers in the form of disaster assistance. Two years after the passage of the 2000 Act, with participation rates near 80 percent and over 50 percent of acreage insured at coverage levels of 70 percent or higher, Congress provided \$2.1 billion in supplemental disaster assistance. Disaster costs from FY 2001 to 2005 totaled \$9 billion.

Why is there continued pressure for disaster assistance when participation is so high? While the Midwest and Northern Plains states tend to insure at high levels of coverage, the South and Southwest have tended to insure at lower coverage levels. Pressures for disaster assistance continue to come from regions where participation and coverage are low. Disaster payments have also tended to be concentrated, however, in the same Plains states as crop insurance payments. Texas, North Dakota, Kansas, South Dakota, and Nebraska were the top recipients of disaster aid *and* crop insurance indemnities from 2001 to 2005, accounting for 38 percent of total combined disaster and crop insurance payments. Far from substituting for crop insurance, disaster assistance outlays have been highly correlated with insurance indemnities. This suggests that much of the

FIGURE 1
CROP INSURANCE AND DISASTER COSTS, FY 1981–2006



SOURCE: Federal Crop Insurance Corporation; Commodity Credit Corporation.

disaster assistance goes to producers who are also receiving crop insurance indemnity payments.

Cost and Benefits of the Crop Insurance Program

Do the current crop insurance program's benefits exceed its costs, both to the taxpayer and to society at large? While there are different ways to measure this question, all of them show the answer is "no."

The most straightforward method is to treat insurance payments as a net transfer measured as the difference between what producers receive and what they pay through premiums. Over the last 25 years, producers have received an average \$2.056 in indemnity payments for every \$1 paid in premiums, for a total producer gain of \$19.3 billion.

A drawback of the net indemnity measure is that it ignores delivery costs and thus probably *understates* benefits. In the absence of government subsidies, producers would pay a premium equal to the risk premium plus an expense load to cover delivery costs and an appropriate rate of return. One publicly discussed measure is similar to this, adding total indemnities and delivery costs, divided by premiums paid by producers. According to this measure, from 1981

to 2005, producers received \$50.6 billion in benefits and paid \$18.5 billion in premiums, or \$2.73 for every \$1 paid in premiums. This method, though, likely overstates benefits, since it is unlikely many producers would purchase unsubsidized insurance.

Neither of these methodologies considers the effects of insurance on crop production or input use. A number of studies show that crop insurance likely does encourage small increases in planted acreage in some eligible crops. Most studies that examine the question of input use conclude that the effects of crop insurance on input use are

negative, which suggests that the resulting effect on crop yields is also negative. Whether this effect is large enough to offset any positive effect insurance has on crop acreage is an open question.

When comparing net producer gains to total costs, crop insurance is relatively inefficient. From 1981 to 2005, producers have received on average \$0.60 in benefits for every \$1 of government cost. This is due, in part, to the fact that delivery costs for crop insurance—like other property/casualty lines of insurance—tend to be high.

What are the net social costs of the crop insurance program? Over the past five years, the combined annual costs of crop insurance and disaster assistance have averaged \$4–5 billion. Assuming that the second order production effects are negligible and surplus gains to insurance providers are minimal, net producer gains can be approximated by multiplying the transfer efficiency (60 percent) times the combined costs. Subtracting total costs from producer gains would leave a net social cost of roughly \$1.6 billion annually.

Program Alternatives

Given the high costs of federal crop insurance, its failure to prevent disaster assistance, its potentially

distorting effects on production and input use, and its relative inefficiency at transferring benefits, what are potential options for policymakers? This brief considers five options.

Eliminate the Crop Insurance Program. Under current baseline projections, elimination of the program could save taxpayers some \$4–5 billion a year. Program elimination would undoubtedly increase the probability of disaster assistance; however, as noted, disaster assistance has already been provided most years anyway. And, despite criticisms of the program, crop insurance remains popular with producers and others in the sector, such as lenders who are potentially adversely affected by crop shortfalls.

Make Crop Insurance Mandatory for Producers Who Receive Commodity Program Benefits. Making crop insurance purchase mandatory for participants in commodity programs would likely ensure high participation rates, and could reduce incentives for Congress to provide ad hoc disaster assistance. This could also help mitigate adverse selection problems.

This has not, however, been popular with producers, because participation rates are already high, and requiring producers to purchase insurance at high coverage levels would impose substantial costs, even at subsidized rates. Moreover, many producers, such as fruit and vegetable growers, receive no commodity program benefits and would hence be exempt from this requirement.

Continue Current Program, but Provide Supplemental Coverage Based on Area-Yield and Revenue Insurance Plans. Under this option, producers could purchase a supplemental area yield policy to cover their crop insurance deductibles. This would address the “hole in the safety net” criticism that producers often have to absorb large losses before receiving crop insurance payments. By basing payments on area yields, additional coverage could be supplied without encouraging the attendant moral hazard problems.

Under area yield insurance, producers receive indemnity payments and pay premiums based on county yield outcomes, not individual ones. Because

producer actions can have only limited impact on the county yield, moral hazard problems are negligible and adverse selection problems are considerably lessened.

Purchasing high area yield coverage with low levels of individual yield coverage has been shown to be a cost-effective strategy of providing risk protection, particularly for producers in high risk areas where individual yield coverage is costly. Supplemental coverage could most likely pay in widespread loss events that affect the county average yield – the very events that are most likely to result in ad hoc disaster assistance.

However, because the risk-reducing effectiveness of area yield insurance depends largely on the correlation between the individual and county yield, supplemental coverage may be less effective for producers in covering losses where individual yields are weakly correlated with county yields. Moreover, area yield coverage is currently available only for a limited number of crops and counties for which the National Agricultural Statistics Service collects a sufficient amount of yield data. These crops include corn, soybeans, cotton, grain sorghum, wheat, and peanuts. Extending area yield crop coverage to other crops, while possible, would raise program costs and potential actuarial issues because of the lack of adequate historical data.

Reduce Program Costs by Reducing Delivery Costs. Between 35 and 40 percent of every tax dollar spent on crop insurance goes toward program delivery. One option to reduce delivery costs would be for the government to retain all underwriting risks and simply reimburse companies and agents for the sale and service of policies, such as what is currently done under the National Flood Insurance program. However, if the current risk-sharing system were eliminated, companies would likely seek higher A&O reimbursement rates to compensate for the loss of underwriting gains. Similar rates of return can be found in other property/casualty insurance lines.

Allow Companies to Compete More Directly on Rates. One option would be to allow companies to build delivery costs into their premium rates, with premiums subsidies offered in the form of vouchers which producers could use toward the purchase of

insurance policies. Companies could then compete with one another for business based on premium rates. It is likely that rate competition would result in lower rates in areas such as the Midwest, where underwriting gains have been high. For less profitable regions, supplemental area yield coverage could provide producers a less costly risk management tool and insurers a more profitable underwriting base.

Conclusion

Despite growth and improvements in the program, federal crop insurance has failed to replace disaster assistance—the stated goal of the 1980, 1994, and 2000 Acts. Increased subsidies have encouraged producers to enroll in the program and to purchase higher levels of coverage, but even with high participation rates Congress continues to pass supplemental disaster bills.

The marginal costs of adding more acreage or increasing coverage through increased subsidies are high, and costs have increased substantially. In the late 1970s, the annual costs of standing disaster assistance were less than \$500 million. By the late 1980s, the combined annual costs of disaster and crop

insurance were \$1.5 billion; by the late 1990s they were almost \$2.5 billion; and from 2001 to 2005, they were almost \$5 billion. Proposed legislation to establish standing disaster legislation in addition to crop insurance would likely push these costs higher still. Moreover, by indemnifying losses twice—once through insurance and once through disaster—there are concerns that combined programs will potentially overcompensate losses and distort production decisions. Congress has many options for reform it could embrace; failure to change the program will ensure that ever-increasing costs and double indemnity for producers will be with us for years to come.

Notes

This policy brief draws on the author's longer paper "Double Indemnity: Crop Insurance and the Failure of U.S. Agricultural Disaster Policy," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Glauber is deputy chief economist at the United States Department of Agriculture. The views expressed here are those of the author and not those of any institution with which he is affiliated.

1. "Coverage level" refers to the amount of a lost crop which the insurance policy will pay for.

INTERNATIONAL TRADE AND POLICY ISSUES

Lessons from Agricultural Policy Reform in Other Countries

Julian M. Alston

During the past 20–30 years many high-income countries have significantly reformed their agricultural policies. Australia and New Zealand have essentially eliminated farm subsidies. Canada has significantly reduced the rate of support to farmers, and has changed the form of support, away from market distorting policies to individual income stabilization accounts. The European Union has maintained relatively high rates of support, as measured by Producer Subsidy Equivalents, but has radically reformed its forms of support, to decouple payments from production. The different reforms reflected some common influences, such as evolving market conditions and pressures from international trade agreements, but they were mostly done to serve domestic economic interests. In a number of instances reforms were catalyzed by budgetary pressures or other “crises.” In the countries that have made the greatest progress in reforming their agricultural policies, important elements included (a) a sector-wide or economy-wide approach to policy, (b) open, public discussion of policy, perhaps through explicit transparency institutions, and (c) adjustment assistance measures or explicit compensation provided to producers harmed by a change.

Background

Agricultural policy has evolved in different directions and at different speeds in different countries, even among countries that seem very similar in many ways. Australia and New Zealand are held up as examples of countries that have been able to wean their farmers off government support. Australia progressively eliminated its agricultural policies over a 30-year period, beginning in the 1970s, as an element of an economy-wide process of industrial policy review and reform. New Zealand made major changes suddenly, in the mid-1980s, as an element of an economy-wide policy reform to address a national financial crisis.

In the late-1980s through the mid-1990s, the United States appeared to be on a path to join these countries that had largely phased out agricultural support programs. In the Uruguay Round of GATT negotiations, the United States joined countries like Australia and New Zealand in pressing other high-income countries, like those in the EU and Canada, to reduce their production- and trade-distorting agricultural subsidies. Consistent with that position, in the 1996 Farm Bill the U.S. government substantially reformed its policy to decouple the main subsidy payments from agricultural production. Since then, however, the direction of U.S. agricultural policy has

reversed, with a return to higher rates of support and more distorting instruments of support and a weakening of the U.S. stance on free trade in agricultural products.

In contrast to the United States, during the past ten years the trend in Europe and Canada has been to increasingly decouple support from production. Canada has preserved support for supply-managed commodities, dairy and poultry, but has otherwise significantly reduced the rate of support to farmers, and has changed the form of support, away from market distorting policies to individual income stabilization accounts. The European Union has maintained relatively high rates of support, as measured by Producer Subsidy Equivalents, but has radically reformed its forms of support over the past 15 years to replace market-distorting subsidies with decoupled payments based on historical production. This EU policy reform is very important to the United States because (a) it is a large change, (b) the countries involved produce and trade a large share of the total quantity of temperate-zone agricultural products, and (c) it is expected to endure.

Lessons for the United States

Policy change in Australia, New Zealand, Canada, and the EU may offer lessons for the United States. All four of these countries have changed their instruments of support in the direction of reducing the extent to which support for agriculture is coupled to production and trade distorting. The different reforms have reflected some common influences. Evolving market conditions and pressures from international trade negotiations and agreements have been common to all countries, including the United States. For the most part, reforms have been driven more by domestic interest rather than external pressure, although external pressures have helped at times. In a number of instances reforms were catalyzed by budgetary pressures or other “crises.”

In the countries that have made the greatest progress in achieving enduring reforms to their agricultural policies, change was facilitated by

complementary policies or institutional arrangements, including (a) a sector-wide or economy-wide approach to policy, (b) open public review processes, perhaps through explicit transparency institutions, and (c) adjustment assistance measures or explicit compensation provided to producers harmed by a change.

Economy-Wide Approach

Change in agricultural policies in Australia and New Zealand was facilitated by the fact that the policy change processes were not singling out agriculture, or individual agricultural industries. Rather, they were deliberate, economy-wide microeconomic reform processes, taking an economy-wide perspective on the implications of industry-specific policy change. Partly as a result of this context, a greater awareness was developed of inter-industry connections and how distortions in one part of the economy had consequences for other parts, which in turn had implications for positions taken by interest groups. Agricultural interests became divided because their interests differed, and this division helped make change possible.

In the U.S. context, agricultural economics arguments and policy debates typically have not highlighted the fact that within U.S. agriculture there are many losers as well as gainers from U.S. farm commodity programs, particularly comparing producers of non-program crops and program crops. The intra-sectoral distributional consequences are tricky to resolve, given the complex nature of agriculture and the commodity programs themselves.

Awareness of these issues and demand for information on distributional aspects are growing, especially from producers of unsubsidized non-program commodities who are arguing for a redirection of farm program support—for instance, specialty crop producers as reflected in the administration’s Farm Bill proposal. What may be most lacking is an independent, credible source, with enough resources to be able to provide the kinds of information that would be most useful, and with an interest in doing so—i.e., a transparency institution.

Transparency Institutions

Policy change in Australia was facilitated by its Industries Assistance Commission (now the Productivity Commission), a transparency institution that was established to systematically review industrial policies—including farm commodity programs and other, especially border, policies—and recommend directions for change and processes of change. In the United States there is no real counterpart, though a number of institutions serve as sources of information about farm program consequences and thus provide some services related to transparency. Movement toward economically rational agricultural policy could be facilitated if the United States had a transparency institution that played a role like that of the Industries Assistance Commission in Australia—at least to provide public, independent analysis of the consequences of policies in a context in which competing ideas and information could be aired.

Adjustment Assistance

In both Australia and New Zealand the government provided explicit measures to facilitate farmers to adjust to conditions of financial hardship (whether created by reform or the market) and to leave agriculture and pursue alternative occupations. These adjustment assistance measures included debt reconstruction and credit subsidies to facilitate amalgamation of uneconomic farms into more economic-sized units, welfare support for farm families, support for retraining, and farm financial and rural family counseling services. The idea that farm or rural policies and programs can be used to facilitate adjustment of resources and not to subsidize resources to remain in the sector was developed in detail in the work of D. Gale Johnson and other U.S. agricultural economists in the 1940s. However, the United States has never implemented major policies of this sort, and many U.S. farm programs seem designed to have the opposite effect and retain resources in agriculture in spite of market signals that they should leave.

Compensation and Buyouts

Adjustment assistance can be seen as an implicit form of compensation. But in some instances, governments have introduced alternative policies explicitly to compensate agricultural interests for some of their losses resulting from policy change. Examples include the Canadian elimination of the WGTA transportation subsidies, and some aspects of the EU reforms. In cases when explicit compensation was paid to individuals suffering losses as a result of the elimination of programs that involved rights to produce or sell a farm commodity—i.e., quotas or allotments—the government effectively bought out the programs. Unlike all the other agricultural protectionist policies that were phased out without any explicit compensation, in every significant instance when quotas were eliminated from Australian agriculture, explicit compensation was paid. Similarly, in the United States, in two cases where quotas (or allotments) were eliminated, peanuts in 2002 and tobacco in 2004, quota owners were compensated. This approach may involve large budgetary commitments but appears to be one way to achieve an enduring change.

Decoupled Transfers

Canada and the EU have moved substantially in the direction of decoupling support from production and trade, reflecting, among other things, responses to both budgetary pressures and past or prospective international trade agreements and trade disputes. In Canada the most distorting subsidies were reduced or eliminated, and whole farm countercyclical income support was introduced. In the EU, market-related subsidies have been to a great extent replaced with decoupled transfers based on historical production and transfers, but with some countercyclical elements provided using border protection. In both of these cases, the extent to which the more-newly introduced policies are decoupled from production is not clear; nor are the implications of the changes for the distribution

of benefits from the policy or the efficiency of the transfers.

Costs of Transfers

Decoupled transfers are likely to have significantly different economic incidence from the kinds of policies that have been phased out in Canada and the EU, and the Canadian income stabilization subsidies will have different incidence again. As well as changing the distribution of benefits, such changes in instruments involve changes in distribution of costs. Elements of costs that should not be neglected in these comparisons are the deadweight losses associated with taxation to finance transfers, and the costs of administration, enforcement, and compliance. The Canadian income stabilization policies in particular seem likely to involve significant costs of this latter type that may well outweigh the social costs of resource distortions associated with the un-decoupled policies that they have replaced. Deeper investigation is warranted before we can say

clearly whether the real-world “decoupled” transfers are preferable on efficiency grounds or distributional grounds. A related question is whether a shift toward decoupled transfers is a transitional step toward elimination of policies altogether or a step in the reverse direction, enshrining certain transfers in a more permanent fashion. The approach in Australia and New Zealand, of phasing out subsidies rather than substituting toward more decoupled (and supposedly less-distorting) policies, might be cheaper in the short run and may offer more enduring reform in the long run.

