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INTERREGIONAL ANALYSIS OF FEDERAL MILK MARKETING ORDER REFORM PROPOSALS: RESULTS FROM THE UW-MADISON DAIRY INTERREGIONAL COMPETITION MODEL (IRCM95)

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BACKGROUND

The 1996 Farm Bill (Federal Agricultural Improvement and Reform (FAIR) Act) mandated that USDA consolidate the current 31 federal milk marketing orders to no less than 10 and no more than 14 orders and authorized the Secretary to reform milk pricing regulations. USDA's order reforms are to be completed by April 1, 1999. As this point, USDA has released its proposed consolidation and pricing reforms and is seeking public comments on their proposal by April 30, 1998. USDA's current invitation for comments is the last opportunity for the public to comment formally on USDA's proposed reforms. USDA will make a final reform decision by the Fall, 1998 and allow dairy farmers to vote, in a producer referendum, on the final reform package.

Producers and industry groups are in the process of preparing comments on USDA's proposal and in developing recommendations for changes. In order to facilitate this process, economic analysis of the regional production, consumption and price impacts of the proposed federal milk marketing order reforms were prepared by the Department

REFORM OPTIONS

USDA's proposal contains two options for Class I differentials and offers new milk component pricing formulas for pricing milk used in manufacturing. The key elements of USDA's proposals can be summarized as follows:

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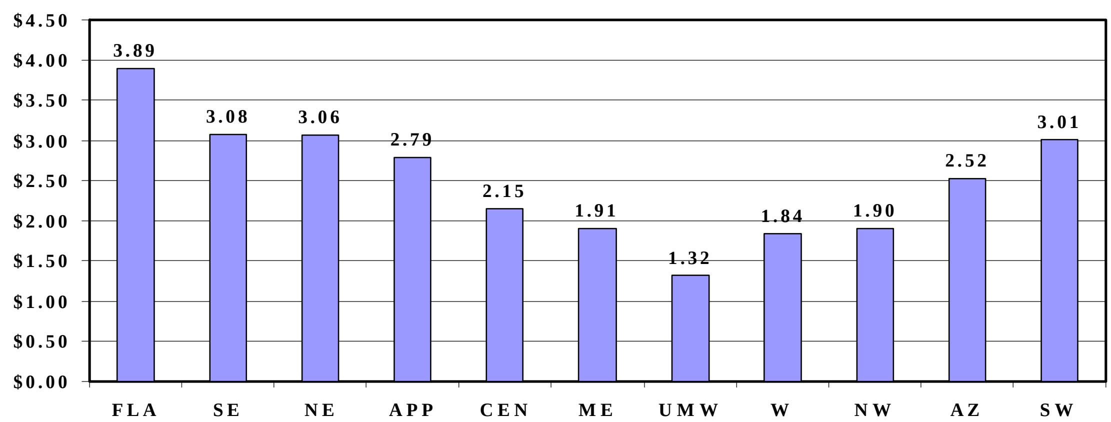
1) Class I Differentials (Fluid Milk):

TABLE 1: Comparison of Current and Proposed Class I Differentials.

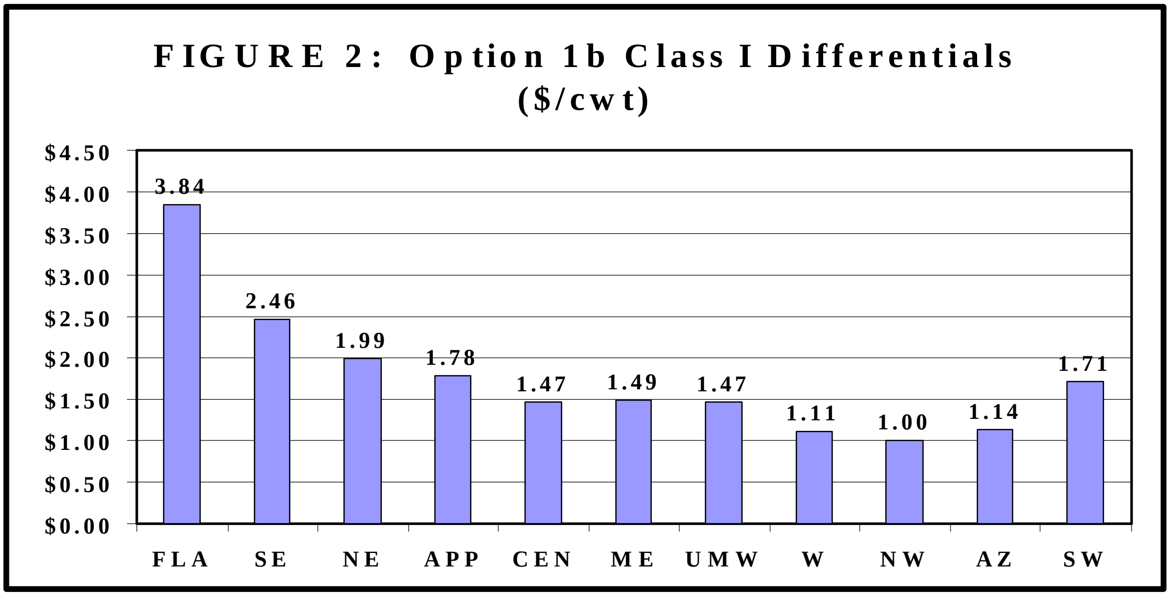
	Current	Option 1a	Option 1b	1a Change from Current	1b Change from Current
Northeast	3.06	3.06	1.99	0.00	-1.07
Appalachia	2.79	2.83	1.78	0.04	-1.01
Florida	3.89	4.01	3.84	0.12	-0.05
Southeast	3.08	3.10	2.46	0.02	-0.62
Mideast	1.91	1.94	1.49	0.03	-0.42
Upper Midwest	1.32	1.76	1.47	0.44	0.15
Central	2.15	2.17	1.47	0.02	-0.68
Southwest	3.01	2.84	1.71	-0.17	-1.30
Western	1.84	1.86	1.11	0.02	-0.73
Northwest	1.90	1.90	1.00	0.00	-0.90
Arizona	2.52	2.35	1.14	-0.17	-1.38
USA	2.55	2.59	1.82	0.04	-0.73

