ANALYSIS OF RECENT OPTIONS FOR CHANGES IN U.S. DAIRY POLICY

Tom Cox and Daniel A. Sumner

The policy instruments that control dairy output and distribution in 1996 are basically the same as those that have ruled the industry for half a century. Three distinct, but interrelated, policy types comprise the major components of government interventions in the U.S. dairy market: (1) a price support program under which the federal government stands ready to buy selected storable dairy products at minimum prices; (2) trade policies, including both import barriers and export subsidies that insulate the U.S. domestic market from competition and shift out the demand for certain manufactured dairy products; and (3) a marketing order system that regulates both regional milk prices paid by users and how these prices are translated into farm level prices. These three sets of policies combine to create a complex web of interrelationships that govern all aspects of the market for milk and milk products in the United States. (See Blaney, Miller and Stillman, 1995 for a extended discussion of the U.S. dairy industry and policy.)

This paper considers the effects of alternative modifications of U.S. dairy policy. For the formal quantitative analysis we draw on the University of Wisconsin-Madison Dairy Interregional Competition Model (IRCM) that has been used extensively over the last several years to consider a wide variety of policy options. We use the model to consider several specific proposals that were prominent in the dairy policy debate leading to the 1996 *Federal Agricultural Improvement and Reform* (FAIR) Act. In each case we consider the effects of a specific option relative to a scenario that replicates the dairy market and policy situation in 1993 (referred to as *BASE*). The options we consider include: (1) deregulation of marketing orders coupled with elimination of price supports (referred to as the *Freedom to Milk* scenario); (2) a complex mix that includes modification of marketing orders to change some regional effects while eliminating the price support on certain products and reducing the price support on other products (referred to as the *House Compromise* scenario); and, (3) the actual Dairy Title of the FAIR Act of 1996 (referred to as the *1996 FAIR Act Dairy Title* scenario). We also evaluate two additional variants on the *1996 FAIR Act Dairy Title* scenario. These scenarios measure the impacts of the provision to eliminate the price support program by the year 2000 under two alternative assumptions about world prices for butter, nonfat dry milk (NDM) and American cheese. These scenarios are referred to as *NO CCC: Low World Prices* and *NO CCC: High World Prices.*

Each of the policy options analysed includes a number of specific features and is described in some detail below. None of the options includes changes in trade barriers or export subsidies and, in fact, no serious trade policy reform was contemplated in the policy discussions leading to the FAIR Act. This is despite the fact that trade barriers are, perhaps, the most significant feature of U.S. dairy policy.

This paper does not review the legislative history or future political feasibility of the options considered. Our purpose is more academic in that we consider these specific options in order to learn what such analysis can teach us about the operation of the U.S. dairy industry and the underlying economics of alternative policies. We do not suggest that the alternatives we consider are the modifications most likely to be included in future legislation, however, they were each serious proposals for the 1996 Act. This paper also does not review the large academic literature that considers the implications of various stylized dairy policies. The research papers and USDA reports we cite include many of the key references and reviews of that literature.

The final section of the paper examines potential implications of alternative U.S. program options for dairy trade and trade relations with Canada. In light of the analysis of each program option developed in the paper we consider if the alternative chosen for U.S. reform has significant implications with respect to dairy trade issues with Canada.

U.S. DAIRY POLICY INSTRUMENTS: A BROAD BRUSH DESCRIPTION

Before considering the specific options and their effects it is useful to provide a brief description of the major U.S. dairy policy instruments.

Price Supports

The USDA agrees to purchase butter, non-fat dry milk (NDM), and American Cheese from processors at prices calculated to ensure that the farm price of milk used for the manufacture of those products will generally remain above the legislated support price ($10.10 per hundredweight in 1995 and $10.35 in 1996). In 1990, a tax on milk production was included in the price support program to limit milk output while directly offsetting dairy program budget costs. Farmers pay a specific per-unit assessment that has averaged a little under one percent of the market price. An added wrinkle to the program has been a refund of assessments to farms whose milk output did not grow from one year to the next and an upward adjustment in the assessment rate on other farms to make up for the lost government revenue.

Trade Policies

Trade barriers are a fundamental feature of U.S. dairy policy. In general, imports of dairy products in the United States have been limited to a small percentage of domestic consumption of manufactured dairy products. The import barriers allow the domestic price of milk and milk products to remain well above the price for traded products in world markets; thus making price discrimination policies feasible. The system of absolute quotas gave way to a system of tariff-rate quotas (TRQs) as a part of the Uruguay Round trade agreement which took force on July 1, 1995. However, the second-tier tariffs that limit over-quota imports remain prohibitively high; therefore, the effects of the TRQs remain the same as the absolute quotas that were replaced. The Uruguay Round agreement also provides for a gradual increase in the quantity of dairy product imports into the United States under the TRQs. This provision will allow for a gradual increase in import access into the U.S. dairy market over the next 5 years.

Subsidized exports have long been used, along with donations to domestic food programs and international food aid, to dispose of stocks of dairy products acquired under the price support program. Subsidized exports have been considered a market for U.S. dairy products that would not disrupt commercial sales. In addition to disposal of government stocks, the Dairy Export Incentive Program (DEIP) has provided explicit price subsidies for commercial dairy product exports since 1989.

Marketing Orders

Unlike the price support and international trade programs, marketing orders, even when applied under federal legislation, are regional in their implementation. Some regions have state marketing orders for milk, and some have no marketing orders. All federal milk marketing orders and the major state milk marketing orders establish specific minimum prices that must be paid for milk according to its end-use class (classified pricing). They also provide for pool pricing such that individual farmers receive a weighted average price of milk sold in their marketing order. Federal milk marketing orders calculate a separate pool price for all milk under each of the 34 regional orders (Neff and Plato, 1995).

Federal marketing orders operate with at least three classes of milk by end use. These classes provide separate markets and pricing for milk used in fluid, and for manufactured products such as yogurt, cheese, butter or NDM. California, which accounts for about 15 percent of U.S. milk supply and operates its own marketing order, has two pool prices that based on two separate weighted averages of prices for five end-use classes. Further, unlike farmers under federal orders, individual farmers in California receive a weighted average of the two pool prices, with these weights determined by individual ownership of milk quota (Sumner and Wolf, 1995).

Each marketing order regulates milk within a geographically limited market. The relationship of prices among orders is determined, in part, by the formula used to set

minimum prices in the orders themselves. The price of unregulated Grade B milk produced in the Minnesota-Wisconsin region is the basis for the minimum price for Class I milk in the lowest-price federal order. The Class I differential (and, therefore the minimum Class I price) is generally higher the further the region is from the Wisconsin.

With different minimum prices in each region, regulations are needed to prevent milk from being transported across regions so as to undermine the maintenance of separate fluid milk markets in different orders. The regulations insure that there is generally little economic advantage to arbitrage across prices in different orders.

DAIRY TRADE AND "DOMESTIC" POLICY

U.S. dairy policy has several elements that generally keep the domestic prices of dairy products above those in most potential export markets. First, import barriers in the form of TRQs (and, for some products relatively high transport costs) are sufficient to insulate the domestic U.S. market from world supply and demand. This is a necessary condition for U.S. prices to remain above the prices that prevail in world markets. Second, the price support program requires government purchases of dairy products at minimum prices that are well above the prices at which these products typically trade in international markets. This means that rather than being exported by commercial firms these products are sold to the government. Third, the marketing order system assures relatively high prices for fluid milk and stimulates milk production in relatively high cost regions. Fourth, subsidized exports under the DEIP contribute to higher domestic U.S. prices for milk by drawing product out of the domestic market.

