U.S. Dairy Policy: Analysis and Options

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Introduction

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

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

This paper describes the economic effects of the main elements of current U.S. dairy policy, presenting data and drawing from the conceptual and empirical literature on the subject where possible. Four main policy instruments are examined: the Milk Price Support Program, federal and state milk marketing orders, trade policy affecting U.S. dairy markets, and the Milk Income Loss Contract program. For each policy instrument, the effects on dairy sector prices and quantities are discussed, along with the implications for economic welfare of producers, processors, and consumers.

A unifying theme that emerges across the various policy instruments is that they each effectively transfer income away from a clearly identifiable group—consumers, taxpayers, and, in some cases, subgroups of dairy farmers—in order to benefit favored dairy farmers.

Moreover, the conceptual analysis of dairy policy, as well as available empirical work, suggests that U.S. dairy policy fails the cost-benefit test. That is, the costs exceed the benefits, creating a net loss for the U.S. economy. Moreover, regional and farm size biases inherent in specific dairy policy instruments are unjustified.

A reasonable approach to fixing these shortcomings would be to eliminate the current programs. Elimination of the status quo programs would yield savings for consumers and taxpayers, and would make some farms better off (those in the upper Midwest and the West, as well as larger farms in all regions). Deregulation would contribute to a healthier U.S. dairy sector that would be more competitive in export markets, and improve the outlook for many dairy farms—particularly the more efficient farms—that are harmed by the current policy regime.

Deregulation would have the added benefit of reducing a significant source of international trade tension. One dairy program alone—the Milk Price Support Program—has contributed one-quarter of the aggregate measure of support (AMS) limit, and more than one-quarter of actual Amber Box payments, in recent years (for more on these trade programs, see Josling 2007).

Elimination of the dairy policies discussed in this paper may not be politically feasible in the short run. However, there are ways to reform current policies so as to deliver subsidies to farmers at less cost to society and with fewer market distortions. The preferred policy is a direct payment that does not depend on market prices or production. Such a policy would reduce market distortions and improve transparency.

Costs and Benefits of the Status Quo Dairy Policies

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

Milk Price Support Program. The Milk Price Support Program (MPSP), which has its origins in the Agricultural Act of 1949, supports minimum prices for nonfat dry milk (NFDM), butter, and cheese through government purchases of these products.[1] Purchase prices for supported products are calculated in such a way as to enable (but not obligate) dairy processors to pay farmers a milk support price determined by Congress, taking into account the quantity of milk required to produce a unit of the manufactured product, as well as estimates of manufacturing costs. Based on the current support price for milk, $9.90 per cwt. of milk with average butter fat content (3.67 percent), current purchase prices for bulk dairy products are reported in table 1.

Table 1. Current USDA MPSP Purchase Prices

Butter	$1.0500/lb.
Cheddar cheese, 40-lb. and 60-lb. blocks	$1.1314/lb.
Cheddar cheese, 500-lb barrels	$1.1014/lb.
Nonfat dry milk, nonfortified	$0.8000/lb.
Nonfat dry milk, fortified	$0.8100/lb.

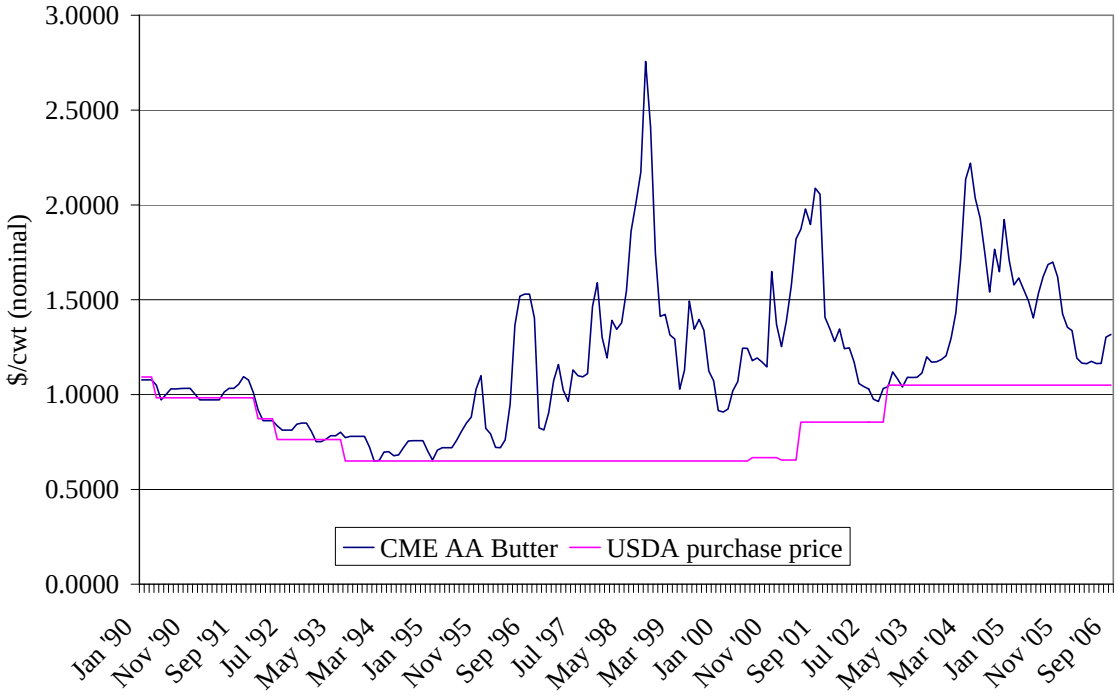
Source: USDA, Agricultural Marketing Service, *Dairy Market News*, http://www.ams.usda.gov/DAIRY/mncs/

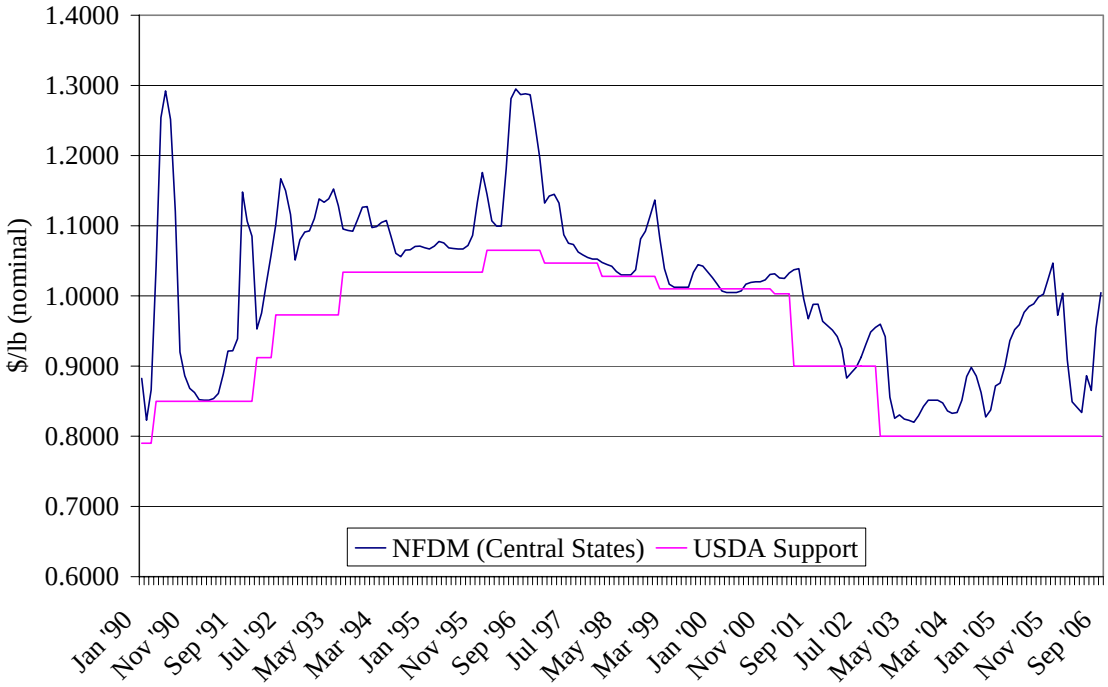
Dairy manufacturers may sell supported dairy products to the U.S. Department of Agriculture (USDA) at the announced purchase prices. Thus the USDA accumulates stocks when market price for any of these products falls below the announced purchase price. Figure 1 shows the relationship between purchase prices and monthly average market prices for butter, cheese, and nonfat dry milk dating back to January 1990. Figure 2 shows net USDA purchases during the same time period. Notably, the MPSP may accumulate dairy product stocks, even when average market prices are above support prices, because of temporal and regional variation in product prices, as well as product

