
Review

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In This Issue . . .

On May 21–22, 1987, the Federal Reserve System Committee on Agriculture and Rural Development met at the Federal Reserve Bank of St. Louis. At this meeting, guest speakers addressed a variety of issues related to U.S. agriculture. This *Review* contains three of the papers presented at this meeting.

Despite direct federal outlays to farm programs in the range of \$20 to \$30 billion per year in recent years, we have been unable to alleviate severe farm financial stress or prevent the continuing decline in the number of family farms. In the first paper, "Farm Policy: Justifications, Failures and the Need for Reform," Thomas Gale Moore, a member of the Council of Economic Advisers, addresses the conceptual basis for a farm program. Although market failure — for example, excessive price or quantity risk that cannot be hedged through conventional market channels — often is cited as a basis for government intervention in farming, Moore notes that the government could also fail, and its costs must be evaluated against any potential benefits from intervention. He also notes that erratic or poorly designed aggregate policies can affect the farm sector through the close linkages between financial and commodity markets. Finally, after observing that the rent-seeking behavior of farmers is a major reason for the current scope and cost of farm programs, Moore acknowledges that any attempt to reform farm programs will require compensation sufficient to ease the costs of transition to a more market-oriented farm sector and overcome the political opposition of vested farm interests.

In the second paper, "Changes in Financial Markets and Their Effects on Agriculture," C. B. Baker, professor of agricultural economics at the University of Illinois, looks more closely at the linkages between financial markets and the markets for farm imports and outputs.

Baker notes that agriculture, which is capital-intensive and export-sensitive, is affected profoundly by movements in interest rates and exchange rates. The growth and integration of international financial markets has modified significantly the role of domestic financial markets in channeling the effects of macroeconomic events and policies to agriculture. In addition, he notes, a dependence on the U.S. dollar as the *de facto* currency of world trade has created severe problems for the United States; international consequences of domestic monetary policies can, and do, feed back to the United States with net negative results.

In the final article, "U.S. Farm Policy: An Australian Perspective," Geoff Edwards, senior lecturer in agricultural economics at LaTrobe University, Melbourne, Australia, points out that viewing solely the domestic consequences of U.S. farm programs ignores their important international consequences on other producing and consuming nations. Edwards compares the U.S. and Australian agricultural sectors' importance for their respective economies. He then assesses the effects of U.S. agricultural policy instruments on U.S. producers and other nations. Finally, he summarizes some evidence on the net benefits and costs of various agricultural trade liberalization schemes by the United States, Japan and the European Community.

Farm Policy: Justifications, Failures and the Need for Reform

Thomas Gale Moore

AGRICULTURE is a very important sector of the U.S. economy. It accounts for about 18 percent of our GNP, a share larger than manufacturing. Because of its size, policies that affect farm prices and output have wide-ranging effects, not only on U.S. farmers, but on foreign producers and consumers as well. For policies with effects this broad, it certainly is important to understand why they exist and the effects they have.

The general philosophical background behind our agricultural policy is largely the same as that being followed in most western countries: to increase the size and prosperity of the farm sector. It is interesting to note immediately that this philosophy is quite different in Third World countries where the objective is to tax agriculture. The reason for this philosophy, of course, is that the small urban population can exploit the more numerous rural population. In developed countries, the small agricultural population exploits the larger nonrural group. These results illustrate the public choice proposition that small groups are often in a position to tax the more general population.

JUSTIFICATIONS FOR FARM POLICIES

The case for government support of agricultural policies has several justifications. Basically, we go back to the 1930s, to the Great Depression, for the start of a major intervention by the federal government into agriculture. At that time, U.S. agriculture was de-

pressed by a combination of low product prices, increasing debt burdens and soil erosion due to drought. A major justification for aiding distressed farmers was based on the idea of equity. Traditionally, U.S. society has been based on the idea of a fair distribution of wealth. Equity is good. Disparity is bad. Farm income has lagged behind urban incomes for many decades, and concern over economically disadvantaged farmers lay behind much of the support for doing something. This is a pure income transfer argument that is becoming less and less tenable as the absolute size of all payments rises and the distribution of payments, which is based on production, falls largely on the wealthy (see table 1). Is it equitable today to transfer \$250,000 in deficiency payments to a farmer when he is worth \$2 million?

Another justification for aiding farmers is the hypothesized existence of market failures. In fact, most of the recent focus on aiding farmers has been not on agriculture's relative poverty but the difficulty of managing farms in a risky and uncertain environment. The assertion is that farming not only is more risky than other businesses, but mechanisms for hedging that risk are not available in conventional private markets. Thus, government programs have been justified in terms of reducing risks, especially risks of nature, such as drought or flood. Other factors, such as low price elasticities of demand and supply and biotechnological change also contribute to an inherent riskiness and uncertain environment faced by agricultural producers. Wide variation in commodity prices and production are offered as evidence to justify the design of price support programs and crop insurance.

Granting that these farming risks exist, however, does not necessarily justify government intervention. At a minimum, we should recognize that government

Thomas Gale Moore is a member of the Council of Economic Advisers. This paper was presented at the meeting of the Federal Reserve System Committee on Agriculture and Rural Development held at the Federal Reserve Bank of St. Louis on May 21, 1987.

Table 1

Direct Government Payments for 1986 Agricultural Programs

Program	Payments		Payees receiving over \$50,000	
	Total (millions of dollars)	Average payment to all payees	Portion of all payees	Portion received of total payments
Corn	\$6,147	\$ 8,000	6%	24%
Wheat	3,454	6,000	1	9
Cotton	1,523	14,000	12	55
Rice	814	25,000	20	61

NOTE: Data are estimates for 1986 crop year.

SOURCE: Office of Management and Budget

failure exists and must be balanced against market failure. For example, the principal reason that a private-sector mechanism for hedging risks has not been developed is government's heavy involvement in agricultural affairs. That is, government has provided price and income insurance to farmers at little or no cost, and this involvement has acted as a deterrent to the private sector supply of comparable insurance. Only recently are option markets being developed that allow farmers to purchase, in competitive markets, insurance against price decline.

Moreover, government intervention can often increase, rather than decrease, the agricultural sector's risk. Unstable monetary and fiscal policies increase risk. Trade embargoes, which may be imposed suddenly, increase risk. Constant changes in farm policy increase risk. Studies by the World Bank, for example, show that protectionism exaggerates fluctuations in farm prices. Government policies generate huge surpluses, which are stored and overhang the market, again increasing risk. Once it is recognized that government is not a perfect instrument for correcting market failures, we should turn to other schemes.

A related element that lies behind many programs is the idea of preserving "the family farm." Congress often talks about the family farm as being the backbone of all that is noble and truthful in America. We can smile a little bit about this, but the small family farm is part of the ideal Jeffersonian society. The trend in agriculture, however, is toward fewer and larger

enterprises run like commercial businesses. Most family farms now earn a significant portion of their income off the farm; hence, the applicability of this rationale has diminished. In fact, farm policies, as currently designed and administered, do very little for the family farm.

Another rationale for government intervention has been conservation of resources and environmental issues. There often exists a difference between the interest of societies at large and farmers in terms of land use and water resources, pollution, erosion and common property problems. Generally, higher support prices have induced marginal land into production; occasionally, however, programs such as the current Acreage Conservation Reserve have retired land from farming. Finally, there has been a concern about food security and reasonable consumer prices for food products. Specifically, subsidies to agriculture have been viewed as a way to increase production and, therefore, lower prices to benefit consumers, particularly low-income consumers. Also, it has been argued that government intervention in commodity markets can alleviate temporary supply shortages or provide a degree of self-sufficiency in agricultural products for the nation as whole. As we all know, programs have worked to increase production, but not to lower prices. Moreover, even if the prices of some specific commodities are lowered, consumers pay the cost of increased production or food reserves through higher taxes.

RENT-SEEKING BEHAVIOR OF FARMERS

Regardless of the particular justification for agricultural policies, however, they are currently supported principally by what economists call rent-seeking behavior. Rent seeking might be defined simply as the personal interest of a vested interest group in getting more income. In agriculture, many commodity groups have much to gain from higher support prices, production restrictions or quotas and tariffs on imports. Moreover, potential gains from such restrictions are large enough to induce groups to organize and incur the costs of lobbying for their adoption.

Because farm lobbies are very powerful, the results of rent-seeking behavior by farmers have been quite predictable. Perhaps most visible is their effect on the U.S. budgetary exposure. Last year (fiscal 1986), the U.S. government spent some \$40 billion on agriculture and related programs. This is an enormous budgetary cost that has expanded dramatically in the last few years. This large cost to the budget has been compounded by billions of dollars in consumer costs due to higher food prices. Given the incentives to produce under the stimulus of large government subsidies, the supply management bias of current programs has been doomed to failure. Stimulating production with higher target prices and fighting the predictable surpluses with acreage diversions ensure only higher taxpayer costs. Restricting output with diversions or set-asides or controlling quantities of product sold in fresh or processed form, as under marketing orders, raises food prices to consumers. Policies that attempt to restrain production through land controls also have the effect of making our farm product less sellable in the world market and reducing our exports.

THE FAILURES OF FARM POLICIES

Federal farm programs simply have failed to address the economics of social problems used to justify the aid. Farm programs do not reduce risk or reduce food prices to consumers. Moreover, as shown in charts 1 and 2, the billions of dollars of aid provided is not targeted to farmers with large debt or cash flow problems: most farmers under financial stress are in the family-farm class of \$40–\$100 thousand in annual sales, but most payments go to farms with more than \$500 thousand in annual sales. Also, we should not forget that the benefits of farm programs are capitalized into higher asset values so that, in the long run, the only true beneficiaries of farm programs are land-

owners who owned their farms prior to the adoption of a farm program or an increase in its benefits.

Much of the money spent on agriculture does not go to distressed farmers, of course, because federal farm subsidy payments are proportional to production. The largest farmers gain the largest share; thus, the government (taxpayer) assistance does not go to those most in need. In fact, as many of us have read, the largest farmers, those who get the biggest benefits, are often the richest: one farmer last year got a check for \$12 million.