Under classified pricing, (and with import barriers in place) buyers are required to pay different prices for identical milk depending on the intended end use of the commodity. Classified pricing has had its most dramatic effects creating higher prices for fluid products while lowering prices for manufactured products. However, price discrimination among manufactured products is becoming more evident in the current system and in some of the options for policy changes. (For example, the *House Compromise* option provides for wide price differentials between milk used for cheese and milk used for butter and NDM.)

This price discrimination can take many forms and could be tailored to stimulate exports without including an explicit subsidy tied to the export of a particular product. For example, some dairy products are more likely to be destined for export markets and others are much more likely destined for domestic use. Given this tendency, classified pricing could be used to set high prices for those products likely to be consumed by domestic buyers and lower prices for products likely to be exported, even though the products were manufactured from identical milk. Classifications by end-use category may be defined such that export-bound products are grouped together and assigned relatively low milk prices. Products destined for domestic consumption may be grouped into classes that are assigned

higher milk prices. Finally, the end-use prices and classifications can be adjusted such that producer revenue is insulated from any drop in the price of those products destined for export. One result is that the price paid by export buyers may be below both the price paid by domestic consumers and the price received by producers. (Sumner, 1996, analyses several such options and discusses their export implications.)

OVERVIEW OF THE UW-MADISON DAIRY IRCM AND THE BASE SCENARIO

The UW-Madison Dairy IRCM is a multi-region, multi-product interregional competition model that balances regional supplies and demands (See Cox; Cox and Jesse; Cox, Chavas and Jesse; and Chavas, Cox and Jesse for more details on the model, its development and the empirical specification of the underlying equations and parameters). The Dairy IRCM has 13 regions (see Table 1), nine wholesale dairy products (see Table 2) and farm-level milk priced on three components: fat, protein, and lactose. The Dairy IRCM was designed to consider potential reform of the federal and state milk marketing orders and other policies. It therefore includes substantial regional detail. Important production areas such as California and the Upper Midwest (which includes Wisconsin, Minnesota, North Dakota and South Dakota) are each modelled as separate regions. Each of the 13 regions is allowed to have different supply functions, farm level prices, and different aggregate wholesale demands determined by population.

The Dairy IRCM generates a spatial equilibrium across regions by adjusting regional prices, production, and trade. In the model, dairy product price differences between regions cannot be greater than transportation costs or additional interregional trade would occur. Mileage between regions, three different transportation cost rates (raw milk, refrigerated and non-refrigerated), and federal and California milk marketing order regulations are explicitly modelled.[1] The model uses regional component pricing, so the farm level value of fat, protein, and lactose are generated regionally as are production of farm milk and production and consumption wholesale products. The model does not examine the evolution of policy changes or reactions to them over time; rather, it presents annual results under the assumption that a policy has be fully implemented and adjustments have taken place. All adjustments are assumed to occur over an intermediate-run time horizon of 3 to 5 years.

---

[1]The model incorporates a single blend price under the California marketing order and thus does not reflect the supply effects of the two pool price system as analysed by Sumner and Wolf. This likely means that the model over estimates the supply effects of the scenarios that change the price of manufacturing milk. However, it also means that the effective supply price in California is less affected by changes in Class I prices.

Table 1. Producing and Consuming Regions of Fluid and Manufactured Dairy Products in the U.S. Dairy Sector IRCM.

1.	**California**
2.	**Central:** Kentucky, Tennessee
3.	**East North Central:** Illinois, Indiana, Michigan, Ohio
4.	**East South Central:** Alabama, Arkansas, Louisiana, Mississippi
5.	**Middle-Atlantic:** New York, New Jersey, Pennsylvania
6.	**Mountain:** Arizona, Colorado, Montana, Nevada, Utah, Wyoming
7.	**North East:** Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont
8.	**North West:** Idaho, Oregon, Washington
9.	**South Atlantic:** District of Columbia, Delaware, Maryland, Virginia, West Virginia
10.	**South East:** Florida, Georgia, North Carolina, South Carolina
11.	**West South Central:** New Mexico, Oklahoma, Texas
12.	**West Central:** Iowa, Kansas, Missouri, Nebraska
13.	**Upper Midwest:** Wisconsin, Minnesota, North Dakota, South Dakota

In order to consider the effects of policy change we compare each alternative to the BASE scenario. The BASE scenario simulates conditions in the 1993 U.S. dairy sector. The BASE scenario is characterized by: (1) budget assessments of $0.1125/cwt, (2) a farm level price support of $10.10/cwt (operationalized as purchase prices of $1.12/pound for American cheese, $0.65/pound for butter, and $1.034/pound for NDM), (3) federal milk marketing orders (classified pricing, Eau Claire based Class I differentials, Minnesota-Wisconsin (MW) minimum price for Class III products and Class I "mover", etc.) and, (4) California pricing rules for California (including California fluid standards in California). In addition, this scenario assumes that the DEIP operates at the 5 year average of its maximum allowable export subsidies on cheese, butter, and NDM (as provided under the Uruguay Round GATT agreement) and that government domestic donations are continued at the 5 year average rates (roughly 2.4 billion pounds of milk equivalent total solids (METS)).

Table 2. Nine Categories of Fluid and Manufactured Dairy Products in the U.S. Dairy Sector

Fluid:	Beverage fluid milk including regular and flavored milk (whole, 2%, 1%, skim) and buttermilk.
Soft Products:	Cream (Half and Half, heavy and light), sour cream, yogurt, eggnog, cottage cheese.
Frozen Products:	Ice-cream, ice-milk, sherbet, frozen dairy mix and mellorine.
Butter:	Butter.
American Cheese:	American, Cheddar, Colby, Monterey and processed American cheese.
Italian Cheese:	Mozzarella, Provolone, Parmesan, Romano and Ricotta.
Other Cheese:	Swiss, Edam, Gouda, Brick, Muenster, Gruyere, cream cheese and all other cheeses.
Nonfat Dry Milk (NDM):	Nonfat dry milk.
All Other Mfg (Resid MFG):	Canned and bulk whole milk and skim milk, dry whole milk and buttermilk, and dry whey products.

In each alternative scenario except the final *NO CCC: High World Prices* scenario, relatively low exogenous world market prices are assumed for butter ($0.69/pound), NDM ($0.70/pound), and American cheese ($0.83/pound).[2] These low world price assumptions yield a butter/NDM milk equivalent world price of around $6.20/cwt.

The ability of mathematical simulations to precisely mimic market behaviour is limited (see Cox and Jesse). In this context, comparing the changes induced by the alternative scenarios relative to the BASE is preferred to comparing the absolute changes

[2]Most scenarios presented here were also evaluated at considerably higher world market prices: butter ($0.82/pound), NDM ($0.90/pound), and American cheese ($0.97/pound). These high world price assumptions yield a butter/NDM (Class IIIa or Class IV) milk equivalent price around $8.50/cwt and tend to lower the losses (increase the gains) generated by dropping price supports in the alternative scenarios. Hence, use of the lower world prices generates a somewhat less optimistic assessment of the likely impacts of these scenarios.

Below we explicitly examine the differential impact of these alternative world price assumptions when the U.S. price support program is ended.

