

Farm Policy and Mandatory Supply Controls — The Case of Tobacco

Kenneth C. Carraro

FROM 1980 through 1986, the United States spent \$43.9 billion in direct payments to farmers and \$52.3 billion on other price support programs.¹ Despite such expenditures, the U.S. farm sector has experienced a severe downturn. Falling exports, declining farmland values, high rates of farm loan delinquencies and increasing dependence on government support payments were visible symptoms of the farm sector's difficulties.

Because of the great expense and the apparent failure of farm programs, some policymakers have called for the use of mandatory supply controls to limit crop production and raise prices.² Advocates assert that such controls could guarantee farmers a "fair" price and improve their incomes, while drastically cutting the cost of farm programs and eliminating farm commodity surpluses.

Kenneth C. Carraro is an economist at the Federal Reserve Bank of St. Louis. Dawn M. Peterson provided research assistance.

¹U.S. Department of Agriculture, *History of Budgetary Expenditures of the Commodity Credit Corporation, Book 2, and Agricultural Outlook* (December 1987), p. 53, table 32.

²The Harkin-Gephardt "Save the Family Farm Act" is the most prominent domestic example of mandatory supply control legislation currently being debated in Congress. In 1986, Congress allocated \$10 million for the study of mandatory controls and the polling of farmers. Mandatory supply controls have recently been proposed in the European Economic Community to limit milk production.

This article examines the effects of mandatory supply controls. The analysis begins with a theoretical discussion of the effects of mandatory supply controls on economies that are closed to international trade and those that engage in international trade. Next, the experience of the U.S. tobacco industry and its mandatory supply controls is examined.³ Finally, the key points from the theoretical discussion and the U.S. tobacco industry's experience are combined with specific facts about U.S. crops to suggest the likely consequences of the supply legislation currently under consideration.

THE ECONOMICS OF SUPPLY CONTROLS IN A CLOSED ECONOMY

Supply control programs are designed to increase the price of a good above its free market price by restricting the quantity of the good that reaches the market. The supply restrictions typically are established by a government agency or a consortium of producers. The Organization of Petroleum Exporting Countries (OPEC) is one example of a group of producers who agree (usually) to restrict production as a means of securing a higher price for crude oil.

³U.S. tobacco policy has used mandatory supply controls since the 1930s.

Figure 1
Supply Controls in a Closed Economy

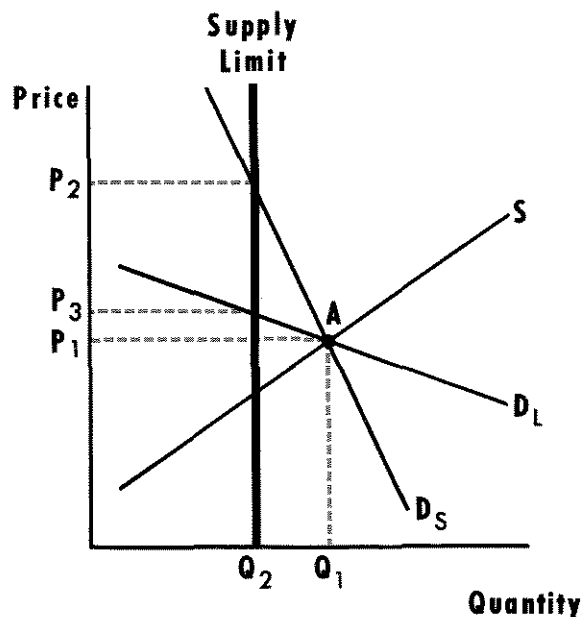


Figure 1 demonstrates how prices are determined in an economy that is closed to international trade and how supply controls can increase the price of a good above its free market level. The supply curve, labeled *S*, rises upward and to the right, indicating that producers will supply larger quantities of a good as its price is increased. The short-run demand curve, labeled *D_S*, slopes downward to show that consumers will buy smaller quantities of a good as its price rises. In a free market, the intersection of the supply and demand curves at point *A* determines that the price would be *P₁* while the quantity supplied would equal the quantity demanded, at *Q₁*. Since the quantity of the good supplied to the market at that price exactly satisfies consumer demand, neither producers nor consumers have an incentive to change their production or consumption patterns.

By imposing a supply limit at *Q₂*, the price can be increased from *P₁* to *P₂*. This would benefit producers, however, only if it increased their profits. Since production declines, the total costs incurred by producers will decline also. As long as total revenue is not reduced by an amount larger than the reduction of total costs, profits will rise.

The change in total revenue resulting from a price change depends upon the price elasticity of demand. The price elasticity of demand measures the responsiveness of the quantity demanded to a change in

price. If the quantity of a product demanded changes proportionately less (in absolute value) than the change in price, the demand is referred to as inelastic.

Since a 1 percent increase in price causes less than a 1 percent decrease in quantity demanded when demand is inelastic, the price increase causes total revenue to increase. Conversely, a price decrease causes total revenue to decrease when demand is inelastic. The effects on total revenue of price changes are reversed when demand is elastic. Elastic demand exists when the quantity of a product demanded changes proportionately more (in absolute value) than the change in price. Since a 1 percent increase in price causes a more than 1 percent decrease in quantity demanded when demand is elastic, the price increase causes total revenue to decrease. Conversely, a price decrease causes total revenue to increase when demand is elastic. A final possibility, known as unitary elasticity, is that a 1 percent change in price leads to a 1 percent change in quantity demanded, which has no effect on total revenue.