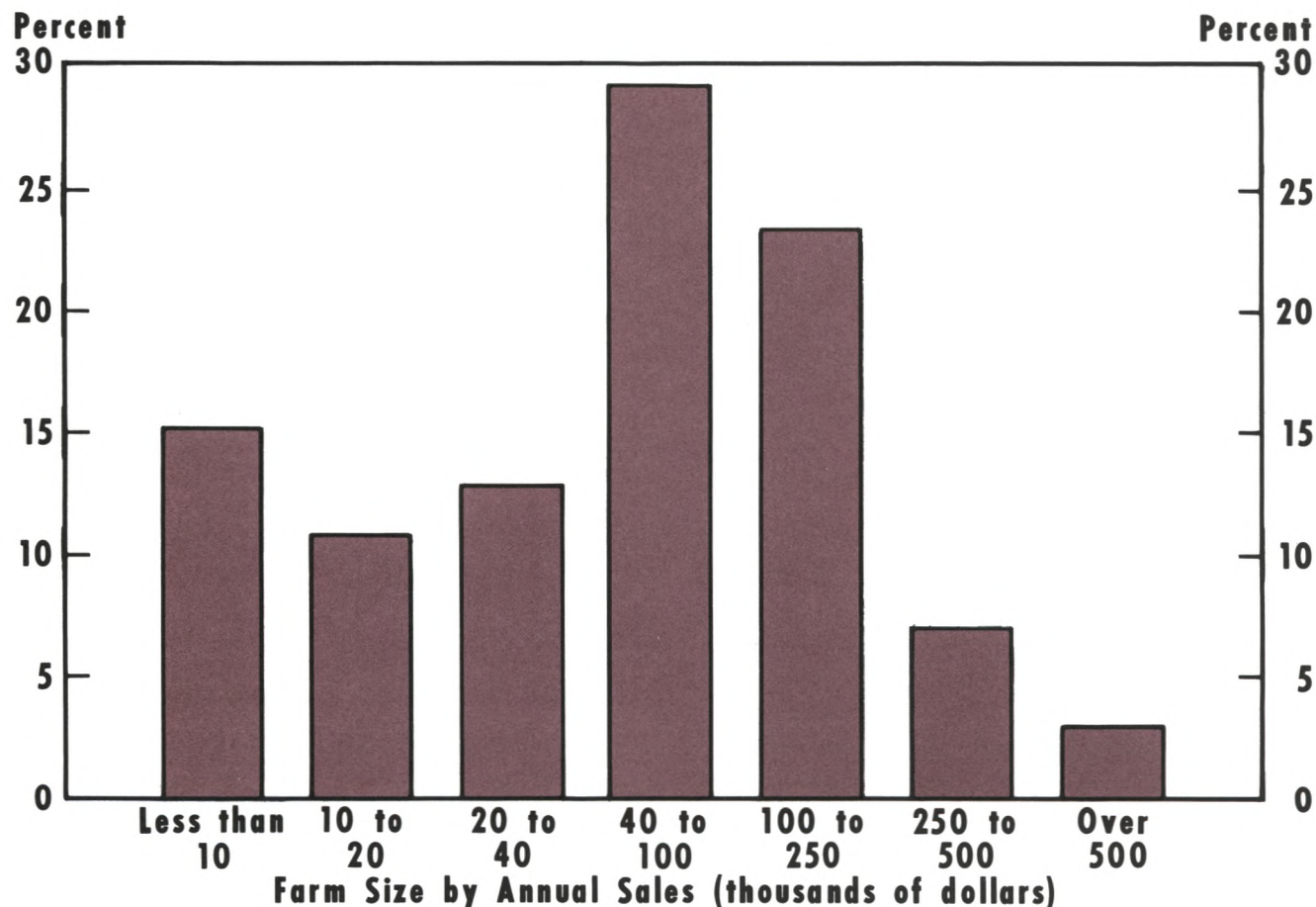
Current policy also results in economic waste. Because the subsidies are tied to production, there are incentives to overproduce. The stock of surplus commodities is left unused or sold at prices below its cost. Excess production, which must be stockpiled by the government or dumped onto world markets, imposes economic losses either through inefficient use of land or restrictions on production. Domestic and world prices are depressed as a result of these government policies, which, of course, is something we are trying to offset with higher loan rates and target prices. It also is interesting to note that similar policies in other countries have given their farmers the same signals to overproduce, generating ever-expanding worldwide grain surpluses (chart 3). The adverse side effects will be eliminated only when the incentive to produce for the government is replaced by incentive to produce for the market.

Government policies also have led to other dramatic effects not directly observable in program expenditures. Studies show that there are large costs of subsidized production due to misallocation of resources in the economy as a whole: large costs to the consumer, large financial cost to taxpayers and significant dead-weight social costs. Agricultural policies result in a greater commitment of resources to that sector than will be generated in a free market. To subsidize agriculture, other sectors are implicitly taxed. Resources are drawn out of other sectors, notably industry, to the agricultural sector. Some say that this shifting of resources has contributed to the "deindustrialization issue." In fact, some studies suggest that Europe has sacrificed up to one million manufacturing jobs due to its agricultural programs.

There are also macroeconomic effects. Money and commodity markets are linked. Shocks from one market spill over into the other in terms of price changes and output. These policies have had a dramatic effect, for example, on land prices. In some countries, such as Japan, they've had significant effects. Japanese agricultural policies have effectively bid up the price of

Chart 1

Distribution of Financially Distressed Farms by Sales Class, January 1, 1986



NOTE: Financially distressed farms are defined as those with debt/asset ratio over 40 percent and negative cash flow.

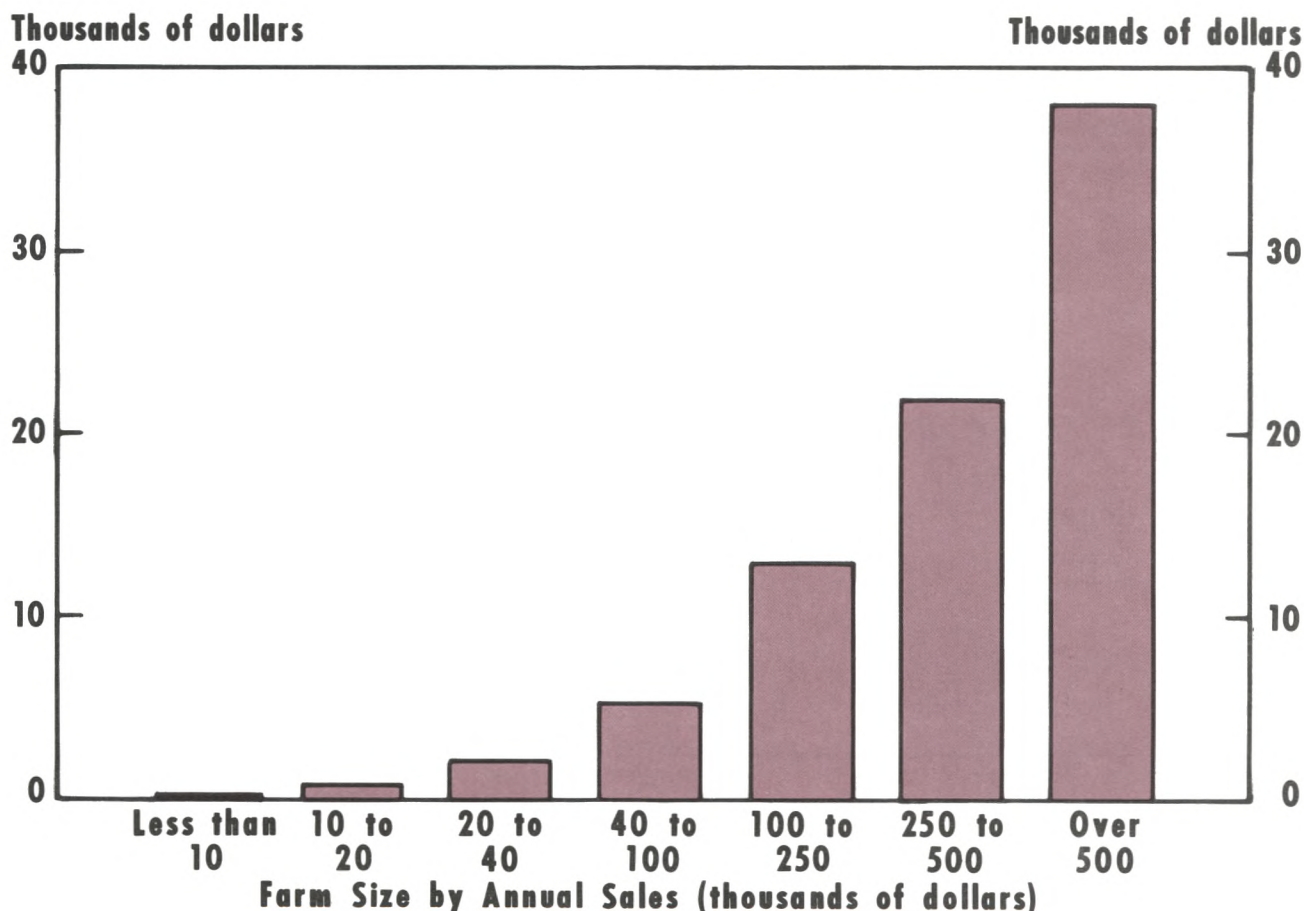
Source: U.S. Department of Agriculture

land in Japan and increased housing costs substantially. The European Common Market has developed programs to subsidize the export of its surplus farm products and, as a result, we have the export enhancement program in the United States, which subsidizes our agricultural exports. So, at this point we are into a "subsidy war" with the Common Market. Other commercial exporting countries have been caught in the crossfire of this subsidy war. Recently, we've subsidized the Soviet Union in grain sales, and it now will be

true that one can buy grain cheaper in Moscow than in Chicago. We developed the marketing loan concept for rice, which effectively subsidizes the export of rice abroad; this has hurt the market for Thailand, one of our major allies in Southeast Asia. This war of subsidies now is hurting not only our taxpayers and other exporting countries, but is benefitting the main importers, such as the Soviet Union. The result is a set of farm programs that contradicts many of our foreign policy objectives.