(say from current reality) generated by the alternative scenarios. The results below summarize the aggregate wholesale and regional farm level impacts of the alternative scenarios as percentage changes from the BASE results. Other results are also presented relative to the projections under the BASE scenario.

ALTERNATIVE POLICY OPTIONS: DESCRIPTIONS AND IMPLICATIONS

We believe it is instructive to present the results from the two major alternative proposals that were rejected in the 1995/96 dairy policy debate, along with a more detailed look at the actual policy that was adopted in the Dairy Title of the FAIR Act. The policy scenarios will each be described in just enough detail to allow the reader to understand the major features that were modelled. Following the description the projections for milk market aggregates from the policy alternative are discussed. We begin with the so called *Freedom to Milk* proposal that was easily the most radical reform seriously considered for the 1996.

Freedom to Milk

This is basically a deregulation scenario with transition payments made to producers based on the average of the best three of the past five year milk sales. A 5 year average of these payments (roughly 10 cents per cwt) is incorporated in the modelling of this scenario. Two key components of the *Freedom to Milk* deregulation are the removal of price supports on all products and the elimination of both the federal and California milk marketing orders. In addition, the producer assessments ($0.1125/cwt) and the government donations (2.4 billion METS) of the BASE scenario are removed. Import barriers remain and imports are fixed at 1993 quantities. Export subsidies may remain available, but they are irrelevant given that prices for butter and NDM fall to world market levels.

Eliminating milk marketing orders reduces fluid milk prices by 17 percent ($2.45/cwt), increases fluid production/consumption by 3 percent (1.6 billion pounds), and reduces fluid revenues by almost 15 percent ($1.1 billion) (see Table 3). As shown in Table 4, the aggregate farm milk price and farm production each drop by roughly 2.5 percent ($0.33/cwt and 3.7 billion pounds). With less total milk production and increased fluid milk consumption, manufacturing milk markets tighten considerably. As a result, production of each cheese type falls (From Table 3: American cheese, -6 percent; Italian cheese, -3 percent; and other cheese, -8 percent) and total cheese production falls by 349 million pounds. Also in Table 3, cheese prices rise (American cheese, 2 percent; Italian cheese, 12 percent; and other cheese, 13 percent). Butter/NDM prices fall to near world market levels because they are no longer supported by government purchases. NDM production falls by 18 percent (173 million pounds). Finally, soft and frozen product outputs fall by 5 percent and 7 percent, while prices rise by 14 percent and 24 percent. These aggregate wholesale

sector results are national in scope. There are significant regional variations in the farm level impacts that are discussed next.

Table 3. Aggregate and Regional Wholesale Sector Summary: Percentage Changes from BASE

	BASE	Freedom to Milk (%)	House Compromise (%)	1996 Fair Act Dairy Title (%)	No CCC: Low World Prices (%)	No CCC: High World Prices (%)
WHOLESALE PRICES ($/cwt)						
Fluid	14.08	-17.4	10.3	-1.7	-6.6	-3.3
Soft	24.23	13.9	-0.4	-1.3	9.2	-2.1
American Cheese	105.40	2.4	-0.2	-2.7	-10.4	-4.9
Italian Cheese	84.36	11.5	11.1	-3.6	-8.3	-11.7
Other Cheese	81.43	13.3	2.2	-2.3	4.6	-0.2
Butter	60.67	-6.4	-11.0	0.6	-8.9	14.1
Frozen	18.85	24.4	-4.0	-0.9	19.1	0.8
Residual Mfg	36.16	-5.6	4.4	-0.0	2.2	2.2
NFDM	99.34	-33.5	-43.2	-2.8	-42.3	-22.7
WHOLESALE PRODUCTION (million pounds)						
Fluid	54,049	3.1	-1.8	0.3	1.2	0.6
Soft	4,027	-5.2	0.2	0.5	-3.5	0.8
American Cheese	3,130	-6.1	-2.0	-4.4	-4.2	-5.1
Italian Cheese	2,467	-2.9	-2.8	0.9	2.1	2.9
Other Cheese	1,066	-8.0	-1.3	1.4	-2.8	0.1
Butter	1,284	1.5	10.0	-0.2	-3.8	-4.0
Frozen	7,639	-7.2	1.2	0.3	-5.6	-0.2
Residual Mfg	4,219	1.5	-10.0	0.0	-0.6	-0.6
NFDM	963	-18.1	10.0	-1.6	-22.7	-13.1
WHOLESALE CONSUMPTION EXPENDITURES (million $)						
Fluid	7,561	-14.8	8.2	-1.4	-5.5	-2.7
Soft	972	7.9	-0.2	-0.8	5.4	-1.3
American Cheese	3,025	2.0	-0.2	-2.3	-8.9	-4.1
Italian Cheese	2,070	8.3	8.0	-2.8	-6.4	-9.1
Other Cheese	1,076	6.0	1.1	-1.2	2.3	-0.1
Butter	616	-4.9	-8.6	0.5	-6.9	10.2
Frozen	1,431	15.4	-2.8	-0.7	12.4	0.5
Residual Mfg	1,388	-4.0	3.1	-0.0	1.6	1.6
NFDM	540	-23.3	-32.0	-1.5	-31.2	-14.7
TOTAL U.S.	18,679	-4.0	3.0	-1.4	-4.0	-2.8

Table 4. Aggregate and Regional Summary of Farm Level Impacts: Percentage Changes from BASE Scenario

	BASE	Freedom to Milk (%)	House Compromise (%)	1996 Fair Act Dairy Title (%)	No CCC: Low World Prices (%)	No CCC: High World Prices (%)
FARM LEVEL PRICES ($/cwt)						
North East	14.08	-9.0	-0.1	-0.8	-2.7	-2.2
Mid-Atlantic	13.30	-4.7	1.7	-0.9	-2.8	-2.3
South Atlantic	13.78	-9.4	-1.1	-0.6	-2.3	-3.2
South East	15.14	-10.6	-1.5	-0.6	-5.2	-3.1
Central	13.89	-7.9	-0.5	-0.8	-5.7	-4.4
E. South Central	14.22	-11.1	-0.7	-0.7	-2.9	-3.3
W. South Central	13.20	-7.0	1.1	-0.6	-0.6	-0.7
E. North Central	13.71	-9.1	0.5	-0.9	-5.1	-2.5
Upper Midwest	11.84	4.2	4.1	-1.1	-4.9	-3.2
West Central	12.79	-4.3	1.3	-1.0	-4.2	-2.6
North West	11.68	2.0	2.4	-1.9	-6.4	-3.5
Mountain	12.29	0.0	1.8	-1.1	-1.1	-1.2
California	11.40	3.1	2.5	-2.1	-6.4	-0.4
TOTAL U.S.	12.68	-2.6	1.7	-1.1	-4.3	-2.4
FARM LEVEL PRODUCTION (million pounds)						
North East	4,500	-2.6	-0.0	-0.2	-0.8	-0.6
Mid-Atlantic	21,617	-2.9	1.0	-0.5	-1.7	-1.4
South Atlantic	3,789	-1.0	-0.1	-0.1	-0.3	-0.4
South East	5,998	-6.9	-1.0	-0.4	-3.4	-2.0
Central	4,220	-11.2	-0.7	-1.2	-8.1	-6.3
E. South Central	2,952	-6.4	-0.4	-0.4	-1.7	-1.9
W. South Central	9,713	-4.7	0.8	-0.4	-0.4	-0.4
E. North Central	15,582	-9.0	0.5	-0.9	-5.1	-2.5
Upper Midwest	34,767	0.7	0.7	-0.2	-0.9	-0.5
West Central	8,923	-6.2	1.9	-1.5	-6.0	-3.8
North West	9,527	1.0	1.2	-1.0	-3.2	-1.8
Mountain	5,212	0.0	0.8	-0.5	-0.5	-0.5
California	22,857	1.1	0.8	-0.7	-2.2	-0.1
TOTAL U.S.	149,657	-2.5	0.7	-0.6	-2.3	-1.3
FARM LEVEL TOTAL REVENUES (million $)						
North East	633	-11.4	-0.2	-1.1	-3.5	-2.8
Mid-Atlantic	2,875	-7.5	2.7	-1.4	-4.5	-3.7
South Atlantic	522	-10.3	-1.2	-0.7	-2.5	-3.6
South East	908	-16.8	-2.5	-1.0	-8.5	-5.1
Central	586	-18.2	-1.1	-2.0	-13.3	-10.4
E. South Central	420	-16.8	-1.0	-1.1	-4.5	-5.1
W. South Central	1,282	-11.4	1.9	-1.1	-1.0	-1.1
E. North Central	2,136	-17.3	0.9	-1.8	-10.0	-4.9
Upper Midwest	4,116	4.9	4.8	-1.3	-5.7	-3.7
West Central	1,141	-10.3	3.2	-2.5	-10.0	-6.3
North West	1,112	3.0	3.6	-2.9	-9.4	-5.2
Mountain	640	0.1	2.6	-1.6	-1.7	-1.8
California	2,605	4.3	3.3	-2.8	-8.5	-0.5
TOTAL U.S.	18,976	-5.0	2.4	-1.7	-6.6	-3.7