Note

This policy brief draws on the author’s longer paper “Lessons from Policy Reforms in Other Countries,” available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Alston is a professor in the Department of Agricultural and Resource Economics, University of California, Davis. The views expressed here are those of the author and not those of any institution with which he is affiliated.

The Impact of the WTO and Bilateral Trade Agreements on U.S. Farm Policy

Timothy E. Josling

U.S. farm policy exists within the constraints of the World Trade Organization (WTO), and the Uruguay Round Agreement on Agriculture (URAA), in particular. The URAA restricts the amount that can be spent by nations on export subsidies and trade-distorting domestic support. In addition, the URAA obliges countries to notify the WTO of their levels of domestic support, and these notifications are open to scrutiny and objections by trading partners.

The longer paper finds that WTO rules (though not the rules in regional and bilateral trade agreements) have had a noticeable impact on the direction of U.S. domestic farm policy. They have changed the set of instruments used and the level of support given. They have modified the scope for such instruments and the way in which farm policy works. And they have influenced the political and economic objectives of farm policy, and the strategic options for achieving those objectives. However, they have only been allowed to operate within the space defined by domestic legislation.

The paper argues that it is necessary to take a broad look at the impact of trade agreements on U.S. farm policy. To be sustainable, farm policy must be compatible with other aspects of U.S. trade and economic policy, or at least not be so incompatible as to put achievements in those other areas in jeopardy. If the United States decides to keep price-related

subsidies such as loan deficiency payments and countercyclical payments, then conflicts between the WTO payment limits will become a frequent occurrence. If, however, the 2007 Farm Bill continues down the road of the 1996 Bill, separating income payments from commodity market conditions, then the WTO limits will not be a major constraining factor in the future.

The Uruguay Round Agreement on Agriculture: A Policy Framework

Although the General Agreement on Tariffs and Trade (GATT) covered agriculture, it provided exceptions to normal restrictions on trade barriers. First, it allowed quotas and licenses in cases where the domestic market was being managed by the state, and second, it exempted export subsidies for primary commodities from the constraints placed on manufactured goods export subsidies. Since agricultural sectors largely escaped effective scrutiny and discipline by the GATT, by the 1980s world markets were being distorted by the competitive subsidization of farm products. The U.S., and other exporting countries, therefore pushed for more enforceable and coherent constraints on agricultural policy in the Uruguay Round of GATT negotiations (1986–94).

The URAA, which came into effect in 1995 as part of the agreement creating the WTO, is built around three “pillars”: market access, domestic support, and export competition. The new market access rules required all forms of quotas and restrictive licenses to be converted into tariffs, with the tariffs being incrementally reduced over time. Export competition rules prohibited new export subsidies and required a reduction in existing subsidies according to volume and expenditure. Domestic support rules governed direct payments which went to farmers in addition to transfers from consumers through border policies. These included deficiency payments, direct income supplements, administrative price systems, subsidies tied to research and extension, conservation compliance payments, and other programs that benefit farmers directly. These payments were then classified according to their distortionary effects on trade. “Amber Box” measures (subsidies tied to price or output levels) were to be reduced by 20 percent relative to a base period (1986–90), subject to *de minimis* amounts excluded from the commitment. “Blue Box” subsidies (those tied to supply control programs) were restricted to payments based on fixed acreage and yield, while “Green Box” subsidies (those unrelated to price and output) were not constrained. Together, these form the framework for the restrictions that all WTO members accept, and the rules with which U.S. farm policies are to comply if they are not to risk challenge at the WTO.

Monitoring of compliance is implemented through the Agricultural Committee of the WTO, and depends on “notification” by members. WTO members accepted an obligation to notify annually the payments made on domestic support, but have been increasingly tardy in exchanging information—impairing the usefulness of the committee as a place for timely challenges.

U.S. Domestic Policy and the WTO Constraints, 1995–2005

Although the United States had to overhaul its instruments of farm policy in the light of the adoption of the

URAA, this did not result in any major reduction in the level of support given by farm policy, and largely passed without significantly disrupting stakeholder interests. It converted many quantitative import restrictions into tariffs, though domestic prices were not markedly affected. It introduced limits on export subsidies, including those pertaining to coarse grains, wheat, oilseeds, milk, beef, pork, poultry, and occasional assistance to fruits and vegetables. However, export subsidies are no longer a major aspect of U.S. policy, with the exception of dairy products, and the economic impact of the residual spending on such subsidies has not been extensive. Disciplines on U.S. food aid were also largely ineffective, as the URAA merely clarified existing practices.

The URAA had its greatest impact on U.S. policies through the domestic support restrictions. The URAA introduced an Aggregate Measure of Support (AMS) as a basis for binding trade-distorting subsidies and for scheduling future subsidy reductions. The 20 percent reduction in domestic support was derived from a base level of \$23.9 billion (1986–88) for the United States, and was reduced by 2000 to \$19.1 billion.

Yet, by starting at a particularly high base, and moving many direct payments from the Blue to Green Box in the 1996 FAIR Act, U.S. farm programs were not much constrained by the cap on direct support. While unlimited Green Box support was at about \$50 billion from 1995 to 2001, payments in the constrained categories never exceeded \$16.9 billion in that period. However, with an increase in outlays since 2004 reflecting loan deficiency payments (LDPs) and countercyclical payments (CCPs)—both linked to price levels, and counted as Amber Box subsidies—it became possible to conceive of a breach of the AMS ceiling of \$19.1 billion. Additional federal government programs to reduce the financial consequences of uncertainties in weather, yields, prices, and global markets, have also been notified to the WTO as Amber Box. This subsidized insurance increases revenue and reduces its variance, and thus encourages planting. However, as with the CCPs, the subsidy element in crop insurance has been covered by the non-product-specific *de minimis* provisions.

It is currently unclear whether Direct Payments (DPs), introduced in the 2002 Farm Bill as a replacement for Production Flexibility Contract payments, belong in the Green Box or the Amber Box. The rationale for including these in the Green Box is that they are based on historical yields and acreage and not related to current price. However, the WTO panel examining the Brazilian cotton case came to the conclusion that DPs had a link with production because of the restriction on DP recipients from planting fruits and vegetables. If DPs (which have ranged from between \$3.9 billion to \$5.3 billion annually since 2002) were to be included in the Amber Box, the AMS limit would have been breached in recent years.

Future direct payments could possibly exceed the WTO limits, under certain crop and price outcomes, if no reforms are made to make them fully consistent with the Green Box definition. This consistency would be enhanced by moving to payments that were not based on commodity prices. Such a move would also make the farm policy more responsive to new needs, such as conservation and rural development, and less focused on the production of a small set of commodities. Although the threat of sanctions by other nations may be unlikely to coerce the United States into conformity with WTO rules, the desire to preserve the integrity of a system of trade rules that benefits the United States (and its agricultural sector) should do so. WTO constraints thus lead U.S. farm policy in a direction in which it should go.

Bilateral and Regional Trade Agreements

Regional and bilateral trade agreements have generally had less impact on U.S. domestic farm policies than have the provisions of the WTO, since preferential trade pacts usually avoid obligations that directly impinge on domestic farm programs. Nonetheless, the desire for gains from trade in agriculture has produced agreements to increase market access. By increasing the amount of farm goods entering the U.S. market as a result of tariff cuts and quota increases, these agreements do, however, influence the viability of domestic support programs. At

the same time, bilateral agreements are careful to state explicitly that the parties retain their rights under the WTO, and make clear that they are designed to be in conformity with WTO rules on FTAs and customs unions.

Having long been a champion of the multilateral trading system and of nondiscrimination, for a combination of geopolitical and economic reasons, the United States has now become an active supporter of regional and bilateral trade agreements as a complement to its WTO commitments. A Free Trade Area (FTA) with Israel in 1985, as an expression of political and economic support, was followed by one with Canada in 1986, which was expanded to include Mexico in the North American Free Trade Agreement (NAFTA) in 1994. Since 2002, the United States has begun to negotiate more bilateral agreements, reflecting a policy of “competitive liberalization,” with market access being liberalized between the U.S. and a number of geopolitical allies and geographic neighbors.

All the U.S. FTAs have provisions for tariff reductions that affect food and agricultural goods. However, the agreements control trade in a range of products considered politically sensitive in one or both partners. For the United States, these sensitivities include sugar, citrus fruits, peanuts, and dairy products. For the partners, the list often includes products such as corn and beans along with rice.

During the NAFTA negotiations, the United States looked to gain improved market access in Mexico for grains and livestock exports, while Mexico wanted to be able to increase the sales of fruits and vegetables in the United States. For trade with Mexico, a bolder move to liberalize trade was planned—with no permanent exemptions after a 15-year transition period. Since this trade is small relative to the U.S. domestic market, the impact of NAFTA on the United States has been minor. However, the integration of markets has heightened awareness of differences in marketing institutions, and the activities of the Canadian Wheat Board have become a source of tension associated with NAFTA.

The Central American Free Trade Agreement (CAFTA), which includes the United States, Costa

Rica, El Salvador, Guatemala, Honduras, and Nicaragua, took effect in 2006, and was intended to help foster economic growth in the Central American region by reducing barriers to trade and investment. The agreement does not regulate domestic subsidies, but increases market access for agricultural goods in both directions. While agricultural trade barriers in the Central American nations are higher than those for manufactured goods, CAFTA phases in provisions for increased market access. Nonetheless, the impact of market access in the United States will likely be limited, since most CAFTA nations have already enjoyed permanent duty-free access from previous agreements. Indeed, approximately 99 percent of CAFTA exports already enter the U.S. market duty-free, with exceptions largely in the cases of sugar, dairy, cotton, meats, and peanuts.

Future Impacts of Trade Agreements on Domestic Farm Policy

At present, the prospects for further multilateral liberalization, through the Doha Round of world trade talks, look somewhat remote. But if agreement were to be reached on a significant cut in bound tariff rates, a sharp reduction of trade-distorting domestic support payments, and the elimination of export assistance through food aid and credit guarantees, the Doha Round would have a more profound impact on U.S. farm policy than did the Uruguay Round.

While the changes agreed in a Doha Round package will have to be phased in over a period of years, so long as its main parameters are known before the 2007 Farm Bill is drafted, flexibility to accommodate its demands could be built into the legislation. Should the United States face tight limitations on the amount of Amber Box support it could provide, it is likely that the price support programs for these commodities would have to be modified. Price support levels would have to be reduced in order to keep within the total AMS limit when market prices are low, and CCPs might have to be subject to limitations to stay within the Blue Box limit.

If the Doha Round results in increased market access, the ability of the United States to support prices for certain commodities by controlling imports (most notably dairy and sugar) might be constrained regardless of any separately agreed limits on subsidies. Should export subsidies be ended under a successful Doha Round of world trade negotiations, the subsidies in the Dairy Export Enhancement Program would need to be phased out. The subsidy components of “in kind” credit guarantees would also need to be removed. If the WTO talks were to mandate that food aid be limited to cash grants, the basis for U.S. food aid policy would be profoundly undermined. U.S. farm exports, however, would benefit from a reduction in the implicit subsidy given by the single-desk seller status of the Canadian Wheat Board—although it is possible that the Canadian government will in any case end the CWB’s export monopoly before long.

Although offering the prospect of expanding markets with Latin America, enthusiasm in the U.S. for a Free Trade Area of the Americas (FTAA) has waned. Economies in that region have been successful agricultural exporters in the past decade, and pose a challenge to the competitiveness of U.S. production. The reaction of U.S. policymakers will therefore be conditioned by the extent to which the United States can expect to compete in such markets as citrus, oilseeds, beef, rice, sugar, and corn. On the other hand, broader competitive pressures for trade liberalization are likely to grow. Markets within South America are being consolidated through MERCOSUR, and since the EU could soon conclude an agreement with MERCOSUR that would eventually include preferential access for farm products, U.S. exporters in all sectors of the economy would face a disadvantage if the FTAA did not materialize.

Conclusion

The impact of trade agreements on U.S. domestic farm policy is both elusive and pervasive. On the one hand, farm policy instruments are staunchly defended in trade negotiations and are rarely “put on the table.”

On the other hand, trade agreements have a corrosive effect on the ability of domestic policy to manage markets to the advantage of domestic producers. Indeed, the Blair House pact with the EU (at which the agricultural modalities for the Uruguay Round were agreed) was intended in large part to ensure that trade constraints did not force domestic policy changes.

Sometimes the full impact of a trade agreement is not felt until market conditions change. In the case of the URAA, the restraints on U.S. policy began to be noticed when prices receded from their high levels in 1996 and 1997. The impact on domestic subsidy policies comes when future legislation is crafted to accommodate the URAA. The effects of litigation at the WTO can be more immediate, but may again be reflected in policy revisions in future years.

The underlying trends in farm policy are closely linked with the restraints built into the WTO URAA. The United States was insistent that domestic policies of all countries be restrained by the rules negotiated in the Uruguay Round. To the extent that Europe's Common Agricultural Policy has changed since 1992, the URAA can be attributed some of the credit. But, the United States farm policy has also increasingly become the target at the WTO of developing

country exporters, such as Brazil, which considered their own agricultural growth to be hindered.

WTO rules have modified the scope of domestic policy instruments and changed the strategic options for achieving political and economic objectives, albeit within the space defined by domestic legislation. If the 2007 Farm Bill continues down the road of the 1996 Bill, by separating income payments from commodity markets, then the WTO limits will not be a major factor in the future. If the United States decides to keep price-related subsidies, such as loan deficiency payments and countercyclical payments, then conflicts between the WTO payment limits will become a more frequent occurrence.

Note

This policy brief draws on the author's longer paper "The Impact of the WTO and Bilateral Trade Agreements on U.S. Farm Policy," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Josling is professor emeritus, Food Research Institute, and senior fellow, Freeman-Spogli Institute for International Studies, Stanford University. The views expressed here are those of the author and not those of any institution with which he is affiliated.

The Farm Bill and WTO Compliance

Daniel A. Sumner

Secretary of Agriculture Mike Johanns, along with key members of Congress, rates compliance with World Trade Organization (WTO) commitments as among the most important drivers for change in the 2007 Farm Bill. This is a new development. In earlier farm bill debates, international obligations were either not significant, or, in 1996 and 2002, not expected to have any serious implications for farm subsidy programs. The successful challenge of the U.S. upland cotton program by Brazil in a wide-ranging WTO dispute disrupted the complacency with which many viewed the U.S. ability to satisfy its WTO obligations. Other challenges to U.S. farm programs are now routinely discussed and evaluated, and Canada, together with a dozen other WTO members, has filed a challenge to the U.S. corn program and the U.S. commitments regarding its aggregate measure of farm subsidies.

D. Gale Johnson noted the “inconsistency” between farm subsidies and U.S. advocacy of free international trade as a source of economic growth and secure international relations at the foundation of the GATT in the late 1940s. But, before the advent of the WTO in 1994 this tension was rhetorical and did not involve international agreements or explicit obligations. This policy brief explores the tensions between U.S. farm subsidy programs and U.S. obligations under WTO agreements. It shows that U.S. farm

subsidies are clearly in conflict with the traditional thrust of U.S. trade policy, including agricultural trade policy. Furthermore, U.S. farm subsidy programs remain vulnerable to successful challenge as inconsistent with the letter and spirit of WTO agreements of which the United States was a leading advocate.

The most direct way to remedy this conflict would be to remove subsidies tied directly or indirectly to commodity production. However, if some kinds of aid to farm producers or rural areas were justified on broad social welfare grounds, such programs could be readily designed to be consistent with obligations not to distort global commodity markets or otherwise violate international commitments. This generally implies focusing support on public goods such as environmental protection or rural poverty in ways that minimize linkage to commodity production.

WTO Agreements, Compliance, and Dispute Settlement

Members (countries or groups of countries such as the European Union) join the WTO if they accept its objective, which is to open markets and facilitate trade. To meet this objective, the WTO plays two roles. First, it facilitates the negotiation of multilateral trade agreements that lower trade barriers and set

rules that reduce other policy impediments to trade between nations. Second, the WTO administers the multilateral trade agreements and facilitates compliance through settlement of disputes. Under rules adopted in 1994, disputes at the WTO are now resolved, even given time for a full appeal process, more rapidly than in U.S. courts, for example.

But, because its members are sovereign governments, the WTO cannot compel compliance with its rulings. At the end of the process, countries may choose to suffer retaliation from other members rather than change their own policies. But, more important than retaliation, lack of compliance with WTO rulings may have large costs in terms of credibility with trading and negotiating partners. This latter cost is a particular problem for the United States, which has long urged fealty to the rule of law in trade relations.