Chart 2

Average Direct Government Payments per Farm by Sales Class, 1985



Source: U.S. Department of Agriculture

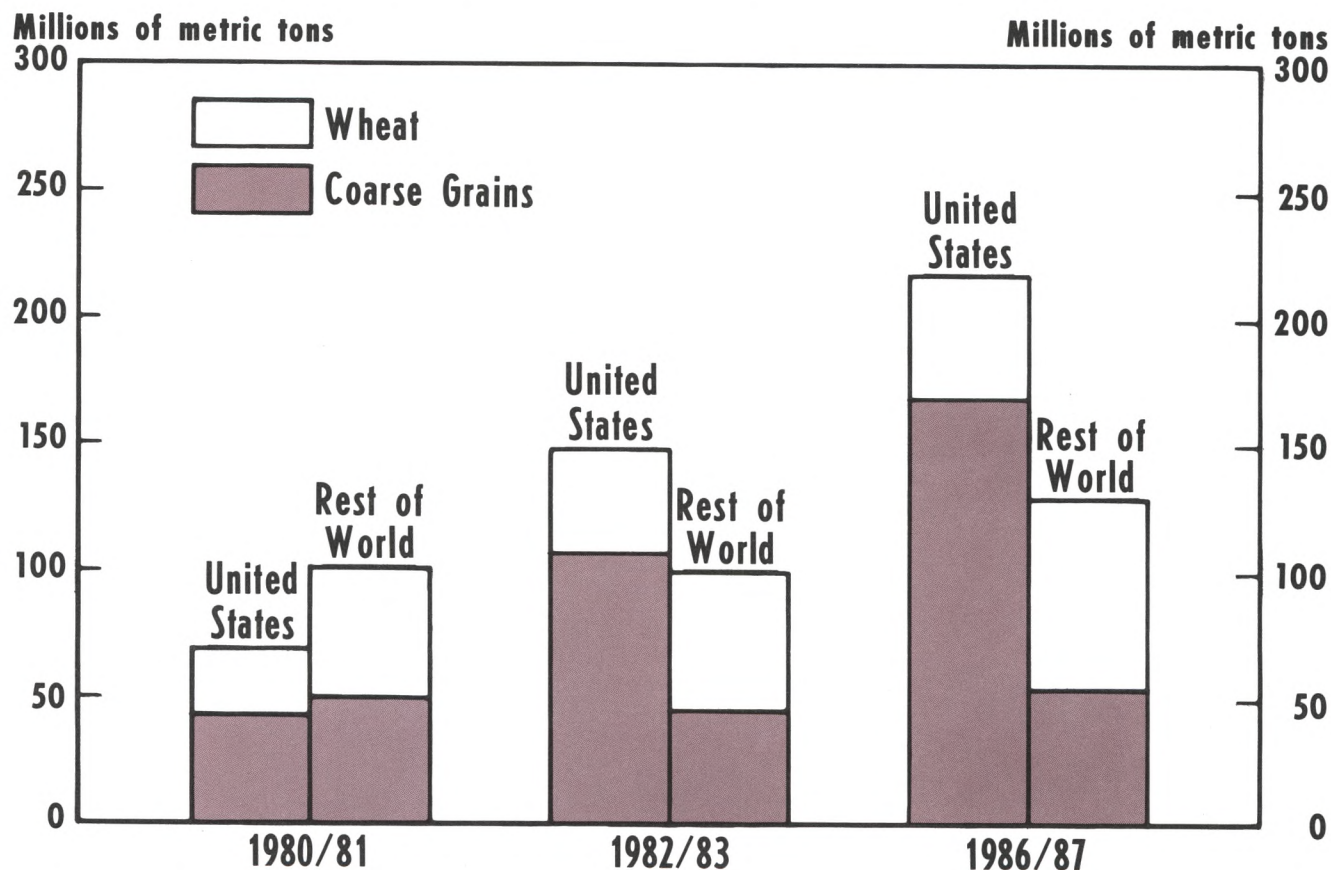
THE PROSPECTS FOR REFORM

In matters of farm policy, as the comic strip character Pogo used to say, "We've identified the enemy and it is us." As we've seen, domestic programs have been justified by a variety of concerns but remain in place largely because of special economic interests. Although these policies have resulted in great and costly economic distortion, I would suggest that focusing reform on U.S. domestic farm policies alone, in terms of their design and cost, has not been a fruitful way to go and won't work in the future. The U.S. must recognize that our agricultural sector is inextricably bound

with the world's agriculture trade, economic growth and policies of other countries. U.S. farmers and those interested in farm policy must deal with the fact that international forces play a critical role in determining farm prices, income, exports, imports and the health of our agricultural sector. Due to the pain associated with government price distorting interventions and the resulting chronic surpluses, the reform of U.S. farm programs today is widely considered a necessity. Moreover, when you start spending the monies we've been spending (the Common Market spent about \$23 billion last year, nearly as much as the United States),

Chart 3

Carryover Stocks of Coarse Grains and Wheat



NOTE: Data are for crop years; 1986/87 data are preliminary estimates.
Source: U.S. Department of Agriculture

there is potential for reform of agricultural policies in other countries as well. A brief summary (table 2) of farm programs in effect in the United States and abroad clearly indicates there is plenty of reform to be adopted by all.

Last year at the Tokyo economic summit, world leaders agreed that agricultural policies were in need of reform. The ministerial declaration at Punta Del Este, which launched the new GATT round of trade talks, made agriculture a top priority for reform and promised to examine both direct and indirect subsidies affecting international trade. This spring, the secretary general of the OECD released an interim report on agriculture. It said that "the causes of the present crisis are rooted in domestic agricultural poli-

cies. Key to reform is emphasis away from price supports." The United States has tabled a proposal in the new GATT round to eliminate all agricultural subsidies and to allow free trade in agriculture by the year 2000.

The approach to reform discussed most often is *decoupling*. Decoupling removes subsidies from production and directs farm benefits to those in need by giving them income support directly. This approach does not distort market prices and give false signals to overproduce; thus, the surplus problems are eliminated. Moreover, the aid is targeted to those in need, rather than those who merely produce the most. Finally, resources employed in agriculture will be there

Table 2

Sources of Producer Support Equivalents for Selected Countries and Major Commodities, 1982-84

Commodity	Japan	European Community	United States
Grains	State trading	Price supports maintained by intervention purchases Variable levy Export refunds	Deficiency payments PIK entitlements CCC inventory operations and commodity loans
Oilseeds	Deficiency payments	Deficiency payments	CCC inventory operations and commodity loans
Dairy	Price supports through government stockholding and trade barriers Some deficiency payments	Price supports maintained by intervention purchases Variable import levies Export refunds	Price supports maintained by tariffs, quotas and government purchases
Livestock	Beef: Quotas Tariff Domestic price stabilization Pork: Variable levy Poultry: Tariff	Price supports maintained by intervention purchases Variable import levies Export refunds	Beef: Tariff Other: General (research and development, inspection, etc.)
Sugar	Price stabilization Import levy	Price supports maintained by intervention purchases Variable import levies Export refunds Production quotas	Price supports Import quotas

SOURCE: Department of Agriculture, Economic Research Service

because, at market-determined prices, farm production is their highest-valued use. According to the OECD, government-induced distortions are the cause of the problem and only their removal will provide a cure. Recently, the OECD ministerial met in Paris and produced a communique on agriculture. That communique also reaffirmed that the cause of the current agricultural problems is public policy. The policies that prevent an adequate transmission of market signals to farmers lead to rising surpluses and declining prices and farm incomes. Thus, it is now being accepted internationally that public policy is a cause of the chronic surplus.

The communique also provided guidelines for reform. First, a long-term objective is to allow market signals to influence the orientation of production, which will better allocate resources. Second, consideration must be given to non-economic factors such as food security. Third, the communique endorsed decoupling, that farm income support should be made through direct income support targeted to farmers in need and not linked to production.

Critics of such proposals argue that the immediate costs to farmers of dismantling the protection afforded by price supports and production controls will

be too great. Therefore, we need to know several things about compensation schemes: how they can ease the pain of adjustment; how they can counter effective political opposition to reform; how compensation can be based on the losses from policy changes; and how such schemes can be designed to reduce the moral hazards that might accompany these policy changes. One example of how these compensation issues can be addressed is the administration's sugar reform package that was sent to Congress this spring. In this

package, compensation is to be offered to sugar producers over a four-year period of time in exchange for lower support prices. Compensation will be costly — in the multiple millions of dollars for some sugar producers — but the distortions and long-run cost of sugar programs that could be reduced provide benefits way in excess of these short-run payments. And, in fact, it is possible to compensate farmers for giving up their price supports and at the same time benefit both consumers and taxpayers.

Changes in Financial Markets and Their Effects on Agriculture

C. B. Baker

THE boom in U.S. farm income and wealth from 1971–80 raised proprietor's equity in the farming sector to an unprecedented \$1,065,441 million at the end of 1979, expressed in terms of 1986 dollars. By the end of 1986, proprietor's equity had been about halved to a level only about \$2 billion more in 1986 dollars than it was at the end of 1959.¹

The total value of farm sector assets in 1986 dollars also peaked in 1979, at \$1,280,712 million. Total sector debt did not peak until 1982, at \$227,615 million. Farm real estate value peaked as well in 1982, at \$978,338 million. It then declined to \$506,791 million by the end of 1986, only a half million more than it had been at the end of 1965.²

Agriculture is affected by changes in both domestic and international financial markets. The changes in financial markets in the past two decades have been dominated by the deregulation of domestic markets, the growth and integration of international markets, and the technologies of information management, interacting with the other two changes.

Like all markets, financial markets carry information as well as resolve terms of exchange. Deregulation has reduced the repression of information and has accel-

erated product innovations and changes in management practices in financial markets. Such responses have created startling changes in the structure and performance of both domestic and international financial markets, with more doubtless to come.

Agriculture is capital-intensive and export-sensitive. It is affected profoundly, therefore, by interest rates and exchange rates. Interest rates are important to the cost of debt service and the value of durable assets, especially land. Because exchange rates influence the demand for farm exports, they are important to the trade and prices of farm commodities and thus to farm income.

The growth and integration of international financial markets has modified the role of domestic financial markets in channeling the effects of macroeconomic events and macroeconomic management to agriculture. The macroeconomy of the United States interacts with the macroeconomy of other countries in a worldwide system that determines interest rates and exchange rates. The interaction is especially intense with countries related to the United States through trade and developmental issues, and involves multilateral financing institutions as well.

The massive effects outlined in the opening two paragraphs are linked substantially with changes in financial markets. This paper will emphasize the international setting for the linkage, prefaced with a brief review of the role of agriculture in economic development, owing to the importance of economic development issues among factors that bear on the future performance of U.S. agriculture.

