

CHAPTER 12

HOW U.S. FARM POLICIES IN THE MID-1990S AFFECTED INTERNATIONAL CROP PRICES

*A harbinger of what to expect with further world-wide implementation of
WTO-compliant policy modifications?*

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THE NATURE OF THE CROP SECTOR

The belief that the crop agriculture market will self-regulate in the short run is the operative assumption behind the contention that once agricultural subsidies are eliminated, US production will fall and prices will recover. For this assumption to be valid, the market for total crop production must be reasonably responsive to changes in price. That is, the supply and demand price elasticities cannot be exceedingly small in absolute terms.

Considering supply first, farmers tend to plant all of their acres across a wide range of prices. They may change the mix of crops, in an attempt to maximize the revenue per acre, but they almost always plant all of their crop acreage. This farmer behaviour of barely reducing planted acreage in response to dramatically lower prices results in a low price elasticity of supply. Farmers respond to lower prices in this manner, because any dollar earned above the out-of-pocket variable cost of production can be applied to fixed costs like taxes. And on rented ground, the producer has every incentive to use every acre possible. It makes no sense to pay the cost of renting ground, if the intention is to leave it unplanted. The strong tendency of producers to grow crops on every acre is true even as individual farmers go out of business. The land almost universally remains in production just under new management. Crop agriculture tends to use all of its productive capacity all of the time and let the weather determine the final production numbers.

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Total crop supply changes little with price; what about the price responsiveness of total food demand? Food is different from other products that consumers purchase. Unlike clothes or televisions, lower prices do not induce consumers to purchase more food. With low television prices, consumers are likely to purchase an extra one for the den and their teenager's bedroom. However, people do not begin to eat four or five meals a day just because food becomes less expensive. In response to lower food prices, consumers may eat out more often, purchase a better quality of food, and buy more highly processed food products, but they do not significantly increase their aggregate food consumption level¹. The price elasticity of demand for all agricultural products taken together is very low.

If consumers bought more food in response to lower prices and producers cut their total farm output as prices declined, excess inventories would quickly vanish and prices would arrive at profitable levels once again. That is exactly what does not happen. If that self-correction were to occur, there would be no fundamental price and income problem and, therefore, no need for farm programs².

THE PRODUCTIVE CAPACITY OF U.S. AGRICULTURE

Aside from random shifts due to weather and other natural events, the downward pressure on crop prices occurs because agriculture's productive capacity tends to expand faster than demand. Demand for agricultural products in a country like the US grows with population and exports but, unlike the demand for cars, houses, clothes and most other product categories, doubling a consumer's income will have a minor impact on his demand for food.

The growth in the productive capacity of US agriculture goes back centuries before the introduction of commodity programs in the 1930s. From its birth as a nation, the US has pursued policies that promoted a phenomenal growth in the productive capacity of agriculture. Supported by the taxpaying public, these developmental policies have increased agriculture's productive capacity by making agricultural inputs more plentiful, more productive or less costly.

Developmental policies began with frontier expansion through the mechanism of land distribution – beginning as early as the late 1700s and continuing through the Homestead Act of 1862. Then, once the frontier closed, the US's most important developmental farm policy was public investment in experiment stations in each state (Hatch Act of 1887), land-grant universities (Morrill Act of 1862), and the cooperative extension service (Smith-Lever Act of 1914). This set of institutions increased the supply, lowered the cost, and improved the quality of physical inputs like seed, chemicals, equipment, and of less tangible inputs like the managerial and decision-making abilities of farmers. The mammoth growth in agricultural productive capacity in the US has been and still is the result of the continuous public investment in agricultural research and education. Clearly, the US government has been intervening in agricultural markets in a gargantuan way for well over a century, expanding productive capacity separate from any consideration of 'farm program' subsidies.

Since individual farmers cannot influence prices, they are constantly in search of new ways to lower costs or increase yields. Thus, the agricultural sector quickly adopts productivity-enhancing technologies, which typically increase supplies faster than the growth in demand, thus putting downward pressure on prices. The lower prices, in turn, become further incentive to adopt more cost-reducing technologies, and prices continue their slide. But the lower prices typically do not cause individual farmers to cut back significantly on production. As a result, production agriculture is under constant price pressure, with periods of brief reprieves, generally the result of disasters or other random events. And, unlike other economic sectors, when individual farmers are forced out of business, the resource (land) is not converted to another more profitable use but remains in production³.

From a societal perspective, ensuring that all people have access to an abundant, safe, affordable supply of food and fibre is an important public policy objective. Given the typically long research cycles for technology development and the uncompromising daily need for food, public research to improve agricultural productivity and expand agriculture's productive capacity will likely remain an important policy priority in the future.