Table 5. Aggregate Welfare and Revenue Impacts: Percentage Changes from BASE Scenario

	BASE	Freedom to Milk (%)	House Compromise (%)	1996 Fair Act Diry Title (%)	No CCC: Low World Prices (%)	No CCC: High World Prices (%)
AGGREGATE WELFARE SUMMARY (million $)						
Producer	2,706	-1.7	1.2	-0.8	-3.0	-1.6
Consumer	4,358	1.7	-1.6	0.8	2.0	1.5
TOTAL	7,064	0.4	0.5	0.2	0.1	0.3
AGGREGATE REVENUE/COST SUMMARY (million $)						
Farm	18,976	-5.0	2.4	-1.7	-6.6	-3.7
Consumer	18,679	-4.0	3.0	-1.4	-4.0	-2.8
Government	441	-66.9	-71.1	18.3	-100.0	-100.0

As a result of increased cheese prices and more access to fluid markets, regions that now produce milk used primarily for manufactured products (Upper Midwest, Northwest, California, and Mountain: these regions accounted for 48 percent of 1993 milk production) are projected to have increases in farm price, production and total revenue while regions that now have high Class I utilization suffer sizable losses. In these regions that produce milk for manufacturing uses, the losses from allowing product prices to fall to world market levels are offset by gains from eliminating milk marketing orders. These simulations suggest, therefore, that, under current regulations, producers in markets with high Class I utilization gain more from the price discrimination maintained by the milk marketing orders than do regions with low Class I utilization.

As noted above and shown in Table 4, U.S. aggregate farm production and price each decline by about 2.5 percent ($0.33/cwt) and total revenue falls by 5 percent ($949 million).[3] Consumer outlays are projected to decline by 4 percent, ($0.7 billion) (Table 5). The direct government budget costs under this option are $146 million annually, due solely to the transition payments ($0.10/cwt on 145,970 million pounds of milk production). Government costs are $295 million less than BASE outlays (Table 6).

Table 6 also provides an indication of likely exports under a deregulation scenario. Exports of butter fall by 8 percent to 293 million pounds and exports of NDM falls by 90 percent to 42 million pounds. Exports of the solids rich residual manufacturing aggregate remain unchanged (372 million pounds). In contrast, exports of American cheese fall to zero as domestic U.S. prices remain well above world market prices.

[3]At the higher world market prices these aggregate declines are smaller: -1 percent on price and -3 percent on revenues.

Table 6. Endogenous Sector Summary: Price Support Purchases (If Products are Supported) and/or Commercial Exports (If Products are Not Supported)

	BASE	Freedom to Milk (%)	House Compromise (%)	1996 Fair Act Dairy Title (%)	No CCC: Low World Prices (%)	No CCC: High World Prices (%)
QUANTITIES (MILLION POUNDS)						
American Cheese	161	0	116	31	0	0
Butter	318	293	575	473	403	70
Nonfat Dry Milk	383	42	365	353	52	192
Residual Manufacturing	372	372	0	372	372	382
MINIMUM DOMESTIC PRICES ($/CWT) / a						
American Cheese	112.00	114.78	112.50	109.80	101.17	107.64
Butter	65.00	58.99	58.99	65.00	58.99	72.00
Nonfat Dry Milk	103.40	59.62	59.62	100.30	59.62	79.62
Residual Manufacturing	33.60	33.60	34.01	33.60	33.60	33.60
WORLD PRICES ($/CWT) / b						
American Cheese	82.72	82.72	82.72	82.72	82.72	97.20
Butter	68.99	68.99	68.99	68.99	68.99	82.00
Nonfat Dry Milk	69.62	69.62	69.62	69.62	69.62	89.60
Transport Cost / c	10.00	10.00	10.00	10.00	10.00	10.00
Government/DEIP Cost / d	101	(0)	2	94	0	0
Other Government Costs / e,f	340	146	126	428	0	0
Total Government Costs / g	441	146	128	522	0	0
Change from BASE		(295)	(314)	81	(441)	(441)
% Change from BASE		-67%	-71%	18%	-100%	-100%

Notes:
a) Minimum domestic prices are either Price Floors (at $10.10 CCC levels or World Market Prices + transportation to North European Ports) or the lowest regional price in the current solution (usually California).
b) World market prices are 5 year averages (1994-98) from FAPRI's 4/95 BASELINE, except for NO CCC: High World Prices which are from FAPRI's 10/95 BASELINE.
c) Approximate transport costs to move products to North European ports or Pacific Rim.
d) DEIP costs computed as Domestic Price - World Market Price + Transport Costs, using 5 year average DEIP Maximums (1994-98): American cheese, 4 million pounds; butter, 70 million pounds; NDM, 217 million pounds.
e) BASE Other Government Costs are computed as (Exports - DEIP Maximum) * Domestic Price - 1993 Assessments ($0.1125/cwt). Note that this includes the 1993 Government release of 14 million pounds of American Cheese and 201 million pounds of butter (i.e., around $146 million at $10.10 CCC prices). Excludes Residual Manufacturing Costs. Freedom to Farm costs are the transition payment ($0.10/cwt) times total milk production (145,970 million pounds).
f) Note that the House Compromise and Dairy Title do not have budget assessments to offset the cost of the government price support and DEIP programs. The lack of assessments explain why the projected Dairy Title government costs are higher than BASE despite lower CCC purchase prices.
g) Total Government Endogenous Costs does not include the costs of Government purchases to meet the 5 year average Domestic Donations of butter, NDM, and American Cheese (71.3, 27.5, and 102.8 million pounds respectively) assumed to be exogenous ONLY in the BASE scenario. At 1993 support prices, the cost of these donations would be around $200 million.