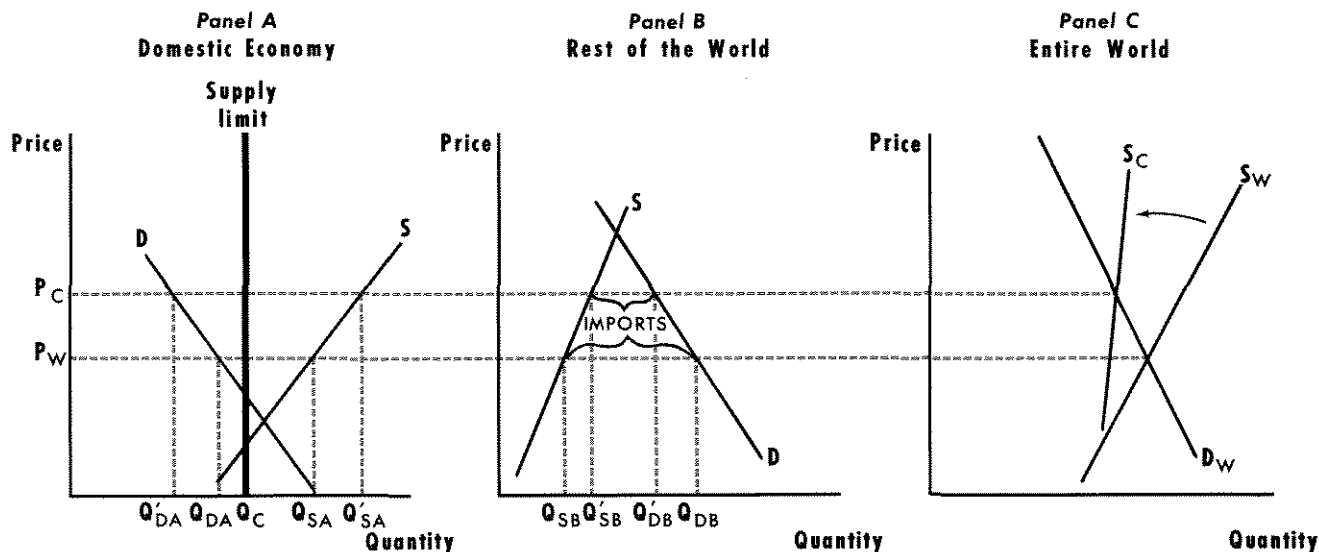
In figure 1, the supply control, which reduced the quantity supplied from *Q₁* to *Q₂*, appears to have caused the price approximately to double from *P₁* to *P₂*. The quantity demanded, however, appears to have decreased much less. In other words, the demand is considered to be inelastic in that price range. When the demand for a product is inelastic, a supply control program increases the total revenue of producers. Since total costs will have fallen also, profits must increase.

When the demand for a product is elastic, a supply control program would reduce the quantity demanded proportionately more than the price increase. The reduction in total revenue makes it possible that the supply control program could lead to reduced profits. In general, a supply control program is beneficial to producers facing an inelastic demand.

A variety of factors influence the elasticity of demand for a product. One of the most important of these is the availability of substitutes for the product. A product's demand is more likely to be elastic if acceptable substitutes for that product exist. For example, the price elasticity of beef likely exceeds that of gasoline because there are numerous substitutes for beef while there are few substitutes for gasoline.

Another extremely important influence on demand elasticity is time. In the short run, a product's demand is generally less elastic than over the long run because consumers find substitutes or learn to conserve on the consumption of the product over time. Demand becomes more elastic the longer the time period as

Figure 2
Supply Controls in a World Economy With Trade



consumers readjust their consumption patterns.⁴

Figure 1 portrays the effect of changes in demand elasticity over time. The curve D_L portrays the long-run demand curve for the product and is much flatter than the short-run demand curve D_S . This reflects the greater elasticity that is common over the long run. The supply control that resulted in the doubling of prices from P_1 to P_2 in the short run is markedly less beneficial to producers over the long run. In this case, the imposition of the supply restraint has a relatively small effect on the price, raising it only to P_3 . Furthermore, it appears that the total revenue has declined through the use of the controls. The short-run strategy that appeared to increase profits may lead to lower future profits if the long-run demand becomes elastic.

THE ECONOMICS OF SUPPLY CONTROLS IN AN OPEN ECONOMY

So far, we have focused on a simple economy without international trade to illustrate fundamental points about supply control programs. This section expands that analysis to include supply controls in a world economy with trade. The addition of trade to the analysis implies: 1) that a product may be pro-

duced in countries outside of the country (or group of countries) attempting to increase returns through a supply control policy, and 2) that the controlled good can be traded between countries. In a closed economy, a product's price is determined solely by domestic supply and demand. With the addition of trade, price determination occurs in the world rather than domestic market.

Figure 2 portrays price determination in the world market. Panel A represents the domestic market for a good. Panel B represents the supply and demand of the product for all other countries in the world. Finally, panel C is the world economy, which is derived by horizontally combining the supply and demand curves of the domestic and rest-of-the-world economies.