NEED TO MANAGE PRODUCTIVE CAPACITY

The ability to produce in excess of current needs, however, is not a mandate for agriculture to use all of its productive capacity all of the time. For example, in the manufacturing sector, between 15 and 25% of productive capacity is intentionally idled at any given time by reason of market supply and demand conditions (Economic Report of the President 2003). For the manufacturing sector, actions taken by producers and consumers are generally sufficient to enable self-correction when the sector experiences periods of overstocks and depressed prices. Management of its productive capacity is a critical part of the correction process.

In the face of the relatively low price elasticities of supply and demand one of the challenges for the agriculture sector has been to find ways to manage its productive capacity so as to provide for the food needs of the consuming public while at the same time ensuring a price that covers costs or most costs. Attempts at self-management by farmers, from Henry A. Wallace's newspaper campaign to convince farmers to plant 10% of their acreage to alfalfa (Culver and Hyde 2001, p. 56), to the Farmers Holiday Association (Shover 1965), to the holding actions of the National Farmers Organization (Halcrow et al. 1984, p. 25), have been unsuccessful. Individual farmers are too small for their decisions to have an effect on total production but, unless a large percentage of farmers participate in a voluntary self-management program, the program is likely to fail. Historically, farmers have not been successful in organizing self-help supply management schemes to adjust output to the needs of the market.

As a result, the role of managing the ever-increasing productive capacity of agriculture has fallen to the government. Wallace and other New Dealers designed the original commodity programs to do for agriculture what it could not do for itself but other industries do on a regular basis: manage productive capacity to provide

sustainable and stable prices and incomes. Until the mid-1980s – and beyond, in some cases – the primary focus of US commodity policy was on production management programs and price support and stabilization programs.

These programs worked by vesting the Secretary of Agriculture with a variety of tools that could be used to manage the productive capacity of US agriculture in the same way that a corporate CEO manages the productive capacity of her firm. These tools established a set of bounds within which the free market could work to allocate resources. Despite their built-in complications, supply management policies have historically prevented the chronic overproduction and depressed prices that would have occurred from a full use of agriculture's productive capacity all of the time. Price support programs put a floor under major-crop prices. So if the Secretary erred in setting aside too little acreage because of above-average yields or unusually low demand, prices were prevented from plummeting uncontrollably.

THE CHANGE IN U.S. POLICY IS THE REASON FOR LOW PRICES

Over the last two decades, the US policy goal of ensuring growth in productive capacity has remained, but the goal to protect prices and farmer incomes through managing the capacity has not. Rather, the government has placed its reliance on the free market to determine prices, making direct payments to support farmer incomes during times of low prices. To absorb excess inventory, US policy shifted away from production management and price support and toward demand expansion – especially export demand. Advocates of freer markets and trade liberalization were successful in persuading policy makers to encourage lower prices by reducing crop price supports, expecting that a flood of exports would follow. It was predicted that by modifying the 'government intervention' of price supports, other countries would reduce their production, higher prices would return, and farmers would reap the benefits of this export boom.

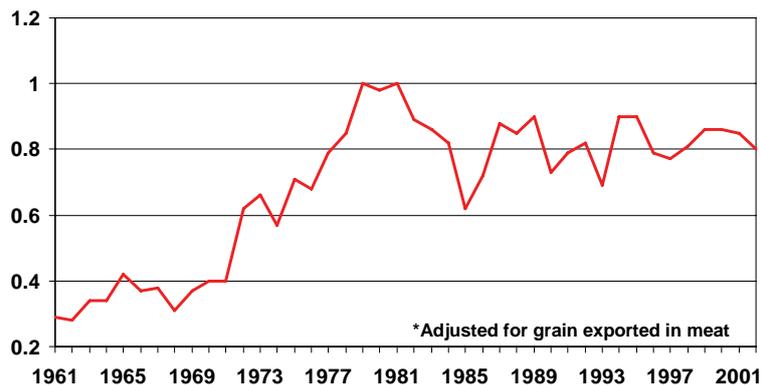


Figure 1. Index of US 8 crop exports, 1961-2002, adjusted for grain exported in meat, 1979=1.0

The result of this kind of thinking was the 1996 Farm Bill, which removed all vestiges of government price supports and annual supply controls. At the time, USDA forecasters were projecting a tremendous growth in US crop exports for the foreseeable future. As shown in Figure 1, the aggregate trend of US exports for the eight major crops continued to be flat after 1996. The skyward export trend in the 1970s, while perhaps burned into people's minds, does not reflect the reality of the last quarter century.

