USDA Agricultural Marketing Service Dairy Program

Regional Econometric Model Documentation

For Model Calibrated To
USDA Agricultural Projections to 2025

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Economics Analysis Branch

Dairy Program

USDA-AMS Dairy Program Regional Econometric Model Documentation

Introduction

Dairy Program's Economics Analysis Branch (EAB) maintains a dynamic regional econometric model of the U.S. dairy industry to support its economic analysis and forecasting responsibilities. The model is comprehensive. It includes: the supply of milk; the allocation of butterfat and non-fat solids to fluid milk and the major manufactured dairy products; and consumer demand for milk and dairy products. The model's supply and demand equations are estimated using historical annual data. The historic data captures changes in the marketplace, including policies and processing capacities. The model includes variables for the Federal Milk Marketing Order (FMMO) system, Dairy Economic Loss Assistance Payment Program (DELAP), and Milk Income Loss Contract (MILC) program. The Margin Protection Program – Dairy (MPP-D) payouts also are estimated. However, the payments do not interact with the other model variables, because the program began recently in 2014 and the production response to the program is still unknown. The model is specified to generate long-term supply, demand, and price[1] projections that are consistent with USDA's official baseline projections.[2] The official USDA baseline is modified for Federal order analyses by specifying Federal order milk marketings from national milk marketings. The model is estimated and simulated with SAS statistical software.[3]

The model simultaneously forecasts annual regional milk production, regional fluid milk consumption, national manufactured dairy product consumption, regional dairy classification, national dairy product prices, and regional farm milk prices sequentially along the time path of 2015 – 2025. Butterfat and non-fat solids are allocated through the use of conversion factors consistent with farm milk and dairy products. Prices for dairy products, fluid milk, and farm milk are solved within the model to achieve equilibrium conditions for supply and demand.

The model operates on three geographic levels: 1.) supply regions, in which the milk is produced; 2.) pools, in which milk is classified by various uses; and 3.) national, in which the classified milk is processed into manufactured products and consumed.

Supply Regions and Milk Production

Milk is produced in all fifty States. The States are grouped into fourteen supply regions: Appalachian (KY, NC, SC, TN, VA), Arizona, California, Central (CO, IA, IL, KS, NE, OK), Florida, Former Western (ID, NV, UT), Hawaii/Alaska, Mideast (IN, MI, OH, WV), Northeast (CT, DE, MA, MD, ME, NJ, NH, NY, PA, RI, VT), Pacific Northwest (OR, WA), Southeast

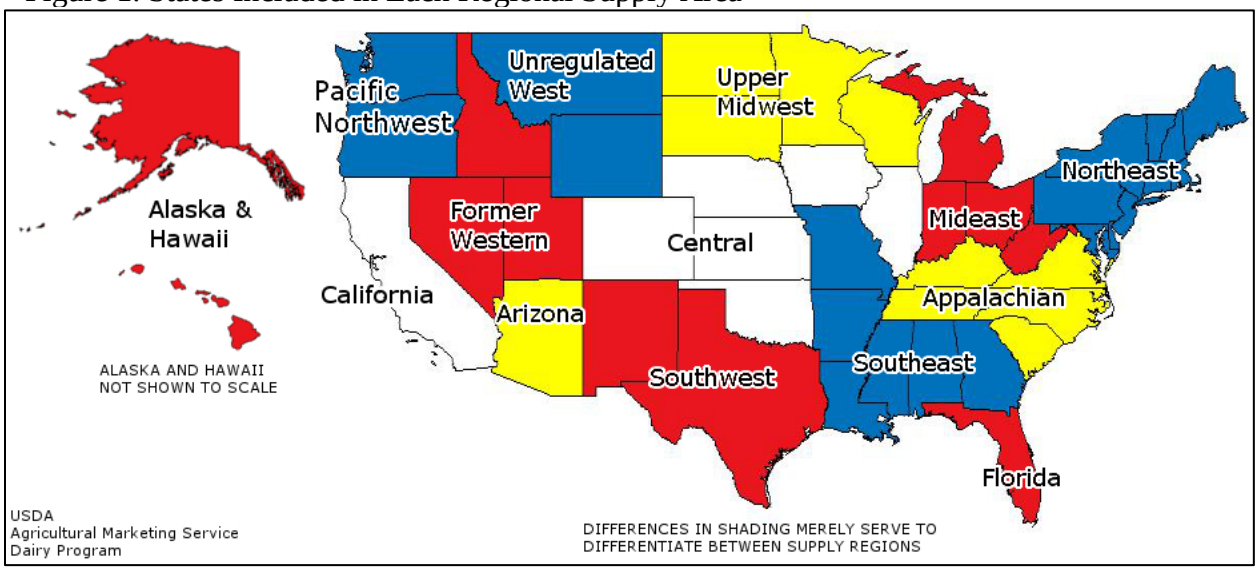
[1] All prices are discussed in real or relative terms.