Ignoring transportation costs, the equilibrium price for both the domestic economy and the rest of the world is P_W . In this case, the equilibrium price is above what the domestic price would have been in a closed economy. According to panel A, at the world price, domestic producers supply a larger quantity (Q_{SA}) than domestic consumers are willing to purchase (Q_{DA}). The difference between these two is exported to the rest of the world where, at P_W , consumers demand a larger quantity (Q_{DB}) than producers in the rest of the world are willing to supply (Q_{SB}) as shown in panel B.

The domestic economy in figure 2 is portrayed as the dominant world supplier of a product for which the demand is inelastic. The imposition of a supply

⁴For example, Houthakker and Taylor (1966) estimated the long-run price elasticity for gasoline at $- .7$, while the short-run elasticity was estimated to be much more inelastic at $- .2$.

control in the domestic economy at the quantity Q_c changes the world supply from S_w to S_c . This shift, in turn, causes the world price to jump from P_w to P_c . Because of supply controls in the domestic economy, the quantity supplied falls from Q_{sa} to Q_c . At the higher price of P_c , foreign production increases from Q_{sb} to Q'_{sb} , while foreign consumption falls from Q_{db} to Q'_{db} . As a result of these changes, the level of exports from the domestic economy to the rest of the world declines. The shares of world trade and world production held by the domestic economy also decline.

The loss of shares of world production and trade is a predictable outcome of a supply control measure. While an exporting country might prefer not to lose its shares of world production and trade, it is more likely to accept these losses if the supply controls result in higher returns to producers. In figure 2, it appears that returns would be increased in the short run because the inelastic world demand curve and the inelastic foreign supply curve result in higher total revenue for domestic producers.⁵

These short-run returns will erode, however, because the price elasticities of both demand and supply increase over time. A given domestic supply control results in a smaller price increase in the long run than in the short run. This effect is even more pronounced with international trade because the elasticity of foreign, as well as domestic, supply generally increases over time. In the short run, producers are unable to respond fully to a price increase because the capital base used for production is fixed. Over a longer period, producers can increase output by adding production capacity, improving technology and adopting new technology. This long-run foreign supply response contributes to the decline in the share of world production and trade of the domestic country by increasing foreign production and, in the process, reducing the demand for the domestic country's exports. The foreign supply response becomes increasingly more important because of the growing foreign share of world production.

⁵The example of OPEC is instructive at this point. When OPEC reduced production as a means of increasing the price of crude oil, it was logical to expect that its share of both oil exports and production would fall. While its share fell, it was able to greatly increase its returns because of the elasticities of world demand and supply. With a lack of acceptable energy sources as substitutes, the world demand for crude oil was extremely inelastic. The world supply of oil also was extremely inelastic because of the small share of world production held by non-OPEC countries and the difficulty, expense and time required to find and tap new oil reserves. If non-OPEC countries had been able to expand production easily and quickly in response to higher prices, the price increases would not have been as great.

In summary, the introduction of international trade makes the decision to use supply control measures dependent on the elasticity of world demand and world supply. It is important to note that, while the elasticity of foreign (rest-of-the-world) supply is important, it is the entire world's elasticity of supply that determines if a domestic supply control program will be effective. For example, foreign supply may be very elastic over a small range; but if foreign production represents only a small share of total world production, the domestic supply control program may still be very profitable. This is true because the foreign supply response, while very elastic, may have only a small effect on the total quantity supplied in the world if domestic production dwarfs foreign production. A natural consequence of domestic supply controls and foreign supply elasticity, however, is an increase in the foreign share of world production and a resulting increase in the world supply elasticity.

THE ORIGINAL TOBACCO PROGRAM

The current tobacco program has its roots in the farm legislation of the 1930s known as the Agricultural Adjustment Act (AAA). This legislation used production controls on most agricultural products as a means of increasing prices. Of the numerous supply control programs proposed in the original AAA legislation, only the tobacco and peanut programs have maintained direct production controls.

The tobacco program functioned, and continues to function, by first establishing a support price.⁶ Initially, farmers were assigned allotments that indicated the number of acres of tobacco each farmer could cultivate. In the 1960s and 1970s, the acreage allotments were supplemented with marketing quotas that limited the number of pounds of tobacco each farmer could sell. These quotas were based on estimates of the quantity that could be sold at the support price.

The price support mechanism has changed only slightly over time. Initially, if a farmer did not receive an offer greater than the support price, the government purchased the farmer's tobacco and held it until it could be sold at the support price. In the 1940s, a system of growers' cooperatives was organized to purchase and hold the surplus tobacco. The cooperatives received, and continue to receive, government financing.

⁶From its inception in the 1930s until 1985, the tobacco support price was based on a "parity index" which measures the ratio of prices received by farmers to prices paid by farmers. The parity ratio is typically criticized for having no relationship to market prices.

For a long period, the tobacco program was considered extremely successful. The price of U.S. tobacco continued to rise, and the program was run at little cost to the government. In addition, the quota rights to grow and sell tobacco were marketable; in fact, they generated as much as \$800 million per year in income for quota owners.⁷ It is, in part, because of the apparent success of the tobacco program that interest in supply controls has resurfaced for other crops.

The tobacco program's ability to endure while generating substantial wealth through the sale and leasing of quotas was attributable to the inelastic nature of both world demand and supply of tobacco. The major reason for the inelastic supply response was that the United States held a large share of the world's production and sales of particular varieties of tobacco.⁸ As recently as the 1950s, the United States produced more than 80 percent of the world's burley tobacco.