Table 1 summarizes the Class I differentials used in this analysis. Current Class I differentials are based on the distance of regional milk marketing orders from Eau Claire, Wisconsin. Under current Class I differentials, regions further from Eau Claire receive a larger premium for fluid milk. Figure 1 summarizes what economists refer to as the spatial price surface characterizing current Class I differentials.

FIGURE 1: Current Class I Differentials ($/cwt).



Option1a establishes Class I differentials at levels very similar to current Class I differentials. Option 1a raises differentials slightly in the Upper Midwest ($0.44/cwt) and lowers them slightly ($0.17/cwt) in the Southwest and Arizona. Most other regions have relatively small increases in Class I differentials. The average Class I differential for the US increases $0.04/cwt under Option 1a. These relatively small changes explain why many consider this proposal to be essentially "status quo".



Option 1b, USDA's preferred option, lowers Class I differentials and generally makes them more uniform across regions. USDA prefers this option because it is more consistent with the market orientation of the 1996 Farm Bill. Option 1b relies more on market conditions and producer associations to establish local Class I prices than either the current system or Option 1a.

Option 1b decreases Class I differentials in all regions except the Upper Midwest, which increases $0.15/cwt. The average Class I differential for the US decreases $0.73/cwt under Option 1b. Despite these large decreases in Class I differentials and the general leveling out of regional Class I prices (particularly in the central through western regions), the remaining disparities (particularly in Florida, Southeast, Northeast and Appalachia -- see Figures 1 and 2) lead some to argue that this reform does not go far enough.

2) Class I Mover (MCP):

USDA's proposal includes a new "mover" for Class I prices which would partially "de-couple" fluid prices from changes in manufacturing milk prices. Currently, the minimum Class I prices are “moved” using the basic formula price (BFP) lagged 2 months. The BFP is derived by using the “base month price” for the previous month with adjustments for changing dairy product prices (mostly cheese) during the current month. The current BFP basically reflects that value of Grade B milk used in cheese production in the Upper Midwest region. USDA proposes to use a 6 month, declining weighted moving average of the higher of the new Class III or Class IV prices (discussed below). 1995 estimates of USDA’s proposed fluid mover would increase the basic price moving fluid milk an average of $0.60/cwt over the current BFP mover.

3) Class II (Soft Products) Pricing:

USDA's proposal includes a new Class II pricing scheme. Class II products include soft products such as fluid cream, ice cream, and cream cheese. Currently milk used for Class II products is priced $0.30/cwt above the BFP lagged two months. The USDA proposal would set the minimum price for Class II milk at $0.70/cwt above the Class IV price (discussed below), the value of milk used in butter and milk powders.

4) Class III and IV (Manufacturing Milk) Price Formulas:

USDA proposes multiple component price (MCP) formulas to set the minimum prices for Class III (milk used in hard cheese) and Class IV (milk used in butter and milk powders). These formulas compute the value of milk components (fat, protein, and other solids) using wholesale commodity prices for butter, nonfat dry milk, cheese and whey. Key assumptions in these formulae include make allowances (marketing margins, the cost of converting raw milk into dairy products) and product yields (how much product per unit of raw milk of a given composition). The specifics of these MCP formulas are:

Butterfat Price/lb. (Class III and IV):
(NASS AA Butter Survey Price/lb. - 0.079 make allowance)/0.82 butter yield

Protein Price/lb. (Class III):
(NASS 40# Cheddar Cheese Survey Block Price/lb. - 0.127 make allowance)*1.32 yield + (((NASS 40# Cheddar Cheese Survey Block Price/lb. - 0.127 make allowance) *1.582 yield)
- Butterfat Price)*1.20 yield

Other Solids Price/lb. (Class III):
(NASS Dry Whey Survey Price/lb. - 0.10 make allowance)/0.968 yield.

Nonfat Solids Price/lb. (Class IV):
(NASS Nonfat Dry Milk Survey Price/lb. - 0.125 make allowance)/0.96 yield.

These MCP formulas are then aggregated in the MCP Class III and IV prices:

MCP Class III Price/lb. (BFP):
3.5*Butterfat Price/lb. + 0.965*(3.3*Protein Price/lb. + 6.7*Other Solids Price/lb.)

MCP Class IV Price/lb.:
3.5*Butterfat Price/lb. + 0.965*(9.0*Nonfat Solids Price/lb.)

USDA formulas would increase Class III price by $0.58/cwt on average during the 1995 period compared to using the current BFP. The proposed Class IV price would increase $0.55/cwt on average during the 1995 period compared to using the current Class IIIa pricing.

THE UW-MADISON DAIRY INTERREGIONAL COMPETITION MODEL (IRCM95)[2]

Since 1988, researchers in the Department of Agricultural and Applied Economics at UW-Madison have developed and systematically revised and refined a complex interregional competition model of the U.S. dairy industry. Denoted the UW Dairy IRCM, the model is designed to evaluate the effects of specified changes in factors that affect milk and dairy product supply and demand on regional prices, production, consumption, and trade flows. In particular, the model was developed to address issues associated with milk pricing under federal and California milk marketing orders.