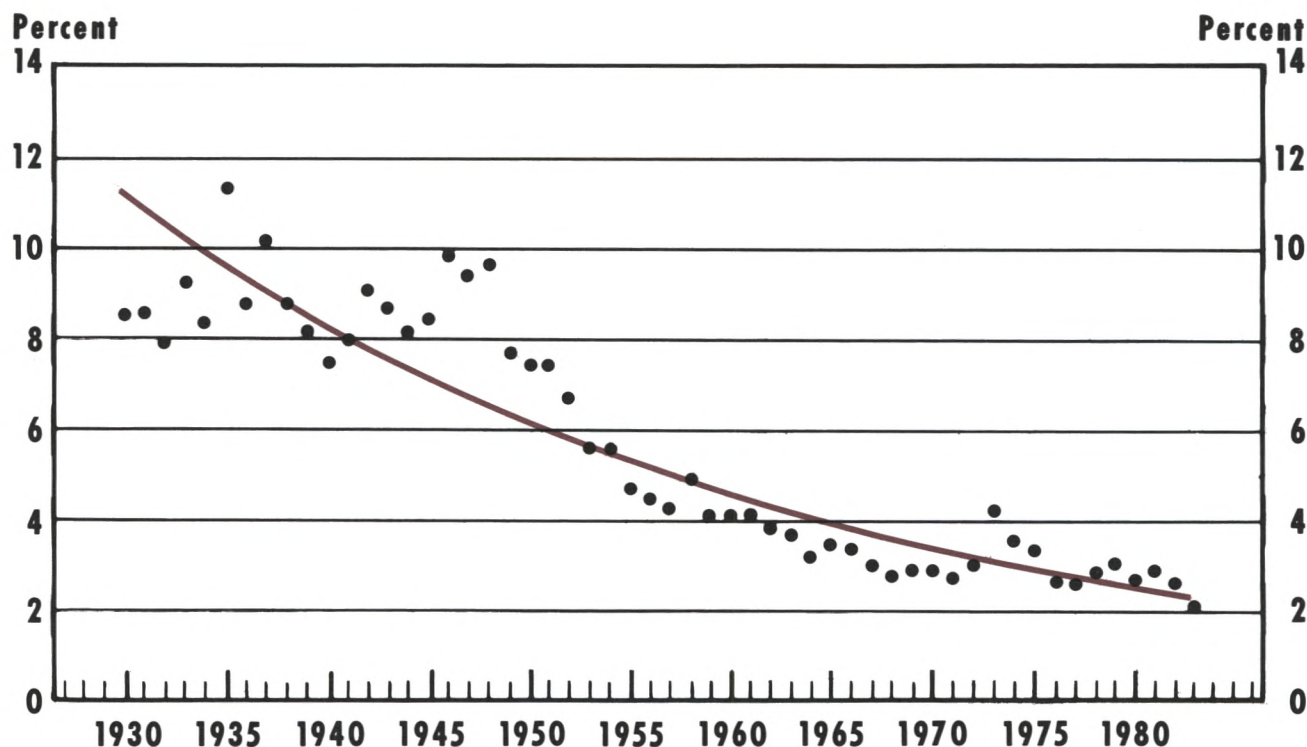
C. B. Baker is a professor of agricultural economics at the University of Illinois, Urbana-Champaign. This paper was presented at the annual meeting of the Federal Reserve System Committee on Agriculture and Rural Development held at the Federal Reserve Bank of St. Louis on May 21, 1987.

¹See Melichar (1987).

²Ibid.

Chart 1

National Farm Income as a Percentage of National Income



Source: Adapted from ERS, Economic Indicators of the Farm Sector: Income and Balance

Sheet Statistics, 1983, ECIFS 3-3, USDA, September 1984. Trend = $\exp^{2.4393-0305t}$;
 $r^2 = .8852$; SEE = .0015.

AGRICULTURE IN ECONOMIC DEVELOPMENT

Perhaps nowhere in the world is the record of how agriculture affects and is affected by economic development more clearly revealed than in the United States. The key is in resources made surplus by increasing agricultural productivity. In market-led economic development, agriculture is told by chronically declining terms of trade that economic development requires a continuing diminution in the share of the nation's resources allocated to agriculture. This is what is revealed in the data of chart 1. Since 1930, farm income as a percentage of national income has declined an average of 16 basis points per year. The trend now has flattened to a ratio of near 2 percent.

Half the explanation is found in secular increases in agricultural productivity. The process releases resources from primary production to other sectors and thus provides the necessary condition for economic growth and development. It also shifts supply curves for food commodities positively across demand curves that are low in price elasticity, thus explaining much of the price instability that is chronic for food commodities.

The other half of the explanation is found in Engel's Law. Engel's Law says that, as income increases, the proportion spent for food commodities decreases. Secular increases of income produce a continuing decline in the income elasticity of demand for food commodities. Income elasticities of demand for food

commodities are near zero in the United States and other more-developed countries while still high in less-developed countries with low incomes.

Trendwise deterioration in agriculture's terms of trade does not imply a trendwise decline in the economic well-being of U.S. farmers. No one has a problem identifying the 1960s as more prosperous for U.S. farmers than the 1930s, despite observations below the declining trend in the 1960s. Owing to adjustments in response to the declining terms of trade, there are, trendwise, fewer farmers to share in the aggregate of farm income. Chart 1 also reveals positive as well as negative variations from the trend. Variations to either side create expectations all too readily capitalized into land values that then have lagged effects on the welfare of those who buy under such expectations.

There is little in these propositions that cannot be found four decades ago in T. W. Schultz' *Agriculture in an Unstable Economy*, and further elaborated two decades ago by E. O. Heady, in *Agricultural Policy Under Economic Development*.³ Subsequent observations simply support the early insights they provided. What is new, especially in the past two decades, is the internationalization of the propositions, owing to the spread of agricultural technology, the consequent spread of economic development, and the conversion of closed economies into open economies, especially through the internationalization of financial markets.

INTERNATIONAL ASPECTS OF U.S. AGRICULTURE

The U.S. food and fiber system accounts for about one dollar in five spent in the United States. The farm component is only 13 percent of the system. The farm component and the system as a whole is thoroughly internationalized.⁴ Farmers buy from farm suppliers who sell into export markets as well as to farmers. Farmers share a U.S. domestic commodity market with foreign producers. As U.S. farmers sell into export markets, they compete with both local producers and producers in other exporting countries. International trade is managed by multinational firms, augmented by a complex of state and parastatal agencies.

The U.S. food and fiber system, farms included, are financed through financial markets that produce in-

terest rates influenced by capital-intensive economic development in Asia and elsewhere, as well as in urban U.S.A. Our own tight monetary and loose fiscal policies during the early 1980s revealed consequences that spilled readily over national boundaries, affecting interest rates everywhere, and the exchange value of the U.S. dollar. Debt service burdens Third World countries, influencing their demand for U.S. exports and threatening the solvency of international lenders, as the solvency of rural leaders is threatened by financially stressed U.S. farmers. We have one-world commodity and financial markets. They transmit shocks that heavily influence the U.S. food and fiber system and the economic welfare of firms, families and communities throughout the system.

A still smaller part of the food and fiber system is represented by research and development (R&D). Yet agricultural R&D, U.S. and elsewhere, has a tremendous impact on economic development. The impact is on the demand side as well as the supply side for agricultural commodities. Economic development requires an economic surplus that can be tapped for investments to generate economic growth. In much of the developing world, as in 19th century United States, agriculture is the likely source in which the surplus can be produced. Agricultural R&D is the triggering mechanism. An economic surplus in agriculture is a necessary condition for economic development in countries still largely rural.

The sufficient condition for economic development is using the surplus to develop other sectors in such ways as to generate continuing growth in per capita incomes. The demand for food commodities will follow. If comparative advantages are consistent with economic development outside agriculture, the demand will be for food imports. Indeed, this is the most promising remedy for the plague of chronic hunger, largely unabated in the world despite the well-publicized, worldwide glut of food commodities.

FINANCIAL MARKETS AND TRADE

A significant consensus links the historic boom in U.S. farm commodities during the 1970s to increased demand for U.S. farm exports, triggered by the declining exchange values of the U.S. dollar in that decade. It was easy to argue, therefore, that the historic bust in U.S. farm commodities from 1981 through 1984 could be explained by the increasing exchange values of the U.S. dollar in that period. Since February 1985, the exchange values of the U.S. dollar have declined again — by nearly 50 percent with respect to the yen, for

³See Schultz (1945) and Heady (1962).

⁴See Baker (1987).

example. The puzzle is in the apparent failure of demand for U.S. exports to respond more readily than it has to this second reversal in the exchange value of the U.S. dollar.

Observations that fail to confirm predictions of widely accepted theory lead to questions on (1) the accuracy of the observations, (2) the assumptions and logic with which the theory is applied and (3) the theory itself. All three responses can be found in a burgeoning literature on exchange rates and trade.

In a recent doctoral dissertation, Dr. Dimitrios Baroutis found that, over the past two years, the U.S. dollar has *not* depreciated in terms of the currencies of competing wheat exporters.⁵ Deborah Olivier, in the *Wall Street Journal*, January 30, 1987, reported that the U.S. dollar had in fact *appreciated* by 35 percent with respect to currencies of countries that export "food and live animals."

In the same issue of the *Wall Street Journal*, Professor Ronald I. McKinnon noted that, over the two-year interval, exports from Japan *had* indeed declined, as predicted by the theory. But, owing to the negative effects on Japanese incomes, imports to Japan had declined still more. The result is the apparent paradox of an increasing trade surplus for Japan in the presence of an appreciating yen and a lagging response in Japan to lowered prices of imports from the United States. In a letter to the editor of the *Wall Street Journal*, dated February 2, 1987, Lawrence Kreicher of Irving Trust suggested that the appropriate question is "what would be the trade deficit had the dollar not been depreciated?" His calculations suggested about 15 percent higher than in fact it was over the two-year period.

Our capacity to explain the failure of 1985–1987 to look like 1973–1980, or to reverse the adverse agricultural trade events of 1981–1984 is somewhat limited, even after correcting for possible errors in observations. There *may be* something to the common belief that institutional rigidities preclude the adjustments predicted by the theory to restore trade equilibrium. However, why did they not also preclude the previous sharp turning points in the early 1970s and the early 1980s? There likely is much to the belief that positive supply shifts outside the United States for crops important in U.S. farm exports, at least in the short term, are irreversible. Insofar as the shifts occur in low-income countries, the evidence suggests that subse-

Table 1

External Accounts of Selected Economies: 1985 (billions of U.S. dollars)

Economy	Current Account	Capital Account	Changes in Reserves
World	–\$80.6	+\$73.6	+\$7.0
MDCs	–53.4	+57.3	–3.9
United States	–117.8	+123.4	–5.6
LDCs	+16.3	–27.2	+10.9

SOURCE: International Monetary Fund, *International Financial Statistics*, 1986.

quent economic development will in fact ultimately increase the demand for U.S. farm exports, and thus, eventually will be a positive factor for U.S. agriculture.

Perhaps more important is the fact that our expectations rest on the heritage of a purchasing power parity (PPP) theory that focuses on adjustment processes in the current account, dominated by the trade balance, and emphasizing relative prices of tradeables between countries and of tradeables and nontradeables within countries. In 1985, the volume of commodity transactions in world trade was about \$U.S. 3.0 trillion. In contrast, the volume of world trade in financial assets was about \$U.S. 110 trillion. The relative volumes suggest that trade in financial assets, reflected in the capital account, has come to dominate trade in goods and services as a source of change in exchange values of national currencies, and also adjustments to variations in those exchange rates.

To examine the capital account requires a brief digression into a simplified open-economy version of macroeconomics. The gross national product of an economy is given by:

$$\text{GNP} = C + I + G + (X - M),$$

where C equals consumption

I equals investment,

G equals net government expenditures,

X equals exports, and

M equals imports.

$X - M$ is the trade balance, the principle component of the current account. $I = S$, savings. Much of savings for the United States occurs outside the United States. The resulting capital inflow produces a capital account that is highly positive: \$U.S. 123.4 billion in 1985 as shown in table 1.