It is important to note that the U.S. dominance in tobacco production and the inelasticity of world supply were even greater when one considers the important distinction of tobacco quality. Owing to special soil and climatic conditions and growing experience, U.S. tobacco generally was regarded to be of unmatched quality.⁹ This further differentiated it from tobacco grown in other countries. If other countries were unable to grow superior quality tobacco even as its price increased, the supply of that tobacco would be considered perfectly inelastic. Perfectly inelastic supply means that the quantity supplied would not change when the price changed.

The demand for tobacco, in general, was also inelastic. One source estimated the intermediate-run demand elasticity of tobacco at $-.1$ and the long-run elasticity at $-.5$.¹⁰ The major reason for the inelastic nature of tobacco demand is the lack of substitutes. The addictive nature of tobacco further reduces sensitivity to price changes. Furthermore, tobacco pur-

chases generally represent only a small share of a consumer's budget, a fact that usually reduces the elasticity of demand. While tobacco users can switch from U.S. to foreign tobacco (or cigarettes), there are few substitutes for tobacco in general.

By using supply controls, U.S. tobacco producers initially earned higher incomes. While the quantity of tobacco marketed fell, the resulting price increase was large enough to cause the total revenue received by quota owners and tobacco growers to increase. Because of the higher price, U.S. exports fell as foreign consumers reduced the amount of tobacco purchased at the higher price. Foreign suppliers responded to the higher price by producing larger quantities of tobacco.

SOME LONG-TERM TRENDS

The supply and demand analysis suggested that the adoption of a supply control policy would lead to both a reduction in U.S. production and a smaller U.S. share of world trade and world production. An examination of tobacco production and quota trends documents the long-term process of reducing the domestic tobacco industry as a means of maintaining the price support mechanism. Chart 1 tracks the production of tobacco in the United States against the production of tobacco in the rest of the world over the past 30 years. It shows that domestic production, though variable, has been trending downward while foreign tobacco production has grown steadily. Since 1966, domestic tobacco production has fallen by 38.8 percent, while foreign production has grown by 56.5 percent.

A longer-term perspective on the impact of the tobacco program restrictions can be gained by examining acreage data. The tobacco program initially attempted to control production solely by restricting the number of acres that farmers could grow. Chart 2 shows the long-term trend of falling acreage allotments.¹¹

As yields increased, acreage limitations became less effective in controlling production and were augmented by marketing quotas that limited the number of pounds of tobacco farmers could market. Chart 3 shows the trend of falling marketing quotas for flue-cured and burley tobaccos, the two varieties that account for 90 percent of all domestic tobacco produc-

⁷Sumner and Alston (1985), p. 13. The U.S. General Accounting Office study found that, although farmers were the intended beneficiaries of the tobacco program, 68 percent of quota owners were not active farmers. U.S. General Accounting Office (1982), p. 18.

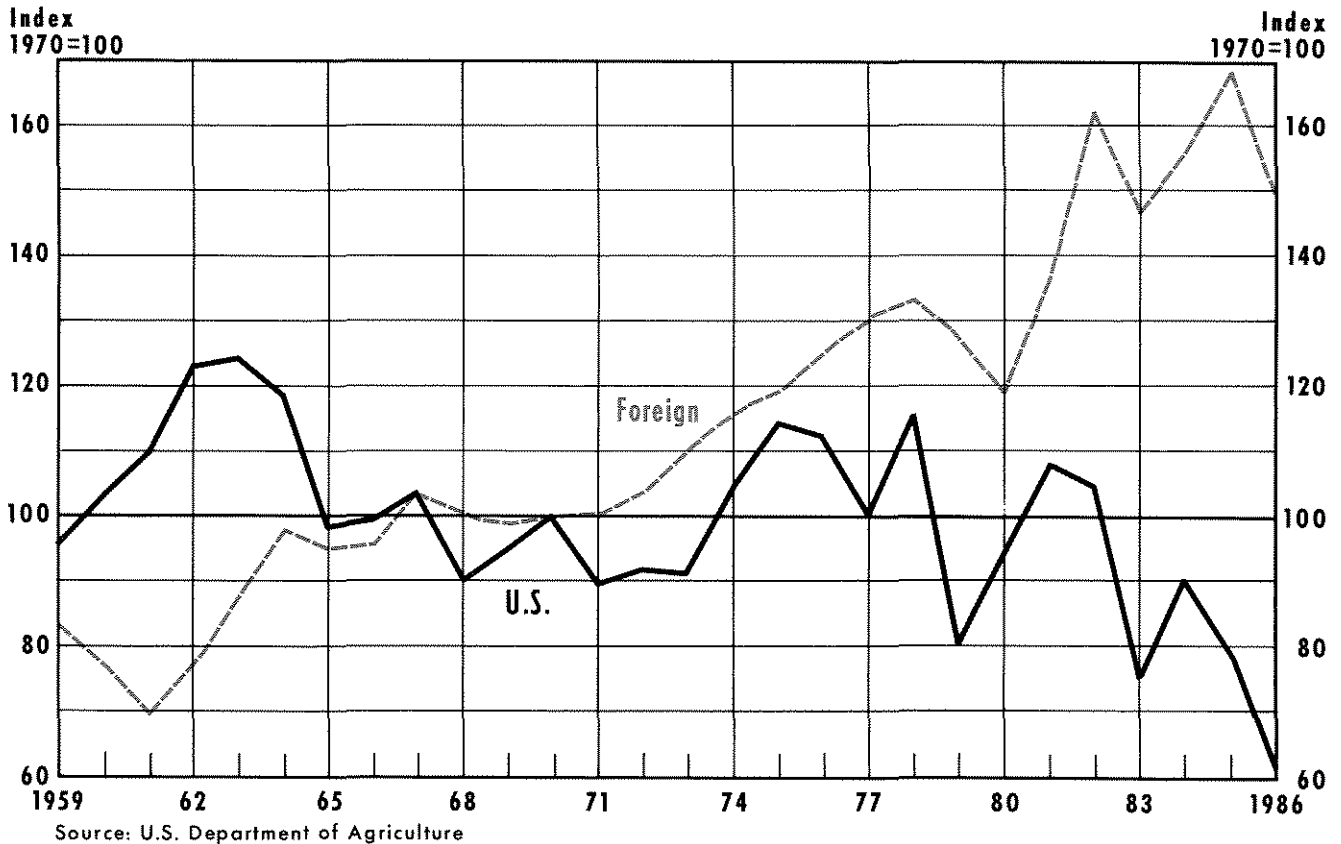
⁸There are numerous varieties of tobacco. Two varieties, flue-cured and burley, account for more than 90 percent of the tobacco grown in the United States. There are other varieties used in the blending of cigarettes that are not grown in this country, such as Oriental tobacco.