The version of the UW Dairy IRCM used in this analysis defines 12 regions of the U.S. that represent separate milk and dairy product production/consumption areas. These regions approximate to the current USDA proposed MMOs (with regions aggregated at the state level) plus California and are summarized in Table 1. In each of the regions, there is a milk supply relationship based on estimated supply elasticities; i.e., the responsiveness of milk production to changes in farm-level milk prices.

Each region has demand relationships for nine dairy products: fluid milks; "soft" manufactured products (e.g., yogurt, cream products and cream cheese); American cheese; Italian cheese; other cheese; butter; nonfat dry milk; frozen dairy products; and residual manufactured dairy products (mainly whey products and evaporated and condensed milks). These regional demands are based on estimates of per capita wholesale demand relationships at the national level.

The supply and demand elasticities used in the model are intermediate-run. This means that changes in production and consumption are assumed to occur over a three-to-five year period.

The model is forced to meet consumption requirements within the regions for the nine dairy products from a combination of local production and "imports" from other regions. Similarly, the model allocates regional milk supply to dairy products that are either consumed locally (within the region) or "exported" to other regions.

The model simulates farm-level milk prices and milk production, wholesale product prices and production, and interregional trade flows. The model generates production, prices, and trade flows that result in maximum producer and consumer benefits given regional supply and demand relationships, and starting values for production, consumption, and prices.

Prices are linked among the regions through transportation costs. Product prices in any two regions cannot differ by more than the cost of hauling the product between the regions. In generating a solution, price differences greater than transportation costs trigger interregional shipments. This increases supply in the receiving region and decreases supply in the shipping region, ultimately leading to a price equilibrium.

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[2] Further information of the UW-Madison Dairy IRCM can be obtained via Staff Papers and Marketing and Policy Briefing Papers from the Department of Agricultural and Applied Economics website***: www.wisc.edu/aae/***.

A unique aspect of the Dairy IRCM is farm-level component pricing of butterfat, protein, and lactose. Component values are converted to associated raw milk and wholesale dairy product prices in evaluating supply and demand relationships.

Model solutions are achieved through an iterative process. Given starting values, the model looks to see if it can improve upon the current situation by reallocating milk components to different products or reallocating dairy products among regions. It continues the process of seeking more beneficial solutions until no further improvement is possible. Typically, several thousand iterations are performed in deriving optimal solutions.

A unique aspect of using an interregional supply/demand model such as the UW Dairy IRCM95 is that both primary and secondary impacts of alternative policies can be evaluated. In particular, the model allows for changes in regional milk and dairy product production over a 3-5 year adjustment period. In contrast, assessment of FMMO reform proposals is often performed using only the direct impacts on "regulated" blend prices without allowing for supply/demand adjustments, a much narrower and often more limited analysis of the impacts.

However, the UW Dairy IRCM pursues the goal of maximizing producer and consumer welfare without regard to certain market characteristics. For example, while the model might show the elimination of production of some dairy product in a region, it is unlikely that existing manufacturing facilities would disappear overnight or even a 3-5 year adjustment period. Hence, the model results tend to reflect less “brick and mortar” than the real world. For this reason, model results need to be interpreted with some caution, particularly for policy simulations that involve large changes from BASE 1995 conditions.

ECONOMIC ANALYSIS OF THE REGIONAL IMPACTS OF THE USDA PROPOSAL

Regional impacts of the USDA proposal are measured through a series of sequential policy simulations. First, a BASE or reference scenario is generated and then changes from this BASE due to alternative policies are measured. In particular, the classified pricing under both federal and California MMOs are modeled using "price wedges" such as the Class I differential. This wedge represents the policy-imposed premium that fluid milk accrues over the value of milk used in cheese production. This represents a "tax" on consumers that generates revenue enhancements that are distributed to milk producers under the federal and California MMOs. In contrast, with Class IIIa priced below the BFP (Class III) price, this generates a negative price wedge that is a tax on milk producers that generates benefits to consumers (in this case processors) of milk for use in nonfat dry milk.

The specific scenarios evaluated include:

1) ***BASE 1995 Scenario:***
   A BASE 1995 model is developed, calibrated and summarized. This model includes:

a) 1995 CCC Price Floors (@ $10.10/cwt farm milk price).
b) 1995 Federal MMOs and California Pricing using price wedges:
- Class I (fluid)), Class II (soft) and IIIa (powder) price wedges computed relative to the BFP

(Class III) for FMMO regions.

- Class 1, 2, 3, 4a, and 4b California price wedges computed relative to California 4b (cheese) price; FAT/SNF quota, quota and over-quota pricing in California.

c) BFP (M-W) minimum manufacturing price and fluid mover modeled only as fluid mover.
d) California fluid standards (higher nonfat solids) only in California.
e) Price calibration of regional farm and fluid milk prices, average commodity prices to actual 1995 levels.

2) No CCC BASE Simulation:

The UW Dairy IRCM measures the impacts of proposed policy changes using an intermediate run (3-5 year) adjustment horizon. Basically this means the model measures changes 3-5 years out from the BASE or reference period, roughly the year 2000. Since the 1996 Farm Bill mandates the elimination of the dairy price support program by 2000, this simulation drops CCC dairy price supports to world market levels. FAPRI's 1988 Baseline forecast is used to generate 1997-2001 average world market prices for butter, nonfat dry milk and American cheese. This NO CCC BASE scenario then becomes the "status quo" reference point from which to measure the impacts of USDA's proposal and complete deregulation (No CCC/ No MMOs).