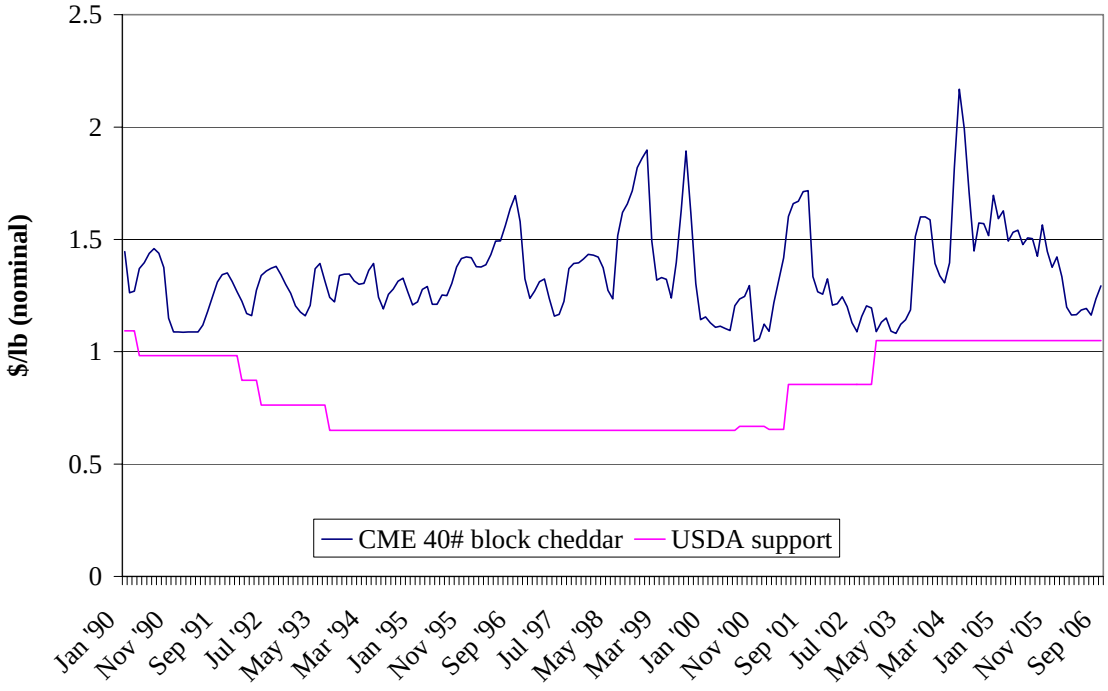
[1] Before the 1949 Act, the U.S. government purchased manufactured dairy products through an ad hoc program established by the Agricultural Adjustment Act of 1933.

heterogeneity. Government stocks are subsequently re-sold into the market during times of high prices, or released as domestic food assistance and international food aid.

Figure 1. Market Prices and Support Prices for NFDM, Butter, and Cheddar Cheese, Jan. 1990–Sept. 2006

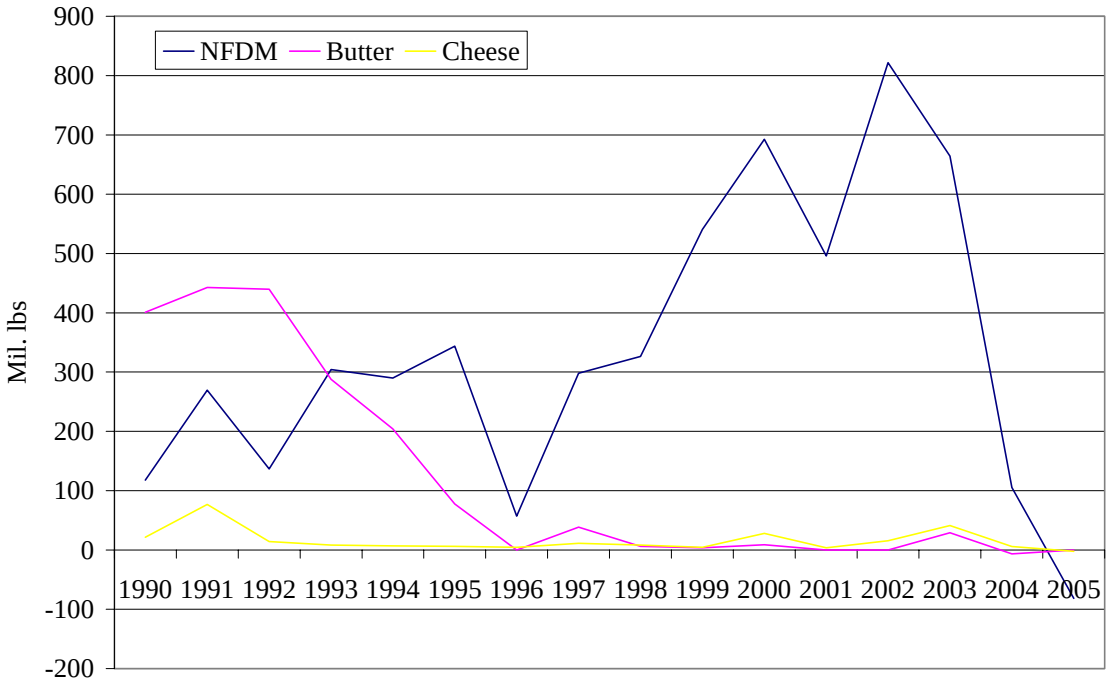






Source: USDA, AMS, *Dairy Market News*.
CME AA butter = Price of Grade AA butter traded at the Chicago Mercantile Exchange, CME 40# block cheddar=Price of 40# block cheddar traded at the Chicago Mercantile Exchange

Figure 2. MPSP Net Removals of NFDM, Butter, and Cheese, 1990–2005



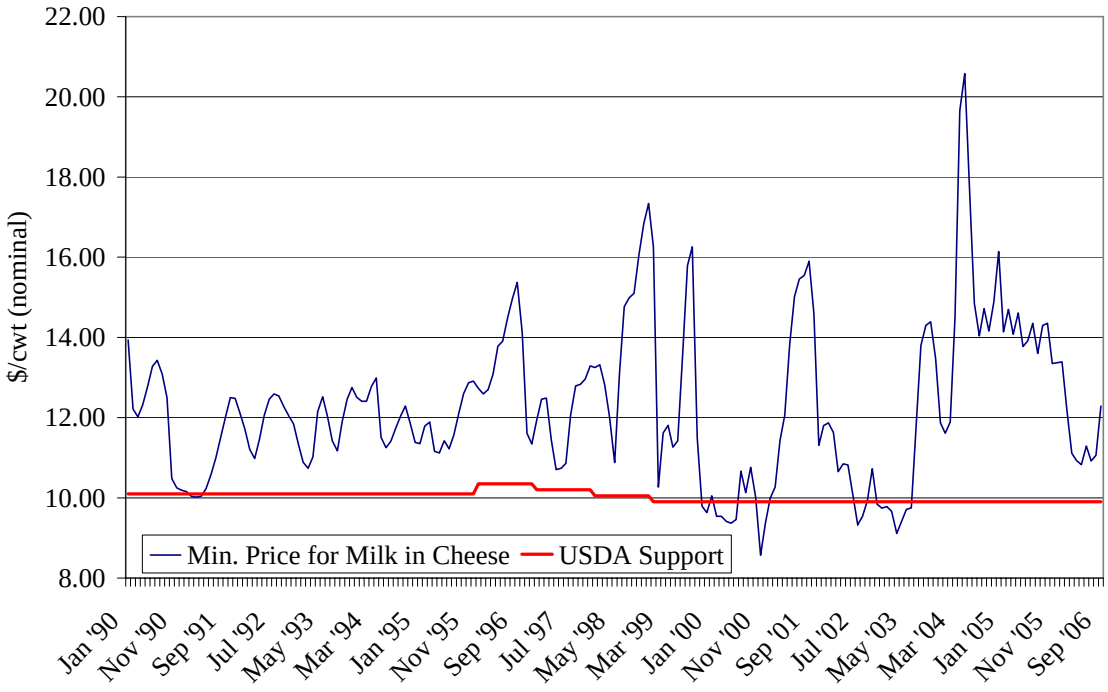
Source: USDA Economic Research Service, *Livestock, Dairy, and Poultry Outlook*, various issues, accessed online on October 15, 2006 at http://www.ers.usda.gov/publications/ldp.

Under the 1996 FAIR Act, MPSP support prices were to be gradually lowered and the entire program was to be eliminated by the year 2000 and replaced with a recourse loan program. However, Congress subsequently extended the program on an annual basis, and then reauthorized the program as part of the 2002 Farm Bill.