The removal of the set-aside program freed up acreage previously withheld from production. Thus, it was no surprise that acreage planted to the eight major crops increased over 6% (over 15 million acres) the year the set-aside policy was removed. Inventory adjustments and world conditions staved off massive price declines, but only until 1998. Thereafter prices plummeted, and government subsidies ballooned to compensate for lost market income. Even as prices declined, the previously idled acreage – which came into production in 1996 – remained in cultivation. While the indexed market price for the eight major crops declined by nearly 40%, contrary to expectations, these radically lower prices did not appreciably cut the aggregate crop acreage remaining in use (Ray et al. 2003, p. 19).

Another feature of the 1996 policy – the effective elimination of price supports – has had the effect of sustaining the persistence of low prices. Current US agricultural policy has no tools to limit the downward price spiral. Even successive yearly reductions in grain stocks have not had the expected price-enhancing impacts of the past. In the current environment, market participants know that no supply management programs can be used next year to raise prices. As a result, crop demanders do not bid up prices to secure future grain needs. They rightly expect, with all-out production, prices will be as low or lower next season. Over the last five years, market participants have been more and more comfortable with less and less grain in the granary at the end of the crop year. Hence, prices have fallen much further than they would have under similar stock conditions before 1996 (Schaffer 2004; unpubl.).

Prior to 1996, government commodity payments were generally used as financial incentives to encourage farmers to participate in supply management programs. Since 1996, government commodity payments are strictly income support payments. In response to the massive price slide, Congress instituted record level payments to farmers, partially compensating farmers for lost income. Annual commodity payments by program are presented in Figure 2. Beginning in 1998, subsidies to farmers increased by 250% over the 1990-1997 period. Post-1997 subsidies took the form of direct payments, unanticipated loan deficiency payments (LDPs), marketing loan gains, and ad hoc/emergency/disaster payments. While all of these payments were being made, the so-called 'excess stocks' were not being removed from the marketplace. As a consequence, prices plummeted. But, with a low price elasticity of demand, falling prices did not cause consumers to buy and consume the problematic 'excess stocks.' As a result prices did not recover but continued their free fall.

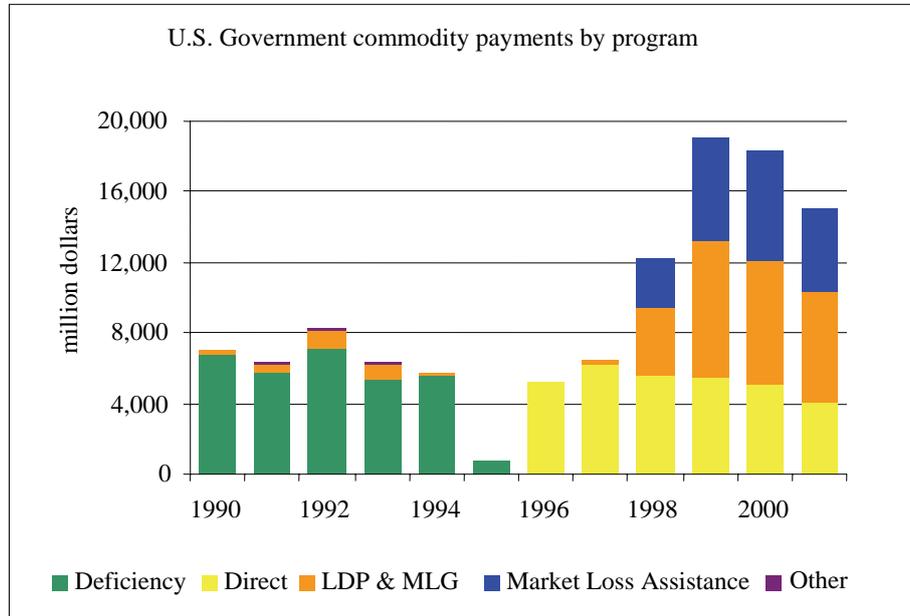


Figure 2. US Government commodity payments by program, 1990-2001

The resulting low prices triggered high subsidies in the US, *not* the reverse. While some blame high US subsidies for low prices, the data clearly show the opposite: higher and higher subsidies were authorized in response to lower and lower prices and farm incomes. The problem was not caused by the income support payments that were added, *post hoc*, by recent legislation, but by the supply control and price-supporting mechanisms that were taken away. As prices fell – making US commodities appear to be more competitive in world markets – exports remained flat.