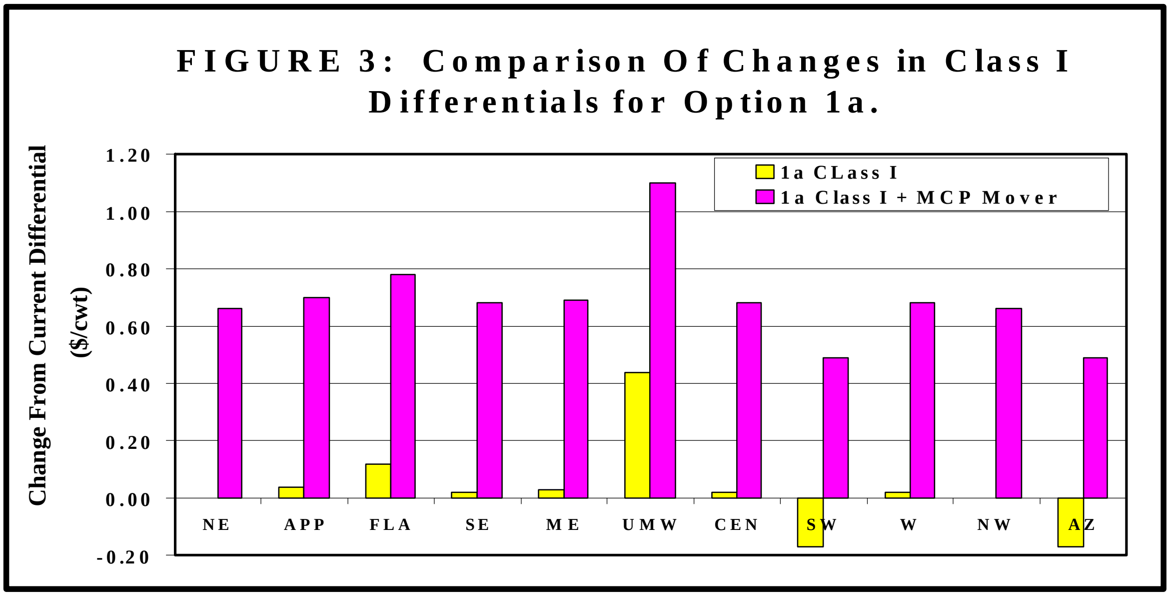
3) Class I Differential Impacts (BFP 1a and BFP 1b):

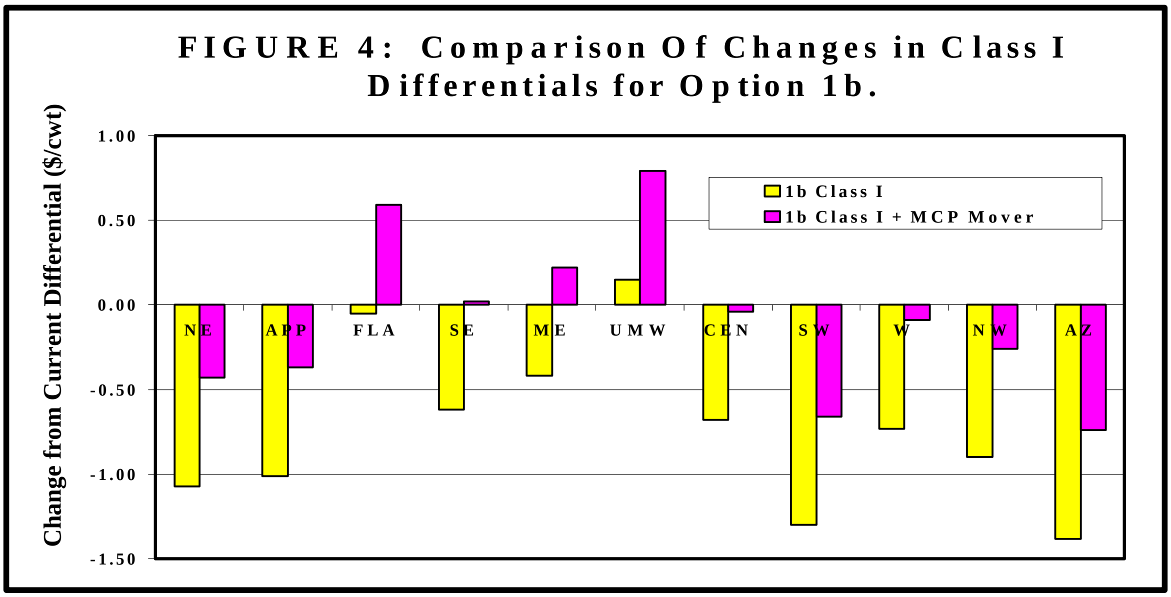
These scenarios (Option 1a and Option 1b) are identical to the No CCC BASE except that the current class I differentials are replaced with the differentials from USDA's proposal. In particular, the BFP remains as the mover for both Class I and Class II under these simulations. Thus, these results measure the primary (blend price) and secondary (price induced supply/demand) regional impacts of Option 1a and 1b in a *ceteris paribus* manner (holding all other factors constant).

