THE BUDGET COSTS OF A "NO NET COST" TOBACCO PROGRAM

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Like the other commodity programs, the tobacco program was begun in the 1930s; since then the program histories have diverged. The tobacco program does not have regularly scheduled renewals and amendments like the other major commodity programs. The tobacco program is not a part of the "farm bill." Tobacco is the only major crop in the U.S. to have an effective federal quota for production, and in 1981, legislation was passed that made tobacco growers the first producer group to be fully responsible for the cost of their program. The so-called "no net cost" tobacco program was designed by tobacco supporters to reduce congressional pressure to eliminate the program. One of the arguments of tobacco opponents was that it was inconsistent for the government to campaign against tobacco use while supporting the production of the crop. The aim of the "no net cost" program was to eliminate the charge that taxpayers' money was being wasted in two efforts that worked at cross purposes. In fact, it is well known that the program is fully consistent with anti-smoking sentiments (the program reduces the amount of tobacco grown and raises the price paid by processors, thereby making smoking more costly: see Sumner and Alston). In any case, the "no net cost" approach seemed like good politics at the time. By promising to pay the costs of the program, growers were promising to take on a liability that had been quite small in the past.

The history of the last few years has revealed much about budget cost projections and about the politics of farm programs. (For commodities other than tobacco, see Blanton, Hitchner, Salathe, and Spitze.) Liabilities that tobacco growers assumed under the new law were surprisingly large in the first year of the new program, and they got much larger. By the end of 1985, when the "no net cost" program had been in effect for only four seasons, growers

were contributing about 15 percent of total revenues to a fund to pay program costs. Even at that rate, most argued that the so-called "no net cost" fund was too small to cover the accrued liabilities. Events had not worked out as projected. Instead of being an inexpensive political ploy to assure continued support for the program, the "no net cost" idea was about to cause the program to collapse under its own weight. In the spring of 1986 a new tobacco law allowed for a federal bailout for the growers. As a result, the period following the "no net cost" law (from 1982 through 1985) had become the most costly period in tobacco program history for taxpayers.

To understand this episode we must examine briefly how the tobacco program works. (For a complete discussion, see Sumner and Alston.) Along the way, we will see how the peculiar measurement of budget costs has meant that the bailout in the Tobacco Reform Act of 1986 actually seemed to be a positive factor in reducing deficits.

Budget Costs and the Tobacco Program

The tobacco program is comprised of production quotas and price supports. The quota is set in each year at a level that is supposed to allow the market to clear at a price above the support price. Under equilibrium, the only tobacco to go under loan would be the odd lot that for one reason or another does not receive a bid above the support price for that type and grade. Because tobacco actually improves in storage, and because quota in future years quota is determined with loan stocks in mind, tobacco taken under loan in one season might be expected to be sold to commercial buyers in future years. Further, increases in value with storage and in response to quota cuts were traditionally expected to pay storage costs.

Under these conditions, the tobacco program would have only minor administrative costs. Most other commodity programs, on the other hand, are expected to be costly. In fact, in the last several years, the main (if often unstated) rationale for the programs has been to transfer money from taxpayers to the farm sector. In tobacco the major transfer is usually designed to be from consumers in the form of higher prices that result from a smaller crop.

Events of the last five years have not gone according to plan in the tobacco industry. The keys to low program costs are (1) the ability to set quota and/or support prices at levels that allow the market to clear with only minor amounts of the crop going under loan, and (2) the ability and resolve to adjust quota levels enough to help liquidate loan stocks quickly. For a number of reasons neither of these conditions has prevailed in the 1980s.

Calculation of Budget Costs for Tobacco

The only federal budget outlays that are charged directly to the tobacco program are loan payments made by the Commodity Credit Corporation (CCC) for tobacco that does not receive a commercial bid above the support price. Each year an average support price for each type of tobacco is established either by national legislation or by the USDA under strict guidelines set by such legislation. Before the start of each marketing season, USDA officials set a specific support price for each grade within the type categories. These grade prices must be set such that their weighted average equals the price set by legislation, where the weights are the expected share of each grade in total production. Setting these specific grade support prices exactly is impossible, given that there are over 150 different grades for some types.

The loan and storage features of the tobacco program involve the use of grower owned and operated cooperatives as intermediaries. For example, for

flue-cured tobacco, the Flue-Cured Tobacco Cooperative Stabilization Corporation (known in the trade as "Stabilization") takes control of all tobacco that goes under loan. At the time of the sales auction, Stabilization pays the farmer for this tobacco at the loan rate minus one cent, using funds which it (Stabilization) borrows directly from the CCC. Stabilization stores the crop and arranges for sale to private buyers. Each month, Stabilization pays to the CCC either all the receipts or up to the total loan amount for tobacco sold that month. From 1982 on, under the "no net cost" program, Stabilization also has held grower "no net cost" contributions for credit against potential losses. "No net cost" funds will be turned over to the CCC as required to offset losses on a crop only when the last tobacco of a given crop year is sold to a private buyer. This has not happened yet and probably is not going to happen until 1994.