Economic Consequences. The textbook analysis of government-enforced price floors applies to the MPSP. The program puts an approximate floor on prices for the supported products. By raising product prices, the MPSP makes manufacturers of those products better off at the expense of consumers, who face higher prices, and of taxpayers, who pay for government stocks. Further, losses to consumers and taxpayers exceed the benefits to producers, so that the MPSP creates net welfare losses for the economy. This welfare analysis does not account for any benefits of reduced price variability that the MPSP achieves by enforcing minimum prices for supported products and by releasing stocks at times of high prices.

Nor does the welfare analysis sketched above address the effects of the MPSP on farm prices for milk and the welfare of dairy farms. The MPSP does not directly enforce a minimum farm price for milk used in manufactured products. Figure 3 shows that after an extended period through the 1990s during which the farm price of milk used in cheese remained above the support price, the farm price fell below support in 2000 and again in 2002 and 2003. During the 1970s and 1980s, milk prices frequently fell below the support price. The extent to which the MPSP results in higher milk prices for dairy farmers depends conceptually on the extent to which the support prices are binding, as well as on the supply of milk, substitution between milk and other manufacturing inputs, and the extent of market power among processors.[2]

Figure 3. The Minimum Farm Price for Milk in Cheese and the Announced Support Price, Jan. 1990–Sept. 2006



Source: USDA, AMS, *Milk Marketing Order Statistics* Web page, accessed online on November 8, 2006 at http://www.ams.usda.gov/dairy/mmos.htm.
and USDA, NASS, *Agricultural Statistics*, various issues.

[2] See Wohlgenant (2006) for a discussion of some these issues in the context of generic advertising.

Regardless of the link between wholesale dairy product prices and farm prices for milk, dairy farms may benefit from the MPSP because of the extent to which farmer-owned dairy cooperatives are involved in processing. In 2002, farmer-owned dairy cooperatives produced 86 percent of the NFDM produced in the United States, 71 percent of the butter, and 40 percent of the cheese (USDA-RBCS 2005). Like private processors of supported dairy products, cooperatives involved in manufacturing benefit directly from the MPSP.

Empirical evidence of the effects of the MPSP indicates that it does indeed raise prices of manufactured dairy products and of the milk used in those products. Cox and Chavas (2001) simulate the elimination of the MPSP in 1995, a time when butter purchases were a relatively important part of the MPSP and the scale of the program was relatively small, and find a 7 percent reduction in the price of butter, a 0.5 percent reduction in the price of American cheese, and a 1.9 percent increase in the price of NFDM, with total consumer surplus increasing by $85 million.[3] Cox and Chavas (2001) also find that elimination of the MPSP would have lowered the U.S. average farm price of milk by 0.4 percent, reducing producer surplus by $75 million.

Price (2004) also simulates the elimination of the MPSP, but calibrates his model to the current (2004) and forecast dairy market situation, during which the USDA purchased mostly NFDM and the scale of the program was relatively large. Thus Price (2004) finds that eliminating the MPSP would have bigger effects on dairy markets than those found by Cox and Chavas (2001): a 9.8 percent reduction in the U.S. price of NFDM, a 2.4 percent decrease in the U.S. price of cheese, and a 13.9 percent increase in the U.S. price of butter. Price (2004) also finds a 2.0 percent reduction in the farm price of milk.

Brown (2003) simulates the elimination of the MPSP, and finds effects that are similar in direction to those of Price (2004), but much smaller in magnitude. Further, Brown (2003) finds that much of the impact of MPSP elimination would occur in the short term (two to three years), as government inventories are reintroduced into the market. Brown (2003) finds imperceptible long-run effects of eliminating the MPSP: a 1.3 percent reduction in the U.S. price of NFDM, a 2.8 percent increase in the U.S. price of butter, little change in the U.S. price of cheese, and essentially no changes in milk production and milk prices.

Chavas and Kim (2003) estimate econometrically the effects of government cheese stocks on the dynamics and variability of U.S. cheese prices. They find that lower purchase prices in the 1990s contributed to greater price variability in U.S. cheese markets.

USDA expenditure on MPSP purchases net of sales from 1980 through 2003 are reported in table 2. Net expenditure was relatively high through the early 1980s, peaking at more than $22 billion in 1982. Partly in response to the high government outlays for the MPSP, the Food, Agriculture, Conservation and Trade Act of 1990 initiated a tax on milk to reduce milk production and partly offset the costs of the MPSP. Thus the

[3] The fact that the price of NFDM increases slightly is due to the fact that butter and NFDM are produced jointly in approximately fixed proportions. So a policy that increases production of butter also increases the supply of NFDM.

expenditures reported in table 2 for those years are not fully borne by taxpayers, but are shared by dairy farms and consumers of dairy products. (Of course, the tax also generates an additional social cost of the program.) Also in response to the high costs of the MPSP and large government stocks of dairy products, the support price for milk and dairy product purchase prices have been adjusted to reduce the scale of the program. In recent years, the support price for milk has, more often than not, remained below the price of milk in manufactured products. Moreover, the USDA has authority to adjust relative purchase prices so as to constrain government costs of the program. For example, if the butter support price is binding at a time that the NFDM support price is not, the USDA may raise the NFDM price and lower the butter price, so as to reduce the costs—and the effectiveness—of the program. Efforts to reduce the size of the program notwithstanding, annual government outlays for the MPSP averaged $210 million in the decade from 1994 to 2003 and $416 million from 2000 to 2003.

Table 2. Milk Price Support Program Purchases, Net of Sales, 1980–2003

Year	$ million (actual)
1980	977
1981	1,818
1982	22,609
1983	2,598
1984	1,768
1985	18,027
1986	1,788
1987	618
1988	951
1989	483
1990	275
1991	431
1992	259
1993	212
1994	149
1995	-1
1996	-68
1997	24
1998	152
1999	179
2000	424
2001	412
2002	552
2003	276

Source: USDA, FSA, *History of Budgetary Expenditures of the Commodity Credit Corporation*, various years. Accessed online on October 12, 2006.http://www.fsa.usda.gov/FSA/webapp?area=about&subject=landing&topic=bap-bu-cc

The MPSP is also a significant contributor to the U.S. aggregate measure of support (AMS) as calculated under World Trade Organization (WTO) guidelines. Under the WTO's Agreement on Agriculture, the United States is committed to limit trade-distorting domestic programs to $19.1 billion per year. The MPSP is judged by the WTO to be an Amber Box program, and thus counts against this limit (see Josling 2007).[4] Under WTO guidelines, the contribution of the MPSP to the AMS is calculated as the difference between the support price for milk, currently $9.90/cwt, and a reference world price of milk, currently $7.25/cwt, times total milk production, regardless of actual government outlays for the program. One rationalization for this calculation is that the MPSP, when combined with restrictions on imported dairy products, provides greater support for the dairy sector than indicated by MPSP outlays alone. From 1995 to 2001, the MPSP contributed an average of $4.5 billion per year to the AMS: approximately one-quarter of the AMS limit, and more than one-quarter of actual Amber Box payments in recent years.

In addition to the actual social costs of the program and the contribution to the AMS, the MPSP spawns additional government regulations to contain the costs of acquiring and storing dairy products. For instance, border measures are employed to contain the government costs of the MPSP. Tariff-rate quotas with binding over-quota tariff rates help restrict U.S. imports of NFDM, butter, and powder, while subsidized dairy exports help reduce the supply of dairy products available domestically, raising the domestic price and reducing government purchases.

Moreover, the MPSP encourages the production of supported commodities at the cost of innovation. In particular, U.S. dairy processors have lagged exporters such as Australia and New Zealand in the development of specialized, high-value dairy ingredients, including a range of concentrated milk protein products. U.S. imports of milk protein concentrate (MPC) grew rapidly through the late 1990s. While data on MPC utilization are scarce, anecdotal evidence indicates that it is used as a protein source in nutrition products, but also as a substitute for NFDM in the manufacture of cheese and other foods. The potential for MPC to substitute with domestically produced NFDM has lead to efforts to restrict imports of MPC and to ban its use in cheese and other dairy food products under the guise that it is not a dairy ingredient approved by the U.S. Food and Drug Administration (FDA). In this way, once again, the MPSP creates demand for further government intervention in dairy markets.

Milk Marketing Orders. Milk marketing orders are a central element of the government programs that were created as part of the New Deal farm legislation. Milk marketing orders regulate the sale of raw, Grade A (fluid grade) milk, setting minimum prices that processors must pay, and distributing milk revenue among Grade A milk producers. Marketing orders do not regulate the sale of Grade B (manufacturing grade) milk. Most Grade A milk sold in the United States is regulated by the system of Federal Milk Marketing Orders (FMMOs), with each federal marketing order regulating milk sales within a unique geographic. In lieu of participation in the FMMO system, a few states operate their own independently administered marketing orders. Of these, California is

[4] The WTO classifies as "Amber Box" those domestic farm policies that are judged by the WTO to distort production or trade. Developed countries have agreed to limit Amber Box programs to no more than 5 percent of agricultural production: $19.1 billion for the United States.

the largest. Table 3 shows production and utilization of milk regulated by FMMO and California marketing regulations. In 2005, the FMMO system and the California marketing order together regulated the sale of 87 percent of U.S. milk production.