4) Class I Differential Plus MCP Mover Impacts (MCP 1a and MCP 1b):

These scenarios measure the combined impacts of the proposed Class I differentials (as in (4) above), plus the impacts of the new Class I mover (the larger of the MCP Class III or Class IV formula prices) and the new Class IV price. Thus, this scenario measures the impacts of using the MCP formula prices for all products except Class II. Using 1995 data, the USDA MCP formula prices would add roughly 58 and 55 cents/cwt to the current BFP (Class III) and IIIa (Class IV) prices. In the simulation results presented here, the MCP formula prices add $0.66/cwt and $0.66/cwt (under Option 1a, $0.64/cwt and $0.67/cwt under Option 1b) to the current BFP and IIIa prices.

As indicated in the next two charts (Figures 3 and 4), the impacts of adding $0.66 ($0.64/cwt under Option 1b) to the fluid price wedges (the fluid premium over Class III milk) used in the previous scenarios (4), can substantively offset the changes in the Class I differential alone.





These results suggest that this is indeed the case for all FMMO regions, even those with decreases in Class I differentials under Option 1a (Southwest and Arizona -- see Figure 3) and some regions under Option 1b (Florida, Southeast and Mideast -- see Figure 4). This means that the combined direct (blend price) impacts of the proposed Class I differentials and mover are a further enhancement of Class I pricing under Option 1a ("status quo plus") and offer considerably less leveling of the fluid spatial price minimums under Option 1b. Looking solely at the Class I differentials misses this important characteristic of the USDA proposal.

The results presented below summarize both the direct (blend price) and indirect (price induced supply/demand) impacts associated with the Class I differential and MCP Class I mover component of the USDA proposal.

5) ***Class I Differential/ Mover Plus New Class II Mover Impacts (USDA 1a and USDA 1b):*** The last component of the USDA proposal concerns the pricing of Class II milk. The current pricing places a $0.30/cwt premium price on the minimum Class II price over the BFP (Class III) lagged two months. Thus, these simulations attempt to capture the impacts of all three components of the USDA proposal: Class I prices, MCP Class III/IV prices as the Class I mover, and the new MCP based Class II and IV pricing.

The USDA proposal sets minimum Class II prices at a $0.70/cwt premium over the Class IV price. This means that whenever the Class IV is below Class III and this difference is greater than 70 cents, the price wedge between Class II and Class III will be negative. Hence, in these circumstances, milk used in soft products (Class II) will be priced at a discount to milk used in cheese (Class III).[3] In the 1995 these discounts would have been -$0.16/cwt under the proposed MCP Class III and IV prices. In the simulation results here, these Class II discounts are -$0.15/cwt and -$0.16/cwt for Option 1a and 1b, respectively.

While Class II utilization is generally quite small, the negative price wedges on Class II production tends to offset (if gains) or enhance (if losses) some of the combined Class I differential and MCP mover impacts. This can have measurable regional impacts depending on Class II usage and the secondary supply/demand effects generated by the direct (blend price) impacts of less revenues to milk used in Class II products. Generally, regions with high Class I usage tend to have higher Class II utilization.

6) Full MMO Deregulation (No CCC/No MMO): This scenario is identical to No CCC BASE except that all classified pricing wedges under the federal and California MMO are eliminated. This is a radical change from the BASE scenario and likely overstates the impacts of deregulation due to the lack of "brick and mortar" in the model. Directionally, however, the results generated by the UW Dairy IRCM are standard textbook economics.

SIMULATION RESULTS

1) Class I Differential Impacts (BFP 1a and BFP 1b). Changing only the Class I differentials in the No CCC BASE scenario tends to generate farm level impacts similar to the changes in Class I differentials (See Tables 1 and 3), particularly for regions with high Class I utilization. These direct (blend price) impacts are evident in the regions with decreased differentials (Southwest and Arizona) as well as increased differentials (Florida and Upper Midwest) under Option 1a. But note that the changes in Class I differentials do not generate exactly the same changes in farm level milk prices due to differences in Class I utilization and the indirect, price induced supply/demand adjustments. Thus, while the Upper Midwest differential increased $0.44/cwt under Option 1a, milk prices rose only 6 cents in these simulation

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[3] This is similar to the current Class IIIa as well as the proposed Class IV pricing -- milk used in butter/powder is priced at a discount to the value of milk used in cheese. In the 1995 these discounts were -$0.83/cwt under IIIa would have been -$0.86/cwt under the proposed MCP Class III and IV prices.

results. Florida's $0.12 increase in Class I differential generated a $0.02 rise in milk prices. The $0.17 decrease in the Southwest and Arizona generated an $0.11and $0.07 decrease in milk prices. With the exceptions of California (+6 cents) and the Northwest (-6 cents), the impacts of changing just the Class I differentials on other regions are minimal. Average U.S. milk prices decrease $0.05/cwt compared to the No CCC BASE simulation under Option 1a.

Option 1b generates larger regional impacts than Option 1a since this proposal drops Class I differentials significantly in several regions (Tables 1 and 3). Again, due to Class I utilization and the indirect, price induced supply/demand adjustments, changes in Class I differentials do not translate directly into farm milk price changes. Several regions (Northeast, Florida, Southeast, Southwest, and Arizona) experience farm milk price declines around $0.30/cwt compared to the No CCC BASE due to the change in Class I differentials under Option 1b. Again, these changes are generally quite a bit less than the changes in Class I differentials (Tables 1 and 3). The largest manufacturing milk regions, Upper Midwest and California, experience farm milk price increases of 12-19 cents/cwt largely due to the indirect, price induced supply/demand adjustments generated by lower milk prices and production in the rest of the US.