The Budgetary Implications of Recent Changes in the Tobacco Program

In 1985 the "no net cost" assessment was used as an immediate rebate to commercial buyers at auction. This had the effect of lowering the net price that buyers paid. The assessment for this part of the 1985 crop was then not available to offset losses on prior crops. There was general agreement that the assessment fund was not large enough to cover expected losses on the 1982-1984 crops. For burley tobacco, there was a major loss associated with a 1983 crop, the quality of which was severely affected by drought. However, this 1983 burley tobacco received grades from the USDA and so was eligible for nonrecourse loans. However, much lower evaluations of the tobacco by commercial buyers meant that an unusually large percentage of the crop went under loan. Major buyers indicated further that they would buy the stored burley tobacco from the 1983 crop only at prices in the range of 10 percent of

the loan rate. The accumulated assessment in the burley "no net cost" fund was far short of covering the implied losses.

The Tobacco Reform Act of 1986 reduced average support prices by about 20 percent and established a formula for setting support prices based on a moving average of past market prices and on a USDA index of prices paid by tobacco farmers. The new law also changed the method for setting quotas. For 1986 and subsequent years, major domestic buyers will be required to state in the spring how much tobacco they expect to purchase during the upcoming crop year. Exports are projected to be equal to their average quantity for the previous three years. The Secretary of Agriculture sets quota as the sum of domestic purchase commitments and past export levels, with an adjustment for current inventory levels and other market conditions.

Because of the severe discounts placed on the 1976 to 1981 flue-cured crops and the 1983 burley crop by the Tobacco Reform Act of 1986, the receipts to CCC on this tobacco will be minimal. The law, however, reduced significantly the potential losses for farmers on the 1982 through 1984 crops. The lower price support level and the buyout allow accumulated assessments to cover expected liabilities on the sale of the 1982-1984 crops.

The 1986 law allows the tobacco program to make a fresh start on the operation of a "no net cost" program. However, the restrictions on quota and price support adjustments still constrain the flexibility of the program to avoid losses on tobacco taken under loan. Under current law and budget calculations, the price support loans are a budget outlay when they are made. An associated budget inflow occurs when the grower cooperatives sell the stored tobacco and repay the loan. These two transactions are not really connected in the calculations of budget outlays. The net costs of the tobacco program in

any year are measured simply as loan outlays minus repayments, without changes in the quantity of crop in storage being treated as a change in the asset position of the government. The result of this convention is that measured or projected budget consequences of the 1986 Act show a net gain to the federal treasury over the next year or so. Even though we know that the taxpayer has lost, the "budget consequences" do not really show that loss.

Projecting Federal Budget Outlays from the Operation of the New Tobacco Program

This analysis of budget outlays of the tobacco program is based on operation under the Tobacco Reform Act of 1986. The law set a schedule for liquidation of stocks held under nonrecourse loans. This feature provides for the payoff of loans for crop years from 1976-1984 over a period of eight years. The law also provides methods for calculating quota and average price support levels for 1986 and subsequent crop years.

As noted previously, the major gross outlays from the tobacco program are in the form of nonrecourse loans made to growers for tobacco that does not receive a commercial bid above the price support for that type and grade. Other costs of the CCC or the Agricultural Stabilization and Conservation Service (ASCS), such as interest charges and administrative costs, usually are not allocated directly to each commodity program. These costs will not be analyzed in detail here.

I will consider only the two major tobacco categories, flue-cured (types 11, 12, 13, and 14) and burley (type 31). Other tobacco types account for less than 10 percent of the total crop value; budget costs are also minor. Several of the minor types (i.e., Maryland, type 32 and some cigar tobaccos) are not covered by federal programs.

The programs for flue-cured and burley tobaccos are similar but not identical. The budget costs associated with each type will be considered separately, beginning with flue-cured. (USDA Tobacco Outlook and Situation contains most of the basic data used in these calculations.)

Budget Outlays for Flue-Cured Tobacco, 1986-1995

Net budget outlays for any year are the sum of receipts from the repayment of nonrecourse loans made in the past and outlays in the form of nonrecourse loans made on the current crop. Both repayments and loans depend on several unknown quantities such as weather, demand shocks, and changes in policies. Net outlays therefore have a high degree of potential variability. The reasoning behind key assumptions will be emphasized to help provide some understanding of the potential errors in the projections.

Flue-Cured Loan Repayments:

The Tobacco Reform Act of 1986 provides for the sale of flue-cured stock held under loan from the 1976-1984 crop years within the next eight years. It is usually assumed that the sale will take place in eight equal yearly installments. Of the total stock, about 192 million pounds was from the crop years 1976-1981. This tobacco was to be sold at a 90 percent discount from the already discounted October 1984 list price. About 392 million pounds of tobacco from the 1982, 1983, and 1984 crop years were sold at a 10 percent discount. The total price of the stored flue-cured tobacco contracted for sale in the legislation was about $1.2 billion. In addition to removing tobacco and making payments over eight years, the tobacco companies will pay all interest and storage charges on the tobacco beginning in July 1986.

All of the tobacco from the 1976-1984 crops is being sold for prices below the associated loan rates and accumulated interest. Therefore the receipts from the buyout will be transferred directly to the CCC. I assume that this will amount to loan repayments of roughly $150 million per year for each year from 1986-1993 ~~(row 4 of Table 1)~~.