⁹Starkey (1985), p. 50 and U.S. General Accounting Office (1982), p. 18.

¹⁰Tweeten (1970), p. 201. These measures of demand elasticity are interpreted to mean that a 1 percent increase in price would lead to only a .1 percent decrease in quantity demanded in the intermediate run and to a .5 percent decrease in the long run.

¹¹Although not shown in the graph, tobacco acreage in 1986 was at its lowest point since 1874 as a result of the supply control program.

Chart 1
U.S. and Foreign Tobacco Production



tion. The chart shows that, after initially rising, poundage quotas for these two tobaccos generally have been decreasing in the 1980s.

As indicated earlier, a reduction in the U.S. shares of world tobacco production and total exports is an expected result of the supply restriction. Table 1 documents these share losses. For example, in the 1955-59 period, the United States accounted for more than 80 percent of the world's production of burley tobacco. By 1985, the U.S. share of burley production had fallen to 38 percent. Similar trends are evident for flue-cured tobacco and for the category labeled "all tobacco."

Not only have the U.S. shares of world production and trade fallen, but the use of imported tobacco has risen substantially (see table 2). Until the 1970s, the use of imported burley and flue-cured tobacco was negligible. In 1969, less than 1 percent of all burley tobacco used in the United States was imported. By 1985, imports accounted for more than 24 percent of all burley use. Other varieties not produced in this coun-

try, such as Oriental tobacco, continually have been imported for blending purposes.

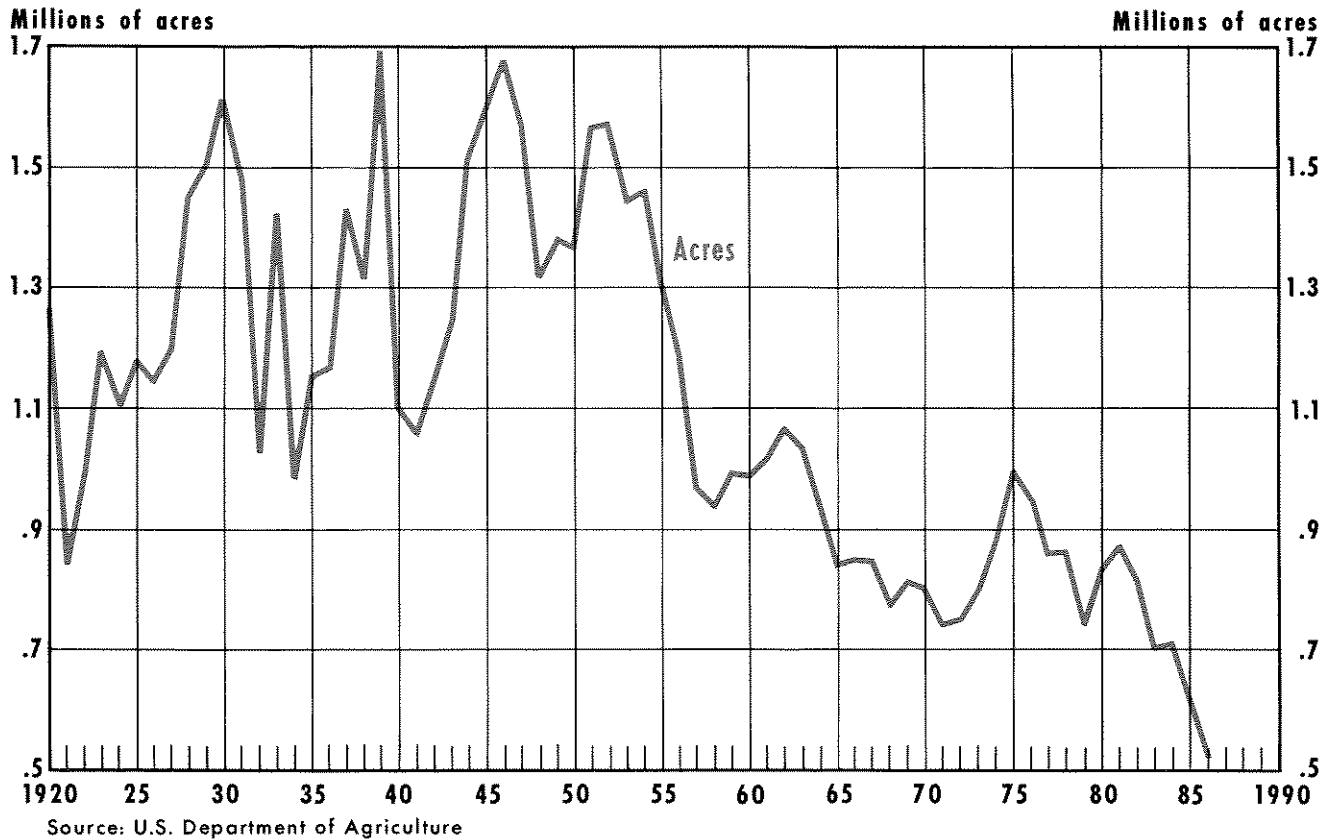
Another important trend is the reduction of the quality advantage that U.S. tobacco holds over foreign tobacco. Numerous sources assert that the quality gap between foreign and domestic tobacco is narrowing.¹² This reflects the fact that attempts to increase the price of high-quality tobacco have provided foreign producers with an incentive to improve the quality of their tobacco. The result of a smaller quality advantage and rising prices has led, predictably, to the loss of both domestic and foreign markets for U.S. tobacco.