IMPACT OF U.S. POLICY CHANGE ON INTERNATIONAL AGRICULTURE

The removal of the price floor in the US had a major impact on farmers around the world as prices descended to levels that were often below the cost of production. The difference between farmers in the US and elsewhere is twofold. First, the US government could afford to and did grant huge payments to farmers to make up for the low prices while most developing countries could not afford those payments. Second, developing countries were unable to use their traditional method, tariffs, to protect their producers from low world prices. The use of tariffs as a means of import/export control had been significantly weakened in many countries as the result of structural readjustment policies forced on these countries by the World Bank and the IMF. Consequently, farmers in developing countries bore the brunt of the failure of the US to maintain its historic supply management program. It was not

the payments that were given to US farmers, but rather the attempt by the US to impose a global trade liberalization scheme on US and world agriculture that brought about this disaster.

In summary, recent periods of depressed prices in world crop markets can, in fact, be traced to policy actions taken in the US. But, the origin and nature of those actions may be different from what most would expect. The US continually invests in the creation of new technologies and other means to expand agricultural production. Overproduction, in the economic sense of that term, occurs when the growth in agriculture's productive capacity exceeds growth in demand *and* there is no mechanism in place to throttle production to needs. The drop in crop prices occurred when the US eliminated the means that had long been used to throttle or balance output to demand needs. Because of the nature of food and aggregate agricultural production, neither consumers nor producers appreciably changed the quantity they consumed and produced, respectively. As a result, market self-correction for total agriculture did not/could not occur in a timely fashion.

The US choose to replace a portion of the nation's farmers' reduced market revenue with payments but that action was a result of the low prices, not the cause. Had the payments not occurred, land prices would have declined substantially, some farmers would have sold out to other better-financed farmers, and the land would have largely remained in agricultural use. Total production would have been affected very little, and, hence, the overall level of farm prices would have recovered only slightly.

Hence, the accusation that US agriculture, in economic terms, overproduced and depressed prices worldwide in recent years has merit. While excess productive capacity is typical in the US, most of price depression should be blamed on the elimination of supply control mechanisms. Any increase in US production that is directly attributable to changes in government payment levels is miniscule compared to the effect of eliminating set-asides and price floors.

An examination of the aggregate output effect of reduced subsidies in other countries

The assertion that reducing and/or eliminating government programs will lead to a reduction in production can be tested by looking at the experience of countries that have made changes in these programs. Over the last few decades, several countries have moved toward policies of reducing government involvement in agricultural markets. Canada, Mexico and Australia have established track records of fewer government controls and freer markets. Changes in commodity production in these countries are the result of a complex array of factors. However, evidence clearly indicates that removal of and reductions in subsidies have not led to significant drops in production. In fact, production increased in several cases. These observations are consistent with studies using the IMPACT and POLYSYS models, which showed that eliminating subsidies will not significantly or quickly reduce production or increase prices.

The Canadian experience. Huge increases in Canadian agricultural subsidies through the 1980s contributed to less than a 3% rise in the number of acres cultivated. Then, fiscal deficits in the 1990s forced a 35% cutback in Canada's support programs over a three-year period. The most notable was the elimination of all subsidies for grain transportation in 1995. This and other significant reductions in government support levels between 1996 and 2001 resulted in less than a 1% decline in farmland use.

The mix of crops farmed changed significantly in response to government policy changes, but Canadian cropland remained in production. Three crop groups historically account for just over half of Canada's total cropland: (1) wheat, (2) selected grains (oats, barley, and corn), and (3) selected oilseeds (principally canola but also including flaxseed, soybeans, sunflower, and mustard seed).

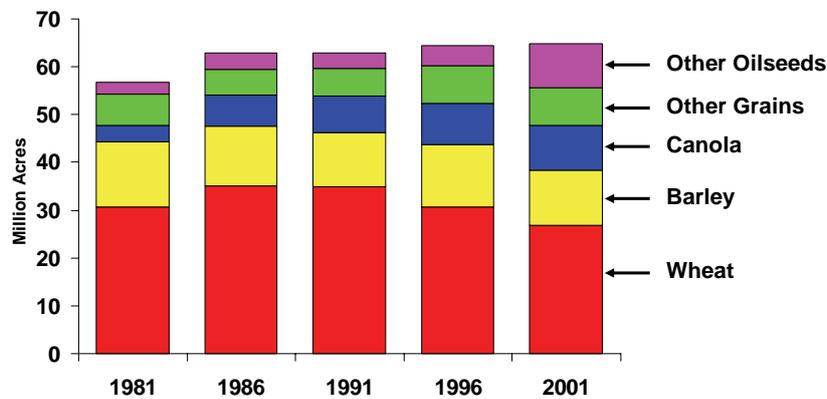


Figure 3. Canadian area planted to crops, 1981-2001

Figure 3 shows the Canadian acreage planted to each of these three crop groups since 1981. Between 1991 and 2001, the acreage of Canada's leading crop, wheat, declined 23%. The elimination of subsidies for grain transportation in 1995 was a major contributor to this significant shift. Over the same period, oilseed production increased 143%. While the crop mix changed as relative prices and program payments changed, aggregate land in production changed little.