The WTO Agriculture Agreement of 1994 was the first to include binding commitments on agricultural subsidy programs. In the agriculture agreement members pledged to list their government programs that subsidized agricultural production and to ensure that an “aggregate measure” of this support did not exceed the established limit set for each year. This process of determining which programs to include and how they affect the aggregate measure has been complex and contentious, and U.S. farm subsidy programs have been challenged as being inconsistent with the spirit and legal obligations of the WTO agreement.

Even more important than the specific commitments of the WTO Agricultural Agreement, in 1994 WTO members also agreed to bring agricultural programs thoroughly under WTO rules relating to subsidies more broadly. That is, rather than being generally outside the general WTO provisions, since 1994 agriculture has been subject to these provisions except where specifically provided for. The general WTO prohibition on export subsidies and subsidies that provide special privileges for local goods over imports (once import tariffs have been paid) now also apply to agricultural goods. Furthermore, the general WTO provisions against using subsidies that have adverse effects on the economic interests of another member mean that farm subsidies that distort market prices to

a degree that seriously harms the industry in another member country are subject to challenge, even if these subsidies are in line with the rules of the agriculture agreement.

The Cotton Case and the New WTO Corn Case

In 2004 and 2005 the WTO dispute settlement panel and appellate body found, in a dispute brought by Brazil, that the U.S. cotton program (and in the case of export credit guarantees, programs for many other commodities) included prohibited export subsidies and local content subsidies. They also found that the cotton program caused price suppression on the world market for cotton that was significant enough to cause serious prejudice to the interests of Brazil. Furthermore, in the process of its decisions, the WTO panel and appellate body found that the “so-called” decoupled payment programs introduced by the United States with the 1996 Farm Bill constituted support for cotton because they limited the crops that farmers could grow while maintaining eligibility for the payments. After missing initial deadlines, in response to these rulings the United States made some adjustments to its export credit guarantee program and eliminated a special “step 2” feature of the cotton program that subsidized buyers of U.S. cotton. The United States did not remove or adjust other programs, and Brazil has gone back to the WTO claiming that the United States has failed to fully implement the original rulings. That implementation case is underway, with initial rulings expected in June 2007, with the potential for appeals after that.

After much speculation about cases being prepared against U.S. programs for wheat, rice, corn, dairy, and other crops, in January 2007, Canada, joined by eight other nations, requested formal WTO consultations with the United States as the first step in initiating a case against the U.S. corn subsidy program that seems modeled after the cotton case. In addition, in the same WTO consultation request Canada claimed that the United States has been misreporting its “so-called” decoupled programs and may have

exceeded its allowed limits on the aggregate measure of support.

Implications for the 2007 Farm Bill

The United States was the leader in bringing agriculture under the full WTO umbrella and strengthening the dispute resolution process. These accomplishments promise to yield important economic benefits for the United States and U.S. agriculture for decades to come. But seeming U.S. violations of its obligations and apparent unwillingness to play by the rules it created undermine the credibility of the WTO and of the United States. To be sure, not every farm program violates the text of the WTO agreements, and the United States should defend its policies against unwarranted legal challenge. Nonetheless, it is also important to recognize when obvious contradictions between rhetoric and action in farm trade policy harm the strong U.S. agricultural interests in opening markets and reducing subsidies globally. There are times when full, immediate, and forthcoming compliance with WTO dispute settlement rulings will reap significant, broad strategic gains. Furthermore, the U.S. should consider unilaterally eliminating or altering its key agriculture support programs to preclude future WTO challenges, and secure the benefits of free trade for its farmers. The 2007 Farm Bill can be the vehicle to achieve all these ends.

Given high projected commodity prices, 2007 is an ideal year to deal with long-term inconsistencies of U.S. farm programs with WTO agreements. Eliminating the marketing loan and countercyclical programs for grains, oilseeds, and cotton and the MILC program for dairy would remove the largest impediments to meeting WTO obligations. These programs clearly stimulate production and affect markets, arguably in violation of the WTO. Short of program elimination, reducing loan rates and target prices enough that these programs are unlikely to affect production would reduce the likelihood of successful challenge against these programs. But, the underlying rationale of these programs, to offset low market prices for producers, is fundamentally at odds with

the principles that the United States has urged on the WTO.

The direct payment programs for grains, oilseeds, and cotton also ought to be eliminated or significantly reformed. Like the countercyclical programs, these programs allow considerable planting flexibility and do not tie payments to commodity prices. However, they do restrict what can be grown on program land and they provide substantial funds to producers and landlords for use on farm investments and as collateral for farm loans. Further, if growers expect that the farm-specific land use and yield data on which they are based may be updated, the program provides incentives to maintain area and enhance yields. Thus these programs too are not immune from WTO challenge.

The cotton panel and appellate body rulings suggest that WTO rules count direct payments as part of trade distorting support. A simple way to meet the current WTO ruling is to remove the planting restrictions for payment base land. However, that would not respond to the other production incentives imbedded within the direct payment program. Here again, eliminating the program is the simplest way to assure compliance with the letter and spirit of WTO obligations. That would also remove the objections raised by traditional growers of the “restricted crops” that they would face unfair competition and lower market prices if growers receiving direct payment and countercyclical payments were allowed to plant their crops on payment-eligible land.

In contrast, payments to farmers for environmental objectives pose many fewer WTO concerns. The general rule is that such programs only face WTO limits if they also stimulate production. So, for example, programs that pay farmers on a per acre basis for production of a specific crop so long as they meet minimal environmental standards would rightly be seen to stimulate production of the crop. Such programs are not prohibited, but they would contribute to distorting international markets and to the aggregate measure of support. The WTO rules for considering environmental programs as only minimally trade distorting allow for support that pays for environmental benefits supplied by the farm without overcompensating the grower.

Conclusion

Compliance with WTO obligations constrains U.S. farm subsidies, but these obligations are consistent with the interest of the United States for an agriculture policy that responds more to market signals rather than government subsidy. Using the 2007 Farm Bill to move vigorously in this direction would avoid international conflict and, indeed, exhibit the economic leadership that the rest of the world should expect from the United States.

Note

This policy brief draws on the author's longer paper "U.S. Farm Policy and WTO Compliance" available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Sumner is director of the University of California Agricultural Issues Center and Frank H. Buck Jr. Professor in the Department of Agricultural and Resource Economics, University of California, Davis. He is co-director of the AEI agricultural policy project. The author thanks David Orden and other AEI project participants for suggestions. The views expressed here are those of the author and not those of any institution with which he is affiliated.

U.S. International Food Assistance Programs: Issues and Options for the 2007 Farm Bill

Christopher B. Barrett

For over fifty years, international food assistance programs—commonly known as “food aid”—have enjoyed broad political support from agribusiness, shipping, foreign policy, and charitable organizations. Yet these policies have become a point of controversy in the World Trade Organization (WTO) Doha Round negotiations, many perceive the programs to be wasteful, and calls for significant reforms have become widespread.

This paper argues that current programs are built on outdated and often flawed assessments about what food aid can accomplish, and should be remodeled around objectives for which food aid is demonstrably effective: rapid, invaluable humanitarian response to food emergencies in low-income countries, and, to a lesser degree, longer-term economic development in low-income countries. Many restrictions on and requirements of U.S. food aid policy should be abolished or reformed. Primary among these are the “buy-U.S.” requirements that food distributed as aid be grown, bagged, and processed entirely by U.S. suppliers, as well as mandates that require shipping food aid in U.S. carriers. Because timely response is essential to meeting emergency needs, a revised program would include cash for local and regional purchases, as well as exemptions from any remaining requirements that delay and add cost to emergency response.

Once food aid programs concentrate solely on humanitarian and development objectives, it may make sense to reorganize the remaining programs into two programs: one for emergency response, the other for non-emergency, development programming. This would achieve focus and save on unnecessary bureaucratic expense, and would also enable the United States to feed far more hungry people per taxpayer dollar.

U.S. Food Aid Program Background

In the period before the 1990 Farm Bill, generous farm price support programs generated massive government-held stocks of grain, and substantial tariff and non-tariff barriers in farm products restricted global commodity trade. The original food aid law—Public Law 480 (PL 480), passed in 1954—allowed the government to dispose of commodity surpluses in markets that were separated from the U.S. market, and so would not drive down domestic prices, while attempting to serve commercial, geopolitical, and humanitarian goals.

The U.S. government currently operates seven distinct food aid programs, two of which are dormant (see table 1 on the following page). The overwhelming majority of U.S. food aid has always fallen

TABLE 1
U.S. FOOD AID PROGRAMS

Program	PL 480 Title I	PL 480 Title II	PL 480 Title III ^a	Food for Progress	Section 416 (b) ^a	Bill Emerson Humanitarian Trust	McGovern- Dole IFECN ^b
Year begun	1954	1954	1954	1985	1949	1980	2003
Managing agency	USDA	USAID	USAID	USDA	USDA	USDA	USDA
2005 actual funding (\$ million)	44	1,413	0	198	76	377	87
2006 estimated (\$ million)	32	1,138	0	205	0	Not reported	99

SOURCE: White House budget proposal for FY 2007.

NOTES: a. Dormant program.

b. International Food for Education and Child Nutrition.

under the three titles of PL 480, which are funded through annual and supplemental appropriations by the Congress and authorized in regular Farm Bills. The Food for Progress, McGovern-Dole International Food for Education and Child Nutrition Program, and Bill Emerson Humanitarian Trust are all likewise authorized by Farm Bills and covered by annual agriculture appropriations.

How Food Aid Has Changed

Concerns about contemporary U.S. food aid arise in response to changes that have occurred in the background conditions that originally informed the design of food aid programs over fifty years ago. The five major changes concern:

1. Disposal of government grain surpluses and use of price supports to help U.S. farmers;
2. Use of food aid to create new commercial export markets;
3. The dramatic shift from program to emergency food aid;
4. Reduced cash resources for food security programming in developing countries; and
5. Changed food aid policies among operational agencies and other donors.

Helping U.S. Farmers? For many years, food aid provided a means to dispose of surplus commodity stocks at a low taxpayer cost. Now that price support programs are no longer a primary source of revenue for American farmers, government grain stocks are gone. The government now purchases food specifically for distribution as aid, but pays above open market prices, as restrictions on specific bagging and processing services force it to procure commodities from a limited competitive tender.

The widespread belief that food aid benefits American farmers financially is now mistaken. Little of the food purchased comes from average farmers; instead, it is mostly sourced from larger-scale agribusiness. At the same time, the \$654 million spent on food aid commodities in 2005 is merely a drop in the ocean of the nearly \$1 trillion U.S. food economy, and provides only about 1 percent of net farm income in the United States. Food aid programs are simply too small to move U.S. market prices for food.

Creating New Export Markets? In 1954, many food aid backers believed that food aid might help develop export markets for U.S. agriculture by establishing new distribution channels. Yet U.S. food aid has actually *displaced* commercial agricultural exports to the targeted countries. Once one controls for other factors at play, food aid does not appear to build up a taste among foreign consumers for U.S. food exports. Nor does it stimulate sufficient income growth in recipient

markets to induce enough expansion of demand for U.S. products to compensate for the commercial exports displaced by the free food aid shipments.

The Shift from Program to Emergency Food Aid.

The nature of food aid has changed significantly. Over the past forty years, there has been a dramatic shift away from government-to-government concessional sales to food aid donations through NGOs, cooperatives, and the World Food Program. U.S. food aid now largely responds to emergencies, which, in the modern era, are less remote and affect a much larger population. Title I funded food aid (sales to foreign governments) now comprises only 6.6 percent of the total U.S. food aid program, down from 62.6 percent in 1980. Title II funded food aid (donated food for emergencies) constituted 77.7 percent of total U.S. food aid contributions in FY 2005, more than double its 1980 share.

Reduced Funding for Food Security Drives

“Monetization.” At the same time, non-food aid funds for food security projects in developing countries have decreased sharply. This has induced NGOs and cooperatives working to end hunger and involved in food aid to adopt more controversial practices, notably “monetization,” wherein they sell the food aid they receive in local markets to raise cash for food security programming. As a result, more than half of Title II non-emergency resources have been monetized each year since 1999.

Increased Effectiveness of Food Aid Practices.

Food aid practices have changed significantly in the last twenty years, becoming much more effective in the process. With improvements in early warning systems, emergency needs assessment methods, and supply chain management systems, the effectiveness of emergency food aid has increased over the past twenty years, and has often helped to prevent widespread famine. One manifestation of this is the increased attention paid to the nutritional content of commodities distributed. Since fortified foods are not commonly available through commercial channels in many poor countries, micronutrient deficiencies are

widespread, and dietary diversity is generally limited among low-income households. Rations designed to meet these needs can work wonders.

Donors have responded to these improved practices by channeling their aid increasingly to the World Food Program and other NGOs that focus on assessed recipient need. However, these successful groups have increasingly purchased food in recipient countries’ local or regional markets. The United States remains the only major donor that does not permit its funds to be used for local and regional food purchases. Aside from U.S. food aid, over 60 percent of global food aid flows are procured outside the donor country, in developing countries, a striking shift in just the past several years.

What Remains the Same: Politically Driven Restrictions on Food Aid

Despite these changes, U.S. food aid programs have continued to labor under politically driven restrictions that limit programs’ flexibility to respond appropriately to rapidly growing emergency needs. These restrictions also unnecessarily drive up costs. In FY 2005, USAID purchased \$654 million in food, but spent nearly \$1 billion in transport, storage, and administrative costs: only 40 percent of expenditures went for food. By contrast, in FY 2003, 68 percent of Canada’s food aid budget was spent on food.

A significant share of these costs are attributable to the many restrictions placed on U.S. food aid, particularly those with respect to shipping, bagging, and processing. Other restrictions, such as the requirement that the food provided through U.S. food aid programs must be grown in the United States, also hurt the ability to respond quickly to emergencies. In emergency medicine, the “Golden Hour” is the first 60 minutes after an accident or the onset of acute illness, the window during which the chances of saving a patient are greatest. The international humanitarian community has generally internalized the principle of the Golden Hour: Rapid response is essential. Food aid procurement restrictions nonetheless stand in the way. The average delay in

delivering emergency food aid is nearly five months because of current rules requiring all U.S. food aid to be grown and procured in and shipped from the United States. The GAO found that, had the U.S. authorized regional food purchases by the World Food Program, it could have saved 120 days in the delivery time for food aid rations to Afghanistan. Delays cost money and lives.

Shipping restrictions on food aid are especially contentious. Partly the result of the desire to maintain a viable U.S. merchant marine fleet that can be called upon in time of war, the 1985 Farm Bill mandated that at least 75 percent of the gross tonnage of U.S. food aid be shipped on privately owned, registered U.S.-flag commercial vessels. Another provision of the 1985 Bill mandates that at least 75 percent of the non-emergency minimum tonnage be fortified, bagged or processed, and that 50 percent of non-emergency grain shipments be bagged.

But these U.S.-flagged ships need not be U.S.-owned. Indeed, foreign-owned lines operating U.S.-flagged ships carried 58 percent of USAID food aid by weight in FY 2005. Moreover, dry bulk ships are of negligible value to the U.S. military, so the GAO has repeatedly concluded that cargo preference on food aid shipments does not advance the objectives for which they are designed. It estimates that cargo preference provisions inflate freight costs by 69 percent without advancing national security interests in military sealift capacity.

In 1996, Congress created a new Maritime Security Program (MSP), providing subsidies of \$2.6 million per ship a year, to give the Pentagon the legal right to use ships and crews for military operations when necessary. There thus now exists a distinct program explicitly for the purpose for which cargo preference was intended. Shipowners can now legally double dip, collecting MSP payments while also enjoying cargo preference mark-ups on many food aid shipments. This is wasteful.

Food aid volumes are a tiny share of global shipments, and so it does little to keep the U.S. merchant marine afloat. Yet, a few ports depend heavily on food aid shipments and benefit from cargo provisions that distort shipping patterns. For example, food aid

makes up one-third of the tonnage shipped from the Gulf of Mexico port at Lake Charles, Louisiana. Analysis of USAID data shows that 45.1 percent of all food aid in 2005 was shipped through Houston-area ports, providing many times those ports' share of commercial exports of the same commodities. The most ridiculous example of distorted logistics arises from the 1986 Farm Bill stipulation that Great Lakes ports should retain their 1984 shares of food aid cargoes. Because no cargo preference-eligible carriers serve Great Lakes ports today, these restrictions are now met entirely by overland cargo transport to facilities in the Great Lakes region where they are moved to a different mode of transport (truck or rail) to move to another U.S. seaport for ocean shipment.

Recommendations for Reform

Historically, food aid has been proven effective at meeting only two objectives: food surplus disposal and providing humanitarian assistance. Since surplus disposal is unlikely to be permissible under any future WTO agreement, a reformed food aid program ought to focus on how best to provide humanitarian assistance.