Over time, the demand for U.S.-produced tobacco has become more elastic as other sources of supply from the rest of the world have appeared. The elastic-

¹²Starkey (1985), p. 50 and U.S. General Accounting Office (1982), p. 18.

Chart 2

Harvested Acreage of Burley and Flue-Cured Tobacco



ity of supply also has increased. In the short run, foreign tobacco producers were limited in their response to higher prices by their land base and other factors such as the knowledge and technology needed to produce higher-quality tobacco. With time, however, foreign producers have acquired these additional inputs. The result has been a dramatic increase in the quantity of tobacco supplied by the rest of the world. As a consequence, the impact of U.S. tobacco policy on world tobacco markets has declined.

Although the long-run benefits of supply control policies may be in question for U.S. tobacco farmers, benefits for foreign producers are obvious. These benefits are conferred in two ways. First, by restricting the supply of U.S. tobacco initially through quotas and later through the maintenance of the loan stocks by the growers' cooperatives, a higher world price is maintained. Second, the program creates a strong incentive for foreign producers to improve the quality of their tobacco by maintaining a higher price in the market for high-quality tobacco than would otherwise result.

None of these long-term trends of decreasing production, falling quotas or falling U.S. shares, however, were cause for concern. The purpose of supply controls was to raise the commodity's price and, more importantly, to raise the net revenue of farmers. For many years, the tobacco program was successful in this respect.

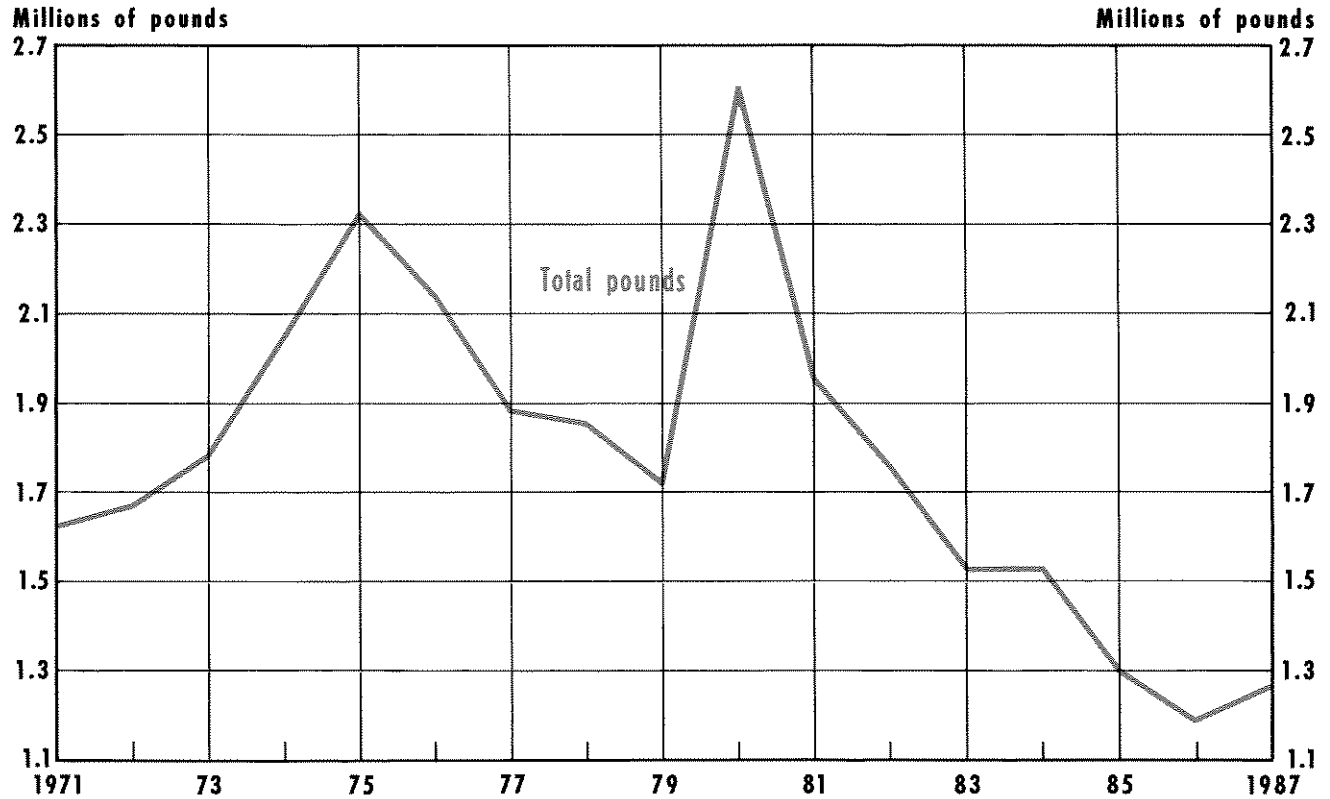
Over a recent period, however, the program led to lower revenues for tobacco growers. From 1982 to 1985, the poundage allotments for burley tobacco fell by 30.4 percent. Over this same period, however, the average price paid to growers for burley fell by 11.9 percent. The combination of lower output and lower price translated into a 38.7 percent decline in tobacco receipts for burley farmers.