The Australian experience. The Australian experience also demonstrates the tendency of farmers to continue to produce as much as they can, even when faced with declining government subsidies. Since 1991, despite periods of low world prices, planted areas of wheat, coarse grains and oilseeds have increased more than 56% in Australia, as shown in Figure 4.

The Australian experience illustrates farmers' ability to shift resources from livestock to crop production in response to policy and price changes. Australia is the world's leading supplier of wool. Historically sheep and wool production has represented a large share of Australia's agricultural receipts. The Australian

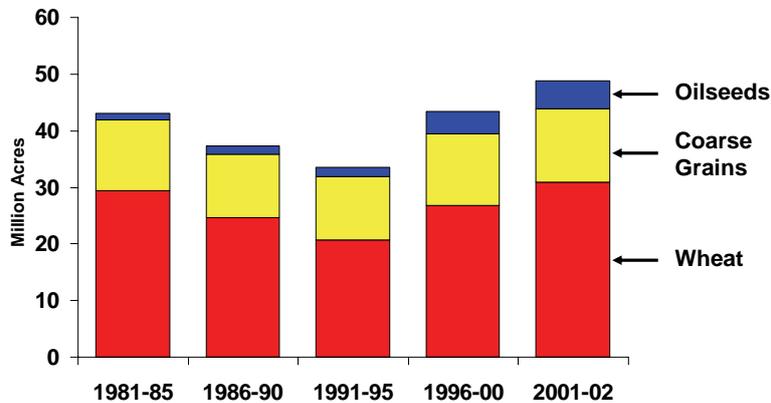


Figure 4. Australian area planted to crops, 1981-2002

government's support for wool production was slashed in 1991. Since 1991, Australian sheep inventories have declined by over 30%. Faced with declining government supports for wool, sheep farmers converted significant pasture acreage to the production of wheat and other crops.

Are the WTO colours scrambled?

The preceding discussion gets us to these questions: What if conventional wisdom is dead wrong in the case of domestic price and income programs for agriculture? What if the worldwide elimination of all of the trade distorting price and income programs that have been identified by the WTO will not or cannot achieve the expected results?

What if, after the programs are eliminated, total production and the overall price level of major crops remain virtually unchanged from current levels – as the discussion in the preceding sections would suggest? What then?

As we have seen, it is the expanding size of agriculture's productive capacity that has the most depressing effect on prices. And yet, those public expenditures that expand productive capacity, including research and extension, general infrastructure and other capacity-building activities, are classified as non-trade distorting and put into the green box. Perhaps there is a need to re-examine the WTO classification system and the conventional wisdom that is attached to it.

Is it possible that all or most of the domestic agricultural programs are assigned to boxes of the wrong colour? If judged by the degree to which a domestic program depresses prices, an argument can be made that the blue box supply control programs and the amber box price support programs belong in the green box and the research, extension and many of the programs in the green box belong in the amber box. Of course, the box designation partially depends on the how each program is administered. If supply control and price support programs were used to raise prices

well above the cost of production, the amber box comes back into the picture. If research, extension and other currently designated 'non trade distorting' activities are only invested to the extent required to maintain productive capacity and not to expand it, then such policies should logically remain in the green box. None of these possibilities seem likely.

The most striking conclusion of all this is that, given the mammoth and likely accelerating growth in productive capacity and the nature of agricultural markets, a subset of the domestic programs that the WTO and others condemn may be the very programs that are needed to prevent dumping and to achieve politically acceptable price levels, especially in developing countries. If those or other programs were accepted, most of the issues concerning government payments would be mute. First, as we have already established, government payments have little influence on total crop production. Second, payment levels would no longer be a major source of income if more price-oriented supply management policies were implemented. Third, US farmers and farmers worldwide would receive higher price prices and market incomes under supply management programs.