Table 3. Production and Utilization of Milk Regulated by Federal and California Milk Marketing Orders, 2005

	Number of federal marketing orders	Quantity of milk regulated (mil. lbs)		Regulated milk as a percent of all Grade A milk sold in the United States		Fluid utilization rate of regulated milk	
		FMMO	Calif.	FMMO	Calif.	FMMO	Calif.
1947	29	14,980	3,983	-	-	66	45
1950	39	18,660	3,928	41	9	56	47
1960	80	44,812	6,461	64	9	64	54
1970	62	65,104	8,582	79	10	63	49
1980	47	83,998	13,057	80	12	46	35
1990	42	102,396	20,519	77	15	44	33
2000	11	116,920	31,873	72	20	40	19
2005	11	114,682	38,443	65	22	39	15

Sources: USDA, AMS, *Milk Marketing Order Statistics*,
http://www.ams.usda.gov/dairy/mmos.htm; and
CDFA *California Dairy Statistics and Trends, 2005*,
http://www.cdfa.ca.gov/dairy/dairystats_annual.html#annuals.
FMMO = Federal Milk Marketing Orders
Calif.= State of California milk marketing order.

Marketing orders use price discrimination to raise the average price received by producers, setting minimum prices that processors must pay for Grade A milk according its end use (classified pricing). The highest price is set for milk used in fluid products, with lower prices set for milk used in manufactured dairy products such as cheese and butter. Table 4 presents definitions and average minimum prices in 2005 for each of the classes used in federal and California milk marketing orders.

Table 4. Milk Marketing Order Minimum Class Prices, 2005 (all prices in $ per 100 pounds of milk)

Product category	Fluid milk	Soft products	Frozen products	Butter/milk Powder	Cheese	Uniform producer price
California order classification	1	2	3	4a	4b	
Federal order classification	I	II	II	IV	III	
Northeast	17.67	13.48		12.88	14.05	15.64
Appalachian	17.53	13.48		12.88	14.05	16.23
Southeast	17.52	13.48		12.88	14.05	16.14

Florida	18.43	13.48		12.88	14.05	17.57
Mideast	16.41	13.48		12.88	14.05	14.70
Upper Midwest	16.22	13.48		12.88	14.05	14.28
Central	16.42	13.48		12.88	14.05	14.47
Southwest	17.41	13.48		12.88	14.05	15.37
Arizona-Las Vegas	16.76	13.48		12.88	14.05	14.65
Pacific Northwest	16.33	13.48		12.88	14.05	14.20
California-Northern	15.74	13.35	13.25	12.50	13.70	13.17[a]
California-Southern	16.01	13.58	13.26	12.50	13.70	13.17[a]

Sources: USDA, AMS, *Milk Marketing Order Statistics*,
http://www.ams.usda.gov/dairy/mmos.htm; and
CDFA, *California Dairy Statistics and Trends, 2005*,
http://www.cdfa.ca.gov/dairy/dairystats_annual.html#annuals.
a. $13.17 is the "overbase" price in California: that is, the price that producers receive for milk. Producers with quota receive an additional $1.70 per cwt quota.

FMMO minimum prices for milk in manufactured products are set by formulas that take into account the wholesale prices of manufactured dairy products, product yields, and estimated manufacturing costs. The resulting minimum prices are the same across all federal orders. The Class I price in each federal order is set as a fixed differential above the higher of the Class III (cheese) and Class IV (butter/NFDM) prices. Class I differentials, and thus Class I prices, differ across marketing orders. Historically, Class I differentials increased with distance from Wisconsin, which at one time was at the center of the largest surplus milk region in the country. Today, Class I differentials east of the Rocky Mountains generally display the historical pattern (table 4). The California marketing order employs more product classes and applies slightly different pricing formulas than does the federal system, but achieves a similar effect: higher prices for milk in fluid products, and lower prices for milk in manufactured dairy products.

In each federal marketing order, revenue from all product classes is pooled, and all producers selling milk in an order receive a weighted average of the minimum class prices, where the weights are the quantity shares of milk used in each class. Because Class I prices and Class I utilization (such as the share of milk used in fluid products) both differ across federal orders, producer prices also differ across federal orders (table 4). The California marketing order has evolved differently from the federal system. California distributes a portion of Grade A milk revenue based on individual producers' ownership of "quota." The California quota does not restrict production or marketing, but gives the quota owners rights to a predetermined amount of the Grade A milk revenue, currently $1.70 per 100 pounds of quota (CDFA). The remaining revenue (Grade A revenue less the portion paid out to quota owners) is distributed uniformly across all Grade A production (Sumner and Wolf 1996; Wilson and Sumner 2000).

Each marketing order regulates Grade A milk processed in a distinct geographic region; currently there are ten federal marketing orders plus the California marketing order. Both minimum prices and producer prices differ across orders, creating incentives for producers and milk processors to ship milk across regions. However, marketing orders have reduced such arbitrage opportunities and have maintained different prices in different orders by creating disincentives to ship milk across regions. Table 4 shows that producer prices are lowest in the West and Midwest as a result of low prices for fluid milk (Class I), combined with low Class I utilization in these regions. The low Class I utilization rates in the West and Midwest result from low population density relative to milk production. Producer prices are relatively high in the East and South, where fluid milk prices and fluid milk utilization are high.

Marketing orders have evolved over time, reflecting changes in the dairy industry itself. Table 3 shows measures of growth of the FMMO system. The quantity of milk regulated by the FMMO system has grown rapidly because of increased milk production in established marketing orders, as well as growth of the FMMO system to previously unregulated areas of the country. The quantity of milk regulated by the FMMO system grew as percentage of all Grade A milk produced in the country through 1980, before beginning a slow decline. At the same time, the fluid utilization rate of FMMO-regulated milk fell from 66 percent to 39 percent between 1947 and 2005.

The California marketing order has also grown in terms of the total quantity of milk regulated and in terms of its share of all Grade A milk produced in the United States. At the same time, the fluid utilization rate of Grade A milk in California fell from 45 percent in 1947 to 14 percent in 2005. Thus in both Federal and California marketing orders, the quantity and share of Grade A milk diverted to manufacturing uses has grown.

The details of marketing order regulation have changed occasionally over the years.[5] However, the main policy instruments—price discrimination and revenue pooling—have remained relatively unchanged over time, as have the main economic effects.

Economic Consequences. The economic effects of marketing orders are well documented in the agricultural economics literature.[6] Price discrimination by marketing orders against fluid consumers raises the price of fluid milk, and reduces economic surplus for fluid consumers. Marketing orders raise the average price of Grade A milk by discriminating against a market with relatively inelastic demand, and distributing revenue across all Grade A milk. By simultaneously reducing fluid milk consumption and encouraging production of Grade A milk, marketing orders increase the quantity of milk sold to the manufacturing market. Thus marketing orders reduce the prices of manufacturing milk and manufactured dairy products, and contribute to additional government purchases through the MPSP.

Cox and Chavas (2001) find that eliminating the FMMO and California marketing orders would result in a 1.6 percent reduction in the average U.S. farm price of milk, and a 0.4 percent reduction in U.S. milk production. Elimination of marketing orders would reduce net farm revenue for U.S. dairy farms by $293 million per year, while increasing consumer surplus by $420 million per year. Brown (2003) finds similar effects as Cox

[5] See Manchester and Blayney (2001) for a description of some of those changes.
[6] See, among others, Sumner and Wolf (1996); Cox and Chavas (2001); Ippolito and Masson.

and Chavas (2001), and further shows that the magnitude of these effects depends on the extent to which fluid processors would continue to pay a premium for milk in the absence of marketing order regulation. Neither of these studies considers the additional cost of producing Grade A milk for the manufacturing market, which reduces the benefits to Grade A producers and increases the social costs of milk marketing orders (Balagtas, Smith, and Sumner [forthcoming]).

Moreover, marketing orders have important distributional effects across regions. Because marketing orders set and enforce different prices in different regions of the country, the economic effects of marketing orders differ by region. Further, because manufactured dairy products are traded, each marketing order affects producers and consumers in other regions. Cox and Chavas (2001) and Brown (2003) each find that elimination of marketing orders would cause farm prices of milk to rise in parts of the West and Midwest, including California, Wisconsin, and Minnesota, while causing farm prices to fall in the East and South. That is, elimination of milk marketing orders would reduce (but not eliminate) regional differences in milk prices. Thus the relatively small effects of marketing orders on aggregate prices and production mask the larger, regional effects. In particular, marketing orders have discouraged milk production in the relatively low-cost, high-growth dairy regions. At the same time, high prices in the Northeast and the South, together with disincentives to ship milk across regions, have protected producers in those regions. Cox and Chavas (2001) find that eliminating marketing orders would raise net revenue by $293 million for dairy farms in the low-price regions, while reducing net revenues for producers in the rest of the country by $586 million per year.