For tobacco from the crop years 1982, 1983, and 1984, growers are responsible for any financial losses suffered under the operation of the nonrecourse loan program. The "no net cost" rules provide for a settling of any CCC losses for a given crop year at the time when all tobacco from that year finally has been sold to private buyers. Assessments were collected from growers in each of the years after 1981 with additional funds collected from buyers in 1986. Under the rules of the 1986 buyout, the last of the 1982-1984 crops will be released to buyers in 1993. So under the current schedule no disbursement of "no net cost" funds will be made until that year. At that time an accounting for CCC costs associated with each crop year will be compared to the total loan repayments made on the crop. The 1986 buyout rules stipulated only a 10 percent discounting of 1982-1984 flue-cured crops. Therefore it is anticipated that CCC losses will be relatively small and that "no net cost" fund holding will cover the required reimbursement.

For the years 1986 and beyond, there will also be sales from the 1985 and subsequent tobacco crops. Holdings of the 1985 crop were not a part of the 1986 buyout negotiations; there are about 125 million pounds of the 1985 crop being held under loan at the beginning of the 1986 sales year. This amounts to roughly 15 percent of the total 1985 crop. This tobacco will be sold over the next several years. The <u>effective</u> support price for the 1985 crop is the same as that assigned by law for 1986. The quality of the 1985 crop was also about

normal. Given normal production and adjustments in quota, the 1985 crop will be sold to private buyers over a period of about four to five years. Allowing for 25 million pounds of sales per year for each year from 1986-1990 at approximately $2.00 a pound per year (not including carrying charges) yields CCC receipts of about $50 million per year ~~(row 5 of Table 17.~~

Loan repayments from crops after 1986 obviously depend on how much tobacco is taken under loan in each year. Given a quantity taken under loan, I will assume that each crop is sold out of Stabilization storage over a five-year period.

Loan Outlays:

The U.S. flue-cured tobacco industry has been out of equilibrium for a decade. Production has fallen from more than 1,400 million pounds in 1975 to 700 million pounds projected for 1986. For the last five years the tobacco program has been under continuous pressure for change, but even significant adjustments were not enough to eliminate the problems. By 1985 the price support was about 20 percent below that proscribed by the basic formula. The 1986 law made permanent the 1985 administrative decision to reduce the price support a further 15 percent. The new price support formula is based on a weighted average of past market prices and the prices-paid index. The new method of setting quotas by surveying domestic buyers and adding their intended purchases to the average of past exports was designed to be more attuned to the market conditions. An inventory adjustment and an additional discretionary adjustment allow the Secretary of Agriculture further opportunities to tune the quota to expected demand.

For 1986 the effective quota (basic quota adjusted for a carryover of over-marketings from the previous year) was set at 694 million pounds. The

basic quota was reduced by 6 percent from 1985, the largest reduction allowed by law. Expected production and marketings are expected to be roughly equal to the quota.

Tobacco is taken "under loan" by Stabilization if it does not receive a market bid above the price support level for that type and grade. In the past decade the percentage of the crop going into Stabilization stocks has ranged from lows of 1.9 percent in 1974 and 5.3 percent in 1978 to highs of 26 percent in 1982 and 21 percent in 1976. From 1973 to 1985 there were four years when less than 8 percent of the crop was taken under loan, seven years when more than 15 percent of the crop was taken, and only two years at the intermediate levels.

For the last five years there has been a general (correct) expectation that U.S. flue-cured tobacco prices were coming down. Buyers speculated that by allowing Stabilization to hold the crop initially, they could purchase later at lower prices. The 1986 Tobacco Reform Act confirmed expectations but also signaled an end to the downward trend. Current levels of commercial stocks indicate an equilibrium in stock levels when Stabilization stocks are included.

In summary, it seems that 1986 is a base year in which quota and expected demand are in fairly close accord. With normal quality we would expect the crop to be sold at prices at or above the support prices. However, given normal variation in qualities and allowing for some additional adjustments to the new program, we may project that about 10 percent of the crop will be taken under loan ~~(rows 1 and 2 of Table 1)~~.

In some years the relatively high-priced grades have been placed under loan; in other years it has been the lower-priced grades. Using an average support price of $1.50 for about 70 million pounds yields outlays of about $105

million. However, the reduction of 4.3 percent due to compliance with Gramm-Rudman rules leaves about $100 million for gross outlays in 1986 ~~(row 3 of Table 1)~~.

Budget costs depend on the quantity of tobacco taken under loan. On the supply side, a small increase in quota is assumed for the years 1987 through 1991. The total market is assumed to shrink, but the U.S. flue-cured share rises slightly so that U.S. flue-cured sales in the domestic market remain constant. The world export market facing the U.S. is assumed to grow slowly and the U.S. share is assumed to end its long decline, so U.S. exports are assumed to rise slowly over the next five years as the recent U.S. price declines take effect in the world market. Then assuming that U.S. exports grow by a total of 20 percent over five years implies expansion from about 350 million tons in 1985/86 to 420 million in 1991 ~~(row 1 of Table 1)~~.

In each year from 1987 through 1995 it is assumed that the average price support for tobacco taken under loan will remain at $1.50. It is assumed that 10 percent of the crop will be taken by Stabilization. Finally, it is assumed that each crop is sold out of Stabilization stocks over a five-year period for roughly $1.50 per pound plus carrying charges. A summary of an algebraic model and a table of budget projections for flue-cured tobacco may be found at the end of the paper. It is assumed that none of the "no net cost" settlements are made until 1991 and that these assessment funds plus sales and loans cover the carrying charges from the crops placed under loan.