[2] Dairy baseline forecasts are developed by an Interagency Commodity Estimates Committee at USDA. Intercept terms for the model are modified for each forecast year as needed to calibrate the model to approximate baseline forecasts. For information on USDA's official baseline, see U.S. Department of Agriculture, Office of the Chief Economist, World Agricultural Outlook Board, OCE-2016-1 (2016 February) *USDA Agricultural Projections to 2025*, Retrieved from: https://www.ers.usda.gov/webdocs/publications/oce20161/56729_oce-2016-1.pdf?v=42508

[3] See SAS Institute, Inc., Version 9.4 *SAS/ETS User's Guide*

(AL, AR, GA, LA, MS), Southwest (NM, TX), Upper Midwest (MN, ND, SD, WI), and the Unregulated West (MT, WY). The regions can be seen in Figure 1, presented below.

Figure 1. States Included in Each Regional Supply Area



The regional supply of milk is estimated by taking the number of cows and multiplying by the amount of milk each cow produces. The cow numbers and the yield per cow are driven by different variables in each region. The regional cow numbers are functions of the producer milk price, feed costs, slaughter prices, non-farm earnings, and/or other variables. Milk production per cow is estimated as a function of milk prices, feed costs, and/or other variables. Producers respond to milk price changes relative to feed costs by adjusting milk cow numbers. Milk per cow is assumed to move in response to changes in milk price relative to feed costs. The number of cows, milk per cow, and feed price data are reported at state level by NASS. Slaughter prices are reported by AMS Livestock Market News (LMN).[4] Non-farm earnings are reported by the U.S. Department of Commerce Bureau of Economic Analysis (BEA). Number of cows and milk per cow are estimated using data from 1980 – 2014. Milk marketings are estimated as milk production less farm use.

The all-milk price estimates that drive milk production for each region are a function of the effective blend price of the pool which predominantly resembles the milk supply region. For example, Order 131 is the "predominant" pool for the Arizona supply region. If there is no predominant pool for a supply region, because the supply region is associated with an unregulated region, a neighboring pool's blend price or all-milk price is used. All other pools for a given supply region are considered possible "supplemental" receivers of the milk supply. The all-milk prices are from NASS state all-milk data and are aggregated to the milk supply regions using a weighted average of milk production in the region. The prices are estimated using data

[4] Because of differences in data reporting practices over time, the slaughter price is actually represented by different prices in different years. Currently, it is represented by the dressed domestic cutter (90 percent lean) live weight price. From 1991 – 2007, it is represented by the Sioux Falls, SD, boner price. Prior to 1991, it is represented by weighted average boner cow price.

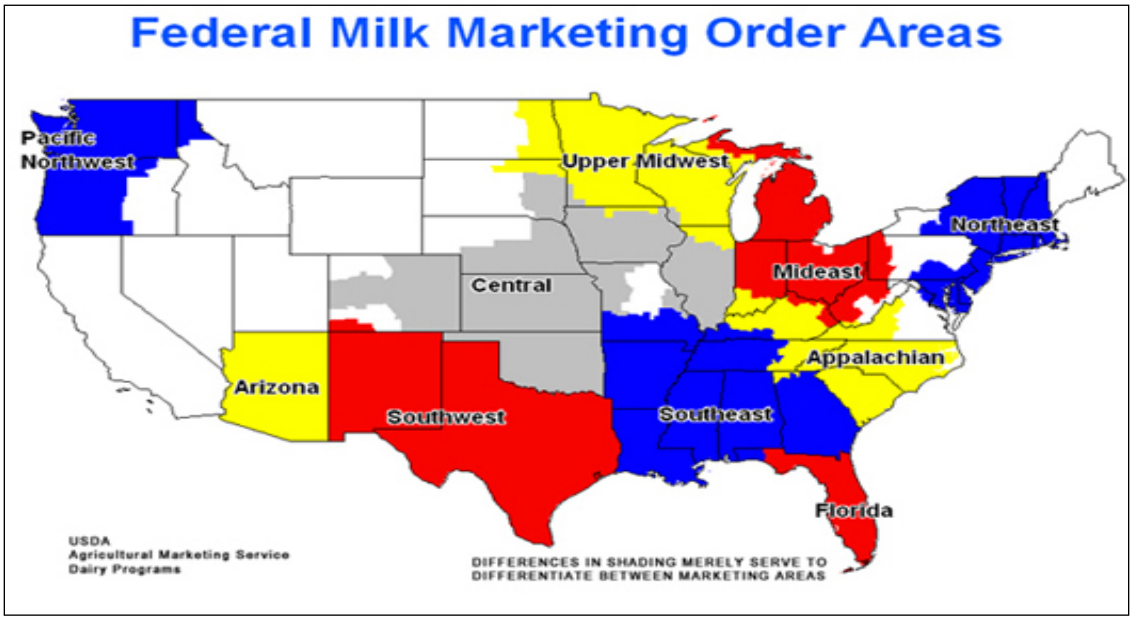
from 2000 – 2014 due to order reform. Prices are deflated by the Consumer Price Index (CPI) for all products as reported nationally by the Bureau of Labor Statistics, U.S. Department of Labor (BLS). The effective blend prices are calculated based on data reported by each FMMO's Market Administrator (MA) office. Some equations include variables to adjust for unusual circumstances over the historical period. The equations related to the regional milk production estimates are in Tables 1 – 14.[5]