The House Compromise (1/25/96)

The *House Compromise* proposed a package of complex significant policy changes affecting fluid and manufacturing milk markets. Each of the major policy provisions is listed here separately, but, it must be stressed, the impacts of the proposal depends on their simultaneous implementation.

- Existing federal and state milk marketing orders are retained but *minimum* fluid prices are kept 2 years at $12.87 plus BASE Class I differentials. These relatively

high minimum prices reflect the tight milk supply (due to unusually hot weather and high grain prices) that characterized the U.S. dairy sector in the fall of 1995.

- A national pool is created for $0.80/cwt of fluid revenues at the average U.S. Class I utilization (about 40 percent).
- California fluid milk protein standards are imposed nationwide; this raises the nonfat solids in fluid milk (as well as fluid prices) and raises the demand for nonfat solids.
- The California marketing order is retained, but California participates in the national Class I pool.
- The price support on butter and NDM is eliminated.
- The producer assessments are eliminated.
- Price support on American cheese is raised from $10.10 (in the BASE) to $10.35. The cheese support is phased down $0.10/year for 5 years generating a 5 year average support level of $10.15/cwt ($1.125/pound versus $1.12/pound in the BASE) which we use in our simulations.
- The most complex change is the creation of a 50 percent Class IV pool to replace the government purchase program for butter and NDM. This program is similar to a farmer financed, target price-deficiency payment scheme where 50 percent of the difference between the cheese support price and the price of milk used in butter and NDM evaluated at world market prices (roughly $6.20/cwt under our low world price scenario) is recovered from a national pool that is assessed on all dairy farmers on the basis of their production. An assessment of about $0.16/cwt on all milk in required to cover 50 percent of the losses from dropping the price support. By maintaining a price differential, this program provides considerable incentives for manufacturers to make cheese rather than butter and NDM. Offsetting these incentives are a generous "make allowance" on butter/NDM production ($1.60/cwt) and the nationwide California fluid standards which raises demand for nonfat solids and shifts milk away from cheese. Due to these factors, in the simulations we assume exogenously that NDM production expands a minimum of 10 percent over BASE quantities.
- The domestic donations of about 2.4 billion pounds (METS) that are included in the BASE scenario are dropped.

Two additional elements contained in the *House Compromise* proposal are not modelled. Neither the stand-by pool nor the unspecified reform of federal marketing orders that is to occur after 2 years have specific or quantifiable elements that lend themselves to explicit modelling. Therefore, rather than speculate on their form, these policy elements are not included in the simulation of this option.

Under the *House Compromise*, butter and NDM prices fall to near world market levels, hence facilitating exports. To the extent that the Class IV pool successfully shifts

milk into export markets and tightens domestic markets for other products (cheese, fluid, soft, and frozen products, etc.), the U.S. dairy industry would gain revenue by reducing supplies along inelastic product demand functions.

Due to the very high minimum fluid prices and the additional solids fortification induced by nationwide California fluid standards, this scenario is projected to increase fluid prices by about 10 percent ($1.45/cwt, 12.5 cents/gallon), decrease fluid production and consumption by about 2 percent (1.0 billion pounds), and increase fluid revenues by about 8 percent ($621 million, Table 3). Given that aggregate milk production rises by 0.7 percent (roughly 1 billion pounds, Table 4), there is considerable additional milk available for manufacturing usage which tends to lower prices and revenues for milk used to produce manufactured dairy products.

The simulations suggest that the combination of California fluid standards nationwide and Class IV pooling as modelled here, successfully raise domestic prices. By construction, NDM production expands 10 percent above BASE levels (as does butter) (Table 3). Butter prices fall by 11 percent (7 cents/pound) and NDM prices fall by about 43 percent (in both cases the resulting prices are equal to prices prevailing in world export markets). Production of residual manufactured products, a key source of milk solids used in fortification (whey solids, evaporated/condensed milk, whole milk powders) fall by 10 percent (422 million pounds). Total cheese production falls by about 2 percent (147 million pounds) while American cheese declines by 2 percent (67 million pounds). American cheese prices fall slightly relative to BASE, while prices of Italian cheese and other cheese rise (11 percent and 2 percent), hence generating added revenue from these cheese markets (Table 3). The CCC purchases 116 million pounds of American cheese at 1.125/pound ($128 million), generating a 70 percent decrease in total government outlays relative to BASE (Table 6).

Farm level results, summarized on a regional basis in Table 4, indicate that producers in several markets with high Class I utilization (e.g., North East, South Atlantic, South East, Central, East South Central) tend to have lower prices, production and revenue relative to the BASE scenario. These losses, however, are generally quite small (less than 1 percent). Further, the precision of the model means that regional changes of this magnitude cannot be distinguished confidently from no change. The higher fluid prices and more Class I revenue induced by this policy are offset by losses due to national Class I pooling. It should also be noted that the losses in the high Class I utilization markets are considerably less than under the *Freedom to Milk* deregulation scenario.

Regions with low Class I utilization have modest price and revenue gains relative to the BASE scenario, generally in the range of 1 percent to 2 percent for price, and slightly higher for revenue (2 percent to 4 percent). Regions such as California, the Upper Midwest, and the North West have slightly higher gains—3 percent to 5 percent on price and about 3 percent to 5 percent on revenues (Table 4).

Average farm prices are projected to rise by 1.7 percent (22 cents/cwt) and production increases by 0.7 percent (1 billion pounds). Aggregate farm revenue increases by 2.4 percent ($458 million, Table 4). Wholesale costs to consumers are projected to rise by 3 percent

($567 million) over the BASE (of this the costs rise by 8 percent, or $621 million, for fluid milk consumers and decline for consumers of other products). Government purchases of American cheese decline slightly from the BASE scenario and total government outlays decline by 71 percent ($314 million, Table 5).

Due to the Class IV pool and elimination of price supports, butter exports increase by 80 percent to 575 million pounds while NDM exports dip by only 5 percent to 365 million pounds (Table 6). These results indicate that the Class IV pool, as modelled in this scenario, successfully increases commercial exports of butter and NDM.

The 1996 FAIR Act Dairy Title

The dairy policy reform that became law in April 1996 calls for much more modest changes from the BASE than the two scenarios just discussed. While a number of detailed provisions are included in the law, the reforms that have quantifiable implications for milk markets are few. (See Jesse and Cropp for a detailed discussion of the dairy provisions of the FAIR Act.)

The 1996 FAIR Act Dairy Title provides marginal changes from current policy over the next 3 to 5 years. The dairy price support program is phased down 15 cents/cwt per year from $10.35/cwt, and completely eliminated by the year 2000 (at which time it is replaced with a recourse loan program). Given the recent strength of dairy product markets (which is likely to continue for several years due to high grain and other feed prices), the impacts of phasing out federal price supports will likely be minimal. However, assessments on dairy producers are eliminated immediately, which does have a direct impact on producers. Section 102 of the 1990 Food Agriculture Conservation and Trade Act (which mandated that no state could use manufactured product to make allowances higher than used under the federal dairy price support program) is repealed. This provision was never implemented and it's repeal will have minor (if any) impacts.

The 1996 Dairy Title does not provide for any specific changes in federal or California milk marketing orders—BASE classified pricing and Class I differentials, and current California pricing (with California fluid standards in California) are all maintained in the simulation. USDA is required to consolidate current orders to between 10 and 14 within three years. USDA is authorized to consider using both multiple basing points and fluid milk utilization rates in setting Class I prices in the consolidated orders, and to consider uniform multiple component pricing in designing a new basic Formula Price. Under this legislation, California may become one of the 10-14 federal orders (if California producers petition and approve a federal order). None of these provisions provide any directly quantifiable impacts on milk markets.