Budget Costs of the Burley Tobacco Program

Budget costs for burley tobacco are determined in essentially the same way as flue-cured tobacco costs. For burley, a contracted buyout of tobacco held under loan for the 1982 and 1984 crops was included in the Tobacco Reform Act

of 1986. In addition, the "no net cost" commitments of the 1983 crop are eliminated, so the CCC absorbs any loss. The burley tobacco buyout was for about 192 million pounds and about $600 million. In the case of burley tobacco, companies have five years to remove and pay for the tobacco. If we assume that companies spread their payments over five years, the burley buyout will yield about $75 million per year for each year from 1986 through 1993 ~~(row 4 of Table 2)~~. I assume that any receipts for the sale of the 1983 crop will be negligible. The burley loan stocks from the 1985 crop are approximately 80 million pounds. If it is assumed that this tobacco is sold over a period of five years at a price of $1.50 per pound, it then yields about $24 million per year ~~(row 5 of Table 2)~~. So the gross inflow from the burley tobacco program for past crops will be approximately $100 million per year, not including carrying charges on the 1985 crop.

For 1986 burley, effective quota was set at 463 million pounds. This is a significant decline from 1985. The 1986 price support was set at $1.488, the same as in 1985. If we assume normal quality, it is reasonable to assume also that about 10 percent of the crop is taken under loan. For 1986 this amounts to 47 million pounds. An assumption that the tobacco under loan is of average price yields a gross outlay of about $71 million for new loans. The supply and demand balance for burley tobacco suggests that quota levels of about 500 million pounds at a price support of about $1.50 can be maintained over the next several years. Assuming that 10 percent of each crop goes under loan at the average price continues a gross outlay of $75 million per year ~~(rows 1, 2, and 3 of Table 2)~~. Assuming an average period of five years to sell out, the crop receipts from crops after 1985 ~~are shown in row 6 of Table 2~~. The would be $15 million in 1986, $30 million in 1987, $45 million in 1988, ~~and~~ $60 million in 1989, and $75 million in 1990.

calculation equations are similar to those for flue-cured and may be found at the end of the paper.

Further Discussion of No Net Cost Assessments

The U.S. tobacco program was to be operated at zero net budget cost according to the amendments passed in 1981. Beginning in 1982 the government began setting and collecting grower assessments that were designed to cover any costs of operation of the price support system. They have been held in a fund or account to be released to the CCC at the time when all tobacco for a particular crop year is completely sold and CCC books for that crop year are cleared. Under current expectations and the sale of loan stocks mandated by the Tobacco Reform Act of 1986, the 1982 through 1984 crops will not be completely sold until 1993. To see how the "no net cost" fund operates, I will examine how the settling of the 1985 crop will likely take place. Even in 1985 the assessment program did not operate as initially designed. The assessment for flue-cured tobacco was set at 25 cents per pound, but 15 cents per pound were used as a direct rebate to buyers at the time of sale. In 1985 approximately 130 million pounds of tobacco failed to receive a bid over the support price and were stored under the nonrecourse loan program. This tobacco was valued at approximately $260 million. By summer 1986 approximately 7 million pounds of this tobacco had been sold to commercial buyers. As this tobacco is sold, the Flue-cured Tobacco Cooperative Stabilization Corporation transfers the proceeds of sales to the CCC each month. If we assume that the last of the crop is sold by 1992, at that time the total loan amount and accrued interest owed to the CCC is compared to payments previously made. Any positive balance owed on the nonrecourse loans is then paid to the CCC out of the "no net cost" assessment account. The price support for tobacco over the

next five years is expected to remain relatively constant. Since interest storage charges are expected to be covered by appreciation of the value of the stored tobacco, the only expected losses are on the amount by which specific piles of tobacco were overpriced at the time of the original auction. About 15 percent of the 1985 crop was taken under loan. For this tobacco the 25-cent assessment is available to fund discounts. The accrued interest on the "no net cost" account is also available.

For the 1986 flue-cured crop the "no net cost" assessment is 3 cents per pound. Assuming that 10 percent of the crop goes under loan, this would allow a loss of about 30 cents for each pound of tobacco that is held under loan.

Storage, Interest, and Other Carrying and Handling Charges

Tables 1 and 2 do not explicitly show any carrying charges for tobacco taken under nonrecourse loans for sale in later periods. The general practice of Stabilization--and the burley tobacco cooperatives as well--is to set sales prices for tobacco such that their receipts cover their own direct costs plus accrued interest on CCC loans. For the tobacco from 1976 through 1984 that was sold under conditions laid out in the Tobacco Reform Act in the spring of 1986, the amount of the sales price ($1.2 billion for flue-cured and $0.6 billion for burley) included interest and other costs up through July 1986. The buyers have up to eight years in which to take delivery of the tobacco. They are responsible, however, for all interest charges on CCC loans and for storage and handling charges that accrue after July 2, 1986. I have not shown these interest charges as outlays by the CCC nor have I shown the payment of interest charges as a part of the loan repayments.

This same practice is followed for the 1985 and subsequent crops. It is further assumed that beginning in the early 1990s, transfers out of the "no net

cost" assessment accounts will be used to cover any additional carrying charges.