The U.S. food aid budget has shrunk by nearly half in real terms since 1980. Since increasingly scarce resources make it more important to maximize value per dollar, it would be wise to remove restrictions on emergency assistance, so that aid can follow best practices in situations where food is most needed. Congress should also consider increasing annual food aid appropriations to \$2 billion a year, an increase from the \$1.6 to \$2.0 billion range that has prevailed since 2002 once supplemental appropriations are taken into account.

Three other reforms would increase the amount of food which NGOs can provide to recipients: repeal the requirement that 75 percent of non-emergency food aid be fortified, bagged, or processed; eliminate the cap on Section 202(e) cash made available to operational agencies to cover administrative, transport, storage, and handling costs; and reform the cargo preferences that drive up shipping costs.

The argument for eliminating the value-added minimum is simple: this mandate is rarely if ever met and it has no basis in advancing food security objectives. Repeal of the Section 202(e) cash spending cap will also be necessary if there are limits placed on the ability to monetize non-emergency food aid. But the most contentious reform will be over cargo preference in ocean freight.

Congress should direct agencies to streamline commodity procurement and freight contracting by insisting on using prevailing best practices in commercial supply logistics, and harmonize the listing of vessels eligible for cargo preference with that for which the Maritime Administration (MARAD) partly reimburses USAID and USDA. Ending the Great Lakes port provisions could likewise eliminate unnecessary freight costs that do not improve the efficiency or effectiveness of food aid programs.

Another important avenue for reform is the prospective use of cash to make local and regional food purchases to respond to food emergencies in developing countries. By law, the food provided through U.S. food aid programs must be grown in, processed in, and shipped from the United States. This “tying” of food aid to domestic procurement sets the U.S. apart from other donors, which have partly or wholly abandoned the practice.

The economic logic supporting local and regional purchases is impeccable: quicker, lower-cost delivery that is less likely to disrupt recipient country markets. This is not uniformly the case: some markets are too thin to absorb a significant increase in commercial food demand without driving up prices, and in other places quality control and transport capacity concerns limit the ability to make these purchases. But most often, local and regional purchases are cheaper and quicker than shipments of U.S. food on U.S. ships halfway around the world. A detailed study of global food aid transactions recently found that local food aid procurement was 66 percent less expensive than shipments directly from donor countries.

Cost savings notwithstanding, the Golden Hour principle is perhaps the most compelling argument for local and regional purchases. Rapid response saves lives, limits ill health, keeps children in school, and

prevents precipitous and sometimes irreversible asset loss by desperately poor people forced into distress sale of their land, livestock, or even persons (via the abhorrent practice of debt peonage). Further, when food aid arrives late, it fails to deliver promised humanitarian benefits in full and can often prove disruptive to local commercial farming and marketing systems.

USAID has made notable efforts to improve timely response through creative rerouting of cargo already at sea and, most notably, through pre-positioning warehouses in Dubai and Djibouti, nearer to some regions (such as the Horn of Africa) where emergencies frequently arise. While this can, in principle, cut response time to two to four weeks, from the nearly five months averaged by U.S. emergency food aid, the volume and variety of commodities available are sharply limited, and maintaining this capacity adds to overall program costs because of facility limitations. Thus, the timeliness and efficiency of emergency response are sharply limited under the current confines of “buy America” provisions.

Since the 1990 Farm Bill relaxed rules on sales of food aid for local currencies in developing countries, “monetization” has led to the widespread transformation of non-emergency food aid out of direct distribution and into open market sales to raise cash resources for development projects. Many observers consider monetization a terribly inefficient way to use taxpayer dollars, while others fear that it distorts markets, displaces imports, and could thereby imperil trade agreements.

Although it is tremendously wasteful for the government to buy food in the United States, ship it abroad to an NGO or cooperative, only to sell it off again in a nation where food is cheaper, NGOs defend monetization on the grounds that it provides cash resources that are not available any other way for overseas development programs. To a certain degree, therefore, debates about monetization are a misplaced struggle over the appropriate funding levels for development assistance. In the event of a WTO agreement, however, new trade rules may force explicit limits on monetization rates, since several WTO member states perceive monetization to be a de facto export subsidy.

Conclusion

Reform of U.S. food aid programs is long overdue. The U.S. government no longer holds food surpluses, and alternative, better ways exist to assist the merchant marine than through cargo preference on food aid shipments. In emergency situations, where food is extremely scarce and markets do not function freely, food aid often proves more valuable than its delivered cost. But current programs are built on outdated and flawed assessments about what food aid can accomplish. U.S. food aid programs can and should be refocused on effective response to food availability emergencies in low-income countries.

As recognition of the changed landscape for food aid spreads, support for a range of potential reform proposals will continue to grow. Given the small share of farm and shipping revenues that comes from food aid programs, the cost of reforms would be negligible, while the improvement in response to humanitarian disasters and chronic food insecurity would be considerable.

A clear demarcation of emergency from non-emergency food aid programs would provide greater stability for essential investments necessary to head

off future food emergencies, and improve the focus on the most efficient and effective uses of scarce resources. This would streamline the administration of food aid programs, reduce the transaction costs for those implementing programs supported by U.S. food aid, and facilitate further reforms in commodity procurement and freight contracting by reducing the number of programs involved.

The complex web of procurement restrictions and bureaucratic duplication currently makes rapid response to humanitarian crises unnecessarily difficult and U.S. food aid programs far more expensive per beneficiary than other donors' food aid programs. The time is ripe for food aid reform in Washington.

Note

This policy brief draws on the author's longer paper "U.S. International Food Assistance Programs: Issues and Options for the 2007 Farm Bill," available at www.aei.org/farmbill. The longer paper includes background supporting data and citations not included here. Barrett is International Professor of Applied Economics and Management, Cornell University. The views expressed here are those of the author and not those of any institution with which he is affiliated.

CONSERVATION AND ENVIRONMENTAL POLICY

Land Retirement for Conservation: History, Analysis, and Alternatives

Ralph E. Heimlich

The Conservation Reserve Program (CRP) and other land retirement programs have been some of the most successful conservation strategies in USDA's portfolio of conservation programs, popular with landowners, environmentalists, sport groups, and farm organizations. Land retirement has not been without its critics, however. Some issues that have persisted throughout the course of modern land retirement programs since 1985 include:

- Potential benefits have not been as fully realized as possible;
- Land retirement is not an effective way to achieve many environmental objectives;
- The transition to less intensive land use has not been achieved or has been too costly;
- Agro-energy could undo 20 years worth of conservation retirement.

CRP reform could meet many of these concerns. A reformed land conservation program would be streamlined to avoid the multiplicity of programs, confusion, and inefficiencies of the current system. It would also focus on environmental goals which it can achieve and target lands that will provide the highest aggregate benefits.

More extensive reforms, such as permitting more extensive grazing and forestry uses while the land is under contract, can help further achieve CRP's original goal of facilitating transition from heavily farmed land to more environmentally friendly agriculture uses. Another way to accomplish this goal is to move the CRP from a land rental program to one in which the government purchases permanent easements, which would convey in perpetuity the right to intensively crop CRP land while permitting more ecologically friendly uses. Extensive use of permanent easements would also prevent re-entry of currently retired land into the production of program crops after the current tranch of contracts expires, which is quite likely given current corn prices and the desire to find more land with which to produce corn-based ethanol. The last thing Congress should do is simply authorize another round of 10-year contracts with no clear plan for transition.

Estimates of Economic Costs and Benefits

Modern CRP has been evaluated several times, prior to and during implementation and again prior to reauthorization. Net social benefits were estimated ranging from slightly less than \$1 billion per year to more than \$11 billion over 10 years. The costs

of CRP over 1985–2005 are estimated at \$21.8 billion, less enumerated savings in government costs for commodity programs of \$11 billion, giving a net cost of \$10.7 billion (table 1). A partial accounting of estimated natural resources benefits totals \$23 billion in net present value over the period, resulting in a net social benefit of \$12.2 billion. Two categories are left out: the change in farm income and the change in consumer prices.

CRP rental payments undoubtedly helped keep many farms afloat in the 1980s and solvent in the 1990s, but they are transfer payments and are properly considered a cost, rather than a benefit. The effect of CRP on crop prices for all farmers would be a benefit, but the amount of the effect depends on being able to estimate the net difference in world prices with and without CRP, taking into account slippage. Changes in consumer prices, both domestic and international, are even more problematic, since much of the production on CRP land was for crops exported to world markets that moved from massive surpluses to more balanced market conditions and back over the 1985–2005 period.

While it is likely that natural resource benefits of continuing CRP after 2007 would remain the same, or even increase if the program were better targeted to the benefits it best produces, the benefits of supply control savings, consumer costs, and changes in farm income due to changes in commodity prices would all likely differ from the past.

Obstacles to Achieving Greater Benefits

Of all the USDA agricultural conservation programs, CRP has the most explicit focus on achieving the most benefits for the dollars spent. It is the only program that has an explicit index for measuring the effectiveness of each application considered relative to its cost, the Environmental Benefits Index (EBI).

TABLE 1
SUMMARY OF COSTS AND BENEFITS, CRP, 1985–2005

	1985–2005	
	Million dollars, undiscounted average per year	Million dollars, NPV at 3% discount rate
Direct costs (rent, incentives, establishment cost, technical assistance and administration)	\$1,520	\$21,799
Supply control savings	\$783	\$11,052
Net cost to the government	\$736	\$10,747
Soil productivity	\$202	\$3,003
Water quality	\$543	\$8,078
Wind-blown dust	\$96	\$1,427
Wildlife habitat	\$704	\$10,474
Partial natural resources subtotal	\$1,545	\$22,982
Net social benefit	\$809	\$12,235

SOURCE: Agricultural Conservation Economics.

However, there remain technical and institutional barriers to achieving greater benefits in the program. These include a clearer focus on which goals are important, better targeting to achieve those goals, and the wisdom of splintering land retirement into many subprograms.

CRP was originally focused on a single goal—retiring highly erodible cropland. Since 1990, however, the program has addressed multiple environmental goals, including soil erosion (both sheet and rill and wind), water quality (both surface and ground), and wildlife habitat. The implicit premise of the EBI is that any parcel offered contributes to all of these goals, and that the best parcels to enroll would score highly on all of them. In reality, any given parcel will score well on one of these attributes, at most, and either moderately or poorly on the others. This is especially true when the attributes are mutually exclusive, such as sheet and rill erosion versus wind erosion, surface water runoff versus groundwater infiltration, or habitat needs of game wildlife versus T&E species.

While we would all savor the “win-win” situation of having every parcel contribute significantly to all

goals, more often we face the situation where a parcel that scores moderately well on several attributes prevails over one that is stellar on only one, especially if it is less productive land with a low rental rate. If, instead of accepting acreage based on the total EBI score, the best scores on wildlife (N1), water quality (N2), and soil erosion (N3) were accepted for one-third of the acreage, each, higher average and minimum scores would have been achieved in past signups.

In addition to examining how to best use the EBI, we need to ask what goals are best served by land retirement. Given modern agricultural methods, retiring land from production is the best way to create more wildlife habitat, but is it the best way to reduce non-point source water pollution or reduce soil erosion? Since cost considerations bias CRP toward taking the least productive cropland, it is likely to be land with the least application of fertilizers and pesticides that contribute to water pollution. The highly erodible land definition was diluted to increase the pool of lands eligible to bid in the mid-1980s, resulting in considerable amounts of land accepted in CRP for which water quality and soil erosion problems could be addressed using conservation practices under EQIP, CSP, or other programs without retiring the land. While giving equal weight to wildlife, water quality, and erosion in the EBI seems superficially fair, wildlife scores should be given more attention since they cannot be adequately addressed without retiring land.

After the program has focused on the goals it can best achieve, the next biggest barrier to getting greater benefits is the ability to target the lands that will provide the highest benefits. Targeting land retirement has advanced incrementally from totally untargeted programs in the 1930s and 1950s, to the broad target of highly erodible land in the 1980s, and the assessment and selection of bids on multiple environmental criteria in the EBI in the 1990s. However, the indicators used in the EBI are still relatively blunt instruments. Particularly lacking is the ability to focus on a parcel's location and relationship to its landscape setting. While the EBI provides specific information on the parcel itself, GIS capabilities and data can

provide equally detailed information about the parcel's landscape setting. USDA's Farm Service Agency is already moving in this direction, but additional steps are needed. Better landscape assessment is urgently needed to choose between competing parcels offered for retirement, and to judge whether any benefit is likely to accrue at all.

A final obstacle to achieving maximum benefits in land retirement is the increasingly splintered mosaic of land retirement programs facing landowners. First the Wetland Reserve Program (WRP) was made a separate program, followed by differentiating the continuous signup and its derivative, the Conservation Reserve Enhancement Program (CREP). Recent splinterings include the Farmable Wetlands Pilot program (FWP) and the Grassland Reserve Program (GRP). These offshoots seek to carve out recognition of their individual constituents, and avoid competing within the general CRP rubric of EBI and soil rental rate. The multiplication of "reserves" is confusing to landowners, however, and weakens the coherence and larger constituency for the overall land retirement effort. This is compounded by splitting responsibility for the programs across agencies (CRP, continuous, CREP, and FWP are in FSA; WRP and GRP in NRCS). It would be far clearer if all land retirement were done under a single program in which all types of land were offered for bid and more individualized terms could be extended to the landowner. New and expanded criteria for continuous or CREP enrollment could be implemented, and whole-field enrollment could also be made "continuous" by comparison to an EBI score standard fixed for a given period of time. Guidance would have to be provided regarding the overall objectives and scope, and the criteria to apply in retiring land under the various subcategories corresponding to the many now-existing programs.

The Best Use of Land Retirement

The 2002 Farm Bill increased the funding for "working lands" conservation programs five-fold, redressing a perceived imbalance between funding available to retire land from production and funding to install

conservation practices and systems on lands remaining in production. As a general rule, land retirement works best when there are multiple resource problems or opportunities that can be addressed by retirement (even if the selection is made based predominantly on one, as above), and where few or none of them can be addressed by changing farming methods. For example, land on which changes in crop rotation or nutrient application can reduce non-point water pollution concerns to acceptable levels would most likely best remain in production, while land that is so highly erodible or so vulnerable to leaching or runoff that no cropping system can economically reduce soil or nutrient losses (assuming those losses actually reach affected waters) would be a good target for retirement.

Applying this logic to wildlife habitat needs tends to favor land retirement because little good can be done for wildlife, particularly for sensitive threatened and endangered species, while engaged in intensive cultivation or retiring only small parcels. However, common wildlife species, such as small mammals and pheasants, often can benefit from relatively minor changes in cropping systems, or from land retirement in a relatively small part of the overall landscape.

Transitioning to Permanent Change

As originally envisioned, land retirement programs were intended to provide a transition from intensive crop production to more extensive grazing or forestry uses for land that was environmentally sensitive. We don't really know how successful modern CRP will be as a transition program, because nearly all of the acres enrolled since 1985 are still in the program. Surveys and contract extensions give a glimpse of the ultimate disposition of CRP land enrolled. After the renewal and extension (REX) process FSA initiated in 2005, some CRP land will be entering its third 10-year rental contract. Some of this land may have also been idled under previous programs in the 1950s and 1930s. Under REX, about 84 percent of contracts expiring in 2007 accepted the renewal/extension offer.

Since 1985, some of the provisions of land retirement programs that stood in the way of a true transition have been eliminated, but others remain. The original enrollments under the 1985 Farm Act restored crop base acreage if the land reverted to crop production and if a substantial reduction in soil erosion was accomplished by the required conservation compliance plan. Sodbuster provisions applying to new cropland require achieving the tolerable soil loss level (T value), a more stringent target. The 2002 Farm Bill once again made commodity program payments dependent on crop acreage base, although with nearly complete planting flexibility and base protection for expiring CRP land.

It is no longer necessary to re-crop expiring CRP to retain base and collect direct (decoupled) payments, but the incentives offered by countercyclical and loan deficiency payments still push landowners toward program crop production. Emergency haying and grazing and managed haying and grazing provisions enacted in 1996 allow producers to use some CRP forage during declared disasters or to improve the quality and vigor of the stand in exchange for a reduction in rental payments. However, the restrictions involved preclude using CRP forage for an important component of any grazing operation.

The 2007 Farm Bill is yet another opportunity to move CRP and other land retirement programs closer to true transition programs by permanently retiring crop acreage base on enrollment, requiring the same strict standard of soil erosion for returning CRP as for sodbuster, and allowing more liberal grazing and forestry use during contracts. These may require a rental schedule that declines over time, and may mean that fewer landowners would be interested in participating, but those who do would be more committed to actually changing use over the long term.