Unwise policy prescriptions

The 1996 change in US farm policy is a case of 'jumping from the frying pan into the fire'. Though never perfect, the historical application of the two major US commodity policy components – one expanding and the other throttling productive capacity – worked significantly better than the policies that were put in place with the adoption of the 1996 Farm Bill. One could argue that the traditional policy combination (1) was in the interest of food consumers, (2) facilitated orderly adjustments in farm scale and numbers, and (3) did not unduly disrupt farmers in developing nations by dumping excess production on the international markets. Indeed, the current agricultural policy configuration has made things worse in the eyes of farmers in developing countries and policy makers throughout the world by retaining policies to expand productive capacity and eliminating the ability to throttle that productive capacity. So what are the alternatives for US policy makers? There are a couple of alternatives that seem unwise or will not work.

It makes no sense to eliminate or vastly reduce public expenditures for research, extension, infrastructure and other activities that expand agriculture's productive capacity, even though the use of that capacity is one of the root sources of farm price and income problems. It is essential to keep well ahead of maximum demand needs not only for this generation but for generations to come. The best way to do that, given the relatively long cycle time for research, is to continue to invest in technologies that push productive capacity ever larger.

Another poor choice would be to completely eliminate *all* US commodity price and income support programs. Contrary to expectations, that approach would result in the same depressed prices and incomes for developing country farmers as the current government payment based US farm programs. Total agricultural output in the US would decline much less than most would expect. Yes, those US crops with relatively higher price and income supports compared to other crops would show a

decline in production and world prices for those crops would increase somewhat. But, the crops that were substituted onto the vacated land would experience increased production and reduced prices. The net effect would be of little to no help to farmers in developing countries. US agriculture and rural communities, on the other hand, would be severely de-capitalized.

The biggest difference between the production costs of the US and Brazil is the land charge (Baumel et al. 2000). So, for example, if the US were to eliminate completely all commodity price and income support programs, the price of US farmland would fall until production costs were in line with those of other large producers like Brazil and Argentina. With lower land costs, US farmers would be able to sell their corn at \$1.75 a bushel – a price no longer below the cost of production. If the price were to get to \$1.75 that way, would farmers around the world benefit? US farmers could no longer be accused of dumping and yet farmers around the world would still be faced with the same low prices that plagued them in the years between 1997 and 2002.

Domestic price and support policies in the US and other developed countries that do not acknowledge and address the root problems are unlikely to fulfil policy objectives. Given that (1) expanding agricultural productive capacity continues to be deemed a worthwhile public endeavour, (2) consumers do not respond to lower prices by consuming more, and (3) crop farmers do not reduce their production in response to lower prices, the challenge is to find mechanisms that hold a portion of the productivity at bay until it is needed.

Alternate policy directions that take the unique characteristics of agriculture into account

The following sections present three sets of US policies that are designed to help overcome aggregate agriculture's relative inability to self-correct following even a significant decline in market prices. They could be viewed as short-run, intermediate-run and longer-term policy alternatives. The first set is based on the presumption that US markets largely determine world prices. This is, of course, more true for some commodities than for others. Events in recent years suggest that the US still plays a dominant role in international price determination. For example, the weather-shortened yields for major crops in 2002 and 2003 and the bumper crop in 2004 in the US substantially affected international crop prices. The second set merges farm policy and elements of energy policy. As a way to minimize the use of land set-asides to raise prices, a portion of that land could be used to produce energy crops. This policy component has the equally important benefit of reducing the world's dependence on fossil fuel. The third set involves the use of multinational cooperation to throttle international productive capacity to better approximate demand requirements at prices that cover production costs.

Each of these alternatives put a brake on output to help remedy aggregate agriculture's inability to make timely market corrections on its own. With higher prices, there would be less need for price-compensating government payments to US

farmers. Prices also would be higher internationally and less 'excess' US production would be forced or dumped onto the international market.

Traditional policy instruments

The first set is a repackaging of policies that have been used in the US. It is a combination of (1) acreage diversion through short-term acreage set-asides and longer-term acreage reserves, (2) a farmer-owned food security reserve, and (3) price supports. The main objective of annual acreage set-asides is to avoid or to reduce the current tendency toward very low prices by inducing farmers to idle a portion of their working cropland. Land retirement in the form of a Conservation Reserve Program (CRP) – a tool already in use – serves to curb excess productive capacity in the long term. In identifying land to be put under CRP, farmers could select some of the most environmentally sensitive cropland. In this way they would ease the environmental burden caused by farming activities.

The second policy element, a food stock or inventory management reserve program, would reduce the occurrence and modify the size of major commodity price spikes. In exchange for a storage payment, farmers would enrol a share of their production in an on-farm storage program when prices are below a threshold level. When prices rise above the threshold, producers would be provided with an incentive to sell their reserves until the price dropped.