⁵See Baroutis (1986).

For any economy, the current account equals the capital account, plus or minus changes in reserves. Thus the large surplus on capital account for the United States contributes much of the offset for the large deficit on current account (minus \$U.S. 117.8 billion in 1985). Indeed the U.S. current account has been highly negative since 1981, the last year with a positive trade balance. Two observations are important relative to table 1: (1) the LDCs (less-developed countries) in aggregate are running positive current accounts and, therefore, are flowing capital to the MDCs (more-developed countries), notably the United States, and (2) in 1986, the United States became the world's largest debtor nation.

Just as PPP focuses on commodity trade and prices, interest rate parity (IRP) centers on trade in financial assets, and on interest rates and exchange rates. PPP proposes that commodity prices respond to changes in currency values so as to leave unchanged the ratio of home to foreign price levels. IRP proposes that changes in home to foreign interest rate differentials leave relative currency values unchanged, owing to counter-balancing changes in expected inflation rates and risk premiums.

The appeal of IRP is supported by a logic that says financial assets are highly substitutable between jurisdictions of the financial assets and independent of the currencies in which they are denominated.⁶ The evidence suggests that, if denominated in the same currencies, differences in jurisdictions do not impede substitutions among financial assets. If denominated in different currencies, however, the differences in jurisdictions do appear to impede substitution among financial assets.

The most plausible explanation for this difference is in the risk premium. Despite large trade and fiscal deficits, the U.S. dollar persisted strong relative to the yen, the Deutsche mark, the British pound, etc. from 1981–1984. Currently, Japanese demand for U.S. financial assets has remained strong despite grievous losses associated with converting depreciating U.S. dollars into yen.

The disciplines enforced upon other countries in both the current account and capital account are restrained for the United States because of the unique role of the U.S. dollar in international relationships, notably in the denomination of international contracts related to commodity trading and of financial

Table 2

Exchange Rate Arrangements, by Group of Countries, as of December 31, 1985

More-Developed Countries

- 7 with independently floating
- 4 with managed floating
- 2 with pegged

Less-Developed Countries

- 8 with independently floating
- 17 with managed floating
- 31 with exchange rates pegged to the U.S. dollar
- 12 with exchange rates pegged to the SDR
- 14 with exchange rates pegged to the French franc
- 35 with exchange rates otherwise pegged

SOURCE: International Monetary Fund, *Exchange Rate Arrangements and Exchange Rate Restrictions*, Annual Report 1986, page 8.

assets traded internationally. The U.S. dollar is the world's principal reserve currency. While a depreciating U.S. dollar does weaken its use as a reserve currency, there appears to be no readily available substitute at a relevant scale of use in international transactions.

CURRENT EXCHANGE RATE ARRANGEMENTS

Current exchange rate arrangements commonly are referred to as flexible. In fact, they consist of a combination of flexible, fixed and managed exchange rates. Among the currencies of the 148 members of the International Monetary Fund (IMF) on December 31, 1985, only 15 could be described as independently floating (see table 2).⁷ These 15, however, include such major currencies as those of Japan, the United Kingdom and the United States. An additional 31 countries have currencies that are pegged to the U.S. dollar.

The European Community (EC) has evolved the European Currency Unit (ECU), a basket of currencies that includes the currencies of France and West Germany as well as six other EC countries. Although the individual currencies do not float independently (beyond a range of 4.5 percent), the ECU does. Moreover, the currencies of 14 more countries are pegged to the French franc alone.

⁶See Cooper (1986).

⁷See International Monetary Fund.

The IMF's Special Drawing Right (SDR) also is a basket of currencies. It is based upon five national currencies (U.S. dollar, Deutsche mark, French franc, British pound and the Japanese yen). The currencies of 12 countries are pegged to the SDR. Thus 79 of the nearly 148 currencies of IMF members are pegged or otherwise closely related to the floating currencies of the United States, EC and Japan.⁸ Much of the world trade in both commodities and financial assets is transacted in these currencies.

POLICIES THAT TARGET EXCHANGE RATES

The monitoring role of the IMF frequently places it in a key position with respect to countries with problems in external accounts, notably external debts to be serviced or renegotiated. The exchange rate is a common policy target in conditionality programs of IMF, owing to the effect it has on adjustments reflected in the current account.

Both PPP and IRP suggest that a nominal devaluation, a remedy commonly suggested, is quickly offset by price changes for commodities and financial assets to restore the original parities in the absence of other macroeconomic measures. The other macroeconomic measures include controlled growth of domestic money and reduced fiscal deficits. But the size of the required reductions in fiscal deficits have been found by Kahn and Lizondo to depend on the policies adopted.⁹ It is larger if the deficit is reduced with increased taxes than if the deficit is reduced with decreased expenditures. If the deficit is reduced with decreased expenditures, the required reduction is less if targeted toward sectors producing tradeables than if targeted toward sectors producing non-tradeables.

THE CURRENT AGENDA

It is an understatement to say that many important issues remain unresolved. There now is a clamor to return to fixed exchange rates. But there is little agreement on parities in which they are to be fixed — or disciplined. Some call for a return to a gold standard. But there is little agreement on values to assign to gold.

Dependence upon the U.S. dollar as the *de facto* currency of world trade creates severe problems for the United States as well as other countries. Monetary policy to meet U.S. objectives is not always consistent with world needs in terms of U.S. dollars. International consequences of domestic monetary policies can and do feed back to the United States with net negative results.

But there is little agreement on an alternative. Countries with alternative currencies appear too small relative to the world to provide the liquidity required of a world trading currency. There also must be general acceptance of the reserve currency as a medium of exchange and store of value.

A potential alternative is the SDR. Much remains to be done, however, for the SDR to succeed as a world trading currency. It is not now widely used as a means of settling transactions. Governments of member countries of the IMF are not soon likely to arrive at an agreement on terms that would provide for the transfer of sovereignty required to make the IMF the world's "central bank."

The state of knowledge on how trade relates to exchange rates also remains at a primitive level. Much of what is thought to be known has been achieved with the use of models of commodity and financial markets that in retrospect are highly deficient. There has been a slow but hopeful movement from single-market partial equilibria to tradeables/ non-tradeables markets in general equilibrium; from simple models of bilateral exchange rate determination to multilateral models that include capital flows and income determination; and, largely in the future, joint determination of exchange rates, trade balances and prices, linked with macroeconomic policy variables and information on the all-important time lags.

It is not surprising to discover that the modeling is complex. So is the system. So are the data requirements and the computing requirements. Yet progress is imperative as the international financial markets grow in size, integration and impact on capital-intensive sectors that are sensitive to exports. The problems are urgent, and progress toward their resolution is slow. Nowhere is this more evident than for U.S. agriculture.

REFERENCES

- Baker, C. B. *Current Financial Stress: Sources and Structural Implications for U.S. Agriculture*, W. I. Myers Memorial Lecture (Cornell University, January 1987), p. 28.

⁸The number of currencies is less than the number of countries because of shared currencies among certain countries.

⁹See Khan and Lizondo (1978).

- Baroutis, Dimitrios. *Triangular Exchange Rate Parities and U.S. Wheat Exports*, unpublished Ph.D. thesis (University of Illinois, Urbana-Champaign, 1986), p. 229.
- Cooper, Richard N. "Macroeconomics in an Open Economy," *Science*, 233:4769 (September 12, 1986), pp. 1155-159.
- Economic Research Service. *Economic Indicators of the Farm Sector Income and Balance Sheet Statistics*, EC IFS 3-3 (USDA, September 1984).
- Heady, E. O. *Agricultural Policy Under Economic Development* (Iowa State University Press, 1962), p. 682.
- International Monetary Fund. *Exchange Arrangements and Exchange Rate Restrictions*, Annual Report 1986.
- _____. *International Financial Statistics*, 1986.
- Khan, Mohsin, and J. Saul Lizondo. "Devaluation, Fiscal Deficits and the Real Exchange Rate," *Economic Review*, World Bank, 1:2 (January 1978), pp. 357-74.
- Kreicher, Lawrence. *Wall Street Journal*, February 2, 1987.
- McKinnon, Ronald I. *Wall Street Journal*, January 30, 1987.
- Melichar, Emanuel. *Agricultural Finance Data Book* (June 1987), pp. 5 and 11.
- Olivier, Deborah. *Wall Street Journal*, January 30, 1987.
- Schultz, T. W. *Agriculture in an Unstable Economy* (McGraw-Hill, 1945), p. 299.

U.S. Farm Policy: An Australian Perspective

Geoff Edwards

PRESIDENT Reagan has said United States farm programs are inefficient, costly and unfair.¹ The Australian prime minister, Mr. Hawke, agrees with that assessment, and considers it applicable to the European Economic Community and Japan also.

This paper compares the role and the recent situation of agriculture in the United States and Australia, assesses the international impact of U.S. farm policy and discusses possible approaches to reducing protection for agriculture in the United States and elsewhere in the world.

UNITED STATES AND AUSTRALIAN FARMING: A BRIEF COMPARISON

The relative importance of farming in the United States and Australian economies from 1957 to 1987 is shown in table 1. Farming's contribution to GNP fell from 4 percent to less than 2 percent in the United States; the fall in Australia was from over 14 percent to less than 4 percent. While the share of farming in employment was 50 percent higher in each country than the recent farm GNP component, it also fell substantially, especially in the United States over the three decades shown.

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¹See Council of Economic Advisers (1987).

Table 1

Share of Farming in GNP and Employment, United States and Australia: 1957-87

	United States		Australia	
	GNP	Employment	GNP	Employment
1957	4.1%	9.3%	14.2%	n.a.
1967	2.7	5.2	9.8	8.5%
1978	2.7	3.5	4.1	6.1
1979	2.9	3.4	5.9	5.9
1980	2.4	3.4	6.1	6.0
1981	2.6	3.4	5.1	6.0
1982	2.4	3.4	4.7	6.0
1983	1.7	3.4	3.3	6.3
1984	2.1	3.2	4.7	5.9
1985	1.9	3.0	4.2	5.7
1986	1.6	2.9	3.8	5.9
1987	n.a.	n.a.	3.8	5.6

n.a. = not available

SOURCE: *Economic Report of the President (1987)*, BAE, *Quarterly Review of the Rural Economy* (September 1987).

The percentage contributions of farm exports to total merchandise exports in the two countries are shown in table 2. This contribution was generally more than twice as high in Australia as in the United States. The proportionate fall in agriculture's share of exports over the decade to 1986 was higher in the United States than in Australia.