Concluding Remarks

The Tobacco Reform Act of 1986 was designed to put the tobacco program back into balance by three measures: (1) it arranged for the removal of the large unsold inventories from previous crop years; (2) it reduced price support levels so that commercial buyers were likely to take more U.S. tobacco, and it provided that future price support levels would be more sensitive to demand conditions; and (3) it allowed the tobacco quota to be lowered and also to be more sensitive to expected quantities demanded at the levels indicated by the price support formula. These changes made it more likely that the tobacco program could operate with less disruption of the market, with lower outlays for nonrecourse loans, and with lower expected losses from the storage and subsequent sale of tobacco taken under loan. It is anticipated that assessments in the range of 2 to 3 cents per pound will cover any losses.

For both flue-cured and burley tobacco there is likely to be a period of large net positive federal budget inflows. This will not be enough, however, to compensate for the costs of the last decade.

The 1986 law also provided a precedent for a federal bailout of the "no net cost" arrangement should unforeseen events occur. The sale of the flue-cured tobacco from 1976-1981 and very low prices tied to the sale of 1982-1984 tobacco at much higher prices amounted to a clear subsidy to the "no net cost" fund for flue-cured tobacco growers. For burley tobacco growers, losses on the poor quality 1983 crop resulted in an explicit subsidy of about $500 million.

So the Tobacco Reform Act of 1986 has two long-run results: (1) a tobacco program that is more likely to operate at low costs and (2) the reasonable expectation that, should the costs rise, the federal government will be there to pick up the tab.

Table 1. The Calculation of Budget Costs for Flue-Cured Tobacco, 1986-1991

Row	Entry	Units	Crop Year (July 1 - June 30) 1986	1987	1988	1989	1990	1991
1	Basic quota	mil. lbs.	729	714				
2	Effective quota	" "	692	714				
3	Production	" "	682	714				
4	Marketings	" "	692	714				
5	Taken under loan	" "	42	71				
6	Sales to trade	" "	650	643				
7a	"Buyout" loan removals	" "	93	70				
7b	"Other" loan removals	" "	25	33				
7c	"Other" loan removals by year:							
	1985	" "	25	25				
	1986	" "	0	8				
7	Loan removals	" "	118	103				
8	Disappearance	" "	880	900				
9a	Beginning "buyout" stocks	" "	584	491				
9b	Beginning "other" stocks	" "	125	100				
9c	Beginning "other" stocks by year:							
	1985	" "	125	100				
	1986	" "	0	42				
9	Beginning loan stocks	" "	709	633				
10	Beginning trade stocks	" "	1250	1118				
11	Total beginning stocks	" "	1959	1171				
12a	Ending "buyout" stocks	" "	491	421				
12b	Ending "other" stocks	" "	142	180				
12c	Ending "other" stocks by year:							
	1985	" "	100	75				
	1986	" "	42	34				
	1987	" "	0	71				
12	Ending loan stocks	" "	633	601				
13	Ending trade stocks	" "	1118	964				
14	Total ending stocks	" "	1771	1565				
15a	Realized average loan rate	cents/lb.	143.8	143.8				
15	Average support price	" "	143.8	143.8				
16	Average market price	" "	155	149				
17	Value of loan receipts	$ mil.	60	102				
18	Value of trade receipts	"	1088	958				
19	Total gross returns	"	1148	1060				
20	Loan outlays	"	60	102				
21a	Repayments from "buyout"	"	191	144				
21b	Repayments of "other" loans	"	36	48				

(Table 1, page 2)

21c	Repayments of "other" loans by year:			
	1985	"	36	36
	1986	"	0	12
21	Loan repayments	"	227	192
22	Net outlays (inflow)	"	(167)	(90)

Fiscal year (Oct. 1, 1985-Oct. 1, 1986)

23	Loan outlays	$ mil.	70	96
24	Loan repayments	"	440	223
25	Net outlays (inflow)	"	(370)	(127)

Values for 1987, etc. are based on the equations and starting values in the list of equations.

Notes to Table 1:

a. 1986 values for flue-cured tobacco are not included in Table 1 but are used in the calculations of 1986 and 1987 values:

Beginning "other" loan inventory	125
Beginning "buyout" loan inventory	584

The effective loan rate for 1985 and 1986 is to be 143.8.

b. Calculation of 1986 fiscal year flue-cured loan repayments:

Loan stocks sold in:	mil. lbs.	$
Oct. and Nov. 1985	7	10
Dec. (incentive program)		
76-81 crops	52	10
82-84 crops	101	150
85 crop	3	5
Jan.-June		
76-81 crops	4	6
82-84 crops	30	45
85 crop	5	8
July-Sept.		
Buyout	93	190
85 crop	10	15
		439

General assumption will be that fiscal year t will be 3/4 crop year t-1 + ¼ crop year t.

c. The recent questions and unofficial downward revisions of U.S. leaf tobacco exports may imply that domestic disappearance has been underestimated. In general, these questions about export data raise further concern about the accuracy of our figures for tobacco stocks and use in the U.S.