Outright Purchase or Easement

Adjusting for inflation, total payments for land retirement in CRP-like programs since 1933 are \$48.7 billion in 2006 dollars, not counting WRP. This is equivalent to \$1,730–\$2,596 per acre, which

is greater than the 1996–97 U.S. average cropland value of \$1,270 per acre. Repeated rental of land in ten-year contracts costs as much as purchasing it as public land in 1996 when CRP was reauthorized.

However, there is another alternative to outright purchase. Permanent easements convey the right to intensively crop land in perpetuity, without restrictions on compatible uses like grazing or forestry, while retaining private ownership. Purchase of permanent easements faces a number of difficulties that annual rental payments do not. Foremost, the congressional budget process does not distinguish the up-front payment needed to purchase such rights from the year-by-year expense of a rental agreement in the way the two are scored for deficit reduction purposes. Because expenditures in out-years of the budget cycle do not count against deficit reduction caps, rental is preferred over appropriation of funds for permanent easements that must be paid right now.

Potential for Conversion of CRP to Cropland

For most of the time since 1985, there was little question that keeping land in CRP helped control commodity supplies and increase crop prices. However, in the last quarter of 2006, the price of corn shot up 50 percent to \$3.12 per bushel, a price not seen since 1996. Unlike recent previous corn price increases, this one is being driven not by supply shortages, but expectation of greatly increased demand for corn, primarily for ethanol production.

How much more current CRP acreage would be profitable to crop at these prices? More than 10 million of the 16 million acres set to expire in the next few years (63 percent) would be profitable to crop at prices recently observed. Most of this (70 percent) would be in corn, and another 23 percent in wheat. Agro-energy is the early 21st century's equivalent of the Russian wheat deal: threatening to undo the last 20 years of conservation effort and unleash a new burst of "fencerow to fencerow" enthusiasm in America's heartland. Agro-energy production has been enticed into the market with a gradually increasing array of subsidies, crowned by the pro-

duction mandate in the 2005 Energy Act, and additional subsidies are being discussed as part of a potential energy title to the 2007 Farm Bill.

Conclusions

Land retirement is the United States' largest conservation program. Motivated in equal parts by supply control and conservation purposes, judgments on its success vary as conditions change. The first tranch of modern CRP, from 1985–1996, succeeded in helping curb commodity production without more expensive paid land diversions, and achieved conservation success, narrowly defined in terms of soil erosion and wildlife habitat.

The second tranch, from 1997 to the present, was undertaken despite improving conditions in the agricultural economy, and with a much more ambitious and ill-defined set of conservation goals. In a more global agricultural marketplace, with no clear need for domestic supply control, but continuing high levels of government payments, land retirement's performance is more questionable. The diverse conservation goals and the splintering of land retirement programs to address specific environmental constituencies make the question of conservation performance less clear, as well. While a great deal of good has been achieved, it is likely that more precise targeting would produce better results than land retirement has accomplished to date.

Whether land retirement programs have facilitated a transition to less intensive land use remains an open question that will not be definitively answered until contracts expire. While it is likely that some covers (hardwood and softwood trees in CRP, wetlands in WRP) and instruments (permanent easements in WRP and GRP) are likely to remain out of cultivation, failure to allow transition use under contract and to permanently remove crop base on most acreage enrolled make re-cropping a distinct likelihood, especially if prices are favorable when contracts expire.

Have we lost all the benefits of CRP if the land is re-cropped? All environmental externalities have

aspects of both flows and stocks to them. Soil erosion damages can be turned on and off as we crop or idle land, but at some point, erosion damages are so severe that soil productivity cannot be regained. Certainly, what we are calling “long term” retirement is less than the blink of an eye on the geological scale of soil building. Opportunities for “farm” wildlife are probably flows that can be interrupted with little damage, but the biodiversity represented by threatened and endangered species can vanish from the Earth forever. Carbon sequestration is an ecological service flow occurring over time, but at what point do damages caused by global climate change become irreversible reductions in the stocks that support all life? Intervention to achieve a more appropriate land use pattern seems reasonable, especially where the benefits at risk are not well represented in markets.

In retrospect, a program of permanent easements might have avoided some of the problems now facing USDA land retirement programs, particularly CRP. Permanent easements to remove cropping rights would have guaranteed a land use transition, would have allowed for less intensive uses immediately, and would have cost less than the recurrent 10-year rental contracts since 1985. However, land retirement’s evolution over the last 20 years leaves policy makers in a quandary. Terminating CRP now leaves many of the incentives for re-cropping in place, especially if another lucrative farm bill like the

2002 Farm Bill is passed in 2007 or market prices are high. Reauthorizing CRP for another tranch of 10-year contracts, while permanently retiring base and making sodbuster apply to CRP land, would remove incentives for re-cropping and allow new signups to better target environmental objectives, but would add to rental dollars already expended.

Recasting CRP as a smaller, tighter permanent easement program would correct the problematic program design of the past and allow for better targeting, but would probably require paying for cropping rights that have not been exercised in at least 20 years, in addition to 20 years of rents already paid. In any case, some blending of these approaches with a more explicit balancing of general and continuous/CREP signup modes is probably in order. The last thing Congress should do is simply authorize another round of 10-year contracts with no clear plan for transition.

Note

This policy brief draws on the author’s longer paper “Land Retirement for Conservation: History, Analysis, and Alternatives,” available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Heimlich is the owner of Agricultural Conservation Economics. The views expressed here are those of the author and not those of any institution with which he is affiliated.

Payments for Ecosystem Services and U.S. Farm Policy

John M. Antle

There is widespread sentiment among both policy analysts and public interest groups that U.S. farm subsidy policy is flawed and in need of reform (Agriculture Task Force, 2006). Existing subsidy policies cannot be justified on either equity or efficiency grounds. Subsidies based on acres produced of “program” crops not only distort domestic and international markets; they also disproportionately benefit large, commercial farms owned by corporations and individuals with above-average incomes and wealth.

The longer paper argues that there are sound scientific and economic reasons for an agricultural policy based on the provision of ecosystem services by agriculture. There is a great deal of scientific data showing that agricultural land use and management impact a wide array of goods and services associated with ecosystem function that are not usually valued by or traded in markets. Economic theory tells us that under these circumstances markets based on private benefits and costs do not allocate resources efficiently. Left to their own devices, markets will tend to over-produce market goods and under-produce ecosystem services. Thus, there is both a scientific and economic basis for an agricultural policy that would provide incentives for farmers to supply the appropriate combination of market goods and ecosystem services.

An efficient agricultural policy could be implemented using a policy mechanism that I call payments for ecosystem services, or PES. A PES system rewards farms for increasing the quantity of ecosystem services they supply above and beyond the amount that would have been provided absent such rewards. A key feature of PES is that they are not subsidies; they are financial incentives provided to farmers who bear costs to increase the supply of ecosystem services valued by society. Thus, PES differs in important legal and economic respects from existing commodity subsidies. A PES policy also differs in important ways from most existing “conservation” or “environmental” programs. A key difference is that most programs prescribe conservation and environmental practices that farmers should use. Experience with environmental regulation shows that this prescriptive approach is far less efficient than policies based on performance standards and incentives. Performance standards and incentives are one way that a PES system could be implemented, and recent research has confirmed that performance-based policies would be a far more efficient way to achieve policy objectives than existing practice-based policies.

The United States has a long history of government programs related to conservation and environmental management. Over time U.S. policy has

shifted from maintaining on-farm productivity toward programs that reward farmers for resource conservation and provision of ecosystem services. Thus, the United States has already traveled some distance down the path toward policies that resemble a PES system, although existing policies fall far short of what an efficient PES system would be. An efficient policy would aim to maximize the net benefits to both farmers and society, taking into account the value of marketed commodities and non-market goods and services. Most of USDA's soil conservation, conservation compliance, and conservation reserve programs are inefficient for several reasons:

- Farmers are paid for adopting certain practices, regardless of the amount of ecosystem service they provide, rather than being paid per unit of valued services.
- Policies often have multiple, conflicting goals, and are implemented with politically determined budget constraints that do not reflect efficient regional resource allocation.
- Conservation programs are often more costly than necessary because they require farmers to take land out of production, even though it is often possible to continue using the land productively while providing environmental services with alternative management practices.

Despite these shortcomings, U.S. conservation and environmental programs already have some features similar to a PES system. Issues that needed to be addressed to move the existing system towards a more efficient one include:

- Policy decision makers will need better information to design efficient mechanisms for the provision of ecosystem services from agriculture. Policy decision makers will need estimates of the environmental and economic effects and budget impacts of a PES system and how it will differ from the existing commodity and conservation programs. To implement a more efficient PES system, additional investment will be needed in the science needed to quantify ecosystem services, taking into consideration issues such as the interactions

between different kinds of services. In addition, further research needs to address how to design and implement contracts for ecosystem services.

- Farmers will need better information and decision tools to help them assess when they should enter into contracts to provide ecosystem services. These tools need to help farmers estimate the quantities of services they can produce and the costs of alternative management practices.
- The compatibility of a PES system with WTO rules needs to be further investigated, and if necessary WTO rules may need to be modified to allow an efficient PES system. PES based on provision of ecosystem services, not market goods production, should be compatible with the WTO rules. However, current WTO rules do not allow producers to be compensated in excess of their private opportunity costs, thus possibly calling into question the acceptance of a PES system that rewarded farmers based on social value that exceeds opportunity cost.

Much of the data and science needed to implement an efficient PES currently exists, but there are gaps that need to be filled. To implement a PES policy successfully, data and models are needed to estimate farmers' willingness to participate in contracts, the quantity of services that would be supplied, and the budgetary costs of programs. Substantial progress has been made in developing this capability for some ecosystem services related to water quantity and quality and greenhouse gas mitigation, but less well-defined services, such as those related to biodiversity, need further work. Information is also needed to support farmers' contract participation decisions. Recent work on carbon sequestration provides a template for how information to support other ecosystem services could be made available to farmers. Existing USDA and land-grant university research and outreach organizations are well-positioned to provide the currently available information to policy decision-makers and to farmers, and to design and implement the research programs needed to supplement existing data and knowledge.

Note

This policy brief draws on the author's longer paper "Payments for Ecosystem Services and U.S. Farm Policy," available at www.aei.org/farmbill. The longer paper

includes background support and citations not included here. Antle is a professor in the Department of Agricultural Economics and Economics, Montana State University. The views expressed here are those of the author and not those of any institution with which he is affiliated.

Public Policy Solutions to Environmental Externalities from Agriculture

Nicolai V. Kuminoff

The production of food and fiber by commercial agriculture has both positive and negative effects on the surrounding environment. Farms can provide wildlife habitat and scenic views for their urban neighbors, while the carbon sequestered by vegetation grown on that land can help to mitigate global warming. At the same time, noise, dust, and odors produced by normal farming operations can annoy urban residents, and runoff of pesticides, fertilizer, and animal waste can lead to water pollution downstream.

The economic values that society places on these off-farm byproducts of agricultural production (i.e., *externalities*) are rarely captured fully by private markets for farmland or commodities. When market prices fail to reflect the impact of farming on the surrounding environment, farmers are left with little incentive to incorporate the value of off-farm environmental quality into their management decisions. This type of market failure is often a rationale for government action such as regulation, taxes, subsidies, and the redefinition of property rights.

For the past twenty years, government intervention has primarily consisted of voluntary conservation payment programs funded by farm bill legislation. These programs pay farmers to manage their land in ways that reduce erosion and runoff, while increasing the provision of wildlife habitat and other environmental benefits. In addition to voluntary conservation

programs, the federal effort to address agricultural externalities also includes compliance provisions of the farm bill and regulations on chemical use, emissions of air and water pollutants, and the private use of endangered species habitat. The burden that these environmental laws place on farmers has been highlighted by recent debates on amending endangered species legislation and expanding regulations on confined animal feeding operations (CAFOs).

This paper describes the current regulatory environment and suggests opportunities for reforming the Farm Bill conservation programs to more efficiently achieve environmental goals. Overall, production agriculture faces far less regulation than other sectors of the economy. Current laws addressing air pollution, water pollution, and the use of toxic chemicals implicitly or explicitly exempt all but the largest confined animal feeding operations from federal regulation. This lack of regulation underscores the role of the Farm Bill conservation programs in addressing environmental issues.

While current programs generate benefits that exceed their implementation costs, federal budget limits prevent them from being extended to more than a small share of farmland. If policymakers were willing to tax the management practices that negatively impact the surrounding environment, instead of paying farmers to change those practices,

environmental issues could be addressed on a greater portion of farmland at a lower cost to taxpayers.

Alternatively, if opportunities for reform are limited to changing the way farmers are paid, there are at least three ways to make the current conservation programs more efficient. First, there is potential for efficiency gains from coordinating the different programs. Second, linking payments to measurable outcomes would help to align farmers' financial incentives with public environmental goals. Finally, requiring the recipients of farm bill payments to report their management practices would create new opportunities to address environmental issues without additional government intervention.

Environmental Regulation and Conservation Payments

Environmental regulation in the United States is often described as following a "polluter-pays-principle." That is, firms have to pay in order to legally emit pollutants into the air and water by purchasing a permit from the government or by installing pollution abatement equipment that satisfies minimum technology standards. While the agricultural sector of the economy is no exception to the polluter-pays-principle, farmers receive preferential treatment.

Table 1, at the end of this brief, summarizes the major environmental regulations and their exemptions for farmers. Current laws regulating air pollution, water pollution, and the use of toxic chemicals implicitly or explicitly exempt all but the largest concentrated animal feeding operations (CAFOs) from federal regulation. Together, these exemptions give farmers the right to discharge unlimited quantities of pesticides, fertilizer, and animal waste produced as a byproduct of normal farming operations. Only a small share of the largest animal feeding operations—less than 1 percent of all farms that account for approximately 10 percent of gross farm revenue—are required to obtain federal permits in order to discharge pollutants into U.S. waters. The authority for regulating emissions from the other 99 percent of farms is delegated to the states, which mostly rely on voluntary or incentive-based programs.

This leaves three major regulations with the potential to constrain farmers' management practices: EPA's pesticide registration program, endangered species legislation, and the compliance provisions of the Farm Bill. For most farmers, the actual burden imposed by these regulations appears minimal. Cancellation of a key pesticide certainly has the potential to decrease profits for farmers who depend on it. But the larger the economic burden, the greater the likelihood of a special exemption, as demonstrated by the recent exemptions for methyl bromide. The Endangered Species Act also has the potential to impose a regulatory burden on farmers by prohibiting normal farming practices that harm threatened or endangered species. The high profile conflict between farmers and fishermen over water allocations in the Klamath River Basin has drawn attention to this issue. But there appear to be few comparable examples. Finally, while compliance provisions of the Farm Bill can be used to withhold payments to farmers who convert wetlands or farm highly erodible cropland, enforcement is limited by provisions of the 1996 Farm Bill and an appeals process that routinely waives most penalties.

Production agriculture clearly faces less environmental regulation than other sectors of the economy. However, it would be incorrect to claim that farmers are unaffected. Compared to developing countries, the United States tends to place more emphasis on using the pesticide registration process to protect food safety, the health of pesticide applicators, and wildlife populations, which may put domestic growers at a competitive disadvantage in international markets. Furthermore, farmers may be affected by environmental regulations on upstream and downstream firms. For example, firms that manufacture pesticides or process farm products do not enjoy the same regulatory exemptions as farmers. Part of the burden from these regulations may get passed on to farmers through higher pesticide prices and lower farm gate prices.

Rather than addressing agricultural externalities through regulation, past farm bills have funded voluntary conservation programs. The Conservation Reserve Program (CRP) and the Wetlands Reserve Program (WRP) pay farmers to retire environmentally sensitive land. The Environmental Quality Incentives

Program (EQIP), the Conservation Security Program (CSP), and the Wildlife Habitat Incentives Program (WHIP) pay farmers to implement conservation practices on working farmland. Finally, the Farm and Ranchland Protection Program (FRPP) and the Grasslands Reserve Program (GRP) provide funding to purchase easements on farmland to prevent it from being converted to more intensive uses. Overall, USDA spent nearly \$4 billion on these programs in 2005. While these expenditures may seem large, they were only sufficient to enroll a small share of farmland. Together, CRP, WRP, CSP, WHIP, FRPP, and GRP funded activities on approximately 46 million acres—at most 10 percent of U.S. cropland.

Opportunities for Policy Reform

The coupling of conservation payments with minimal regulation has been dubbed a “pay-the-polluter” approach to addressing farm externalities, in contrast to the “polluter-pays-principle” that applies elsewhere in the economy. This preferential treatment is at least partly due to the administrative costs of regulation. While it is feasible for EPA to regulate small groups of farmers like CAFOs, extending permit and enforcement programs to the entire farm sector would require an order-of-magnitude expansion.