The 1996 FAIR Act Dairy Title extends and fully funds DEIP through 2002, authorizes USDA to assist in forming export trading companies, and authorizes the National Dairy Board to use funds for export market development. Other major provisions include the exemption of California from federal standards of identity for fluid milk (that is, it

explicitly allows California fluid standards in California) and allows the Secretary of Agriculture to authorize the Northeast Dairy Compact (which allows northeast states to collectively set higher minimum fluid prices than mandated under the federal order structure) for a limited time and under fairly stringent conditions.

In terms of modelling, the Dairy Title of the FAIR Act of 1996 is almost identical to the BASE, but without budget assessments, and with a $9.90 milk price support that implies a reduction by 3 percent in the NDM price floor ($1.003/pound versus $1.034/pound at a $10.10/cwt milk price support) and a reduction by 3 percent in the American cheese price floor (to $1.098/pound). Butter supports are kept unchanged from the BASE at $0.65/pound. This scenario as modelled, does not incorporate any market order reform nor any Northeast Dairy Compact effects. Lastly, this scenario drops the government domestic donations (of 2.4 billion pounds METS).

The 1996 *FAIR Act Dairy Title* scenario has minimal impacts on wholesale fluid markets: average fluid prices fall by 1.7 percent ($0.24/cwt) and production increases by 0.3 percent (166 million pounds) compared to BASE. Lower American cheese and NDM incentives (due to the lower $9.90 versus $10.10 price supports) result in a decline in American cheese production by 4.4 percent (137 million pounds) and a decline in NDM production by 1.6 percent (16 million pounds). Other wholesale level changes are minimal (see Table 3).

Farm prices and revenues are projected to decline slightly relative to BASE in all regions (see Table 4). Across the regions listed in Table 4, milk prices fall 1 percent to 2 percent while milk revenues fall by 1 percent to 3 percent. The National average milk price falls by about 1 percent (14 cents/cwt) while aggregate milk revenues decline by 1.7 percent ($322 million). Aggregate producer surplus falls by 0.8 percent ($21 million) (Table 5).

Aggregate consumer expenditures (at wholesale) fall by 1.4 percent ($269 million) while consumer welfare increases by 0.8 percent ($35 million) (Table 5). Annual government expenditures due to the price support program are projected to be $522 million after a 3 to 5 year adjustment period. This is an 18 percent ($81 million) increase over BASE. Under this scenario the government purchases 31 million pounds of American cheese, 473 million pounds of butter, and 353 million pounds of NDM (Table 6). In contrast to the BASE scenario, however, there are no budget assessments to offset the cost of these purchases. Therefore net government expenditures increase despite the considerably smaller purchases of American cheese compared to BASE. DEIP expenditures are about $94 million. If these projections do prevail, there will likely be pressure to manage these levels of butter and NDM removals, (beyond the DEIP limits) to avoid the build up of government stocks.

No CCC: With Alternative Assumptions on World Prices

Under the FAIR Act the federal dairy price support program is scheduled to end by the year 2000. It is therefore of particular interest to consider the impacts of alternative world market prices for butter, NDM and cheese at the end of a 3 to 5 year adjustment

period. Two scenarios were examined that are identical to the 1996 FAIR Act Dairy Title except that they drop butter, NDM, and American cheese price supports and allow domestic prices for these products to fall to world market levels. Given our uncertainty over future world market prices, both low and high world market price assumptions are used to provide bounds on the likely impacts of elimination of the federal dairy price support program by the year 2000. As mentioned earlier, the low world price assumptions yield butter and NDM milk equivalent prices around $6.20/cwt; whereas the high price scenario yields milk equivalent prices of about $8.50/cwt (see footnote 2 for more detail).

The impacts on the wholesale fluid sector are considerably larger when product prices are allowed to fall to the world prices rather than being supported at the U.S. government purchase prices as was assumed under the *FAIR Act Dairy Title* scenario. Average fluid prices decline by 6.6 percent ($0.92./cwt) with low world prices and by 3.3 percent ($0.46/cwt) under the high world price assumptions (Table 3). Given these lower prices, fluid milk production and consumption is projected to expand by 1.2 percent (633 million pounds) under low world prices and by 0.6 percent under low high world price assumptions. Domestic prices for American cheese fall sharply (10.4 percent) under low world prices, (5.1 percent) under high world prices, but do not fall to world market levels in either scenario. American cheese production falls by 4 percent to 5 percent, while total cheese production falls by 1.7 percent under low world price assumptions.

Butter and NDM prices adjust to world market levels under both of these scenarios. As shown in Table 3, aggregate butter price declines by 8.9 percent (5.4 cent/pound) under low world prices, but increases by 14 percent (9 cents/pound) under high world prices. Butter production falls by roughly 4 percent (50 million pounds) under both scenarios. Commercial exports remain strong (403 million pounds) under low world prices, but decline sharply to 70 million pounds under high world prices (Table 6). The impacts of world market prices on wholesale NDM markets are even larger: NDM prices decline by 42 percent under the low world price conditions and by about 23 percent under high world prices. Similarly, NDM production also declines by about 23 percent under low prices but by 13 percent with the high world price assumptions (Table 3). Note that commercial exports of NDM drop sharply under both of these scenarios: exports decline by 83 percent to 52 million pounds under low world price assumptions and by 50 percent to 192 million pounds under the high price assumptions (Table 6). Aggregate consumer expenditures (at wholesale) decline by 4 percent ($750 million) while consumer surplus increases by 2 percent ($86 million) under low world prices. With high world prices consumer costs fall by 2.8 percent and consumer surplus rises by 1.5 percent (Table 5).

Given these wholesale market impacts, it is not surprising that farm prices and revenues in all regions are projected to decline relative to BASE under both of these scenarios: the ranges are 1 percent to 6 percent under low world prices and 0.4 percent to 4.4 percent under high world prices. Average U.S. milk prices are projected to decline 4.3 percent or 55 cents/cwt relative to BASE under low world prices (the effect is roughly half as large under high world prices) (Table 3). Across the regions shown in Table 4, milk revenues decline by 1 percent to about 13 percent under low worlds prices, and decline by

0.5 percent to 10.4 percent under high world prices. Table 5 provides aggregate producer effects. Aggregate milk revenue declines by 6.6 percent ($1.251 billion) and producer surplus declines by 3 percent ($81 million) under low world prices. Under high world prices, milk revenues fall by 3.7 percent ($0.694 billion) while aggregate producer surplus declines by 1.6 percent ($44 million). Under both of these scenarios, there are no government expenditures because there are no price supports.

CAVEATS AND MODELLING LIMITATIONS

The Dairy IRCM used to assess the likely impacts of these alternative policy scenarios has several limitations that should be mentioned again before proceeding to the concluding section. First, the model measures the impacts expected to occur over a 3 to 5 year adjustment period and assumed that all dairy products have equilibrium prices based on the prices of the milk components used in their production. However, the BASE model results suggest that the U.S. dairy sector does not yet price fully on a component basis. Further, the model does not incorporate shipment of intermediate products (skim milk and cream) and does not allow for reconstitution. Additional research is underway to address these limitations.