Table 2. The Calculation of Budget Costs for Burley Tobacco, 1986-1991

Row	Entry	Units	Crop Year (Oct. 1 - Sept. 30) 1986	1987	1988	1989	1990	1991
1	Basic quota	mil. lbs.	493	500				
2	Effective quota	" "	488	500				
3	Production	" "	488	500				
4	Marketings	" "	488	500				
5	Taken under loan	" "	49	50				
6	Sales to trade	" "	439	450				
7a	"Buyout" loan removals	" "	56	56				
7b	"Other" loan removals	" "	16	26				
7c	"Other" loan removals by year:							
	1985	" "	16	16				
	1986	" "	0	10				
7	Loan removals	" "	72	82				
8	Disappearance	" "	550	550				
9a	Beginning "buyout" stocks	" "	280	224				
9b	Beginning "other" stocks	" "	80	113				
9c	Beginning "other" stocks by year:							
	1985	" "	80	64				
	1986	" "	0	49				
9	Beginning loan stocks	" "	360	337				
10	Beginning trade stocks	" "	870	831				
11	Total beginning stocks	" "	1230	1168				
12a	Ending "buyout" stocks	" "	224	168				
12b	Ending "other" stocks	" "	113	137				
12c	Ending "other" stocks by year:							
	1985	" "	64	48				
	1986	" "	49	39				
	1987	" "	0	50				
12	Ending loan stocks	" "	337	305				
13	Ending trade stocks	" "	831	813				
14	Total ending stocks	" "	1168	1127				
15a	Realized average loan rate	cents/lb.	148.8	148.8				
15	Average support price	" "	148.8	148.8				
16	Average market price	" "	156.2	156.2				
17	Value of loan receipts	$ mil.	73	74				
18	Value of trade receipts	"	686	703				
19	Total gross returns	"	759	777				
20	Loan outlays	"	73	74				
21a	Repayments from "buyout"	"	120	120				
21b	Repayments of "other" loans	"	24	39				

21c	Repayments of "other" loans by year:			
	1985	"	24	24
	1986	"	0	15
21	Loan repayments	"	144	159
22	Net outlays (inflow)	"	(71)	(85)

Notes to Table 2:

a. The 1983 crop burley stock is left completely outside the budget calculations. It is not clear what the disposition and income related to that tobacco will be. As of September 1986, the CCC held about 200 million pounds.

b. Crop year t corresponds to fiscal year t + 1.

c. Burley values used in calculations of 1986 budget information:

Buyout total: $600 million for
Pounds of burley: 284 (left from 1982 and 1984 crop years).

1985 loan rate: 148.8.

Budget Costs and Related Equations
for Flue-Cured Tobacco
(with suggested parameter values noted)

	Dependent Variable	Equation
(1)	Basic Quota	$BQ_t = a_q(1 + r_q(t - 1986) + b_{qt}$

a_q - initial quota level (700 ± 20) b_{qt} - adjustment in quota allowing for one-year jumps (0 ± 20)
r - industry growth rate (.02 ± .1)

(2) Effective Quota $EQ_t = BQ_t + (EQ_{t-1} - M_{t-1}) * (1 + a_e)$

a_e - adjustment for the pattern of over- and under-quota sales (0 ± .2)

(3) Production $PD_t = EQ_t * (1 + a_p)$

a_p - adjustment for yield and crop carryover (0 ± .1)

(4) Marketings $M_t = EQ_t * (1 + a_m)$

a_m - adjustment for over- or undermarketing (0 ± .03)

(5) Quantity under Loan $L_t = M_t * a_e$

a_e - proportion of crop going under loan (.1 + .2, -.1)

(6) Sales to Trade $S_t = M_t - L_t$

(7a) "Buyout" Loan Inventory Removals $BLR_t = BBLI_t/(1994 - t)$

(7b) "Other" Loan Inventory Removals $OLR_t = \sum_{k=t-a_i}^{t-1} OLR_{tk}$

(7c) Other Loan Inventory Removals for Crop Year k $OLR_{tk} = BOLI_{tk}/[a_i - (t - k)$

a_i - maximum number of years loan stocks are held

(7) Loan Inventory Removals $LR_t = BLR_t + OLR_t$

(8) Disappearance

$$D_t = a_d * [(1 + r_d) * (t - 1986)] + b_{dt}$$

a_d - initial disappearance level (900 ± 50)

b_{dt} = one-year adjustments in disappearance (0 ± 50)

r_q - disappearance growth rate (0 ± .1)[1]

(9a) Beginning "Buyout" Loan Inventory

$$BBLI_t = EBLI_{t-1}$$

(9b) Beginning "Other" Loan Inventory

$$BOLI_t = EOLI_{t-1}$$

(9c) Beginning "Other" Loan Inventory from Crop Year k

$$BOLI_{tk} = ELI_{t-1,k}$$

$$(BOLI_{t,t-1} = L_{t-1})$$

(9) Beginning Loan Inventory

$$BLI_t = BBLI_t + BOLI_t$$

(10) Beginning Trade Inventory

$$BTI_t = ETI_{t-1}$$

(11) Total Beginning Trade Inventory

$$BI_t = BLI_t + BTI_t$$

(12a) Ending "Buyout" Loan Inventory

$$EBLI_t = BBLI_t - BLR_t$$

(12b) Ending "Other" Loan Inventory from Crop Year k

$$EOLI_{t,k} = BOLI_{tk} - OLR_{tk}$$

(12c) Ending "Other" Loan Inventory

$$EOLI_t = \sum_{k=t-a_i}^{t-1} EOLI_{t,k} + L_t$$

(12) Ending Loan Inventory

$$ELI_t = EBLI_t + EOLI_t$$

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[1]Disappearance and quota currently are out of balance and will remain so while industry stocks are above equilibrium levels. In the period 1976 to 1981 the total stocks-to-disappearance ratio was about 1.8. At the beginning of the 1986 crop year it stood at 2.2. At the beginning of the 1987 crop year it is expected to be 2.0.