If policymakers were willing to tax the management practices that generate negative externalities, instead of paying farmers to change those practices, the environmental impacts of production agriculture could be addressed on a greater portion of farmland at a lower cost to taxpayers. The monitoring and enforcement costs of operating such a program could be at least partly funded by the tax revenue it generates. Of course, such a drastic departure from current policy may be politically infeasible. If realistic opportunities for reform are limited to changing the way polluters are paid, there are at least three ways to improve the efficiency of current programs.

1. Coordinating Conservation Programs. Currently, farmers self-select into different conservation programs that seek to address the same set of externalities. This

situation may fail to exploit the potential efficiency gains from having a mix of policy instruments. For example, land retirement is probably better suited to preserving habitat for sensitive wildlife species, while it may be more efficient to address runoff of farm chemicals by paying a farmer to reduce applications of fertilizer or to install buffer zones adjacent to waterways. Retirement and working land programs also differ in their ability to create tax savings by reducing the size of payments made through price support programs.

Policymakers could exploit the diversity of conservation instruments by coordinating their enrollment processes. One possibility would be to have farmers submit a single application that outlines both land retirement *and* working land options, knowing that program officials would choose which (if either) contract to offer them. Program officials could then allocate funds between land retirement and working land payments in a way that exploits each instrument’s relative advantages at addressing externalities and creating tax savings. If merging or coordinating the programs is not feasible, a simpler approach would be to adjust the weights on the indices used to select contracts for each program to emphasize their relative strengths.

2. Linking Payments to Environmental Performance. The working land programs (EQIP, CSP, and WHIP) pay farmers to implement conservation practices regardless of the environmental outcome. This strategy fails to align farmers’ financial incentives with public environmental goals. For example, a farmer could collect WHIP payments for implementing a project that is believed to have a beneficial effect on habitat for the endangered grey wolf, regardless of whether any wolves ever visit the farm. A performance-based version of the same program might pay farmers in proportion to the number of wolves that visit the farm or make additional payments for wolf pups born on the farm. In this example, linking payments to the behavior of the wolf population provides a stronger incentive for the farmer to enhance wolf habitat. More generally, linking payments to environmental outcomes rewards farmers for developing new, cost-effective ways of addressing externalities. This incentive for innovation is missing from the current programs.

It would be more challenging to develop a practical way of linking payments to environmental outcomes for externalities that are widely dispersed or difficult to measure, such as water pollution and ecosystem services like biodiversity and carbon sequestration. One possibility would be to base payments on the predictions of agricultural ecosystem models that use chemical and biophysical relationships to explain how environmental outcomes depend on farm characteristics, climate variables, and land management. For example, the Environmental Policy Integrated Climate (EPIC) model can predict how different tillage methods affect carbon sequestration, soil erosion, and nitrogen runoff. However, because models like EPIC abstract from the complexity of real ecosystems, their predictions will be imprecise. Furthermore, using the predictions from these models as the basis for payments would require detailed information on the physical characteristics of individual farms and farmers' management practices.

3. An Information Compliance Provision. Adding an information compliance provision to the Farm Bill would require that, each year, farmers who receive any payments must report some information about the geographic characteristics of their farm and their land management practices. In the near term, these data would provide an important input to the continuing research effort to understand the links between farmland management and environmental outcomes. In the longer run, the data could be used together with agricultural ecosystem models to make performance-based payments to farmers. Finally, releasing some of the data to the public would create new opportunities for private parties to negotiate solutions to externalities without additional government intervention.

A key challenge in developing the compliance provision would be to certify the accuracy of self-reported information. EPA currently faces this challenge with its Toxic Releases Inventory, which is based on firms' self-reported production, use, and releases of numerous chemicals. Misreporting has been an ongoing concern. EPA addresses this concern by randomly auditing a small number of firms as well as visiting firms that report unusual activity, such as the largest year-to-year

changes in chemical use. Firms are fined for misreporting information or failing to submit the required information. If farmers were found misreporting their management practices, one possible enforcement option would be to remove their right to collect future payments from Farm Bill programs.

Conclusion

The paucity of environmental regulations on farming means that the 2007 Farm Bill will play a key role in the production of agricultural externalities over the next few years. Replacing conservation payments to polluters with taxes on management practices that generate negative externalities would allow policymakers to address environmental issues on a greater portion of farmland at a lower cost to taxpayers. If this proposal is infeasible, there are three ways in which the current programs can be reformed to address externalities more efficiently. First, there is some potential for efficiency gains from coordinating the conservation programs. Second, linking payments to measurable environmental outcomes would help to align farmers' financial incentives with public environmental goals. Finally, requiring the recipients of farm bill payments to report their management practices would provide new information that could help researchers understand the links between management practices and environmental outcomes, serve as the basis for a future system of performance-based payments, and create new opportunities for private parties to negotiate solutions to externalities.

Note

This policy brief draws on the author's longer paper "Public Policy Solutions to Environmental Externalities from Agriculture," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Kuminoff is assistant professor in the Department of Agricultural and Applied Economics, Virginia Tech. The views expressed here are those of the author and not those of any institution with which he is affiliated.

TABLE 1
SUMMARY OF FEDERAL ENVIRONMENTAL REGULATIONS AND KEY EXEMPTIONS FOR FARMERS

Area	Regulation	Key Exemptions/Limitations	Outcome
Water Pollution	<u>Point Source Wastewater Permits</u> <i>Point sources</i> must satisfy technology and water quality standards to obtain a permit to legally discharge pollutants into U.S. waters.	<i>Point sources</i> include confined animal feeding operations (CAFOs) in general, but exempt “agricultural stormwater discharges and return flows from irrigated agriculture.”	1) Approx 4,100 CAFOs have permits. 2) All other farms may legally discharge soil, animal waste, fertilizer, and pesticides into US waters without a permit.
	<u>Dredge or Fill Permits</u> Permits are required to fill wetlands.	Excludes “normal farming” activities with incidental discharges of dredged or fill material.	In some cases, farmers can convert wetlands to crop production without a permit.
	<u>Nonpoint Source Pollution</u> States must develop plans to address pollution from <i>nonpoint sources</i> in waters failing to meet ambient quality standards.	1) Federal funding and enforcement are limited. 2) States determine which nonpoint sources to regulate.	Some states exempt farmers while other states promote voluntary adoption of best management practices. Direct regulation by state or local officials is rare.
Air Pollution	<u>State Implementation Plans</u> Each state must develop an enforceable plan to meet national ambient air quality standards, or be regulated by EPA.	Regulations emphasize “major sources” that emit threshold levels of pollutants. Thresholds implicitly or explicitly exclude farmers.	Individual farms are not regulated under the Clean Air Act.
Chemical Use	<u>Pesticide / Fertilizer Registration</u> Registration, determination of approved uses, and limitations on who can apply them.	Subject to EPA approval, states may register additional pesticide uses or temporarily use an unregistered pesticide to address pest emergencies.	EPA determines which pesticides and fertilizers farmers can use, but special exemptions have been allowed for methyl bromide and others.
	Monitoring, reporting, and liability for storage / disposal of toxic chemicals.	Exempts registered pesticides and agricultural use of fertilizers.	EPA does not regulate, track, or report farmers’ use of registered pesticides and fertilizers.
Wildlife Habitat	Prohibits “takings” of threatened and endangered species, and migratory birds.	Unclear whether intent must be present in the case of poisoning of migratory birds.	Legal actions have been taken against farmers and ranchers who “take” threatened or endangered species.
Farm Bill	Farmers who convert wetlands or fail to apply conservation systems on highly erodible land cannot collect payments.	Provisions only apply to a small share of current recipients of farm program benefits. Moreover, enforcement is questionable.	Farmers receiving payments have an incentive to comply. Other farmers do not.

SOURCE: Author’s calculations.

Biofuel Incentives and the Energy Title of the 2007 Farm Bill

John A. Miranowski

Biofuel Basics

Biofuel is a renewable energy source that can be used to substitute for petroleum imports, improve oxygenate levels in fuels and hence improve air quality, and reduce the amount of carbon dioxide released into the atmosphere. Ethanol from corn is the most commonly used biofuel. When cost-competitive enzymatic processes are developed for breaking the cellulosic fibers in corn stover, grasses, and woody plants into component sugars, biomass may be used to supplement corn grain as an ethanol feedstock. Other conversion processes, such as producing bio-gas or bio-oil and refining the product into a biofuel (e.g., bio-butanol), are also under development. But even under an optimistic scenario, such technologies will not be available on a commercial scale before 2015.

Biodiesel is a liquid fuel with combustion properties similar to petroleum diesel fuel. It can be made from vegetable oil, animal fat, or recycled grease via a process where methanol is used to convert base oil into methyl ester. In the U.S., biodiesel is primarily produced from soy oil, animal fats, and waste cooking oil.

Ethanol output has expanded steadily since 1980 to an estimated 7.5 billion gallons in 2007. This expansion has been heavily driven by policies, notably subsidies granted through federal and state

tax credits, and ethanol as a gasoline additive to achieve air quality regulations in the Clean Air Act Amendments. Recently, increases in oil prices have given an overwhelming boost to biofuels as a substitute for petroleum-based fuels.

Currently, the primary feedstock for ethanol is corn. Over 13 percent of the 2005 U.S. corn crop was used as ethanol feedstock, with projections that over 25 percent of the corn crop could go into ethanol production by 2009. Corn prices have nearly doubled in the last year alone, and corn futures contract prices for deliveries into 2010 are above \$4.00 per bushel. This is turning long-standing farmer concerns with low prices and surpluses to concerns from other interest groups over the growing competition between food, feed, and fuel. Livestock producers are concerned over high feed costs and disruptions in livestock markets, humanitarian groups over potential increases in global food prices, and environmental interests over increased water quality and greenhouse gas emission as corn production expands to meet ethanol demands.

The 2007 Farm Bill will be developed in an era promising higher commodity prices, where market prices will be well above support levels, and loan deficiency payments will not be required to make up the difference between market price and the support price, and countercyclical payments will also decrease.

Costs and Benefits of Policy Intervention

The main policies influencing the ethanol market are: 1) every gallon of ethanol that is blended receives a tax subsidy of 51 cents per gallon, and 2) the Clean Air Act Amendments generate increased market demand for ethanol. In 2006, the tax subsidy was over \$2.5 billion. If the industry expands to 14–15 billion gallons annually, the tax subsidy will climb to \$7.0–7.5 billion per year. Do the benefits of these policies exceed the costs?

Three sources of benefits from expanded biofuel production are:

- *Energy security.* About 60 percent of U.S. oil consumed is imported, much of it from politically unstable parts of the world. To the extent that these “less reliable suppliers” create a threat to the U.S. economy and national security, substituting domestically produced biofuel sources for imported oil will reduce that risk and possibly the level of national defense expenditures.
- *Environmental quality.* Blending ethanol with gasoline reduces carbon monoxide and other harmful air emissions. The Clean Air Act Amendments (1990), which mandated the use of reformulated gasoline and oxygenated fuels in regions with serious mobile source air quality problems, were designed specifically for this purpose. In addition, substituting biofuels for petroleum reduces the amount of greenhouse gas (GHG) emissions released into the atmosphere.
- *Reduced federal budget exposure.* Higher corn prices due to increased ethanol demand result in reduced government commodity program payments to corn and soybean producers. Also, rural employment growth may eventually reduce the need for rural development funding.

The issue of benefits relative to costs is easiest to quantify for the ethanol subsidy. In terms of 2006 values, do the sum of the energy security gains, environmental quality (air quality and GHG emission reduction) gains, and reduced commodity program costs attributable to ethanol expansion exceed the \$2.5 billion in ethanol subsidies?

With respect to energy security, the benefits are nearly impossible to measure short of attributing a portion of defense expenditures to energy security costs, as a few groups have done. Instead, it is important to note that corn ethanol supplied about 3.5 percent of the 142 billion gallons of gasoline consumed in 2006, which is likely an imperceptible contribution. Even if we use 15 billion gallons of biofuel by 2015, that would account for less than 10 percent of gasoline consumption and 6–7 percent of U.S. motor fuels and likely be a small contribution to energy security at a cost of \$7.5 billion.

Using biofuel reduces greenhouse gas (GHG) emissions relative to fossil fuels. Including the life-cycle energy use of corn-based ethanol, GHG emissions are reduced by about 12–13 percent relative to the same Btu-equivalent amount of gasoline. The actual GHG emission reduction per mile driven is about 1 percent with an E10 blend. With respect to Clean Air Act Amendment gains from blending ethanol, the major gains are in non-attainment regions with air quality problems. Most of these gains have been or soon will be realized. Benefits from blending ethanol in attainment regions are more limited for carbon monoxide and volatile organic carbons but may increase nitrous oxide emissions.¹

Budgetary savings due to commodity price increases are primarily a matter of countercyclical payments for corn, since prices have been and are expected to continue to exceed the loan-program support price either with or without an ethanol subsidy. The subsidy of 51 cents per gallon is about 25 percent of the price of ethanol. Using estimated supply and demand functions for ethanol based on recent market data, removal of that subsidy would reduce the production of ethanol by 5 percent in the short run.² This would reduce the demand for corn by about 1 percent, since about 20 percent of corn is used in ethanol production, and this would reduce the price of corn by about 3 percent or 8 cents per bushel in the short run. Under 2002–04 market conditions, countercyclical payments for corn were being made even with the rate of ethanol use that the ethanol subsidy then generated. Thus, without the ethanol subsidy countercyclical payments for corn

would have been 8 cents per bushel higher. With 8 billion bushels of corn receiving payments, the budgetary cost savings due to having the ethanol subsidy are therefore estimated at \$640 million.

Calculating the benefits and costs at the margin, adding a gallon of ethanol at a subsidy cost of 51 cents generates budgetary gains of 6.4 cents per gallon of additional ethanol stimulated by the subsidy. Thus, if the subsidy were to be justified by benefits as large as the costs, the energy security benefits plus clean air benefits would have to be almost 45 cents per gallon at the margin, or additional gallons of ethanol the subsidy induces compared to the absence of the subsidy.³

Alternative Estimates

The preceding estimates were made on the basis of supply and demand functions for ethanol based on monthly data, so they show a short-run effect of removing the subsidy. Over the longer term, the supply of ethanol would be more responsive to the absence of a subsidy because processing capacity, which is largely fixed in the short run, would be more variable. Demand would be more responsive to price, also. The long-run break-even price that a modern plant can pay for corn is estimated at about \$4.25 per bushel. In the absence of the subsidy, the breakeven price decreases to about \$2.75 per bushel. Some have argued that these responses are substantial and that, were it not for the subsidy, fuel ethanol would not exist until crude oil prices were sufficiently high (\$60 per barrel crude oil) and would not expand beyond 7.5 billion gallons, the RFS.

Additional Costs and Benefits of Biofuel Expansion

In addition to direct costs of production, biofuel expansion can have a number of other costs. As corn acreage increases in response to higher corn prices and increased ethanol production, nutrient use and soil loss will likely increase. Corn acreage will be pushed onto more erodible soils, more erosive

practices will be utilized in corn production, and the derived demand for fertilizer nutrients will increase. Nutrients and sediment from soil runoff are the two major sources of water quality deterioration originating in Midwest agricultural areas. Further, use of more nutrients and more erosive production practices will reduce or eliminate the GHG emission reduction associated with corn grain ethanol.

A frequently cited benefit of the ethanol boom in the Midwest is rural development. The corn ethanol industry creates well-paying jobs in rural communities, which have local income and job multiplier impacts that ultimately lead to community development. It is argued that these community benefits may be further enhanced by local investment as opposed to outside investment.⁴ As the industry grows, these potential benefits are becoming less significant for a number of reasons. First, earlier dry mill plants were smaller, employed more workers per unit of output, had a larger share of local investment, and had a limited impact on local corn markets and livestock feed costs. Today, new dry mill ethanol plants have increased annual production capacity from 40 million gallons or less to over 100 million gallons. New plants employ under 0.5 workers per million gallons capacity, whereas earlier plants employed up to 2.5 workers per million gallons capacity. Roughly 40 percent of ownership in earlier plants in Iowa was local and relatively little investment is local in new plants.⁵ For the Midwest and the U.S., the added benefits of ethanol industry expansion have likely exceeded the added costs of industry expansion to date. The corn ethanol industry has demonstrated that biofuel can make a modest contribution in meeting air quality requirements, GHG emission reductions, energy security, and reducing farm program payments. Such industry expansion can also bring about local economic development without destructive impacts on livestock industry growth and the quality of the rural landscape.

Continued expansion of the corn ethanol industry will add benefits, but eventually the added costs will exceed added benefits. At what ethanol output level the added benefits exceed the added costs is uncertain. Continued industry expansion will

produce less new employment per unit of capacity and may eventually create a net job loss. Local industry expansion may create environmental costs if groundwater supplies are drawn down and consumption is disrupted in some local areas. Although corn ethanol has helped meet certain CAAA requirements, significant expansion of the industry will contribute to decreasing reductions of GHG emissions if more intensive production practices and more erodible lands are used to produce corn.