Note, however, the USDA proposal does not change just the Class I differentials. Importantly, adding 60-70 cents to the fluid mover can enhance (if increased), diminish (if decreased) and/or reverse changes in Class I differentials (Figures 4 and 5). This is essential to understand the USDA proposal.

2) Class I Differential PLUS MCP Mover Impacts (MCP 1a and MCP 1b).

These scenarios measure the impacts of adding the MCP fluid mover to the Class I differential impacts of the previous simulations. This basically adds an extra $0.65/cwt across the board to Class I differentials and changes Option 1a from a "status quo" to a "status quo plus" for regions with high Class I utilization. Importantly, under Option 1b, regions with Class I differentials that decrease less than $0.65 (see Table 1) actually get increases in their Class I differentials (Florida, Southeast, Mideast). Declines in Class I differentials in other regions are considerably lessened by the MCP mover portion of Option 1b (Figure 4).

Table 4 confirms the impacts of adding $0.66/cwt (Option 1a; $0.64/cwt Option 1b) to the proposed changes in Class I differentials. Option 1a generates farm milk price increases in all regions except Appalachia and California. Importantly, previous gains in the Upper Midwest nearly evaporate (from 6 cents/cwt under previous results using just the Option 1a differentials to 1 cent/cwt when adding in the impacts of the MCP fluid mover). This is due to declining manufacturing prices induced by higher blend prices, more milk production and less fluid consumption in the regions with higher Class I usage. For the same reasons, changes in California' milk price drop from +6 cents/cwt (due to Class I differentials alone -- Table 3) to -6 cents/cwt due to the impacts of adding 66 cents/cwt to the changes in Class I differentials under Option 1a. In aggregate, U.S. milk price declines 1 cent/cwt versus 5 cents/cwt due to the augments in Class I differentials caused by the proposed MCP fluid mover.

Under Option 1b, the farm price decreases due to reduced Class I differentials alone (Table 3) are either reduced (Northeast, Southwest, Northwest, Arizona) or reversed (Appalachia, Florida, Southeast, Mideast, Central) into gains (Table 4). Farm price increases (Table 3) in the primarily manufactured milk regions are lessened (Upper Midwest and California) or reversed (West) when adding in the augments to Class I differentials due to the MCP fluid mover under Option 1b (Table 4). The Upper Midwest and California milk price gains under the Option 1b Class I differentials alone decrease 8 cents (from $0.19/cwt to $0.11/cwt) and 11 cents (from $0.19/cwt and $0.12/cwt to $0.01/cwt), respectively. In aggregate, U.S. milk price declines 6 cents/cwt versus 10 cents/cwt due to the augments in Class I differentials caused by the proposed MCP fluid mover.

3) Class I Differential/MCP Mover PLUS Class II Impacts (USDA 1a and USDA 1b).

The full impacts of the USDA proposal and full MMO deregulation (No CCC and No MMO) are summarized in Tables 5-8. Table 5 and 6 summarize farm price and revenue impacts while Tables 7 and 8 summarize wholesale level price and revenue impacts.

Comparison of Tables 4 and 5 shows the additional impacts of the proposed Class II pricing (Table 5) when added to the Class I Differential and MCP Fluid mover impacts from Table 4. As discussed above, Class II is priced at a discount to Class III under the USDA proposal. Rather than the $0.30/cwt premium for Class II over Class III as under current policy, Class II would receive a $0.14/cwt to $0.16/cwt discount relative to Class III milk under the USDA proposal. This is similar to the pricing of Class IIIa (an $0.83/cwt to $0.87/cwt discount relative to Class III) under current policy or Class IV (an $0.85/cwt to $0.86/cwt discount relative to Class III) under the USDA proposal.

The impacts of these Class II discounts is to lessen the gains or enhance the losses due to changes in the Class I differential/MCP fluid mover under Options 1a and 1b. Comparing Tables 4 and 5 indicates that these additional Class II impacts are in the neighborhood of 3-6 cents or less for all regions. Impacts tend to be larger in regions with more Class II usage. The primarily manufacturing milk regions get additional indirect benefits due to the slightly reduced, direct blend price impacts in the high Class I regions. Thus, the Upper Midwest and California gain an extra 1 cent/cwt under Option 1b (Table 5 versus Table 4) while California gains 2 cents/cwt under Option 1a.

In aggregate, the average U.S. milk price declines 3 cents/cwt (versus 1 cent/cwt) under Option 1a and 8 cents/cwt (versus 6 cents/cwt) under Option 1b when the additional Class II impacts (Table 5) are included with the Class I differential and MCP fluid mover components of the USDA proposal.

Table 5 indicates that, in general, regions with high Class I utilization gain more from Option 1a than Option 1b while the Upper Midwest and California, both primarily manufactured milk regions, gain more from Option 1b.

Table 6, which summarizes the farm milk revenue impacts of the full USDA proposal, reinforces this observation. Option 1a generates an additional $18 million/year in aggregate U.S. farm revenues compared to the No CCC BASE scenario. The Northeast (+$18 million), Florida (+$5 million), Mideast (+$13 million) and Upper Midwest (+4 million) are the largest gainers under the proposed Option 1a. Those regions losing farm revenues under the proposed Option 1a include Appalachia (-$9million) and California (-$15 million).

In contrast, Option 1b generates aggregate losses of $69 million in farm milk revenues compared to the No CCC BASE scenario. The Upper Midwest (+$51 million), California (+$7 million), Appalachia (+$9 million) and the Mideast (+$8 million) are the largest gainers. Those regions losing farm revenues under the proposed Option 1b include the Northeast (-$74 million), Southwest (-$44 million), Central (-$9 million), Northwest (-$7 million) and Arizona (-$9 million).