Table 2

Share of Farm Exports in Total Merchandise Exports, United States and Australia: 1976-87

	United States	Australia
1976	20.3%	45.5%
1977	20.1	45.5
1978	20.7	43.2
1979	19.1	42.7
1980	19.2	44.9
1981	19.1	44.3
1982	18.1	41.0
1983	17.9	34.5
1984	18.3	34.9
1985	14.8	35.4
1986	13.0	35.5
1987	n.a.	34.1

n.a. = not available

SOURCE: ERS, *Agricultural Outlook* (March 1987, Yearbook Issue), BAE, *Quarterly Review of the Rural Economy* (September 1987).

Putting the shares of farm exports in total (merchandise) exports together with the shares of exports in GNP (4.8 percent in the United States in 1986 and 14.1 percent in Australia) indicates that the Australian economy is affected to a much greater relative extent than is the U.S. by developments in world markets for farm commodities.

For most of the 1980s, farm income in the United States and Australia has been depressed. This shows up most clearly by comparing deflated (or real) farm income in the 1980s and the 1970s (see table 3). Only in 1987 is United States real farm income expected to reach the levels it attained the second half of the 1970s, after being well below them until 1985. In Australia there is more ground to make up. Real farm income in 1987 was less than half its level in the second half of the 1970s, with a rise to 60 percent being expected in 1988.

The proportionate increase in farm indebtedness has been much greater in Australia than in the United States (table 4). From 1976 to 1987, farm indebtedness in Australia rose faster than the 9 percent a year increase in the consumer price index, while farm

Table 3

Farm Income in the United States and Australia: 1970-88

	United States		Australia	
	Total net farm income (billions of U.S. dollars)	Index of deflated total net farm income	Total net farm income (billions of Australian dollars)	Index of deflated total net farm income
1970-74 (av.)	\$22.1	195	\$1.5	148
1975-79 (av.)	23.6	149	1.9	135
1980	16.1	80	4.2	183
1981	26.9	122	3.1	125
1982	23.5	122	2.8	100
1983	12.7	52	0.6	19
1984	32.0	126	3.6	109
1985	32.3	124	2.9	85
1986	37.5p	140p	2.0	54
1987	44.0e	157e	2.6p	64p
1988	n.a.	n.a.	3.5e	81e

n.a. = not available, p = preliminary, e = estimated

NOTE: Total net farm income for Australia is equal to the gross value of rural production minus farm costs.

SOURCE: ERS, *Agricultural Outlook* (November 1987). ABARE, *Commodity Statistical Bulletin* (November 1987). U.S. index calculated by and Australian index adjusted to 1982 = 100 by author.

Table 4

Total Farm Indebtedness, United States and Australia: 1976–87

	United States (billions of U.S. dollars)	Australia ¹ (billions of Australian dollars)
1976	\$ 97.0	\$2.6
1977	114.9	2.7
1978	131.9	3.0
1979	155.2	3.3
1980	170.4	3.8
1981	188.8	4.4
1982	203.6	4.7
1983	202.4	5.5
1984	198.7	6.0
1985	192.1	7.3
1986	176.0p	8.1
1987e	155.5	7.8

¹excludes debt to hire purchase companies, trade creditors and private lenders.

p = preliminary
e = estimated

SOURCE: ERS, *Agricultural Outlook* (October 1987), BAE, *Quarterly Review of the Rural Economy* September 1987).

indebtedness in the United States increased less over this period than consumer prices.

Notwithstanding the increase in farm indebtedness, the ratio of farm debt to assets remains relatively low in both countries; however, Australian farmers have significantly lower measured debt-asset ratios than their American counterparts (table 5). Part of this difference may be due to differences in the liabilities included. It is notable that, apart from "other crop growers," Australian farmers did not experience substantial increases in their debt ratio as did U.S. farmers over the period 1978 to 1986. However, the increase in indebtedness and the rise to high levels in real interest rates caused an increase from 8 percent to 14 percent in interest payments' share in cash costs in Australian broadacre farming between 1978 and 1986.²

Changes in debt ratios reflect, in part, movements in land values. Falls in agricultural land values of 40 percent to 50 percent were common in the United

Table 5

Ratio of Debt to Value of Assets in U.S. and Australian Farming: 1978–86

	United States	Australia				
		Wheat/ other crops	Mixed livestock/ crops	Sheep	Beef	Sheep and beef
1978	16.8%	12%	12%	12%	10%	14%
1979	16.9	12	10	9	8	10
1980	17.0	13	9	10	5	9
1981	18.8	12	10	10	7	8
1982	20.8	12	10	9	7	8
1983	21.2	12	9	10	7	7
1984	23.2	12	8	9	7	8
1985	24.9	16	11	10	6	11
1986	25.1	19p	12p	13p	7p	10p

p = preliminary survey estimate

SOURCE: ERS, *Agricultural Outlook* (May 1987), Kingma, O. "Performance of the Farm Sector," paper presented at BAE Outlook Conference, Canberra (February 1987).

States in the five years to February 1986. In Australia, farm land price declines have been much smaller and confined mainly to cropping areas. Average land values in the important wheat-sheep belt are estimated by the ABARE to have risen until 1985, and to have fallen by 20 percent between 1985 and 1987.³ After taking account of Australia's high inflation rate, the fall is 33 percent in real values.

There are important differences, arising largely from dissimilarities in climate and natural soil fertility, in farming practices in the United States and Australia. Approximately 70 percent of beef cattle are lot fed in the United States, while virtually all beef is produced on pastures in Australia.⁴ Similarly, dairy cows are not housed in Australia. Wheat grows in the winter in Australia and in the spring in the United States. Most Australian soils are deficient in phosphorus, and this is rectified by application of phosphatic fertilizers. However, United States farming makes much more intensive use of nitrogenous fertilizers. In Australia

²Kingma (1987).

³The Bureau of Agricultural Economics became the Australian Bureau of Agricultural and Resource Economics in September, 1987.

⁴McLeish and Spill (1987).

Table 6

Production and Trade by Selected Countries for Australia's Four Largest Farm Export Commodities (Average 1985–87)¹

	Production	Trade ²
WOOL	000 tonnes	000 tonnes
United States	41	–55 ³
European Community	151	–437 ³
Japan	0	–194 ³
Australia	827	+707 ³
WORLD	2,968	1,211 ^{3,4}
WHEAT	000,000 tonnes	000,000 tonnes
United States	64	+30
European Community	75	+13
Japan	1	–6
Australia	17	+15
WORLD	513	92
BEEF AND VEAL ³	000,000 tonnes	000,000 tonnes
United States	10.8	–0.8
European Community	7.2	+0.5
Japan	0.5	–0.2
Australia	1.3	+0.7
WORLD	45.8 ⁵	2.5 ⁶
SUGAR	000,000 tonnes	000,000 tonnes
United States	4.6	–2.3
European Community	14.3	+2.3
Japan	0.9	–1.9
Australia	3.5	+2.7
WORLD	100.0	29.5

¹With the exception of beef and veal, production and trade are measured for 12-month periods that do not coincide with calendar years. The 1987 year, for example, means the relevant 12-month period ending in 1987.

²A minus size indicates imports, and a plus exports.

³Average for 1984, 1985 and 1986.

⁴Exports by Australia, New Zealand, South Africa and Argentina for 1984, 1985, and by Australia, New Zealand and Argentina for 1986.

⁵World production for 1984.

⁶Exports by Argentina, Australia, New Zealand, Yugoslavia, Uruguay, Canada, European Community and United States.

SOURCE: BAE, *Commodity Statistical Bulletin* (January 1986, December 1986).

lia. Both countries are significant players in international trade in Australia's four top farm export commodities (shown in table 6 in decreasing order of export earnings). For the two countries, the volume of beef and veal traded is similar, and this is true for sugar also. The United States exports twice as much wheat as Australia, while Australia is a much bigger player in world trade in wool.

On the *production* side, the United States produces much more of each commodity apart from wool: 30 percent greater for sugar; nearly four times as large for wheat; and eight times as large for beef and veal. This means that, except for wool, there is much greater potential for changes in production in the United States — changes arising from developments in domestic farm policy, gains in productivity or other factors to influence world prices, and hence the benefits from trade to other exporting and importing countries. The European Community produces more wheat and sugar than the United States, but less beef and veal.

U.S. FARM POLICY AND ITS INTERNATIONAL IMPACT

Compared to Australia, the European Community and many other countries, agricultural policy in the United States is considerably more complex, and its effects exceedingly difficult to assess. There are several reasons for this.

First, the optional nature of farm programs for wheat, corn and other grains means that policy analysts must assess separately the effect of programs on incentives and on producers' responses for program participants and non-participants. (Programs typically cause price changes for non-participants as well as for participants.) The proportions of production that will be accounted for by each category of producers must also be estimated.

Second, substantial changes in U.S. farm programs occur frequently.

Third, U.S. farm policy relies heavily on a large number of policy instruments. Six of these instruments are listed in table 7. The first column in table 7 summarizes the effect of each instrument on farm producer incentives in the United States. Each instrument is considered in isolation from the others; the effects shown are relative to a situation of no government intervention in agricultural markets.

The first instrument, mandatory unpaid land set-asides, acts as a tax on farmers. The second instru-

grain crops are normally grown in rotation with pastures containing legumes to provide nitrogen for use by pasture grasses and by subsequent crops.

A final important fact is the difference in the absolute size of agriculture in the United States and Australia.

Table 7

The Effect of U.S. Policy Instruments on Domestic Producers and Other Countries

Instrument	Effect on domestic producers	Effect on welfare of other:	
		Export countries	Import countries
Acreage reductions (unpaid)	Tax	+	-
Loan rate/CCC stock-operations	Subsidy or Tax	+ or -	- or +
Target price/deficiency payments (with incomplete decoupling)	Subsidy	-	+
Two-price schemes	Subsidy	-	+
Tariffs/quantitative import restrictions	Subsidy	-	+
Export subsidies	Subsidy	-	+

ment serves as a production subsidy when the loan rate is high relative to the world price, so that the Commodity Credit Corporation accumulates stocks. When the CCC releases stocks, the effect is equivalent to a tax on producers. The other instruments act as subsidies and, except for two-price schemes having a particular characteristic — farmers' return from their marginal production being equal to the world price — encourage extra production.

The two final columns show the effect of each United States farm policy instrument on the net economic benefits to other countries. Most of the instruments shown reduce world prices, making other nations that export these commodities worse off, and importing countries better off. This is true of target prices achieved via deficiency payments, two price schemes (the resulting reduction in U.S. consumption causes the world price to fall even if U.S. production is not increased), tariffs/quantitative import restrictions, and export subsidies.

The massive value of deficiency payments to United States farmers is illustrated by their capitalized values per acre. In 1985 these were: \$450 for wheat, \$562 for corn, \$1050 for cotton and \$1725 for rice.⁵ If deficiency payments were made completely independent of cur-

rent production as suggested by several U.S. congressmen and the Administration, deficiency payments could support farm incomes without inducing increase in production.