RECENT PROGRAM DEVELOPMENTS AND CHANGES

In the 1980s, the tobacco price support mechanism led to major problems. The tobacco price support was,

Chart 3

Poundage Allotments for Burley and Flue-Cured Tobacco



Source: U.S. Department of Agriculture

Table 1

U.S. Percentage of World Tobacco Production and Exports

Year	Burley		Flue-Cured		All tobacco	
	Production	Exports	Production	Exports	Production	Exports
1955-59	82%	60%	41%	60%	23%	35%
1960-64	80	57	40	52	25	30
1970	62	33	30	46	19	28
1975	52	27	28	33	18	20
1980	44	27	20	29	16	20
1981	51	21	18	26	16	18
1982	49	30	13	23	13	18
1983	33	22	13	22	11	17
1984	42	18	12	24	12	17
1985	38	26	10	22	10	18

SOURCE: U.S. Department of Agriculture, *Tobacco Outlook and Situation Report* (December 1986), p. 42.

Table 2
Percentage of Imported Flue-Cured and Burley Tobacco Used Domestically

Year beginning July 1	Flue-Cured	Burley
1969	0.9%	0.6%
1970	1.6	0.6
1971	1.7	0.9
1972	1.9	1.6
1973	2.8	5.4
1974	3.4	8.4
1975	3.5	8.4
1976	4.6	7.2
1977	8.3	14.7
1978	9.3	15.1
1979	13.1	18.6
1980	11.7	22.3
1981	11.5	19.1
1982	17.7	24.1
1983	17.6	25.8
1984	20.9	28.9
1985	24.1	24.5

SOURCE: U.S. Department of Agriculture, *Tobacco Outlook and Situation Report* (April 1987), p. 14.

and still is, administered by growers' cooperatives, which purchased surplus tobacco and held it until it could be sold at a price above the support level. Any losses on the surplus stocks were absorbed by the Commodity Credit Corporation (CCC), while gains were redistributed to the cooperative's members. As the stocks held by cooperatives continued to grow but prospects for selling these stocks at a gain seemed remote, the potential cost to the government increased greatly.

In response, the No Net Cost Tobacco Program Act of 1982 was passed. This act stipulated that the tobacco program be run at no net cost to the government other than administrative costs. Under this law, assessments were levied on growers and buyers to support losses incurred by the program. In 1985, both buyers and producers of flue-cured tobacco were required to pay assessments of 7 cents per pound to cover program costs. This amount was roughly equivalent to \$140 per acre for farmers.

U.S. tobacco surpluses grew as the gap between the support price and the world price widened and imports gained a larger share of U.S. tobacco markets. With less domestic tobacco being sold on the market, the cooperatives purchased more surplus tobacco. As a result, the growers' potential liability for losses on

the stored tobacco increased. The assessments for 1986 were estimated at 30 cents per pound or \$600 per acre.

Legislation in 1985, however, relieved growers of the potential liability for losses on the stored tobacco. The CCC took title to the surplus stocks and sold them at discounts of up to 90 percent, resulting in a net loss of approximately \$373 million. This loss will not be recovered through the No Net Cost Act.

In exchange for the government's rescue, tobacco farmers accepted lower support prices. Because of the lower prices, the assessments fell to only 2 cents per pound. The United States Department of Agriculture (USDA) also was given increased freedom to reduce tobacco prices further if needed and was permitted to use a more market-oriented method of calculating support prices and setting quotas.¹³

The new tobacco program has resulted in substantially lower prices. The average tobacco price paid to growers fell from \$1.80 per pound in 1985 to \$1.45 per pound in 1986. As a result, tobacco exports rose in 1987. Imports also fell and now represent a smaller share of the tobacco used in the United States. Marketing quotas also have been increased in anticipation of growing sales.