Tables 7 summarizes the aggregate farm/wholesale impacts of increasing Class I price effects under Option 1a and decreasing them under Option 1b: the U.S. average farm price for Class I milk increases $0.36/cwt under Option 1a and decreases $0.02/cwt under Option 1b. The indirect, price induced supply/demand impacts of these changes are mirrored by changes in the prices of manufactured milk products: cheese prices fall 0.5 to 0.6 cents/pound under Option 1a and rise 0.4 to 0.5 cents/pound under Option 1b. Nonfat dry milk (NDM) prices fall under both scenarios, but fall much more under Option 1a due to the higher blend price induced increases in milk production in the regions with higher Class I usage. With decreased fluid consumption (due to higher fluid prices) and more milk production (due to higher blend prices), more milk moves into manufactured products, hence depressing their prices. Option 1b induces just the opposite effect with a general tightening of manufactured milk markets due to less Class I price discrimination.

The wholesale level expenditures on fluid milk increase $167million under Option 1a while decreasing $10 million under Option 1b (Table 8). Increased Class I differentials are basically a tax on fluid milk usage that is then distributed to producers based on their Class I utilization. In contrast, wholesale level cheese expenditures fall $29 million under Option 1a but increase $21 million under Option 1b. Hence, Option 1a generates a gain to purchasers of cheese while Option 1b generates a loss. Total wholesale expenditures increase $112 million and $26 million under Options 1a and 1b, respectively. This indicates that consumers will be worse off under both of these proposals, but less so under Option 1b.

4) Full Deregulation: No CCC/No MMOs.

Total elimination of federal and California classified pricing reduces the aggregate fluid price $2.06/cwt (-15%) -- see Table 7. Aggregate production and consumption rise 1.2 billion pounds (+2%). Associated with falling prices and inelastic demand, fluid revenues fall $984 million (13%) -- see Table 8. This is a substantive gain to fluid milk consumers.

Associated with less fluid milk price discrimination (revenue enhancement), regions with high Class I differentials lose (Northeast, Appalachia, Florida, Southeast, Mideast, Southwest) as prices, production and milk revenues fall sharply: milk price fall $1.00-$3.00/cwt (6%-19%) and milk revenues decline $100-$300 million (5%-25%).

Increased fluid milk consumption (due to lower Class I prices) and decreased milk supply (due to lower farm level blend prices) results in less manufacturing milk. As a result, manufactured milk markets tighten, manufactured product prices and revenues rise:
cheese prices rise $4-6/cwt (4%-5%); total cheese production falls 77 million pounds; and cheese revenues rise $253 million (3-4%). Similarly, nonfat dry milk (NDM) prices rise $12.22/cwt

(13%) and NDM production falls 56 million pounds (-4.6%). Total commodity expenditures fall $538 million, a net gain to consumers.

Note that these results suggest that the federal/California classified pricing system increase short run U.S. competitiveness in world dairy markets by lowering cheese prices 5-6 cents/pound and NDM prices 12 cents/pound. The primarily manufacturing milk regions pick up the tab for this increased competitiveness by experiencing lower blend prices due to the lowered manufactured product prices.

Under MMO deregulation, rising manufactured product prices induce gains in the primarily manufacturing milk regions (regions with less than 30% Class I utilization) of the Upper Midwest, California, West and Northwest. UMW and California milk prices rise $0.40-$0.50/cwt (4%) while revenues rise $234 and $181 million. The West and Northwest have smaller gains.

In contrast, regions with higher Class I utilization (greater than 30%) gain the most from the Class I price discrimination under current federal and California MMOs. Thus, these regions lose the most when these federal/state government interventions in the pricing of Class I milk are removed.

SUMMARY

Economic analysis of the regional impacts of USDA's federal milk marketing order reform proposal is presented here to provide interested parties with additional information on the potential impacts of these changes. If it wasn't clear before, it will hopefully be clear now that the USDA proposal is quite complex. In particular, direct blend price impacts often do not capture the full impacts of the proposed policies due to the potentially sizable indirect, price induced supply demand adjustments within and between regions. Hopefully, the sequential measurement of the Class I differential, MCP fluid mover and Class II impacts presented here will help interested parties to better understand and assess these key classified pricing components of the USDA proposal.

Note that the results presented here should be considered macro not micro impacts as they measure the regional impacts at the pricing points used in USDA's published Class I differentials. Micro impacts related to how individual plants are zoned from these central markets are not addressed.

Economic models are limited in their ability to capture all real world factors influencing the U.S. dairy sector. Thus, the simulation results presented here must be balanced with judgements based on market and industry experience and intuitions. These modeling limitations notwithstanding, the UW Dairy IRCM results presented here provide a comprehensive, quantitative economic basis for assessing the regional impacts of the current USDA proposal for FMMO reform.