The third policy element, price supports, would provide an added measure to help avoid price collapses. Government price supports would be activated through government stock purchases triggered when prices fall below a threshold level. The government purchase of surplus stocks at a threshold level will eliminate the problem of dumping as long as the threshold level is set appropriately. This is in contrast to post-1996 policies, which have provided farmers with Loan Deficiency Payments (LDPs) and Marketing Loan Gains (MLGs) while allowing commodities to be sold on the world market at prices well below the threshold level.

If there is any one policy change that has made US agriculture vulnerable to the charge of dumping it is the institution of LDPs and MLGs – allowing the price to fall to so-called world levels – in the place of the traditional non-recourse loan program. The non-recourse program took low-priced grain off the market and did not allow it to flow into world markets, thus protecting farmers around the world from dumping by the US.

Our colleagues at the Agricultural Policy Analysis Center have used a simulation model to examine the impacts of this specific combination of policy measures on production levels and prices. The results of simulating these policy changes are remarkably clear: prices for the major commodities would increase from 23% for soybeans to more than 30% for corn, with rice and wheat not far behind. The general increase in the prices of all commodities would lead to net farm income levels close to and above that obtained through a continuation of the status quo, while at the same time reducing government payments significantly below the *status quo* projections, saving about \$6 to \$8 billion per year (Ray et. al. 2003, p. 46).

The \$6 billion reduction in annual government outlays would certainly be good news for US taxpayers. And most importantly, perhaps, it would eliminate dumping US products onto international markets. Because the US is the oligopoly price leader for many crops, higher US prices would be transmitted to the world market, helping to restore the prosperity for rural economies on which national economic development relies.

Intensifying agriculture's role in providing energy

Converting land into the production of dedicated bioenergy crops like switchgrass is one of the new and innovative means of addressing the need to manage the supply of storable crops. Instead of 'paying farmers not to farm' – an accusation made about acreage reduction programs in the past – a payment could be provided so that farmers would be able to provide the crop to a utility at a rate competitive with coal or bunker oil. As a perennial crop, switchgrass would help reduce soil erosion while remaining available for conversion back to crop production should the need arise. The payments could be directed in ways that strengthen farming as a livelihood strategy. The payments could also be targeted toward farmers who are within a certain radius of a co-fired electrical generation facility, leaving farmers at a greater distance to continue to grow their storable commodities.

In addition, switchgrass production could be targeted to areas facing serious disease or pest infestation by taking the land out of grain or seed production long enough to reduce the risk significantly. For instance, this could be important in nematode-infested fields for which a two-year corn–soybean rotation is not sufficient to reduce the nematode numbers.

With this approach, production levels could be managed by the diversion of acreage away from traditional tradable crops and toward the non-food, non-tradable crops such as switchgrass. When the annual set-aside was replaced with an incentive to develop a bioenergy-dedicated crop in the simulation model (retaining the farmer-owned food security reserve and price supports from the first alternative), results demonstrated overall levels of price increase comparable to those achieved by the set-aside policy. This illustrates that annual set-asides, while convenient, would not have to be a major component of the program.

Further, results similar to those demonstrated by introducing switchgrass could also be achieved by expanding the acreage enrolled in the Conservation Reserve Program (CRP). Such an approach may also contribute additional environmental benefits. Moreover, if necessary, land diverted to bioenergy-dedicated crops or placed in the CRP could be brought back into the production of major crops if unexpected weather or other events jeopardize the supply of food or if demand conditions warrant.

Multinational cooperation

Because the US is a major crop exporter and price leader, the previous two policy sets could be effective for the near future. But to sustain the improvement in farmer

income over the long term, the US would have to be joined by other major agricultural players. A longer-run set of policies that would benefit farmers worldwide is the institution of an international program of supply management for both tropical crops like coffee and bananas and staples like corn, wheat, soybeans and rice. Such a program is needed because the major market characteristics that we have described for crops like soybeans and corn also apply to tropical crops. With the end of the Coffee Agreement and the investment by the World Bank and others to expand the geographic range of coffee production as a development tool, coffee prices have collapsed.

It is important to note that this price collapse happened in a crop that the US does not subsidize, because it does not produce it. US subsidies did not cause the sharp decline in coffee prices. Rather, the price problems that plague coffee, banana, cocoa, tea, jute and rubber reinforce our contention that the elimination of US and EU subsidies will not bring about the positive results that many expect. Once again, the key is to develop mechanisms by which agricultural production can be managed in a way that benefits both consumers and producers.