In a study that estimates demand for dairy products, Chouinard and others (2005) find that low-income households, households with young children, and households with low education attainment tend to benefit the most from elimination of marketing orders. While the aggregate consumer benefits are large, Chouinard and others (2005) find that the consumer benefit per household is small: on the order of less than $54 per year.

Milk marketing orders also affect world markets for dairy products for the same reason that individual marketing orders have spillover effects on producers and consumers in other regions. Specifically, milk marketing orders effectively tax production of a nontradable product, fluid milk, and subsidize U.S. production of manufactured dairy products, which may be traded on world markets. Thus, in addition to the welfare effects on U.S. producers and consumers, milk marketing orders also potentially benefit world consumers of manufactured dairy products, and harm world producers of manufactured dairy products. However, the effects of marketing orders on world markets for manufactured dairy products are constrained by explicit trade policies that limit international trade in these products.

Trade Policy for Dairy Products. International trade in dairy products is constrained by protectionist policies in much of the world. Both Canada and the European Union (EU) restrict imports, subsidize exports, and implement a milk marketing quota to raise domestic prices. Japan and South Korea apply binding tariff-rate quotas to dairy imports. U.S. trade policy for dairy products, which is driven in part by domestic policies, includes both import restrictions and subsidized exports. Australia and New Zealand are notable exceptions, exporting with relatively little government intervention in dairy markets.

The operation and economic effects of the Milk Price Support Program and of milk marketing orders are closely related to U.S. trade policy. Tariff-rate quotas apply to U.S. imports of a seemingly endless list of dairy products; the U.S. Harmonized Tariff Schedule lists more than 200 separate tariff lines for dairy products.[7] For most of the products, access to the low, in-quota tariff is administered by USDA on a license basis. For many of these products, the over-quota tariffs are prohibitively high. As a result, imports account for a tiny fraction of U.S. consumption of dairy products. The value of U.S. dairy imports in FY 2005 was $2.5 billion. From 1997 through 2004, imports accounted for between 3 and 5 percent of annual U.S. consumption of milk fat, and 3 percent of U.S. consumption of milk protein (table 5).

Table 5. U.S. Dairy Production, Trade, and Consumption, 1997–2004 (metric tons, except as indicated)

	1997	1998	1999	2000	2001	2002	2003	2004
Milk production	60,470,834	71,333,575	73,749,887	75,928,967	74,995,464	77,140,071	77,290,211	77,535,154
Fat								
Production	2,237,421	2,639,342	2,728,746	2,809,372	2,774,832	2,854,183	2,859,738	2,868,801
Imports	66811	101,731	107,940	100,241	143,718	142,721	140,575	161,968
Exports	40750	35,049	29,820	39,142	39,819	38,755	17,321	52,448
Net exports	-26,061	-66,682	-78,120	-61,099	-103,899	-103,966	-123,254	-109,520
Consumption	2,263,482	2,706,024	2,806,866	2,870,471	2,878,731	2,958,149	2,982,992	2,978,321
Imports as a share of consumption (%)	3	4	4	3	5	5	5	5
Protein								
Production	5,260,963	6,206,021	6,416,240	6,605,820	6,524,605	6,711,186	6,724,248	6,745,558
Imports	148,938	174,208	190,968	209,234	188,829	196,072	216,556	205,864
Exports	73,608	82,320	97,804	89,062	99,170	90,333	102,216	161,776
Net exports	-75,330	-91,888	-93,164	-120,172	-89,659	-105,739	-114,340	-44,088
Consumption	5,336,293	6,297,909	6,509,404	6,725,992	6,614,264	6,816,925	6,838,588	6,789,646
Imports as a share of consumption (%)	3	3	3	3	3	3	3	3

Source: Milk production figures from USDA, NASS, *Milk Production, Distribution, and Income Annual Summary*, various years. Fat and protein production are computed from milk production, assuming 3.7 percent fat content and 8.7 percent protein content. Fat and protein content of imports, exports, and net trade are from Ken Bailey's *Dairy Outlook Web Site*, http://dairyoutlook.aers.psu.edu/Trade/TradePage.htm, accessed October 15, 2006.

[7] Eight-digit tariff codes. Chapter 4 of the HTS is designated exclusively for dairy products. Some dairy products also appear in chapters 19, 21, and 35.

The U.S. government also intervenes in dairy trade by subsidizing dairy exports. The Dairy Export Incentive Program (DEIP) pays cash bonuses to U.S. exporters of nonfat dry milk, butter, and cheese. The DEIP reduces the price of U.S. exports, increasing the quantity exported, and raising the domestic prices of the exported products. By raising the prices of nonfat dry milk, butter, and cheese, the DEIP also reduces MPSP purchases. DEIP expenditures from 1990 to 2003 are reported in table 6.

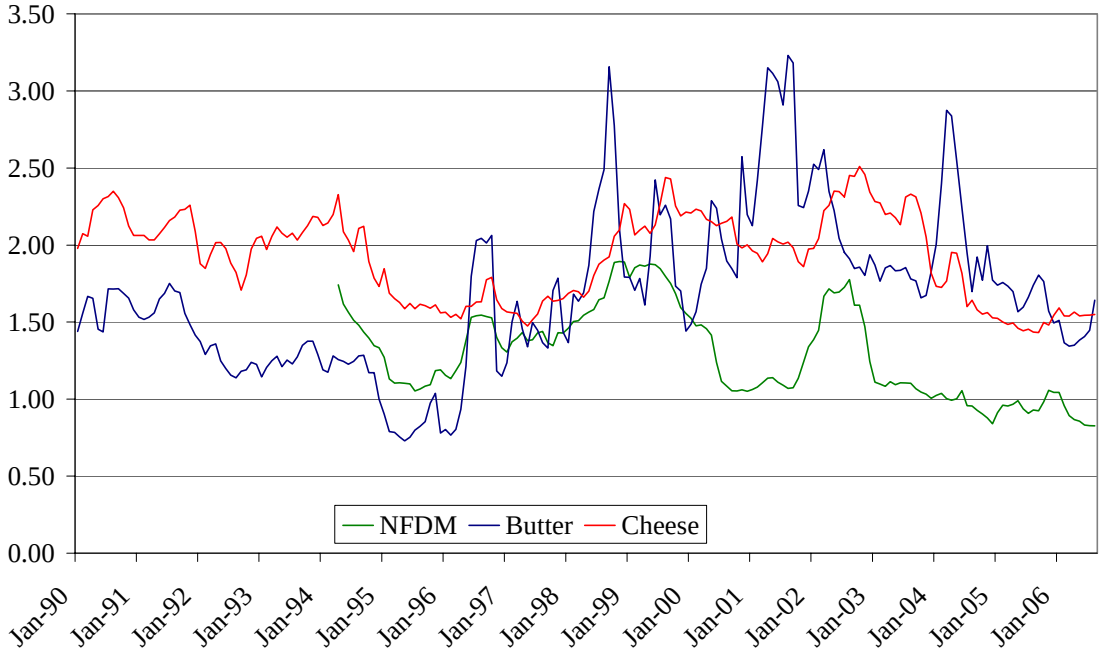
Table 6. DEIP Quantities Shipped and Total Commitments, 1987–2003

	Quantities				
Fiscal year	Butter and butteroil (tons)	Cheese (tons)	NFDM and whole milk powder (tons)	Total, all products (tons)	Commitments, all products[a] ($thousands)
1987	0	0	287	287	289
1988	0	0	10,660	10,660	8,050
1989	0	0	0	0	0
1990	5,015	0	0	5,015	9,246
1991	11,070	2,000	17,400	30,470	39,261
1992	18,045	3,772	56,072	77,889	75,996
1993	14,149	4,205	168,243	186,597	161,797
1994	28,602	2,013	102,909	133,524	117,615
1995	38,550	3,425	204,261	246,236	140,225
1996	0	2,491	22,472	24,963	20,424
1997	18,003	3,650	117,216	138,869	121,462
1998	6,959	4,017	107,098	118,074	110,160
1999	395	2,779	133,148	136,322	145,308
2000	5,298	6,012	83,694	95,004	77,322
2001	0	3,030	55,451	58,481	8,488
2002	0	1,222	82,251	83,473	54,615
2003	10,000	2,272	73,883	86,155	31,526

Source: USDA (2004, p. 50).
NFDM=Nonfat dried milk.
a. Commitments are approved DEIP expenditures.