(13) Ending Trade Inventory $ETI_t = BTI_t + S_t + LR_t - D_t$

(14) Total Ending Inventory $EI_t = ELI_t + ETI_t$

(15a) Realized Average Loan Rate $RLR_t = SP_t (1 + a_r)$

a_r - % of deviation of actual loan rate from ex ante support price (0 ± .1)

(15) Average Support Price $SP_t = a_s * (1 * r_s(t - 1986))$

a_s - initial average support price level (143.8 ± .05)

r_s - rate of change of support price (0 ± .05)

(16) Market Price $P_t = SP_t * (1 + a_{mp})$

a_{mp} - % market price is above support level (.05 + .1, -.03)

(17) Value of Loans Received $VL_t = RLR_t * L_t$

(18) Value of Sales to Trade $VS_i = P_t * S_t$

(19) Value of Marketings (gross returns) $VM_t = VL_t + VS_t$

(20) Loan Outlays $LO_t = VL_t$

(21a) Repayments from "Buyout" $RB_t = BLR_t * a_{er}$

a_{er} - average value of buyout stocks set in July 1986 (2.05 ± .10)

(21b) Repayments of "Other" Loans $ROL_t = OLR_t * RLRR_t$

(21c) Average Realized Loan Rates for Tobacco Removed from Loans

$$RLRR_t = OLR_{t-a_i,t}/OLR_t) RLR_{t-a_i} + (OLR_{t-(a_i-1),t}/OLR_t) RLR_{t-a_i} + \ldots + (OLR_{t-1,t}/OLR_t) RLR_{t-1}$$

$OLR_{(t-(a_i-k)),t}$ - the amount of tobacco taken under loan in crop year $t-(a_i-k)$ and sold in year k. For example, let $a_i = 5$ and consider loan removals in t = 1990. $OLR_{t-a_i,t}$ would be the amount of 1985 tobacco removed from loan stocks in 1990 and $OLR_{t-(a_i-2)t}$ would be the amount of 1987 (1990 - (5-2) tobacco removed from loan stocks in 1990.

(21) Repayments of Loans $RL_t = RB_t + ROL_t$

(22) Net Outlays $NO_t = LO_t - RL_t$

(23) Fiscal Loan Outlays $FLO_t = LO_{t-1} * (1 - a_{fm}) LO_t * a_{fm}$

a_{fm} - % of crop marketed by Oct. 1 (.85 ± .03)

(24) Fiscal Repayments $FRL_t = RL_{t-1} * (1 - a_{fr}) + RL_t * (a_{fr})$

a_{fr} - % of repayments made in July, Aug., Sept. (.25 ± .25)

(25) Fiscal Year Net Outlays $FNO_t = FLO_t - FRL_t$

Notes relating to the equations underlying the calculation of budget costs and related quantities for flue-cured tobacco

These equations are for a crop year basis (July 1 - June 30) starting in 1987. The subscript t refers to crop year. Capital letters designate prices, quantities, or dollar values. Small letters designate parameters. For each parameter a suggested value and a suggested range are given. Quantity units are millions of pounds farm weight. Prices are in cents per pound. Values are in millions of dollars.

Budget Costs and Related Equations
for Burley Tobacco
(with suggested parameter values noted)

	Dependent Variable	Equation
(1)	Basic Quota	$BQ_t = a_q(1 + r_q(t - 1986) + b_{qt}$

a_q - initial quota level (500 ± 25) b_{qt} - adjustment in quota allowing for one-year jumps (0 ± 20)
r - industry growth rate (.02 ± .1)

(2) Effective Quota $EQ_t = BQ_t + (EQ_{t-1} - M_{t-1}) * (1 + a_e)$

a_e - adjustment for the pattern of over- and under-quota sales (0 ± .2)

(3) Production $PD_t = EQ_t * (1 + a_p)$

a_p - adjustment for yield and crop carryover (0 ± .1)

(4) Marketings $M_t = EQ_t * (1 + a_m)$

a_m - adjustment for over- or undermarketing (0 ± .03)

(5) Quantity under Loan $L_t = M_t * a_e$

a_e - proportion of crop going under loan (.1 + .2, -.1)

(6) Sales to Trade $S_t = M_t - L_t$

(7a) "Buyout" Loan Inventory Removals $BLR_t = BBLI_t/(1990 - t)$

(7b) "Other" Loan Inventory Removals $OLR_t = \sum_{k=t-a_i}^{t-1} OLR_{tk}$

(7c) Other Loan Inventory Removals for Crop Year k $OLR_{tk} = BOLI_{tk}/[a_i - (t - k)$

a_i - maximum number of years loan stocks are held

(7) Loan Inventory Removals $LR_t = BLR_t + OLR_t$

(8) Disappearance

$$D_t = a_d * [(1 + r_d) * (t - 1986)] + b_{dt}$$

a_d - initial disappearance level (550 ± 25)

b_{dt} = one-year adjustments in disappearance (0 ± 50)

r_q - disappearance growth rate (0 ± .1)