There again are three elements to this policy, but at a multinational level: (1) the establishment of an international humanitarian food reserve for essential storable crops and (2) the institution of a production management program by the top producers of a given crop, (3) coupled with a storage program to maintain prices within a predetermined range for storable crops. The international supply management program would be designed to benefit farmers worldwide. Domestic and international instruments need to be designed with the purpose of managing the use of the production capacity of agriculture in the countries of both the North and the South to the extent that countries are involved in export markets for those crops. Nothing in these agreements should prevent countries from enacting policies aimed at feeding their domestic populations. Only when a country began to export surplus production would it need to be a party to international supply management agreements. The establishment of these programs needs to be done within the context of the concept of food sovereignty.

Given a price goal or a reasonable price band, these instruments would allow producers a greater utilization of the production capacity during times of high prices and a lower utilization of the production capacity when prices are depressed. With the inclusion of a humanitarian reserve, areas of the world that experience random weather, pest or disease disasters would receive help. The storage program would help provide a band within which prices could vary. These programs would reduce the financial incentive to bring sensitive land like tropical forests into crop production by guarding against the risk of extremely high prices. In this and other ways, policies could be structured to achieve environmental, community, food sovereignty and other societal benefits.

SUMMARY AND CONCLUSIONS

Current US farm policy deserves much of blame for the depressed nature of world crop prices. But contrary to the usual arguments, excess crop production and fire-

sale prices did not occur because farmers responded to payments and increased production. It occurred because the US no longer has the means to throttle its ever-expanding productive capacity or to establish a floor on commodity prices. Acreage set-asides and effective price supports are no longer part of the current US farm program, so all of agriculture's productive capacity is used all of the time.

The current US farm program does not work well because it is based on a model that treats agriculture as if it had the same characteristics as the typical manufacturing industry – it does not. The aggregate demand for food responds very little to wide swings in crop prices. Similarly, farmers do not take acreage out of production in response to, even, severe drops in price. For the markets to work in the same fashion as the typical manufacturing industry there would need to be price responsiveness on the part of supply and demand.

Recognizing this lack of price responsiveness, the US government has long enacted policies to establish a framework within which market forces could be brought to bear in the determination of crop prices. These policies took the shape of supply management programs that gave the US Secretary of Agriculture the tools to manage the total production of the US crop sector in much the same way that the CEO of Daimler-Chrysler determines the number of trucks and cars that will be produced in a given month.

Some general US policy alternatives that were identified are:

- Reinstitution of some of the traditional US farm policy instruments.
- Acreage reduction programs.
- Inventory management reserve.
- Establishment of a price band with a floor and ceiling.
- Intensify agriculture's role in providing energy.
- Gain multinational cooperation in an international supply management program.
- The following international implications were identified:
- Farmers in developing countries bore the brunt of the failure of the US to maintain its historic supply management program.
- A subset of the US supply and price support programs that the WTO and others tend to condemn may be what is needed to prevent dumping and to achieve politically acceptable price levels worldwide.
- The unique international characteristics of food and agriculture should be kept in mind when evaluating trade agreements as well as the impacts of changes in countries' agricultural policies.
- In light of the economic response and the food-security- and sovereignty-based political considerations that characterize food and agriculture worldwide, it is important to consider seriously whether the WTO colour classification system for agricultural programs and WTO's most fundamental premises with regard to the behaviour of the world's agricultural sector need to be re-evaluated.

NOTES

¹ Aggregate food consumption and per capita calorie intake will be affected somewhat with changes in the mix of food consumed as consumers respond to changes in relative prices of individual foods and

changes in tastes and preferences. Similarly, these forces may have a non-negligible affect on the intensity and mix of input use in agriculture and therefore a slight impact on total agricultural production, especially if changes in prices or in tastes and preferences shift consumption from low-input foods such as cereal to higher-input foods such as meat.

² In our view, it is not the purpose of US farm programs to lift farmers out of poverty or to allow all who want to farm to farm. Thus, if the market worked perfectly, there would be those who possess too few resources or lack sufficient management abilities to earn an 'adequate' living in agriculture. A portion of those may be eligible to receive help from other government programs.

³ Not only does acreage change little with changes in prices, application of yield-determining inputs such as fertilizer, seed population and pesticides changes only slightly too. The fact that farmers can only influence their revenue by using adequate levels of the most productive inputs is not lost on US crop farmers or those that advise crop farmers. Any savings farmers achieve from reduced use of seed, fertilizer and pesticides tends to be small compared to revenue lost due to lower yields.

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