Import restrictions partially insulate U.S. dairy markets from world markets. In this protected environment, the MPSP raises domestic prices of supported products well above world prices. Figure 4 reports U.S. prices relative to world prices for NFDM, butter, and cheese, dating back to 1990. With few exceptions—butter in 1995–96, and NFDM in 2004–06—U.S. prices have been much higher than world prices. Since 1990, U.S. prices have been, on average, 29 percent above world prices for NFDM, 68 percent above world prices for butter, and 92 percent higher than world prices for cheese.

Figure 4. U.S. Prices for NFDM, Butter, and Cheese Relative to World Prices, 1990–2006



Source: U.S. prices are for NFDM (high heat), Western states, Grade AA Butter traded on the Chicago Mercantile Exchange (CME), and 40# Block Cheddar traded on the CME, as reported in USDA, AMS, *Dairy Market News* (various issues). World prices are for NFDM, Butter, and Cheese, F.O.B. Northern Europe, as reported by USDA, FAS (http://www.fas.usda.gov/dlp/dairy/dairypag.htm).

Economic Consequences. Interestingly, several empirical analyses have found that trade liberalization would have relatively modest effects on milk prices and production in the United States, and that the magnitude and the direction of those effects depend, in part, on the extent of trade liberalization. Alston and others (2006) simulated the effects of bilateral free trade in dairy products between the United States and Australia, leaving

domestic policies and trade policies in the rest of the world's dairy markets unchanged. The authors find that bilateral free trade would cause U.S. farm prices and milk production to fall by 2 percent, and that the actual Australia-U.S. Free Trade Agreement, which allowed for small increases in imports from Australia, would have essentially imperceptible effects on U.S. dairy markets.

Peng and Cox (2006) show that the effects of trade liberalization on U.S. dairy markets depend on whether domestic dairy policy reform is included as part of the liberalization package. They find that U.S. milk prices would rise by 4 percent as a result of multilateral dairy trade liberalization that leaves domestic policies in place, while prices would fall by 4 percent as a result of dairy trade liberalization that also eliminates U.S. and world domestic policies. Lower U.S. milk prices in the latter scenario result in part from increased milk production and exports from Canada and the EU in response to an elimination of marketing quotas. Of course, the effect of trade liberalization also depends in part on the initial difference between U.S. and world dairy product prices. In other words, the effects of U.S. trade policy on U.S. dairy markets depend on the counterfactual: how much do current policies across the country distort trade, and which policies in which counties would be eliminated or reduced?

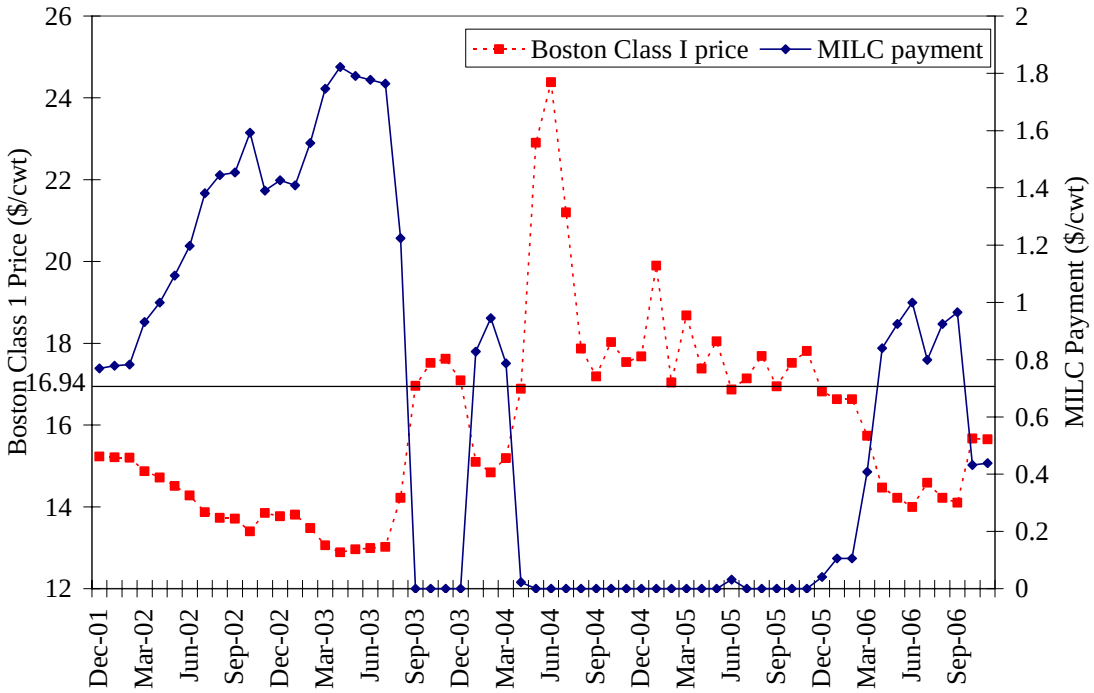
Milk Income Loss Contract. Current trade policy, milk marketing order regulations, and the MPSP have been in place for decades, with mostly minor alterations. The 2002 Farm Bill introduced a new policy for U.S. dairy in the form of the Milk Income Loss Contract (MILC). The MILC program is a major change to U.S. dairy policy in that it is a direct subsidy for milk production. (For all of the previous regulation affecting the U.S. dairy sector, direct subsidies have played a minor part, and have mostly come recently in the form of ad hoc emergency payments.) The MILC program is a deficiency payment policy, in which the USDA makes payments to producers in months that U.S. milk prices fall below a specified target price. Unlike the deficiency payments for feed crops and oilseeds, which are paid on a percentage of historical production, MILC payments are made on current production. All U.S. producers are eligible, but individual producers can receive payments only on milk production up to 2.4 million pounds per year. The first MILC payments were made in December 2001, and the program was originally authorized through September 2005. MILC payments were subsequently extended through August 2007.

Through September 2005, the MILC payment rate was calculated as 45 percent of the difference between a target price of $16.94 per cwt. and the FMMO Class I price for Boston.[8] The MILC payment rate since October 2005 has been calculated as 34 percent of the difference. The reference to Boston is an artifact of the now defunct Northeast Dairy Compact, which was part of the 2002 Farm Bill debate but was excluded from the final legislation. The Compact, in operation between July 1997 and September 2001, obligated fluid milk processors in six New England states to pay 100 percent of the difference between $16.94 and the Boston Class 1 price on all fluid (Class 1) milk (Balagtas and Sumner (2003)). Although the MILC program uses the same target and

[8] The MILC payment rate is .45[max(0, $16.94 – (Boston Class I Price)]. The Boston Class I price is equal to the "Class I Mover" plus $3.25. The Class I mover is the higher of the FMMO Class III and Class IV prices. Thus the MILC payment rate can be expressed as .45[max(0, $16.94 – (Class I Mover + $3.25)] = .45[max(0, $13.69 – (Class I Mover)].

reference prices ($16.94 versus the Boston Class 1 price) as did the Northeast Dairy Compact, there are important differences. First, the MILC payment rate is 45 percent of the difference and is paid on all eligible milk, regardless of class. Second, the MILC payments are paid by taxpayers, not milk buyers. Third, MILC payments are not limited to any particular region of the country. Fourth, the MILC program has a payment limit, while the Compact had none. Thus, despite a superficial similarity between the MILC and the Northeast Compact, the programs are quite different. Figure 5 plots the Boston Class I price and the MILC payment rate for the entire history of the program.

Figure 5. The Boston Class I Price and MILC Payment Rates, December 2001–September 2006



Source: USDA, Farm Services Agency, *MILC Payment Rates*, accessed online, December 16 at http://www.fsa.usda.gov/Internet/FSA_File/milcrates.pdf and USDA, AMS, Milk *Marketing Order Statistics* Web page, accessed online on November 8, 2006 at http://www.ams.usda.gov/dairy/mmos.htm.

Although all dairy farms are eligible to receive MILC payments, any one farm can receive payments only up to 2.4 million pounds of milk per fiscal year. Moreover, a farm must choose the month in which payments to that operation will begin, and the choice must be made on or before the fifteenth day of the previous month. Beginning with the chosen month, MILC payments will be issued on a consecutive monthly basis until the end of the fiscal year, or until the quantity limit, 2.4 million pounds, is reached. For example, if an operation wanted to start payments in March 2003 (foregoing potential payments from October 2002 through February 2003), it must have notified the USDA by

February 15. The operation will then receive the MILC payment starting in March and in each consecutive month, or until the 2.4 million pound limit is reached.