One important instrument of United States farm policy invariably works to raise world prices for farm commodities, and another policy sometimes does. Mandatory acreage reductions increase world price in two ways. First, they reduce production via a movement down the industry supply curve. Second, they increase costs per unit of output as farmers substitute fertilizers and other inputs in place of land. Of the instruments listed in table 7, acreage reductions alone clearly benefit other exporting countries such as Australia.

When the loan rate for crops is set at a level that draws commodities from the commercial market into CCC stocks, the world price is raised. This was the situation in the period covered by the 1981 Farm Bill. When stocks are sold, however, other exporting countries are harmed, while importing countries benefit from the lower prices.

The effects of United States farm policies on output do not arise only through higher producer prices. These policies, especially the loan price and target price deficiency payment schemes, provide a much higher *level of certainty* about future prices that would exist in a free market. For example, the 1985 Farm Bill provided target prices for wheat to be maintained at their 1985 level of \$4.38 per bushel in 1986 and 1987,

⁵Council of Economic Advisers (1986).

Table 8

Nominal Protection Coefficients for Producer and Consumer Prices of Selected Commodities in Industrial Countries: 1980-82

	Australia		European Community		Japan		United States	
	Prod NPC	Cons NPC	Prod NPC	Cons NPC	Prod NPC	Cons NPC	Prod NPC	Cons NPC
Wheat	1.04	1.08	1.25	1.30	3.80	1.25	1.15	1.00
Coarse grains	1.00	1.00	1.40	1.40	4.30	1.30	1.00	1.00
Rice	1.15	1.75	1.40	1.40	3.30	2.90	1.30	1.00
Beef and lamb	1.00	1.00	1.90	1.90	4.00	4.00	1.00	1.00
Pork and poultry	1.00	1.00	1.25	1.25	1.50	1.50	1.00	1.00
Dairy products	1.30	1.40	1.75	1.80	2.90	2.90	2.00	2.00
Sugar	1.00	1.40	1.50	1.70	3.00	2.60	1.40	1.40
Weighted average	1.04	1.09	1.54	1.56	2.44	2.08	1.16	1.17

SOURCE: World Bank, *World Development Report*, Oxford University Press (1986).

declining to \$4.29 in 1988, \$4.16 in 1989 and \$4.00 in 1990. Although the bill announced reductions in loan prices, (effectively minimum prices for producers' current production), it provided valuable reductions in uncertainty about prices through to 1990. The greater certainty about prices provided by the target price and loan price undertakings of the Farm Bill means that risk-averse farmers find it attractive to produce at higher levels than they would do with the same expected prices but without the price guarantees.

While the role of price supports in producing the problems of global agriculture has rightly been emphasized, the contribution to surplus-generating investment provided by a high degree of certainty about process for several years ahead has been relatively neglected. While it is difficult empirically to separate these two effects, it is obvious that production would be reduced substantially if existing price support levels were provided in the form of subsidies on prices in free markets, with the price guarantees being removed.

Of course, the critical issue for Australian wheat or sugar producers is the overall effect that the entire *package* of policies making up the commodity program exert on other countries. While assessing this is complicated, some evidence on the effect of United States agricultural programs on world prices and trade can be presented.

The Matter of Prices and Access

The extent to which one nation's agricultural policies effect the economic fortunes of another coun-

try depends mainly on the resulting price distortions in the former country and on the non-price restrictions placed on the latter country's trade.

A useful indicator of price distortions in agriculture is given by nominal protection coefficients for producer prices and consumer prices. These coefficients express domestic prices as the ratios of border prices, where border prices can be considered as export prices for export situations and import prices for import situations. Information on nominal protection coefficients for producer and consumer prices for the United States, Australia, the European Economic Community and Japan for the years 1980-1982 is shown in table 8.

Rates of producer protection were at least as high in the United States as in Australia for each of the seven commodities. The figures in the bottom row indicate that United States price supports encouraged aggregate agricultural production much more than Australian pricing policies did. Overall, the price of food to consumers was also raised more by market interventions in the United States than in Australia, although buyers of wheat and rice fared better in the United States. Policies that raise domestic consumer prices also harm other export countries by increasing the output that must be disposed of on other world markets.

For perspective it should be noted that producer and consumer prices were higher relative to world prices in the European Economic Community than in the United States, and they were much higher still in Japan.

Rates of producer subsidy would generally have been higher in more recent years than in the years 1980-1982. This is due mainly to the lower level of world prices — against which subsidy rates are measured. Anderson and Tyers (1987) projected average producer to border price ratios of 1.5 for United States agriculture in 1988 and 2.0 for all industrial market economies.

Australia's top rural export is not included in table 8. Wool growing is very lightly assisted through government intervention in Australia. The United States tariff of 10 cents a pound (clean) on wool appears to be a relatively minor impediment to Australian exports of wool in this market. In addition to the benefits conferred by the tariff, United States wool growers received payments from taxpayers amounting to about 20 percent of their cash receipts in 1985.⁶

Australia's agricultural trading opportunities are not restricted only by policy interventions that raise prices to overseas producers and consumers. It also faces quantitative restrictions on access of some commodities to major markets. Restrictions on exports of beef and sugar to the United States are important cases.

The Impact of U.S. Farm Policies on International Trade

The Bureau of Agricultural Economics has estimated that the Common Agricultural Policy of the European Economic Community caused income losses to Australian farmers of almost \$A1 billion a year in the five years to 1985.⁷ That was around 14 percent of the gross value of exports of the six commodities included in the study — wheat, coarse grains, sugar, beef, sheep, meat and dairy products — in 1985. No comparable estimate has been made of the effects of United States farm policies on the income of Australian farmers. The greater complexity of farm policy in the United States than in the European Economic Community, and the greater frequency of major policy changes, are strong deterrents to attempts to duplicate the European Community study for the United States. However, two major projects are in progress in the Australian Bureau of Agricultural and Resource Economics of the international consequences of United States farm policies. One project focuses on grains and the other is more general in scope.

The World Bank has published estimates of the effects on world prices and world trade volume of removing policies in major countries and blocs that cause prices of agricultural commodities to differ from world prices. These estimates provide a general indication of the way a small trading country such as Australia would be affected by liberalization of commodity markets in large countries. Some of these estimates are shown in table 9.⁸ Note that liberalization in a country or bloc means that policy-caused price distortions are removed simultaneously for all seven commodities, so that the results reflect interactions between the commodities as liberalization changes relative prices to producers and/or consumers.

Except for wheat and coarse grains, liberalization in the United States is estimated to have a much smaller effect on world prices, and hence on other exporters such as Australia, than liberalization in the European Economic Community. A movement to free commodity markets in the United States is found to *reduce* the world price for coarse grains, to the detriment of other exporters. This appears to be due to the removal of acreage restrictions and to substitution of coarse grains for wheat upon liberalization.

World trade volume for coarse grains, pork and poultry, and dairy products are found to increase more with removal of protection in the United States than in the European Community. Prices and trade volume for beef and lamb are increased much more by market oriented policies in Japan than by liberalization in the United States or the European Community.

THREE APPROACHES TO MORE OPEN AGRICULTURAL TRADE MARKETS

Solutions to the problems of distorted and restricted agricultural trade can be sought through unilateral, bilateral and multilateral actions.

The balance between *domestic* benefits and costs can be expected to determine action under each of these approaches. The most plausible explanations of government intervention in agriculture emphasize economic characteristics (such as price elasticity of demand and number of producers) which determine an industry's effectiveness in seeking assistance, and the

⁶Economic Research Service (1986).

⁷Bureau of Agricultural Economics (1985).

⁸The World Bank pointed out that the figures in table 9 almost certainly underestimated the benefits to developed countries from trade liberalization.

Table 9

International Price and Trade Effects of Liberalization of Selected Commodity Markets, 1985

Country or country group in which liberalization takes place	Wheat	Coarse grains	Rice	Beef and lamb	Pork and poultry	Dairy products	Sugar
Percentage change in international price level following liberalization							
EC	1%	3%	1%	10%	2%	12%	3%
Japan	0	0	4	4	1	3	1
United States	1	-3	0	0	-1	5	1
OECD	2	1	5	16	2	27	5
Developing countries	7	3	-12	0	-4	36	3
All market economies	9	4	-8	16	-2	67	8
Percentage change in world trade volume following liberalization							
EC	0%	4%	0%	107%	3%	34%	-5%
Japan	0	3	30	57	-8	28	1
United States	0	14	-2	14	7	50	3
OECD	-1	19	32	195	18	95	2
Developing countries	7	12	75	68	260	330	60
All market economies	6	30	97	235	295	190	60

NOTE: Data are based on the removal of the rates of protection in effect in 1980-82. Data for the EC exclude Greece, Portugal and Spain.

SOURCE: World Bank, *World Development Report 1986*.

costs of providing assistance.⁹ A consequence of this view, in contrast to the alternative "public interest" explanation for trade in interventions, is that governments are unlikely to change their programs quickly in response to new studies revealing that interventions are costly to the overall community. Nevertheless, research and education can educate the electorate about the costs and benefits of agricultural programs.¹⁰

Unilateral Changes in U.S. Farm Policy

Many suggestions have been made for reforming United States farm policy. An interesting comparison of the effects of the Food Security Act 1985 and of six

other farm policy proposals, as prepared by Resources for the Future, is reproduced in table 10; it ranks the various policies in decreasing order of desirability to each of three groups: farmers, agribusiness and households.¹¹ Actual values for net farm income, acres planted (the criterion for ranking the policies from the perspective of agribusiness) and food and tax costs per household are also shown for most policies.

Not surprisingly, the policies rated as best for producers (mandatory supply controls with export subsidies, and two price schemes) rank near the bottom for agribusiness and for households. On this approach, the interests of agribusiness are more closely aligned to those of consumers (taxpayers) than they are with producers. This increases the prospects for reform of United States farm policies in ways favorable to households. Market-oriented policies involving complete or

⁹For example, Gardner (1987); von Witzke (1986); Sieper (1982).

¹⁰One development is a large study of the economic effects of agricultural policies in several countries that is being coordinated by the Australian consultants Andy Stoeckel and Sandy Cuthbertson and funded by the Australian and United States governments and Australian farmers.

¹¹Resources for the Future (1987).

Table 10

Rankings of Farm Policy Proposals: Snapshot of 1990–91

Policy proposal	Producers (net farm income)		Agribusiness (acres planted)		Households (food and tax costs)		Other exporters (world price)
	Billions of dollars	Rank	Millions of acres	Rank	Dollars per year	Rank	Rank
Mandatory supply controls with export subsidies	\$41	1	169	6	\$3,482	7	5
Two price scheme	n.a.	2	n.a.	5	n.a.	5	7
Extension of marketing loans	27	3	204	4	3,111	4	2
Food Security Act of 1985	25	4	207	2	3,101	3	4
Low target price with partial decoupling	20	5	211	1	3,040	2	3
Mandatory supply controls without export subsidies	n.a.	6	153	7	3,308	6	1
Decoupling with transitional income support	n.a.	7	n.a.	3	n.a.	1	6

n.a. = not available

SOURCE: Resources for the Future (National Center for Food and Agricultural Policy), *Farm Bill Revisited: Midcourse Corrections or Stay the Course?* (April 1987). Final column is author's assessment.

partial decoupling of producer assistance from current production rank highest from the view of households.