TABLE 2: Compostion of UW-Madison Dairy IRCM95 Regions with 11 Federal MMO's.		
FMMO Region	**Current FMMO's**	**States**
New England (NYC)	New England, NY-NJ, Mid-Atlantic, Other Unregulated Areas in NY and New England	Conneticut, D.C., Delaware, Massachusetts, Maine, Maryland, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
Appalachia (Charlotte)	Carolina, Tennesee Valley, Louisville-Lexington-Evansville	Kentucky, North Carolina, South Carolina, Tennessee, Virginia
Florida (Tampa)	Upper Florida, Tampa Bay, Southeast Florida	Florida
Southeast (Atlanta)	Southeast	Alabama, Arkansas, Georgia, Lousiana, Mississippi
Mideast (Cleaveland)	Michigan UP, S. Michigan, E.Ohio-W. Pennsylvania, Ohio Valley, Indiana	Indiana, Michigan, Ohio, West Virginia
Upper Midwest (Chicago)	Chicago Regional, Upper Midwest	Minnesota, North Dakota, Wisconsin
Central (Kansas City)	Iowa, Nebraska-W. Iowa, Eastern SD, Central IL, Southern IL-East MO, Southwest Plains, Eastern CO,Greater Kansas City	Colorado, Illinois, Kansas, Nebraska, Missouri, Oklahoma, South Dakota
Southwest (Dallas)	Texas, N. Mexico-W. Texas	New Mexico, Texas
Western 9St. Lake City)	SW Idaho-Eastern Oregon, Great Basin, W Colorado	Idaho, Montana, Nevada, Utah, Wyoming
Pacific Northwest (Seattle)	Pacific Northwest	Oregon, Washington
Arizona-Las Vegas (Phoenix)	Central Arizona	Arizona
California (San Francisco)		California
Other		Alaska, Hawaii

Table 3: Farm Level Price Impacts of Changing Class I Differentials Only.

Changes From No CCC BASE Scenario ($/cwt)

Scenario:	Option 1a	Option 1b
Northeast	-0.09	-0.30
Appalachia	0.00	-0.06
Florida	0.02	-0.25
Southeast	0.00	-0.28
Mideast	-0.02	-0.03
Upper Midwest	0.06	0.19
Central	-0.01	-0.07
Southwest	-0.11	-0.41
Western	0.01	0.02
Northwest	-0.06	-0.10
California	0.06	0.12
Arizona	-0.07	-0.32
USA	-0.05	-0.10

TABLE 4: Farm Level Price Impacts of Changing Class I Differentials PLUS Multiple Component Price (MCP) as Fluid Mover.

Changes From No CCC BASE Scenario($/cwt)

Scenario:	Option 1a	Option 1b
Northeast	0.08	-0.18
Appalachia	-0.03	0.12
Florida	0.21	0.12
Southeast	0.09	0.00
Mideast	0.12	0.09
Upper Midwest	0.01	0.11
Central	0.05	0.00
Southwest	0.03	-0.29
Western	0.00	-0.01
Northwest	0.02	-0.06
California	-0.06	0.01
Arizona	0.02	-0.25
USA	-0.01	-0.06

TABLE 5: Farm Level Price Impacts of Changing Class I Differentials/MCP as Fluid Mover PLUS Proposed Class II (MCP Class IV + $0.70.cwt).

Changes From No CCC BASE Scenario ($/cwt)

Scenario:	Option 1a	Option 1b	No MMO
Northeast	0.05	-0.21	-0.92
Appalachia	-0.08	0.07	-0.96
Florida	0.15	0.07	-2.93
Southeast	0.04	-0.04	-1.81
Mideast	0.08	0.05	-0.51
Upper Midwest	0.01	0.12	0.54
Central	0.01	-0.04	-0.19
Southwest	-0.01	-0.33	-0.79
Western	-0.01	-0.02	0.37
Northwest	0.00	-0.07	0.01
California	-0.04	0.02	0.49
Arizona	-0.01	-0.28	-0.30
USA	-0.03	-0.08	-0.26

TABLE 6: Farm Level Revenue Impacts of Changing Class I Differentials/MCP as Fluid Mover PLUS Proposed Class II (MCP Class IV + $0.70.cwt).

Changes From No CCC BASE Scenario ($ million)

Scenario:	Option 1a	Option 1b	No MMOs
Northeast	18	(74)	(322)
Appalachia	(9)	9	(113)
Florida	5	2	(93)
Southeast	2	(2)	(105)
Mideast	13	8	(83)
Upper Midwest	4	51	234
Central	2	(9)	(43)
Southwest	(2)	(44)	(104)
Western	(1)	(2)	34
Northwest	0	(7)	1
California	(15)	7	181
Arizona	(0)	(9)	(9)
USA	18	(69)	(422)

TABLE 7: Wholesale Level (Farm) Price Impacts of Changing Class I Differentials/MCP as Fluid Mover PLUS Proposed Class II (MCP Class IV + $0.70.cwt).

Changes From No CCC BASE Scenario ($/cwt)

Scenario:	Option 1a	Option 1b	No MMOs
Fluid	0.36	-0.02	-2.06
Soft Products	-0.12	0.06	1.02
American Cheese	-0.60	0.47	5.40
Italian Cheese	-0.52	0.38	4.69
Other Cheese	-0.60	0.40	5.67
Butter	0.00	-0.01	0.14
Frozen Products	-0.10	0.10	0.62
Other Manufactured	-0.29	0.24	3.05
Nonfat Dry Milk	-1.48	-0.25	12.22

TABLE 8: Wholesale Level Revenue Impacts of Changing Class I Differentials/MCP as Fluid Mover PLUS Proposed Class II (MCP Class IV + $0.70.cwt).

Changes From No CCC BASE Scenario ($ million)

Scenario:	Option 1a	Option 1b	No MMOs
Fluid	167	(10)	(984)
Soft Products	(4)	2	28
American Cheese	(16)	12	139
Italian Cheese	(11)	8	95
Other Cheese	(2)	1	19
Butter	(0)	(0)	1
Frozen Products	(8)	9	41
Other Manufactured	(7)	6	75
Nonfat Dry Milk	(7)	(1)	49
Total Expenditures	112	26	(538)