Economic Consequences. The MILC contract provides a countercyclical payment in which payments increase as prices fall. Because MILC payment rates are calculated as a percentage of the difference between $16.94 and the Boston Class 1 price, the policy does not set a price floor for producers. However, MILC payments dampen market signals when the Boston Class 1 price is below $16.94. Moreover, in contrast to the MPSP, for which support prices have been low and generally declining over time, the target price for MILC is relatively high. From 2000 through 2006, the average Boston Class 1 price was $16.04/cwt.

Table 7 reports USDA's MILC payment expenditures, along with production data, for the United States and for the five major state recipients. Through FY 2005 (the original sunset date for MILC), the USDA paid out $2.0 billion in MILC payments, over half of which went to producers in Wisconsin, New York, Pennsylvania, Minnesota, and California. Of these five states, California received the smallest share of total MILC payments, but its producers received, on average, the largest absolute subsidies per farm. The average annual MILC payment per farm in California ($20,708) was more than double that in other states because of the relatively large size of California farms. However, relative to revenue from cash sales of milk, MILC payments were a relatively unimportant source of income in California, the equivalent of 1.1 percent of milk revenue, compared to 4.1 percent of milk revenue in Wisconsin and 4.4 percent in Minnesota.

Table 7. USDA MILC Expenditures, United States and Five Largest State Recipients, FY2003–05

		Milk production in 2003					MILC Payments			
State	Number of dairy farms, 2003	Total (million lbs)	Per cow (thous. lbs)	Per farm (thous. lbs)	Avg. price, 2003–05 ($/cwt)	Annual milk revenue per farm ($)	FY2003–05 total ($million)	Avg. annual payments ($million)	Avg. annual payments per farm ($)	Percent of milk revenue (%)
WI	16,900	22,266	17.7	1,318	15.13	199,384	415.2	138.4	8,189	4.1
NY	7,100	11,952	17.8	1,683	15.27	256,996	187.0	62.3	8,779	3.4
PA	9,600	10,338	18.0	1,077	16.17	174,095	181.3	60.4	6,295	3.6
MN	6,600	8,258	17.5	1,251	14.97	187,265	163.6	54.5	8,263	4.4
CA	2,400	35,437	20.9	14,765	13.34	1,970,199	149.1	49.7	20,708	1.1
USA	86,360	154,455	19.0	1,789	14.63	261,598	2,025.4	675.1	7,818	3.0

Source: Total MILC payment data from Chite (2006). Dairy farm numbers, production, and price data from USDA**,** Agricultural Statistics database, accessed online on October 15, 2006 at http://www.nass.usda.gov/.

The effects of MILC on individual farms depend on whether or not the 2.4 million pound cap on payments is binding. For smaller farms, for whom the quantity limit on payments is nonbinding, MILC raises the incentive price; small farms can increase

payment revenue and net revenue by increasing production. Thus the MILC program induces increased production from smaller farms. For larger farms, the MILC program essentially provides a fixed payment, providing no direct incentive to increase milk production. In fact, lower milk prices due to increased production from small farms will result in reduced milk production from large farms.

Given the average annual milk production per farm (table 7), the 2.4 million pound cap on payments far exceeds the average annual production per farm in Wisconsin, New York, Pennsylvania, and Minnesota, as well as for the United States as a whole. Thus MILC raises the incentive price for the average-size farm in these states. However, the 2.4 million pound limit is equivalent to less than two months' production for the average-size California farm. Thus assuming MILC payments are expected to occur in more than two months of the year, the average-size California dairy farm would rightly view MILC as a fixed payment, with no effect on the producer's incentive price.

An approximate boundary between small and large farms for the purposes of the MILC payment is 200 cows. Table 8 presents the share of farms and the share of production from farms with less than 200 cows and farms with 200 or more cows. For the United States as a whole, 9 percent of farms milked 200 or more cows, producing just over 60 percent of total U.S. production. Thus, for most farms in the United States, and for most farms in the traditional dairy states in the Upper Midwest and the Northeast, MILC raises the incentive price and induces increased production. However, for most farms in the West and larger farms throughout the country, the 2.4 million pound cap is binding and MILC is a direct payment. These differences have important implications for the distribution of MILC costs and benefits.

Table 8. Share of Farms and Production Milking 200 or More Cows, United States and Selected States, 2003 (percent)

	Share of dairy farms		Share of milk production	
	< 200 cows	200^{+} cows	< 200 cows	200^{+} cows
Wisconsin	94.7	5.3	67.5	32.5
New York	91.5	8.5	53.5	46.5
Pennsylvania	96.7	3.3	79	21
Minnesota	95.6	4.4	72.5	27.5
California	28.3	71.7	2.5	97.5
United States	91.0	9.0	38.5	61.5

Source: USDA**,** Agricultural Statistics database, accessed online on October 15, 2006 at http://www.nass.usda.gov/.

Brown (2003) simulates the elimination of the MILC program, relative to a baseline in which the MILC payment rate averages $1.18 per cwt. Brown estimates that elimination of the MILC program would cause the average U.S. farm price to rise by $0.41 per cwt from a base of $12.24, approximately a three percent increase. For small producers, the elimination of the $1.18 MILC payment, together with a $0.41-increase in the All Milk price, results in a net reduction of $0.77 per cwt. in the incentive price.

For large dairy farms, the $0.41-increase in the farm price of milk offsets the elimination of the MILC payments. Given the $1.18 MILC payment rate, large farms

received an annual fixed payment of $28,320 (=$1.18/cwt x 24,000cwt). For a farm with annual production of 6.9 million lbs (=$28,320/$0.41), the higher farm price of milk just offsets the elimination of the MILC payments, leaving net revenue for this farm unchanged. Farms producing more than 6.9 million pounds benefit from the elimination of the MILC program, as the added revenue from a higher price more than compensates for the elimination of the fixed payment. For a farm with milk output per cow of 21,000 pounds(the California average; see table 7), the break-even herd size is 329 cows. Put another way, farms milking more than 329 cows are made worse off by the MILC program. Farms falling into this category include a majority of farms in the West, and comprise a significant minority of U.S. farms.

Of course, the MILC program also has implications for other dairy policies. Increased milk production induced by MILC lowers the price of milk and dairy products and increases government purchases in the MPSP. Also, lower prices for milk and dairy products lead to increased consumption of dairy products in the United States and in export markets.

Finally, the MILC program, like countercyclical payments for program crops, contributes to the U.S. aggregate measure of support and is subject to challenge in the WTO.

Toward a Better Dairy Policy

One effect of the current set of dairy policies is to raise returns to dairy farming on average. Brown (2003) finds that the MPSP, DEIP, MILC, and federal milk marketing orders together raise the U.S. average farm price by 1.5 percent, and increase U.S. milk production by 1.9 percent. A USDA (2004) study of federal dairy policies finds similar aggregate, farm-level effects, and further finds that these programs reduce variability in farm milk prices and wholesale dairy product prices.[9] These studies and others imply modest aggregate net benefits for dairy farmers (see, for example, Cox and Chavas 2001; Price 2004). However, as noted, the aggregate net benefit for dairy farmers is only part of the story. Current dairy policy imposes costs on consumers, taxpayers, and some dairy farmers. Indeed, the conceptual analysis of dairy policy, as well as available empirical work, suggests that the costs exceed the benefits, creating a net loss for the U.S. economy. Thus U.S. dairy policy fails the cost-benefit test.

Who Wins and Who Loses from Elimination of U.S. Dairy Programs? U.S. dairy policy makes the country as a whole worse off. Moreover, the costs and benefits accrue to clearly identifiable groups.

U.S. consumers stand to benefit from elimination of U.S. dairy programs. The termination of milk marketing orders would result in lower prices of fluid milk and soft manufactured dairy products such as yogurt (see Cox and Chavas 2001; Chouinard and others 2005). What's more, lower milk prices would particularly benefit some of the most vulnerable members of society, including low-income households (Chouinard and others 2005). Elimination of the MPSP would also result in lower prices for consumers, as lower prices of butter, cheese, and NFDM would likely result in lower prices for a range of dairy products.

[9] Both Brown (2003) and USDA (2004) assume the California marketing order continues to operate.

The effect of trade liberalization on U.S. consumers is less clear. U.S. consumers gain from multilateral trade liberalization if trade liberalization is tied to domestic dairy policy reform in the U.S. and abroad, but could be made worse off if trade liberalization is not accompanied by domestic policy reform (Peng and Cox 2006). But even if domestic policy reform is not forthcoming in the United States or the EU, U.S. consumers would benefit from bilateral or regional free trade with relatively free-trading exporters such as Australia (Alston and others 2006).