CAN SUPPLY CONTROLS BE USED EFFECTIVELY ON OTHER CROPS?

The initial success of the tobacco program's use of supply controls can be attributed to supply and demand characteristics that are not present for other major crops. The tobacco program benefited from the fact that the demand for U.S. tobacco was inelastic because of a lack of a good substitute. Additionally, the world supply was inelastic because the United States held a dominant share of the world's production.

¹³The support price formerly had been determined by a combination of the parity index and limits set by the Secretary of Agriculture. Tobacco support prices currently are determined by a formula using five-year moving averages of tobacco prices and year-to-year changes in costs of production. This approach is substantially more "market-oriented" than the previous method, which was driven by costs of numerous products unrelated to the open market for tobacco.

The USDA determines tobacco quotas based on three factors. The first factor is the intended purchases of tobacco by cigarette manufacturers based on the support price. Cigarette manufacturers must provide these estimates and purchase a minimum of 90 percent of their stated intentions or face a penalty. The remaining two factors are the average tobacco exports of the past three years and an estimate of the quantity of tobacco needed to maintain tobacco stocks at desired levels.

Most, if not all, other major crops do not enjoy these characteristics.

For example, if the United States were successful in restricting the production of corn and raising its market price, consumers would most likely switch to any of the numerous coarse grains such as barley, sorghum, millet or oats, which are acceptable substitutes for many of the feed uses of corn. On an international level, the U.S. share of the world's coarse grains is small. If it were to impose supply controls on corn, it would be necessary to restrict greatly the importation of foreign grain that would occur in response to higher U.S. prices. Such trade restrictions might negatively affect the ability to export other U.S. commodities.

In some crops, the United States *does* have a large share of the world's production. Because of the availability of substitutes, however, supply restriction would be ineffective. The United States, for example, produces more than half of the world's soybeans. Unfortunately for advocates of supply controls, other crops like corn, coconut and cotton seed can be substituted for soybeans as inputs for edible oil production.

An additional factor restricting the potential use of supply controls for other crops is the world elasticity of supply of these crops. Most crops for which supply controls have been considered in the United States can be produced throughout the world. Wheat, for example, is produced in more than 100 countries. If the United States were successful in raising wheat prices by reducing production, other wheat-producing countries would be able to respond quickly by increasing production while the non-wheat-producing countries would have incentives to begin to produce wheat.

SUMMARY

Controlling the supply of agricultural products has received attention recently as a possible solution to the problem of falling farm prices and growing commodity surpluses. The original tobacco program provides an insight into the likely effects of such farm policy changes. The tobacco program enjoyed initial success because of unique characteristics of the supply of and demand for tobacco. The market power of the United States in the world tobacco market, however, has decreased over time as supply and demand

elasticities and the foreign share of world production have increased. To a large extent, the decline in market power can be attributed to U.S. policy actions. In response to this decline, the supply control program has been altered to be more market-oriented in setting support prices. The other major crops for which supply control legislation has been proposed do not have the necessary supply and demand characteristics needed to successfully impose a supply control program, even in the short term.

REFERENCES

- Belongia, Michael T. "The Dairy Price Support Program: A Study of Misdirected Economic Incentives," this *Review* (February 1984), pp. 5-14.
- Galston, William A. *A Tough Row to Hoe: The 1985 Farm Bill and Beyond* (Hamilton Press, 1985).
- Grise, Verner N. "The Tobacco Program: Recent Changes and Issues in the Eighties," *Tobacco Outlook and Situation Report*, U.S. Department of Agriculture, Economic Research Service (U.S. Government Printing Office, March 1984).
- Houthakker, H. S., and Lester D. Taylor. *Consumer Demand in the United States—1929-1970* (Harvard University Press, 1966).
- Johnson, Paul R. *The Economics of the Tobacco Industry* (Praeger Publishers, 1984).
- Pugh, Charles R. "County Lease Rates for Flue Cured Tobacco: Revisited," Economics Special Report No. 66 (North Carolina State University, May 1981).
- Starkey, James H. "An Industry Viewpoint of the Tobacco Program and its Effects," in *Removal of Price Supports and Supply Controls for U.S. Tobacco* (National Planning Association, Washington, D.C., 1985).
- Sumner, Daniel A., and Julian M. Alston. *Removal of Price Supports and Supply Controls for U.S. Tobacco: An Economic Analysis of the Impact* (National Planning Association, Washington, D.C., 1985).
- Tomek, William C., and Kenneth L. Robinson. *Agricultural Product Prices* (Cornell University Press, 1981).
- Tweeten, Luther. *Foundations of Farm Policy* (University of Nebraska Press, 1970).
- U.S. Department of Agriculture, Agricultural Marketing Service. *Annual Report on Tobacco Statistics*, various issues.
- _____. Agricultural Stabilization and Conservation Service. *History of Budgetary Expenditures of the Commodity Credit Corporation, Fiscal Year 1980-1986 Actual, December 29, 1986*.
- _____. Economic Research Service. *Tobacco Outlook and Situation Report*, formerly the *Tobacco Situation Report*, various issues.
- _____. *Tobacco, Background for 1985 Farm Legislation*, Agriculture Information Bulletin Number 468 (National Economics Division, September 1984).
- U.S. General Accounting Office. "Tobacco Program's Production Rights and Effects on Competition," Report by the Comptroller General of the United States, CED 82-70 (April 23, 1982).