Alternatives to Biofuel Subsidies

On balance, do the benefits of biofuel incentives outweigh the costs? The basic economic question to be addressed with respect to economic policy and the welfare impacts of biofuel incentives involves policy objectives. If the goals are to improve energy security and reduce dependence on foreign oil, reduce GHG emissions, and reduce federal budget exposure on farm commodity programs, what is the least distorting or least-cost approach to achieve these objectives?

The economic response to the GHG emissions reduction objectives would be to impose a tax on petroleum and other fossil fuels equal to the marginal value of the negative externalities created by GHG emission costs. Alternatively, we could establish a cap and trade system for GHG emissions and let the private sector pursue the least-cost way of achieving a given reduction in GHG emissions. By letting the private sector find the least-cost solution, resources would be allocated more efficiently in achieving the GHG emissions reduction. Our nation has not demonstrated the political will to tax petroleum and other fossil fuel sources or create a cap and trade system except in the case of sulfur emissions from power plants. Similar provisions could be used in the case of energy security costs. A tax on petroleum and other fossil fuels would increase conservation, reduce imports, and improve energy security.

Historically, the U.S. has pursued a “cheap energy” policy through the use of extensive tax subsidies to the fossil fuel energy sector, including many

provisions contained in the Energy Policy Act-2005. In the ongoing policy effort to maintain low petroleum prices, prices do not serve as an effective signaling mechanism for alternative energy and biofuel markets to develop substitute fuels. Instead, policy makers have chosen fuel forms, such as ethanol and biodiesel or electric cars in California, to receive tax subsidies and mandates in an effort to create a “more level playing field” relative to petroleum fuels.

Even if the nation chooses to pursue second best policy options, some second best options may be less inefficient than other options. For example, since there is no “silver bullet” to solve the so-called “energy problem,” a more efficient solution would be to provide comparable tax subsidies to all forms of low carbon or renewable fuels, including hydrogen and nuclear energy. Alternatively, mandates could be more fuel inclusive to let the market determine which fuel forms would achieve the mandate at lowest cost. Such approaches would stimulate more efficient or competitive fuel forms to be developed and marketed, would encourage adoption of carbon reduction technologies in refining and processing petroleum and other fossil fuels, and would encourage different fuel utilization technologies from improved internal combustion engines to electric and hydrogen powered vehicles. The alternative, having policymakers and the government “pick the winners,” is not an efficient alternative.

As a second best solution, Kopp (2006) argues, “Subsidies and mandates are better suited to commercialization, while policies focusing on R&D are better suited [to] pre-commercialization.” More typically, both incentives are provided to new technologies. The recently announced winners of U.S. Department of Energy (DOE) grants for six cellulosic-ethanol biorefineries are an illustration of this approach (Science, 2007). In addition to the 51 cent per gallon ethanol subsidy, the six biorefinery grant recipients will receive up \$80 million to research, develop and commercialize cellulosic ethanol.

Several biofuel provisions have been proposed for the upcoming 2007 Farm Bill processes. These range from provisions to extend or eliminate the ethanol subsidy to R&D incentive for biomass

feedstock and biomass ethanol provision. Options currently being discussed for the Energy Title of the 2007 Farm Bill:

Expand Federal Direct Market Intervention to Support Renewable Energy:

- Raise the level of the Renewable Fuel Standard (RFS).
- Extend renewable energy tax credits to 2015 or later.
- Reduce biofuel tax credits when they are not effective in increasing biofuel supply or are not needed.
- Provide accelerated depreciation on renewable energy equipment and facility investment.
- Use more land enrolled in the CRP for biomass harvesting.
- Refocus the CCC Bioenergy Program to support biomass used in bioproduct processing.

Expand Federal Indirect Support for Renewable Energy:

- Expand the national cellulosic ethanol research initiative.
- Expand creative financial engineering to support development of the biobased economy beyond grants, loans, and loan guarantees.
- Bridge the gap between federally funded basic research and industry-funded applied research and development.

Conclusions

Energy-related provisions were included in the 2002 Farm Bill under the Rural Development Title. Given the increased interest in biofuels and other biorenewables, a separate Energy Title is being considered for the 2007 Farm Bill. We need to carefully weigh the added benefits and costs of such government intervention. We have conducted an interesting

social experiment over the last three decades with ethanol. The federal government and some state governments as well have provided incentives to increase both corn grain ethanol production and consumption to improve local air quality, reduce GHG emissions, and provide a substitute fuel from renewable resource that could serve to improve energy security. The experiment was successful, but in large part because the price of crude oil increased. Pushing this experiment further will eventually have the added costs outweighing the added benefits. Further expansion is typically justified on grounds of moving to biomass-based ethanol, which is purported to have even large environmental and developmental benefits. However, economic analysis raises serious questions about the potential of biomass ethanol as a sustainable biofuel source.

Notes

This policy brief draws on the author's longer paper, "Biofuel Incentives and the Energy Title of the 2007 Farm Bill," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Miranowski is professor of economics and director, Institute of Science and Society, Iowa State University. The views expressed here are those of the author and not of any institution with which he is affiliated.

1. U.S. Environmental Protection Agency. Regulatory Impact Analysis: Renewable Fuel Standard Program, EPA420-R-07-004, April 2007. <http://www.epa.gov/otaq/renewablefuels/420r07004.pdf>.

2. John Miranowski and Jittinan Aukayanagul. "Short Run Econometric Model of the Ethanol Market," Unpublished working paper, Iowa State University, 2007.

3. The corn-price increases caused by the ethanol subsidy have other consequences as well, namely, higher corn costs to livestock producers and other buyers and higher returns to owners of land suitable for corn production. But these effects largely cancel out, the gains of one side of the market equaling the losses of the other, so they do not affect the benefit-cost calculations. They do not exactly cancel out because, with the subsidy in place, the marginal cost of ethanol is greater than the marginal value of ethanol to buyers, by the amount of the subsidy. This implies a deadweight loss triangle whose area is $1/2 \times 51 \text{ cents/gallon} \times \text{million gallons} = \$X \text{ million per year}$.

4. John Miranowski and Leandro Andrian, "Community impacts of local investment in biofuel plants." Unpublished working paper, Iowa State University, 2007.

5. John Miranowski and Mark Imerman. "Changing structure of the ethanol industry and implications for future rural development." Unpublished working paper, Iowa State University, 2007.

RURAL DEVELOPMENT

Rural Development Policy

Maureen R. Kilkenny and Stanley R. Johnson

Farm employment is not the long-run *economic base* of rural America, in the sense that it does not lead or determine the rest of employment in rural America. Over the past two centuries the farm share of U.S. population has fallen from 70 percent to 2 percent, and the share that is rural has fallen from 90 percent to 25 percent, but the share of the population that is *rural but not farmers* has stayed remarkably stable at about 22 percent (figure 1 on the following page). Modern studies have found, if anything, negative relationships between dependence on farm sector support and rural development (Goetz and Debertin, 1996; Drabenstott, 2005). The negative externalities of urban congestion, high costs of urban space, and attractive rural amenities (e.g., Deller et al., 2001), are the modern determinants of rural development in the United States.

The piecemeal process of agricultural adjustment has been successful. The geographic and sectoral mobility of farmers has been facilitated by the fact that farmland has been a good asset and it is relatively easy to liquidate. Increased farm size and productivity growth in the agricultural sector have been rewarded by the market. Households who remain in the farm sector now have higher incomes on average, \$81,000/year, compared to average U.S. household income of around \$60,000 (USDA/ERS, 2006a).

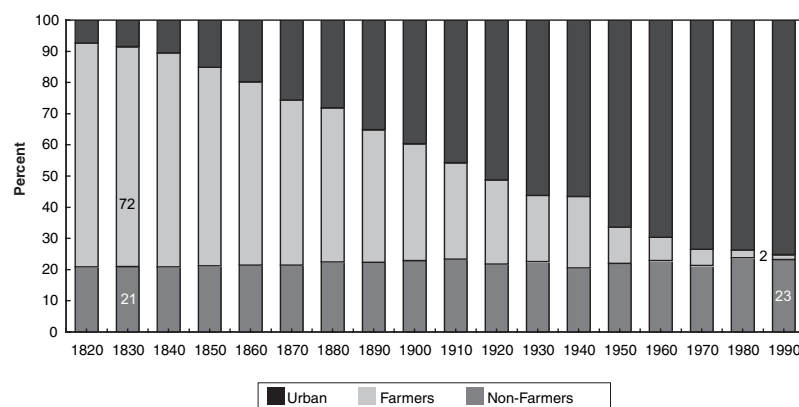
In contrast, the process of *rural adjustment* to the changes in transportation and production technologies that render the smallest and most remote (rural) communities redundant continues. Figure 2, on the following page, shows the spatial gradient in net domestic migration. Cities grow bigger at the fastest rates. Non-metro towns adjacent to metro areas also grow at positive rates. Both are growing the expense of small towns that are not adjacent to cities. This is *spatial rationalization*.

Main Policy Issue

A segment of our population bears the costs of rural adjustment to spatial rationalization. Unlike farmers; non-farm rural home and business owners do not have liquidatable assets. Geographic mobility is not an individually rational option. Even if there are buyers, spatial rationalization is not achieved by replacing one set of residents and owners in a declining town with another set. Unlike in the farm sector, where reductions in the number of farmers/increases in farm size *reward* remaining farmers with higher incomes, reductions in the number of rural citizens per town *penalize* the remaining rural residents and business owners.

Numerous market failures exist and justify rural public good provision, public investment to

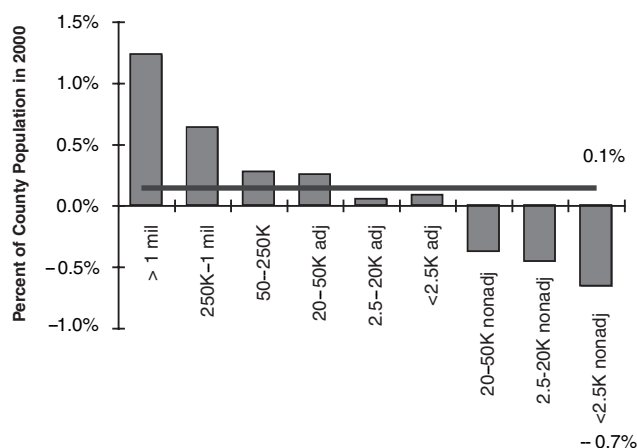
FIGURE 1
U.S. POPULATION SHARES



SOURCE: <http://www.census.gov/population/www/documentation/twps0029/tab18.htm>.

NOTE: Two centuries of change in the share of the U.S. population that farms, but no change in the share that is rural but does not farm.

FIGURE 2
AVERAGE NET DOMESTIC MIGRATION RATE



SOURCE: CO-EST2005 estimates, Bureau of Census, 2000–2005 averages.

NOTE: Domestic net out-migration rates are highest from small and remote communities.

underemployment, missing markets (no buyers for rural property, high rural vacancy rates), factor price distortions (lower prices paid for the same factor of production in rural areas), underprovision of public goods (inequitable access to public school education), price distortions (rural prices above marginal costs of production plus delivery), and low rural wages.

And because rural property values and incomes are low, there are compounding negative consequences. One, the rural tax base is lower precisely where the per taxpayer costs of public services and infrastructure (schools, roads, utilities) are higher. This fact alone indicates that special effort and intergovernmental transfers to rural communities may be needed to ensure every U.S. citizen, regardless of where they are born, has access to public education though high school, electricity and communications, clean water, and proper sewage systems.

The other unfortunate consequence is that rural households have lower financial leverage. As Jane Jacobs (1984) argues, *stagflation*—low wages and high prices—is a *spatial* phenomenon. Rural wages and rents are lower, while the prices of tradable goods (automobiles, college education) are the same (or higher) as in urban areas. The relevant conse-

quences of spatial stagflation are that it undermines the rural tax base and increases the cost of geographic and sectoral mobility for rural people and businesses. Because localization of the money supply process is the antidote to spatial stagflation, it is important that encourage rural adjustment, and publicly funded compensation for the losers in the process of spatial rationalization. Outward signs that asset fixity, geographic immobility, and other space-related market failures hurt rural people include higher rates of rural

encourage rural adjustment, and publicly funded compensation for the losers in the process of spatial rationalization. Outward signs that asset fixity, geographic immobility, and other space-related market failures hurt rural people include higher rates of rural

funds flow through rather than around commercial banks in rural areas.

The dilemma for U.S. rural development policy is that keeping declining towns on “life support” delays the inevitable. But mobilizing rural citizens piecemeal exacerbates the cost of that “life support” by increasing the rate of decline. The current mix of “sector-,” “place-,” and “people-based” policies may even be making rural adjustment more painful. Each person who exits a small town leaves remaining schools and businesses another student or customer farther below minimum efficient scale. Each taxpayer who exits a small town increases the costs of local public good provision borne by the remaining residents. Piecemeal mobility of rural people reduces rural property values, dampens economic opportunity, and worsens the dependence of rural communities on intergovernmental funds.

“Place-based” policies are those for which the location or spatial category of the beneficiary is a key criterion for eligibility. Six commonly recognized pitfalls and shortcomings of place-based policies are that they may (i) generate nothing but rents for the owners (potentially absentee) of property in targeted places, (ii) attract or retain (trap) poor people in poor areas, (iii) distort business as well as human migration decisions, (iv) enable the postponement of necessary adjustments, (v) create dependencies, and are (vi) subject to abuse by place-based politicians (Kilkenny and Kraybill, 2004).

Nationwide policies also have at least two notable shortcomings. First, because of spatial heterogeneity, spatially uniform/economy-wide or “pan-territorial” sector-based or people-based policies do not necessarily have spatially neutral effects (Hurter and Martinich, 1989; Kilkenny and Huffman, 2003; Blank, 2005). Second, nationwide spatially neutral policies may help mobilize people out of low-income, low-vitality rural areas; but in doing so, they push rural communities further below critical mass. In sum, nationwide and people-based policies have spatially differentiated effects, are likely to be inefficient, can be excessively costly, and can make rural problems even worse.

What do we want from rural development policy? The USDA Rural Development Agency’s strategic plan says it nicely: “A *rural America that is a healthy, safe, and prosperous place to live and work.*” Farm policies helped agriculture adjust to having fewer, larger, more prosperous farms; run by a declining number of farmers. Rural development policy should help rural America adjust to having fewer, larger, more prosperous rural communities. One big difference is that rural adjustment cannot be accomplished one household at a time. Another big difference is that the number of rural citizens consistent with spatial rationalization has, and should continue to, increase.

Existing rural development programs emphasize *categorical* eligibility and equal access. Any and every rural town may obtain federal funds to help secure a minimum quality of life. Because budgets are limited and because not all rural places are economically viable, attempting to sustain *all* rural communities is done at the expense of achieving critical mass and sustainability in *most* rural communities. To leverage the development of potentially sustainable rural communities we recommend the use of place-tailored *matching* funding rather than place-based *categorical* funding.

We suggest five principles for the 2007 Farm Bill rural development programs. In order of increasing difficulty of implementation, they are (1) take the lead for more interagency cooperation, (2) move funds through, not around, the commercial banking system, (3) initiate a *modulation* process, (4) leverage own-effort by emphasizing matching funding, and (5) facilitate rural adjustment by mobilizing whole communities.

The first principle is about interagency specialization and trade (not nationwide program consolidation). Our country prefers the federations of towns, counties, districts, states, and national government comprised of many specialized agencies over a single top-down central government because pan-territorial, one-size-fits-all programs to provide public goods are less efficient than locally tailored programs. To lead, specialize, and trade there are at least four things the USDA RD Agency should be doing: (i) coordinate and specialize, (ii) minimize redundancies, (iii) share

or merge some operations, and (iv) watchdog to ensure equal opportunity for rural constituencies in other agencies' programs.

The second principle of working *through* the commercial banking system is another no-cost recommendation. The USDA RD has already been expanding guaranteed loan program levels while reducing grant and direct loan program levels. This trend should continue. In particular, we encourage partnering with rural commercial banks rather than subsidizing non-bank competitors of rural banks. When funds flow through the rural offices of banks they will augment rural liquidity and will help avoid rural stagflation.

Also, commercial banks have much at stake regarding the mechanism of farm support. Farm loans are backed by farm land collateral, at values inflated by farm support programs. If those programs were terminated and farm land values collapsed, a process of multiple deposit contraction would occur. That has the potential to undermine the solvency of the Midwestern banking system and disrupt the country's money supply, not to mention the local money supplies in rural farm-belt communities.