(9a) Beginning "Buyout" Loan Inventory

$$BBLI_t = EBLI_{t-1}$$

(9b) Beginning "Other" Loan Inventory

$$BOLI_t = EOLI_{t-1}$$

(9c) Beginning "Other" Loan Inventory from Crop Year k

$$BOLI_{tk} = ELI_{t-1,k}$$

$$(BOLI_{t,t-1} = L_{t-1})$$

(9) Beginning Loan Inventory

$$BLI_t = BBLI_t + BOLI_t$$

(10) Beginning Trade Inventory

$$BTI_t = ETI_{t-1}$$

(11) Total Beginning Trade Inventory

$$BI_t = BLI_t + BTI_t$$

(12a) Ending "Buyout" Loan Inventory

$$EBLI_t = BBLI_t - BLR_t$$

(12b) Ending "Other" Loan Inventory from Crop Year k

$$EOLI_{t,k} = BOLI_{tk} - OLR_{tk}$$

(12c) Ending "Other" Loan Inventory

$$EOLI_t = \sum_{k=t-a_i}^{t-1} EOLI_{t,k} + L_t$$

(12) Ending Loan Inventory

$$ELI_t = EBLI_t + EOLI_t$$

(13) Ending Trade Inventory

$$ETI_t = BTI_t + S_t + LR_t - D_t$$

(14) Total Ending Inventory

$$EI_t = ELI_t + ETI_t$$

(15a) Realized Average Loan Rate

$$RLR_t = SP_t\ (1 + a_r)$$

a_r - % of deviation of actual loan rate from *ex ante* support price (0 ± .1)

(15) Average Support Price $SP_t = a_s * (1 * r_s(t - 1986))$

a_s - initial average support price level (148.8 ± .05)

r_s - rate of change of support price (0 ± .05)

(16) Market Price $P_t = SP_t * (1 + a_{mp})$

a_{mp} - % market price is above support level (.05 + .1, -.03)

(17) Value of Loans Received $VL_t = RLR_t * L_t$

(18) Value of Sales to Trade $VS_t = P_t * S_t$

(19) Value of Marketings (gross returns) $VM_t = VL_t + VS_t$

(20) Loan Outlays $LO_t = VL_t$

(21a) Repayments from "Buyout" $RB_t = BLR_t * a_{er}$

a_{er} - average value of buyout stocks set in July 1986 ($2.15/lb. ± .10)

(21b) Repayments of "Other" Loans $ROL_t = OLR_t * RLRR_t$

(21c) Average Realized Loan Rates for Tobacco Removed from Loans

$$RLRR_t = OLR_{t-a_i,t}/OLR_t)\ RLR_{t-a_i} + (OLR_{t-(a_i-1),t}/OLR_t)\ RLR_{t-a_i} + \ldots + (OLR_{t-1,t}/OLR_t)\ RLR_{t-1}$$

(21) Repayments of Loans $RL_t = RB_t + ROL_t$

(22) Net Outlays $NO_t = LO_t - RL_t$

For burley, the crop year t corresponds to fiscal year t+1.

Notes:

The subscript t refers to crop year. Capital letters designate prices, quantities, or dollar values. Small letters designate parameters. For each parameter a suggested value and a suggested range are given. Quantity units are millions of pounds farm weight. Prices are in cents per pound. Values are in millions of dollars.

Treatment of interest, storage costs appreciation, and "no net cost" assessment accounts. The budget cost equations and tables do not reflect payments for interest and storage costs for tobacco taken under price support program loans. These stocks were later sold to private buyers with the proceeds used to repay the original loans plus other accumulated charges. In general, it is expected that the appreciation in value of stored tobacco will offset the carrying costs. The 1982 "no net cost" law requires that grower (and since 1986, buyer) assessments be used to offset any potential losses. The ASCS and other program analysis and record keepers do not usually indicate interest or appreciation in their accounts for a particular crop. The tables and equations reported here follow that practice. A partial exception is made in the case of the so-called "buyout" in the 1986 Tobacco Reform Act. In this case the dollars per pound implicit in both the burley and flue-cured "buyout" contracts include accumulated interest and other charges up to the beginning of July 1986. Further carrying cost for the "buyout" inventory is the financial responsibility of the contractual buyers. As is the case for other tobacco under loan, these costs are not reflected in the tables or equations.

Economic relationships underlying the budget cost equations. For the most part, the budget cost equations are accounting identities and do not reflect explicitly the linkage between prices and quantities inherent in any industry. The equations for marketing, quantity placed under loan, and disappearance (equations 4, 5, and 8) are connected to the equations for support price and market price (equations 15 and 16) through own- and cross-price elasticities of demand. This linkage implies that simulations or scenarios with large values of a_s or r_s should be associated with both lower values of a_m and the disappearance parameters and larger values of a_1.

The lower marketings and higher loan stock themselves feed through the system to imply lower quota levels. In fact, the 1986 Act implies a close relationship between disappearance and basic quota and between stocks and basic quota. In particular, higher disappearances and lower ending stocks in year t-1 mean higher basic quota in year t. Thus higher values for a_d, r_d and b_{dt} should be associated with higher a_q, r_q and b_{qt+1}. No attempt has been made to formalize this simultaneous system because demand elasticities are not well known for the inherently dynamic problem of projecting short-run movement in disappearance and inventories.