Taxpayers also would benefit from elimination of dairy programs. Federal outlays for MILC payments and the MPSP averaged more than $1.3 billion per year between 2000 and 2004, not including administrative costs of operating these programs. Administrative costs are not negligible. For example, costs of storage, transportation, processing and packaging, and other outlays associated with running the MPSP averaged $37 million from 2000 to 2004.[10]

Ironically, some dairy farms would benefit from elimination of certain elements of dairy policy. The modest aggregate policy benefits accruing to dairy farms mask significant regional implications of U.S. dairy policy. By balkanizing U.S. milk markets and inhibiting interregional milk shipments, milk marketing orders protect higher-cost producers, especially those in the East and South, at the expense of lower-cost producers in the West, Southwest, and Midwest (Cox and Chavas 2001). Producers in these latter regions would receive higher prices and earn higher net revenue if milk marketing orders were eliminated. Similarly, the MILC program induces increased milk production from smaller farms, which lowers the farm price of milk. Many large farms, for which MILC is a fixed payment, would realize higher net incomes if the MILC program were discontinued. Yet there is no compelling reason for a regional bias in federal dairy policy, nor is it obvious that federal policy should favor smaller farms.

Producers in all regions and of all sizes may also benefit from improved opportunities for risk management if marketing orders were eliminated. The elimination of minimum class prices could open the door to greater risk-sharing between manufacturers and farmers. Also, a simpler pricing mechanism than that provided by marketing orders could facilitate the use of hedging strategies in derivatives markets and other risk management tools. Termination of U.S. dairy policy could also make the U.S. dairy sector more competitive at home and abroad. Elimination of the MPSP would reduce the prices of U.S. products on world markets, and would also encourage dairy manufacturers to diversify away from the bulk commodities purchased by the government and toward higher-value products sought by private consumers.

Of course, many dairy farms would be worse off without the current set of dairy policies. Elimination of the MPSP would result in lower prices for all farms, and would also harm manufacturers of cheese, butter, and NFDM. Elimination of marketing orders would result in lower milk prices in the Northeast and the South (Cox and Chavas 2001). Elimination of the MILC program would lower the net price and net revenue of smaller dairies (those with fewer than 200 dairy cows) throughout the country.

[10] See USDA, FSA, various years. *History of Budgetary Expenditures of the Commodity Credit Corporation*. http://www.fsa.usda.gov/FSA/webapp?area=about&subject=landing&topic=bap-bu-cc. Accessed online on October 12, 2006.

Inefficiencies of U.S. Dairy Policies as Means for Increasing Returns to Dairy Farming. The inefficiencies of each of the main domestic policies for dairy can be summarized as follows:

MPSP.

- The benefits of higher prices for supported dairy products may accrue not only to dairy farms, or even mainly to them, but also flow to processors of those products, as well as suppliers of other inputs.
- Government purchases distort dairy product markets, reducing consumption and increasing production of butter, NFDM, and cheese, and hindering the competitiveness of the U.S. dairy sectorby stifling innovation.
- The MPSP increases demand, from taxpayers and from the dairy sector, for additional policies to limit MPSP costs.
- The MPSP hinders progress in multilateral trade negotiations.

Milk Marketing Orders.

- This program makes producers in some parts of the country worse off.
- Regulation distorts prices within each market, reducing fluid milk consumption and increasing milk production.
- With relatively low and decreasing shares of milk going to the fluid market in most regions (table 3), price discrimination is increasingly ineffective at raising the average producer price.
- An early justification for marketing orders—to countervail potential market power by fluid milk processors—is no longer relevant in light of the emergence of dairy cooperatives as the major source of U.S. milk production.

Milk Income Loss Contracts.

- The MILC program harms larger farms. Payment limits per se are not the problem. Rather, the disparate effects for different types of farms stem from the fact that the MILC program induces a supply response from smaller farms, while restricting payments to others.
- The MILC program, like countercyclical payments for program crops, does not provide safety-net protection from supply shocks. Payments triggered on market prices provide inadequate income support when a negative supply shock (for example, from bad weather) results in high prices, and pay out when prices are low, even if net revenue is not low.

Subsidizing Dairy Farms with Less Market Distortion

A better way to subsidize dairy farming draws from the lessons of current dairy policy and simplifies the policy landscape. Lessons that might be drawn from the U.S. experience with the MPSP, milk marketing orders, and MILC include:

1. Target subsidies directly to the intended recipients (dairy farms).
2. Do no harm. That is, policy aimed at raising returns to dairy farming ought not to make any dairy farms worse off. This is not to argue that some producers do not need

more government assistance more than others; rather, if this is the case, the policy should not overtly penalize the producers that do not need government assistance.

3. Do not distort producer or consumer prices, allowing market forces to guide production and consumption.

As an example of a policy that could increase returns to dairy farming while complying with these rules of thumb, consider eliminating the MPSP, milk marketing orders, and the MILC program, and replacing them with a direct payment decoupled from current prices. Payment limits could be put in place to contain program costs and to proportionally favor smaller farms (if this were deemed necessary). Decoupling the payment from current prices would dampen (although not eliminate) the supply response compared to the current MILC program. By raising dairy farm income, the payment reduces producers' need for the MPSP and marketing orders, which also raise dairy farm income but do it with more market distortions. In addition, eliminating the MPSP and milk marketing orders also eliminates the need for import restrictions and would make the U.S. dairy sector more competitive in world dairy markets.

Coupled with a firm termination date after which no payments would be made, such a payment could be viewed as a government buy-out of the status quo policies. Of course, as with any buy-out program, an issue is the inability to constrain future policy options to exclude a return of government support.

In a policy proposal put forth in February 2007, the Bush administration recommended a revised version of the MILC program that makes payments based on historical production, and gradually reduces the payment rate over time.[11] The proposal is to retain the current countercyclical structure, with payments made when market prices fall below a target price, while leaving in place the MPSP, as well as milk marketing orders. Basing MILC payments on historical production would reduce, but not eliminate, the supply response relative to the current policy, and would therefore reduce the negative effects of the MILC program on larger dairy farms. However, the proposal to base MILC payments on historical production also faces some practical difficulties. Similar payments for program crops are tied to farmland. However, there is no obvious productive asset to which MILC payments can be based. Would rights to the proposed MILC payments be given to the farm entity? Would those rights be transferable? Would new dairy farms, with no production base, be eligible for payments? Implementation of these payments could have important implications for the economic impact of the policy.

Moreover, the MPSP would continue to be a large contributor to the U.S. Aggregate Measure of Support, and the proposed MILC payment would continue to be subject to WTO challenges. Finally, the payments would continue to be countercyclical in the sense that they are triggered by low market prices. As discussed above, countercyclical payments based on price triggers are imperfect safety net policies because of the inverse relationship between changes in market price and changes in net revenue caused by supply shocks.

A better countercyclical-type payment would be based on a measure of net farm revenue, not market prices. Such a policy could pay out when net farm revenue is low: as a result, for example, of reduced demand or increased input costs. A challenge for such a policy is developing measures of net farm revenue. Despite this challenge, the Bush

[11] See the USDA Farm Bill proposals Web site.
http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?navid=FARM_BILL_FORUMS

administration's proposal recommends replacing the current countercyclical payments for program crops with revenue countercyclical payments.

For either a direct payment or a countercyclical payment, an issue that would need to be addressed is taxpayer costs of the program. However, the relative simplicity and transparency of a direct payment or, to a lesser extent, a revenue countercyclical payment, facilitates such cost-benefit analysis.

Finally, it is worth addressing the effects of alternative policies on the risk associated with dairy farming. There is evidence that the MPSP reduces variability in prices of supported dairy products and in the farm price of milk (Chavas and Kim 2005). Also, the MILC program reduces variability in the net farm price for smaller farms, although not for larger farms. Neither of these policies protects farmers from production risk. As discussed above, the countercyclical nature of MILC payments likely exacerbates income variability caused by supply shocks. Milk marketing orders also likely contribute to the risks that dairy farmers face by inhibiting forward contracts for milk and by reducing the effectiveness of derivatives markets as a risk management tool. In short, current dairy policy offers provides, modest risk protection for dairy farmers, at best, and may actually increase risk.

The fixed payment policy sketched above also offers little risk protection, and is best seen (like the status quo policies) as distribution of income from taxpayers to dairy farmers. However, to the extent that the fixed payments raise dairy farm income, they also reduce the relative risk (that is, the coefficient of variation of income) faced by dairy farms. On the other hand, the income countercyclical payment would reduce income variability for dairy farms. Still, the revenue countercyclical payment might best be viewed as an income transfer from taxpayers to dairy farmers.

If variability in prices—or, perhaps more relevantly, variability in income—is perceived to be an issue, producers could potentially benefit from the development of new risk management tools, apart from price- or income-enhancing policies. In particular, insurance products, like those already in use or in development for the crop sector, could be developed for the dairy sector. That said, there is little reason to be sanguine about the prospects for insurance (even subsidized insurance) as long as lawmakers are inclined to provide ad hoc disaster relief to farmers (see Glauber 2007).

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