I have added a ranking of the policies from the perspective of other exporting countries, such as Australia. Unilateral use of mandatory supply controls, with idling of 127 million acres (more than 40 percent of the total cropland base) in 1991, is the policy that Australian farmers would endorse most enthusiastically. However, mandatory supply controls rank very poorly for all U.S. interest groups. Of some comfort to other exporting nations, perhaps, is that the *worst* U.S. policies from their perspective (two price schemes, decoupling with transitional income support, and supply controls with export subsidies) would be un-

popular also with at least one of the domestic U.S. groups.¹²

Bilateral Liberalization

Agreements reached between two countries to reduce trade barriers *may* be consistent with the General Agreement on Tariffs and Trade (GATT) objective of increasing world trade. This depends on whether

¹²If the United States were more concerned about the foreign relations fallout from its farm policies on countries importing agricultural commodities, the relevant ranking would be the reverse of that in the final column of table 10. That would increase the attractiveness of two price schemes, decoupling with temporary income supports and supply controls with export subsidies.

the extra trade that results between the two countries is mainly a net addition to world trade or is obtained largely by reducing other countries' trade. Although free trade areas between two or more countries are permitted under Article 24 of GATT, bilateral trade liberalization appears inconsistent with the GATT most favored nation principle of extending to all GATT members reductions in trade impediments negotiated with a particular member country.

The Multilateral Approach

GATT is the only forum for the detailed negotiations required in an international approach to reducing impediments to freer trade. The fact that so little was achieved toward freer world agricultural trade in the previous seven GATT rounds is not a good omen for the round that commenced in Punta del Este, Uruguay, in September 1986. Increased pressure from other international groups, notably the Organization for Economic Cooperation and Development (OECD) and the Economic Summit Countries, will be important for progress towards a more liberal agricultural trade regime in the current GATT round.

The United States tabled its Uruguay round proposal for agriculture with GATT in Geneva in July 1987. Australia's proposal is contained in the joint submission from the Cairns Group members, tabled in October 1987. While there are significant differences between the two proposals, these are much less important than the remarkable degree of common ground.

The United States and Australian (Cairns Group) proposals both called for:

- the phasing out by the year 2000 of all policy measures that directly or indirectly subsidize agricultural production and all measures that limit market access;
- the use where governments provide income support for farmers of measures that make payments independent of current levels of production and marketing;
- the reform of GATT rules and disciplines consistently with the above.

Agreement on these steps in the Uruguay round, and their implementation, would ensure a new, liberal era in world agricultural trade.

In deciding whether to participate actively in GATT efforts to reduce agricultural assistance multilaterally, each nation will likely compare the economic effects of multilateral liberalization on domestic groups with

the economic effects of reducing assistance *independently* of other countries. The differences arise from the larger increase in world prices when protection is removed from a bigger share of world production under multilateral liberalization.

Anderson and Tyers (1987) have estimated the effects of gradually removing agricultural assistance by individual countries or groups of countries, and by many countries simultaneously, over the period 1988 to 1995 that throws light on this. Some of their results are shown in table 11. U.S. producers would lose approximately \$22 billion in 1995 if the U.S. removes agricultural protection unilaterally. This large producer loss becomes a gain of \$3 billion if liberalization occurs in all advanced market economies. In the European Economic Community, unilateral liberalization would cost producers an estimated \$89 billion; this would be reduced to only \$74 billion if liberalization occurred in all industrial market economies.

If, as seems likely, government decisions on reducing agricultural assistance depend mainly on the way producers are affected, the multilateral approach appears much more attractive for the United States than going it alone. It is much less clear that either approach to liberalization would appeal to the European Economic Community. This poses a substantial problem for negotiations in the GATT round.

Producers in Japan lose heavily from multilateral liberalization, as they do from unilateral removal of protection. Japan, also, can be expected to oppose both routes to freer markets if producer interests predominate.

In Australia and New Zealand, by contrast, farmers would experience significant net gains in income under the "let's all do it together" route. The losses (not shown in the table) from removal of their own (generally modest) assistance would be easily outweighed by the increases in world prices resulting from removal of much larger price distortions by the big players. Producers in Australia and New Zealand can be expected to be more enthusiastic about multilateral liberalization than farmers in the United States.

Taking economic gains to consumers (taxpayers) as the difference between net economic welfare and producer gains in table 11, the results suggest that other groups in the European Economic Community and, more so, in the United States would prefer unilateral to multilateral reform. This, also, may not augur well for progress in the GATT round.

Table 11

Welfare Effects of Liberalizing Food Policies by Selected Producers: 1995 (billions of 1985 U.S. dollars per year)

	United States		European Community		Japan		All industrial market economies	
	Producer welfare	Net economic welfare ¹	Producer welfare	Net economic welfare ¹	Producer welfare	Net economic welfare ¹	Producer welfare	Net economic welfare ¹
Effects on:								
US	\$-21.5	\$ 3.3	\$ 7.6	\$ 1.7	\$ 4.4	\$- 0.1	\$ 3.1	\$ 3.1
EC	5.0	-1.9	-88.6	21.4	9.7	- 1.8	-73.7	17.6
Japan	0.3	-0.1	1.9	- 3.1	-40.2	27.1	-38.7	19.5
Australia	0.4	0.1	2.4	1.1	0.9	0.3	3.2	1.7
New Zealand	0.4	0.2	1.1	0.6	0.5	0.3	1.6	1.1
All industrial economies	-13.9	1.1	-70.9	22.7	-22.6	25.6	-122.9	50.9

¹Net economic welfare in the Anderson-Tyers model is the sum of the change in producer welfare (change in profits), the change in consumer welfare (what consumers are willing to pay, less what they have to pay), and the benefits to taxpayers from lower government subsidies.

SOURCE: Anderson and Tyers, *Global Effects of Liberalizing Trade in Agriculture*, Trade Policy Research Centre, London, 1987.

CONCLUDING COMMENTS

Australian farmers and Australia as a nation are harmed by United States farm policies, though less than they are by the agricultural policies of the European Economic Community. These effects are experienced through power world commodity prices and trade volumes and increased instability of prices. Measures of the international effects of agricultural protectionism in major countries and blocs often understate the true effects. One reason for this is that protectionist measures often reduce domestic price uncertainty, as well as raising producer prices. The effects of reduced uncertainty on investment and output can be substantial, but frequently they are not captured in measures of the impacts of policies.

Implementation in the United States of Administration proposals to reduce the assistance provided to farmers via subsidies and price supports, and reorientation of assistance to supporting incomes independently of production, would be welcomed in Australia. Similarly, the thrust of the United States proposal to GATT for multilateral phasing out of agricultural subsidies and barriers to imports between 1990 and 2000 has been called "bold and imaginative" by Australia's prime minister.

However, both in multilateral negotiations and in domestic policymaking, the powerful forces that have caused existing policies to be introduced and maintained will not easily be overcome. United States farmers will oppose more market-oriented policies if they lower their incomes. They will prefer multilateral reductions in agricultural protection, which will push world prices up more, to unilateral reductions confined to the United States. Moreover, they stand to gain relatively much less from multilateral reductions than do Australian farmers. With the relatively small gain to U.S. farmers and the large losses for European Community and Japanese farmers from phasing out agricultural protection, it is easy to be somewhat pessimistic about the outcome of agricultural negotiations in the current GATT round.

If production-oriented support programs that have produced the global agricultural crises are to be replaced by market-oriented policies supplemented by production-independent income supports, consumers and taxpayers must be convinced that it is worthwhile to adopt more cost-effective approaches to bolstering farmers' incomes.

REFERENCES

- Anderson, K., and R. Tyers. *Global Effects of Liberalizing Trade in Agriculture* (London: Trade Policy Research Centre, 1987).
- Bureau of Agricultural Economics. "Agricultural Policies in the European Community," *Policy Monograph No. 2* (Canberra: Australian Government Publishing Service, 1985).
- Carmichael, W.B. "National Interest and International Trade Negotiations," *The World Economy* (December 1986), pp. 341–57.
- Council of Economic Advisers, *Economic Report of the President* (U.S. Government Printing Office, 1986, 1987).
- Dam, K.W. *The GATT: Law and Economic Organization*. (University of Chicago Press, 1970).
- Economic Research Service. *Government Intervention in Agriculture: Measurement, Evaluation and Implications for Trade Negotiations*, U.S. Department of Agriculture (GPO, 1987).
- Gardner, B.L. "Causes of U.S. Farm Commodity Programs," *Journal of Political Economy* (April 1987), pp. 290–310.
- Hathaway, D.E. "Trade Negotiations: They Won't Solve Agriculture's Problems," *Choices* (Fourth Quarter 1986), pp. 14–17.
- Hawke, R. Speech to the Contracting Parties of the GATT, Geneva, October 22, 1987.
- Kingma, O. "Performance of the Farm Sector," paper presented at Annual BAE Outlook Conference, Canberra (February 1987).
- McLeish, R. and M. Spill. "Livestock — Feed Grain Linkages in The Pacific Basin: The Impact of a Fall in Grain Prices," paper presented at Livestock and Feedgrains Study Program Pacific Economic Cooperation Conference, Napier, New Zealand, October 1987.
- Pearlberg, R. "International Agricultural Policy Coordination: An Impediment to Liberal Reforms," paper presented at Benjamin E. Lippincott Symposium, Policy Coordination in World Agriculture (Minneapolis: University of Minnesota, April 1987).
- Rausser, G.C. and B.D. Wright, "Alternative Strategies for Trade Policy Reform," paper presented at Benjamin E. Lippincott Symposium Policy Coordination in World Agriculture (Minneapolis: University of Minnesota, April 1987).
- Resources for the Future, National Center for Food and Agricultural Policy. *The 1985 Farm Bill Revisited: Midcourse Corrections or Stay the Course?* (Washington, D.C., 1987).
- Sanderson, F. "Putting Agriculture in the GATT: Comment" (Resources for the Future, Washington, D.C., May 1986).
- Sieper, E. *Rationalizing Rustic Regulation* (Sydney, Australia: Centre of Independent Studies, 1982).
- World Bank. *World Development Report 1986* (Oxford University Press, 1986).
- von Witzke, H. "Endogenous Supranational Policy Decisions: The Common Agricultural Policy of the European Community," *Public Choice* (1986), pp. 157–74.