Also, the model specifies relatively elastic regional supplies of manufactured products. That is, the model does not incorporate "brick and mortar" with respect to regional processing capacity, hence likely allows for more change in regional processing profiles than might be expected to occur over a 3 to 5 year period. Thus, the results provide an indication of what regional processing would look like if the U.S. dairy sector maximized returns to farm level milk components.

The model also does not incorporate the impacts of additional factors such as changes in and impacts of NAFTA and GATT, emerging markets (both on the supply and demand side), trade disputes, world supply demand balance, etc. Given the nature of U.S. trade policy for dairy, we do not see these omissions as crucial.

The Dairy IRCM demonstrates the kinds of changes in production, prices, and interregional trade that would likely occur if federal dairy programs were modified. The model emphasizes that prices are interrelated among regions and products. It also shows how, as a result of these interrelationships, changes that have primary effects in one region or on one product spill over into all other regions and products. This is particularly true for the impacts on regions with high Class I utilization and fluid production versus regions specializing in production of manufactured dairy products.

The Dairy IRCM does a reasonably good job of representing the complex U.S. milk marketing and pricing system, but it is only a mathematical simulation model. Its projections must be interpreted carefully and tempered by market experience and intuition. Any model

must be used as only one tool among many that should be used together in the process of gaining an understanding of the potential impacts of changes in agricultural policy.

SUMMARY AND IMPLICATIONS OF THE ANALYSIS

The simulations discussed above have emphasized a variety of national and regional impacts of several policy options (and two additional variants) on prices, production, and industry revenues within the U.S. dairy sector. It may be useful to summarize the underlying economics that drives the implications of each policy before going on to consider implications for Canada-U.S. dairy trade and trade relations of the dairy policy changes in FAIR Act of 1996.

The proposals considered in the dairy policy debate that lead to the FAIR Act had several common elements. None of these proposals included lower import barriers and all include full funding of export subsidies under the DEIP. Further, all proposals, provided for elimination of the dairy farmer assessments instituted in 1990 and reduced price support activities by the USDA. Before passage of the relatively modest changes included in the FAIR Act, the U.S. Congress seriously considered the much more dramatic changes in milk market regulations that were analysed in detail above.

The *Freedom to Milk* policy would have eliminated the price support program and the dairy marketing orders. Such a policy would reduce transfers to the dairy industry from both consumers and taxpayers. It would also allow changes in regional production patterns. The simulations indicate that the regional distortions created by marketing orders are so large that producers in major dairy regions that have relatively low milk prices, would gain from eliminating the whole system of support and regulations. Such a system would allow more milk to be produced in lower cost regions, but because the price of fluid milk falls and less milk is produced in high cost regions, the system also implies that more of that milk from California and the Upper Midwest would be used in fluid products. Therefore, given import barriers, U.S. dairy product prices remain above world prices and exports are minimal.

Another failed proposal, the *House Compromise* favoured by significant parts of the dairy industry, would have eliminated the government purchase program for butter and NDM, but raised the price support for cheese. It also included a whole set of complex rearrangements of subsidies and pricing regulations that would have left dairy markets at least as heavily regulated as before. The *House Compromise* policy is such a complex mix of program changes that it defies simple summary. It is clearly not deregulation and increases, rather than reduces, many of the distortions of the current system. As may be observed from Tables 5 and 6, this proposal shifts an even higher proportion of the dairy program subsidy from tax payers to consumers of dairy products. It also shifts some of the consumer cost to domestic consumers of cheese relative to consumers of butter.

The increased use of non-fat solids in fluid milk also increases the transfers from fluid consumers to producers of NDM. By eliminating the price support on butter and NDM, the proposal could facilitate export of these commodities, but little increase in exports is projected under our analysis. Export expansion is limited primarily because regional and product realignments predominate and because increased use of NDM to fortify fluid milk reduces the availability of NDM for export. The two new national pooling schemes together with the different treatment of NDM and butter relative to cheese seem to keep the mix of manufactured products similar to what is produced now. There does, however, seem to be an incentive for reduced production of butter and NDM relative to cheese in the period over which the price support would have been binding.

The FAIR Act gradually reduces the support price over 4 years from $10.35 in 1996 to $9.90 in 1999 and eliminates the price support program for subsequent years. The FAIR Act includes some language encouraging modifications of the marketing order system, but provides little guidance as to the form of the new price or marketing regulations. The simulations reported as *FAIR ACT DAIRY TITLE* in Table 3 through 6 include the effects of the price support reduction to $9.90 and the elimination of the producer assessment The elimination of the price support program that is a part of the FAIR Act is considered in the two final simulations. These simulations indicate the FAIR Act implications (relevant for the year 2000 and beyond) under two alternative projections of world dairy market conditions. Thus, to understand the likely effects of the dairy policy changes that the United States adopted in 1996, we should consider each of the final three simulations.

The three simulations used to represent the FAIR Act all show lower milk prices, lower farm incomes, and lower consumer costs in the United States. Because there is no marketing order reform, there is little regional variation in the losses to producers except that producers in regions that rely most on production of manufactured dairy products lose slightly more than producers in other regions.

Each of the simulations presented respond to the question: under market conditions that prevailed in the base period (roughly 1993), what would have been the outcome if, instead of the policies that prevailed at that time (BASE), the United States would have had specific alternative policy? For the FAIR Act program we examine this question, under the assumption of relatively low world dairy prices, first for the period for which the price support of $9.90/cwt applies (scheduled for 1999 under the FAIR Act). We then examine the question again, under the case of no price support program (which is terminated after 1999 under the FAIR Act). Because of the potential importance of world market conditions when the U.S. price support has been eliminated we examine this last case again with a higher set of world dairy prices.

Note that these simulations are not designed to provide predictions of the most likely implications of the FAIR Act for the 1996-2002 period. The underlying market conditions expected over the life of the FAIR Act have important implications for its effects, and these market conditions are likely to differ from those that prevailed in the 1993 base period. However, comparing the simulations to the base, and to each other, helps us better understand the alternative polices.

During 1995 and 1996, high grain prices and other factors have caused the price of milk and dairy products to be relatively high—well above the USDA purchase prices for cheese, butter and NDM. The result has been very low USDA acquisition of stocks and very low government costs. If these high price conditions were to continue, say because grain prices continue to be high, then a gradual elimination of the price support program would have little effect. If simulations were prepared under the conditions of high underlying milk prices, then we would find quite minor consequences of the FAIR Act, under either the $9.90 support price or under elimination of the price support program. With high market prices the price support program becomes almost irrelevant and major impact of the FAIR Act would be the elimination of the producer assessment.

The FAIR Act was prepared when many projections were that high grain prices and relatively high prices for milk would continue. This allowed analysts to conclude that the price support program provided limited gains to producers which were easily offset by the elimination of producer assessments. Further, by allowing market forces to have more influence over the relative prices of manufactured dairy products, the FAIR Act might facilitate exports of some dairy products during periods when U.S. prices are low or world prices are high.

Our simulations show that the provision for a lower support price does affect farm prices and incomes directly when market conditions are such that relatively low U.S. prices and low world prices prevail. No one really knows what market conditions will be over the next 7 years and, properly interpreted, the simulations provide useful guidance to potential consequences of the FAIR Act over this period.