The sensitivity of rural bank assets to farm support policy motivates our third principle for the 2007 farm bill: initiate a *modulation* process to support an orderly transition to a market-oriented farm sector without strangling rural liquidity. Additional pressure to reduce direct support to farmers comes from the World Trade Organization negotiations. Our suggestion is to mandate a bipartisan special temporary commission involving executive and legislative branch representatives and experts from within and outside of government to figure out how to maintain rural liquidity even as subsidy-inflated returns to farmland are reduced.

Our fourth principle, *leverage own effort*, merges a popular (private sector) place-competitiveness strategy with federal strategy of the provision of public goods and rural quality of life. We suggest that this be done by requiring places to compete for federal funding, and that disbursements leverage local funding, not substitute for it. We also recommend providing incentives to communities that plan, especially those that coordinate consolidations with other

rural communities, and communities that make progress on their plans.

The fifth principle is to enable community-wide spatial relocation to avoid piecemeal rural out-migration and chronic decline. The households and businesses in rural towns that cannot maintain even a portion of their infrastructure should be eligible for community-wide relocation assistance simultaneously. Consolidations of two or more towns into sustainable-size towns, and conversions of rural satellite towns into suburbs of cities, should be especially encouraged.

Spatial rationalization can be accomplished in a variety of ways. The hardest is piecemeal: household by household and business by business through rural out-migration, relocations, closures, or death. The easiest but lowest payoff way is jurisdictional consolidation. Jurisdictional consolidation does not require households or businesses to move, just an enlargement of jurisdictional boundaries to encompass the merging communities. Jurisdictional merging reduces local public sector duplications. It releases local public revenues for other purposes, such as the match to be eligible for federal funding of infrastructure if required.

Real spatial rationalization is achieved by physical relocations of households and businesses. Towns in flood zones, for example, are relocated. The cost per household is the price of a comparable home in the destination small town. Instead of piecemeal decline, numerous declining communities could be reorganized into sustainable new ones. Instead of sinking funds again and again on infrastructure, spend the funds once and for all in ways that help citizens achieve a higher quality of life elsewhere while preserving each community and their legacies. Funds saved on infrastructure should be allocated to pay for the relocations. Landmark buildings such as a school, church, town hall, or other building of sentimental value should accompany the bulk of the relocated population. Also, the merged town could be renamed with a hyphenated version of both towns' names, in the same way that children in Spain carry the surnames of both parents.

Conclusion

Rural development policy can reduce the downside risks and increase the benefits of spatial rationalization. Rural development policy can also stop subsidizing spatial redundancy. If rural development policy does both, it will increase economic opportunity and improve the quality of life for all rural Americans at a faster rate and lower cost to taxpayers.

Note

This policy brief draws on the authors' longer paper "Rural Development Policy," available at www.aei.org/farmbill. The longer paper includes background support and citations not included here. Maureen Kilkenny is professor of resource economics, and Stanley Johnson is distinguished professor Emeritus, Iowa State University. Both are currently employed in the College of Agriculture, Biotechnology and Natural Resources, the University of Nevada, Reno. The views expressed here are those of the authors and not those of any institution with which they are affiliated.

References

- Blank, Rebecca. 2005. "Poverty, Policy, and Place: How Poverty and Policies to Alleviate Poverty Are Shaped by Local Characteristics," *International Regional Science Review* 28(4):441–464.
- Cowan, Tadlock. 2006. An Overview of USDA Rural Development Programs Congressional Research Service (CRS) Report for Congress, Washington, D.C.; June 22.
- Deller, Steve, Tsung-Hsui Tsai, David Marcoullier, and Donald English. 2001. "The Role of Amenities and Quality of Life in Rural Economic Growth," *American Journal of Agricultural Economics* 83(2):352–365.
- Dorr, Thomas, USDA Undersecretary for Rural Development. 2003. "USDA Programs make our rural regions stronger." Iowa View Editorial. *The Des Moines Register* July 25.
- Dranbenstott, Mark. 2005. "Do Farm Payments Promote Rural Economic Growth?" *The Main Street Economist: Commentary on the Rural Economy*, Center for the Study of Rural America, Federal Reserve Bank of Kansas City, Kansas City, MO.
- Goetz, Stephan, and David Debertin. 1996. "Rural Population Decline in the 1980s: Impacts of Farm Structure and Federal Farm Programs," *American Journal of Agricultural Economics*, 78(3): 517–29.
- Government Accounting Office. 2005 "21st Century Challenges: Reexamining the Base of the Federal Government," GAO-05-325SP. Washington, D.C.
- Jacobs, Jane. 1984. *Cities and the Wealth of Nations: Principles of Economic Life*. New York: Random House.
- Kilkenny, Maureen. 1998. "Transport Costs and Rural Development," *Journal of Regional Science* 38(2) 293–312.
- Kilkenny, Maureen, and David Kraybill. 2003. "The Economic Rationales for and against Place-Based Policies," Paper presented at the AAEE-RSS Annual Meetings, July 27–30, Montreal, Canada.
- Kilkenny, Maureen, and Sonya Huffmann. 2003. "Rural/Urban Welfare Program and Labor Force Participation," *American Journal of Agricultural Economics*, 85(4): 914–27.
- U. S. Department of Agriculture, Economic Research Service. 2006a. "Farm Household Economics and Well-Being: Farm Operator Household Income in Perspective," <http://www.ers.usda.gov/Briefing/WellBeing/incomein perspective.htm-#farm> Updated February 8, 2006 (date accessed 10/31/06).
- . 2006b. "2007 Farm Bill Theme Papers: Rural Development," www.usda.gov/documents/Farmbill07_ruraldevelopment.pdf (accessed 8/3/2006).

Infrastructure Investment and Rural Development

Mitch Renkow

Farm bills dating back to the 1970s have committed federal resources to various types of infrastructure investment programs targeted to rural communities. Title VI of the 2002 Farm Bill—the “Rural Development” title—authorized hundreds of millions of dollars annually for water purification, wastewater treatment, and solid waste management in rural towns and counties. Between 2002 and 2006, total federal outlays on water treatment and waste disposal amounted to \$3.3 billion. More than 93 percent of this money took the form of grants; the balance was distributed as loan subsidies. Money was also authorized for investment in rural telecommunications capacity, including programs related to broadband access, local television access, distance learning, and e-commerce. Since 2004 the Rural Utilities Service has made \$1 billion in loans (at subsidized rates) to telecommunications providers, primarily for broadband deployment.

How do the returns to rural development programs stack up against their costs? Unfortunately, economic studies that provide estimates of net benefits are not available in the literature, mainly because the data needed to carry out such analysis—particularly the counterfactual of what would have happened absent the public investment—have not been developed. We can consider, however, the extent to which infrastructure investments authorized

within the Rural Development title actually can be linked to various manifestations of what is commonly, if imprecisely, termed *rural development*. This policy brief summarizes the evidence on whether or not such links exist.

Specifically, it concentrates on infrastructure investments made in small, relatively remote communities having populations less than 20,000—the types of communities that are targeted by the programs that have been historically funded under the Rural Development title. *Development* here will be taken to encompass sustained positive changes in the magnitude and composition of economic activity within those communities, the amenities that they possess, and the range or quantity of government services made available to their residents.

Two types of federal infrastructure investments have received the most discussion in the context of the Rural Development title—water treatment infrastructure and telecommunications infrastructure. Neither type of investment appears to offer much in the way of a “pump priming” stimulus to local economic activity. In both cases, the prospective payoffs to infrastructure investment in rural areas vie with the inherent difficulty in recouping their large fixed costs in locations with low population densities. Moreover, the net benefits of these sorts of investments are often substantially related

to proximity of rural communities to urban employment centers.

With respect to water treatment investments, it appears difficult to justify federal involvement on grounds that such investments counter the unfunded federal mandates with respect to drinking water and wastewater effluent standards. Strong evidence of fiscal substitution effects and local willingness to pay for improved water quality, coupled with the fact that the public goods generated by those investments are generally consumed locally, call into question the advisability of federal funding for these types of investments.

On the other hand, federal funding of broadband deployment into remote areas may be justified on the grounds that access to up-to-date telecommunications activity is an inherent “citizenship right” that should be afforded to all. However, this justification requires an assessment that the positive social net benefits associated with universal (or at least, near-universal) provision of high-speed Internet access to remotely located citizens outweigh its high costs.

Water Infrastructure

The importance to different types of businesses of the availability and cost of water and sewer services is highly variable. Some types of industrial processes are more dependent on adequate supplies of water than others, and the lack of a local water system in a given rural community may well preclude location of firms that utilize those processes intensively. What little research has been conducted on the economic impacts of rural water and sewer systems suggests that their net benefits tend to be much more modest in rural communities than they are in more densely populated urban communities. This is fundamentally due to the substantial economies of scale and density in plant construction and deployment of water and sewer lines.

Evidence linking the availability of water treatment infrastructure in rural communities to those communities’ ability to attract new businesses is weak. While some empirical research connects some

firms’ location decisions to the availability and quality of local water supplies, most analysts of firm location find that other factors—particularly the quality and size of the local labor force, the existing road network, and the nature of the local telecommunications infrastructure—are much more important. Moreover, the higher unit costs of water treatment in (smaller) rural systems generally translate to higher unit prices for water customers; this in turn tends to lower a community’s attractiveness to new firms considering relocation. These higher water charges attenuate the positive effects offered by greater availability of local water treatment capacity.

For many rural communities, changes in residential development patterns may well be the most profound impact brought about by augmentation of local water treatment capacity. This is especially the case for rural communities located in reasonably close proximity to urban areas where deployment of water infrastructure facilitates exurbanization trends currently observed at the urban-rural fringe. In terms of local economic development, local businesses—particularly those in construction, retail, and service sectors—generally will be positively affected by increases in demands for their goods and services arising from population growth. On the other hand, residential development associated with exurbanization often leads to substantial fiscal pressures on local governments (and taxpayers) as they pay for the increased level of public services associated with residential development.

Unfunded Mandates. Stringent federal treatment standards for both drinking water and wastewater effluent, in conjunction with devolution of fiscal, regulatory, and enforcement responsibilities to state and local governments, represent an important set of unfunded federal mandates facing local communities. Rural Development title funds channeled to rural communities for drinking water treatment and wastewater treatment would thus appear to represent a counterbalancing cushion to the costs of unfunded federal mandates. Just how large that cushion is would of course vary widely across communities, system types, and the extent to which

federal requirements raise costs above what the community would have incurred absent those requirements.

However, there are several reasons why federal aid to water infrastructure investment might represent a less-than-optimal use of public resources. First, there is evidence that greater local cost shares in construction of water treatment facilities leads to more economical choices—simpler treatment technologies, more careful oversight of project costs, and shorter construction periods. Second, when water treatment is funded locally, communities have considerably stronger incentives to promote water conservation in order to delay the installation of additional treatment capacity. Third, in many circumstances, fiscal substitution effects will prevail such that each dollar of federal funds will not result in an additional dollar of total expenditure on some socially desirable outcome (such as safe drinking water or suitably treated wastewater discharges). That is, federal funds may simply displace resources that local governments would have spent to achieve those outcomes, even in the absence of federal mandates. Finally, to the extent that the public goods created by federal investment in rural communities' water treatment capacity are consumed locally, one can reasonably question those investments on efficiency grounds. A number of studies indicate substantial local willingness to pay for water quality improvements. This suggests that in many cases local financing of water treatment infrastructure will be feasible, in addition to being more efficient due to the beneficiaries of the services provided by the infrastructure paying for the generation of those services.

Benefits versus Costs. According to Office of Management and Budget data, annual expenditures on water treatment and wastewater disposal systems made through the Rural Community Advancement Program during the period 2002–2006 averaged \$660 million. Over 90 percent of these funds were in the form of grants. Two factors are important in determining whether and when such investments are likely to pass a reasonable benefit/cost test.

First, the ability of water infrastructure investments to provide a strong “pump priming” stimulus

to local economies is often limited in the sense that the services provided by infrastructure may in many cases be necessary for sustained economic growth, but they are probably never sufficient. This means that assessing relative benefits will depend heavily on environmental services and associated amenities associated with water treatment. But even if the net benefits of those environmental services outweigh the costs associated with their provision, it remains highly debatable whether federal underwriting of those investments is sound public policy. The ample evidence of fiscal substitution effects and local willingness to pay for improved water quality, coupled with the fact that the public goods generated by those investments are generally consumed locally, call into question the advisability of federal funding for these types of investments on both efficiency and equity grounds.

Second, economies of scale in plant construction and economies of density in the installation of water lines mean that benefits are more likely to outweigh costs in areas in which the level and density of populations served are highest. For this reason, investments in water treatment infrastructure in rural communities located within the commuter shed of expanding urban labor markets are likely to yield the highest net returns. On the other hand, the probability of costs outweighing benefits for any particular project will be greatest in the most remote and least populous communities—which are of course precisely the kinds of communities that Rural Development title programs are designed to serve.

Telecommunications Infrastructure

Properly implemented telecommunications capacity reduces the cost of physical distance to consumers and to businesses in the communities served. Hence, telecommunications investments in rural areas can yield substantial positive impacts on the productivity and profitability of existing firms, as well as on the location decisions of potential new firms. And rural consumers stand to benefit from

the broader array of goods and services choices available to them in an electronic marketplace.

In striking contrast to the situation that existed at the end of the twentieth century, rural communities and rural dwellers are now connected to the internet to nearly the same degree as their urban counterparts. Where a rural-urban digital divide persists, however, is in access to high-speed data transmission through broadband connectivity. Despite some narrowing of this gap over the past few years, access to broadband continues to lag in rural areas—especially in sparsely populated rural areas and remote communities located far from urban centers.

The benefits of broadband over dial-up connectivity are well chronicled. By reducing the effective cost of distance, the high-speed data transmission enabled by broadband has significant potential for ameliorating key constraints on economic performance of businesses in rural places—small markets, high transport costs, and physical isolation. E-commerce, health care, and education are areas in which broadband offers significant potential benefits to rural residents.

Ironically, precisely the same physical remoteness and low population densities that make broadband particularly desirable in rural areas also render its deployment expensive. All broadband technologies require very large up-front financial outlays by service providers. For this reason, rural small businesses generally pay more than do their urban counterparts for high-speed internet access. Moreover, demand-side constraints have proven to be important factors limiting deployment of broadband in rural areas. This is because broadband carriers generally require a minimum number of customers before they will offer service in an area.

Benefits versus Costs. Since 2004 the Rural Utilities Service has made \$1 billion in loans (at subsidized rates) to telecommunications providers, primarily for broadband deployment. The rates of return on broadband deployment are inversely related to the density and remoteness of populations served. This, of course, limits the effective rate of return on telecommunications investments made under the auspices of the Rural Development title,

since those investments are specifically targeted to more remote and less populated areas.

Broadband availability appears likely to expand more rapidly into rural communities located nearer to urban areas than into more remote locations. The lion's share of the narrowing of rural-urban gaps in access to high-speed data transmission that has taken place in recent years is accounted for by deployment of DSL and cable service in rural communities located near urban centers. However, some level of rural-urban digital divide may in fact be socially desirable—i.e., that the costs of bringing broadband to particularly remote areas may greatly exceed the benefits that universal service would bring.

On the other hand, there is substantial historical precedent for federal investments in communications infrastructure that provide close to universal access to a dominant mode of communication in society (such as mail service or telephone service). Presumably, such investments reflected an assessment by policymakers that the public goods created by deployment of these sorts of integrative infrastructure were sufficiently large to outweigh the relatively steep costs of their providing those infrastructure services to remote consumers. The desirability of continued or expanded federal funding of programs promoting broadband deployment into remote rural areas depends on the extent to which a comparable assessment of these positive social externalities exists today.

Conclusion

Net payoffs to investments in both water treatment and telecommunications infrastructure are related to the size and density of the population served. This represents a formidable barrier to those sorts of investments passing a reasonable cost/benefit test in the remote and less-populated areas targeted by federal programs under the Rural Development title of the Farm Bill. With respect to water treatment investments, it further appears difficult to justify federal involvement on grounds that such investments counter the unfunded mandates attributable

to stringent federal treatment standards for both drinking water and wastewater effluent. Strong evidence of fiscal substitution effects and local willingness to pay for improved water quality, coupled with the fact that the public goods generated by those investments are generally consumed locally, call into question the advisability of federal funding for these types of investments on both efficiency and equity grounds. In short, federal underwriting of those investments appears to be unsound public policy.

On the other hand, federal funding of broadband deployment into remote rural areas may be justified on the grounds that access to up-to-date telecommunications capability is an inherent “citizenship right” that should be afforded to all. However, this justification requires an assessment that the positive social benefits and public goods associated with universal (or at least, near-universal) provision of high-speed internet access to remotely located citizens outweigh its high costs.

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