CONCLUSION: IMPLICATIONS FOR RELATIONS WITH CANADA

What are the implications of these policy options for dairy trade and trade relations with Canada? First, it should be stressed that, with present barriers in place, there are few if any direct effects of U.S. policy on exports to Canada, Nor, with U.S. barriers and the current Canadian policies, are there direct implications for imports from Canada. No proposed U.S. dairy program could lower the Canadian tariff wall or reduce U.S. prices enough that product would flow over that wall. That said, each of the policies considered may change trade incentives or otherwise affect the political pressures on trade policy.

Policies such as *Freedom to Milk* would allow a more market oriented domestic industry with declining product prices. A new orientation, plus reduced total revenue and lower prices might increase pressure for more access to Canadian markets. Offsetting this effect, however, is reduced price discrimination in the U.S. This means that low-cost production regions that had produced mainly manufactured dairy products, shift more milk to fluid uses. As a result, average milk prices in these low cost regions are projected to rise.

The key question for this option is: what sort of political pressures on trade would emerge in a much less regulated dairy industry?

The House Compromise proposal would have reshuffled, but not dismantled the array of dairy policy tools. It would have modified intra-industry revenue flows from the existing price discrimination pattern and creates new price discrimination instruments. None of this affects trade with Canada directly, but lower prices of potentially exportable butter and NDM might have increased pressure for exports to Canada. If such pressure on Canadian policy were to occur, Canadians would be sure to point out the export subsidy characteristics of the House Compromise Class IV pooling program. This policy, by transferring revenues within the industry, while simultaneously raising U.S. consumer prices and lowering potential export prices, could be seen as an indirect export subsidy under the Uruguay Round agreement (Sumner).

Let us conclude with a discussion of the most likely effects of the FAIR Act for dairy trade and trade relations with Canada. Consider the case of a gradual or partial opening of the U.S. - Canadian border, as discussed, for example, in the Barichello and Romain chapter in this volume. Their analysis of Canadian milk quota programs suggests that, with lower border barriers, the potential for imports from the United States would most likely be met by a reduction in the regulated high prices in Canada and lower quota rents rather than by an attempt to maintain high prices in the face of imports. Further, the lower the effective potential import price from the United States, the more Canadian prices must decline in order to avoid imports. Barichello and Romain, among others, argue that U.S. prices have been high enough, and Canadian quotas tight enough, so that the effect of much lower tariffs would be much lower prices in Canada, and that no trade need actually occur. Clearly, information about the effective export prices of dairy products from the United States is vital in determining the effect of lower tariffs on milk prices and quota values in Canada. The FAIR Act has direct implications for those potential export prices.

The direct impact of the FAIR Act is to reduce the support prices for manufactured dairy products that are most heavily traded on world markets. The simulations show that the FAIR Act allows the prices of NDM and cheese, in particular, to decline relative to the BASE. Further, the FAIR Act continues the marketing order system which, through price discrimination, lowers the price of manufactured dairy products. Marketing orders also restrict trade of milk within the United States and create many regional markets. Our simulations show that the FAIR Act lowers farm milk prices most in several regions, such as the North West, California and the Upper Midwest, which may be most suited to export to Canada. We do not include simulations to project exports to Canada under alternative Canadian policies, but the factors just discussed indicate that the FAIR Act would place additional pressure on Canadian milk prices and quota rents, and increase the potential for exports to Canada from the United States.

The additional trade pressure may raise some additional trade tensions. By scheduling the elimination of the price support program, the FAIR Act makes the price discrimination aspects of U.S. dairy policy more transparent and important. As noted above, U.S. policies may cause the price of milk used in potential export products (such as NDM and butter) to

be below the price of milk received by U.S. producers (which is a blend price) and below the average prices paid by buyers who make products directed towards the domestic market. (This average is more likely to include products required by marketing orders to be made with higher priced milk.) If lower tariffs between the United States and Canada eventually open the border to potential trade, this stimulation to exports implied by U.S. policy may well raise concerns or objections within Canada.

Finally, it should be noted again that, in 1995 and 1996, dairy product prices in the United States have been well above the support prices. If these market conditions were to continue, the FAIR Act would have relatively little effect on potential export prices except that producer assessment that raised cost of production most for the most efficient producers have been eliminated.

Even though none of the policy options we have considered has direct consequences for trade flows under present import barriers, each does have implications that may affect pressure for changes in trade relations, and they do have export implications if trade barriers are reduced. We do not speculate here on the likelihood of major reductions in border barriers. U.S. import barriers may not be as high or as distorting as those in Canada, but they do create a major subsidy for the U.S. dairy industry, and seem to be politically secure. This could make it difficult for the United States to advocate open markets for dairy trade. But, of course, nations seldom find it troubling to condemn another country's policies, even when they have similar distortions at home.

REFERENCES

Barichello, Richard and Robert Romain. "The Canadian Dairy Policy: Contemporary Issues." in this Conference Volume U.S./Canadian Dairy Policy Trade Tensions, 1996.

Blaney, Don P., James J. Miller, and Richard P. Stillman. *Dairy: Background to the 1995 Farm Legislation.* Agricultural Economic Report No. 705, U.S. Department of Agriculture, April 1995.

Cox, Tom and Ed Jesse (1995). "Regional Effects of Selected Dairy Policy Options: Dairy IRCM Simulations/" *Marketing and Policy Briefing Paper*, Number 52, March 1995. Department of Agricultural Economics, College of Agricultural and Life Sciences, University of Wisconsin-Madison.

Cox, Tom (1994). "Regional Impacts of Reducing Dairy Price Supports and Removing Milk Marketing Orders in the U.S. Dairy Sector." *Economic Issues*. Number 125, June 1994. Department of Agricultural Economics, College of Agricultural and Life Sciences, University of Wisconsin-Madison.

Cox, Tom, Jean Paul Chavas, and Ed Jesse (1994). "Regional Impacts of Reducing Dairy Price Supports and Removing Milk Marketing Orders in the U.S. Dairy Sector." *U.W. Agricultural Economics Staff Paper* 377, May 1994.

Chavas, J.P, T.L. Cox, and E.V. Jesse (1993). "Spatial Hedonic Pricing and Trade." *U.W. Agricultural Economics Staff Paper* 367, August, 1993 (revised, May 1994).

Economic Research Service. United States Department of Agriculture. *Provisions of the 1996 Farm Bill. Agricultural Outlook*, Special Supplement, AGO-961, April 1996.

Jesse, Ed and Bob Cropp. "Dairy Title: The Federal Agriculture Improvement and Reform Act of 1996" *Marketing and Policy Briefing Paper*, Number 55, April 1996. Department of Agricultural Economics, College of Agricultural and Life Sciences, University of Wisconsin-Madison.

Neff, Steven A. and Gerald E. Plato *Federal Marketing Orders and Federal Research and Promotion Programs: Background to the 1995 Farm Legislation.* Agricultural Economic Report No. 707, U.S. Department of Agriculture, May 1995.

Sumner, Daniel A. "Export Subsidy by Adjustments in Domestic Price Policy: U.S. Dairy Schemes After the Uruguay Round," Draft prepared for presentation at the 1996 ASSA meetings, San Francisco, North American Economics and Finance Association Session"State Trading, Export Subsidies, and Trade Disputes" January 7, 1996.

Sumner, Daniel A. and Christopher A. Wolf, "Quotas Without Supply Control: The Effects of Dairy Quota Policy in California." forthcoming *American Journal of Agricultural Economics*, draft, Department of Agricultural Economics, University of California, Davis, revised September 1995.