The prices driving production are adjusted to reflect dairy support program payments. Total monthly MILC Program state payments data are available from the Farm Service Agency (FSA) from October 2002 – May 2006. State MILC data from FSA on a monthly or calendar year basis is no longer available after May 2006. However, total U.S. calendar year payments and fiscal year state payment data are available for 2006 and 2007. Given that data, monthly state payments are assumed to be proportional to the fiscal year state proportions. State level monthly data for fiscal years 2009 – 2014 are available from FSA as well. The total calendar year state requests for payment are used to proportion the FSA total U.S. payment data in 2009 – 2014. DELAP information is reported on a national level by FSA and included on a per hundredweight basis.

Pools, Supply Allocation, and Compositional Regressions

Milk produced in each supply region is allocated to, or "pooled on," one or more marketing areas, or "pools". There are twelve pools in the model, comprised of the ten existing FMMOs, California,[6] and an unregulated area to handle the classification of products not otherwise covered.[7] Figure 2, presented below, shows a map of the existing FMMO structure. The

Figure 2. Areas Covered by Federal Milk Marketing Orders



[5] Most tables, due to their size, may be found at the end of the document.
[6] Data for the California pool that would otherwise come from an MA office is available from the California Department of Food and Agriculture (CDFA).
[7] The model accounts for the existence of Order 135 as a pool until 2005, after which it is considered to be part of the unregulated pool.

allocation of milk into various class uses, for later production into consumer products, is estimated within these pools.

The sum of the allocations to each pool from a supply region must equal the milk produced in the supply region and cannot be less than zero. To ensure that milk movements to the pools from the supply regions sums to total production, compositional regressions are utilized to estimate the movement of milk. The details of compositional regression estimation can be found in Aitchison;[8] however, a brief explanation follows. Compositional regressions utilize a functional form that ensures that allocations to each pool are greater than zero and add up to the milk produced in the supply region. The adding up constraint is accomplished by estimating a ratio of each allocation over a designated "fill-up" value, with the ratio logged to satisfy the strict positivity constraint. The fill-up value acts to balance the equations as a residual variable might, but is not a residual in the traditional sense. Because the fill-up value is represented in each equation, it is not simply a leftover. Indeed, there is an implicit allocation equation in which the movement of milk to the predominant pool is estimated in relation to itself. However, this equation always equals one.

In the context of the regional model, compositional regressions are applied in the following manner: each supply region is associated with a predominant pool, as explained in the last section. Following Aitchison, milk pooled on this pool is assumed to be the fill-up value. Milk quantities moving to other pools, relative to the milk staying in the predominant pool, are simultaneously estimated. Effective blend prices from each pool are assumed to be the driving factor, with prices based on MA and CDFA data. The producer milk marketed under each FMMO is based on AMS State of Origin data and CDFA unregulated Grade A marketings.

The choice of the fill-up value for each supply region could be arbitrary, but the predominant pool is chosen for two reasons: one, it makes economic sense that milk will be chiefly utilized in the area in which transportation costs are minimized. Two, relative prices are assumed to be the driving factor in the allocation of milk to pools. By choosing the predominant pool as the fill-up value, the effective blend price of the other pools relative to the predominant pool's effective blend price becomes the driving factor, representing the decision to pool milk on one pool or another.

[8] Aitchison, J. 1982. "The Statistical Analysis of Compositional Data." *Journal of the Royal Statistical Society. Series B (Methodological)*, Vol. 44, No. 2., pp. 139 – 177.
http://rbras.org.br/lib/exe/fetch.php/pessoais:abtmartins:thestatisticalanalysisofcompositionaldata.pdf

As an example, a portion of Table 15, the Allocation of Northeast Milk to Pools, is reproduced below. The full table may be found at the end of this document. Milk from the Northeast supply region is estimated to go to one of four pools: Order 1, Order 5, Order 33, or the unregulated pool.[9] It should be noted that not all pools are explicitly estimated for each supply region. These specifications incorporate assumptions which follow historical transportation trends, i.e., milk produced in the Northeast is highly unlikely to be pooled on Order 124 (the Pacific Northwest order). In practical terms, the milk movements that are not historically observed or are extremely small (less than one percent of the pool's supply or less than one percent of the supply region's movements) are assumed to be zero. Order 1 is the Northeast region's predominant pool. Therefore, the supply allocations to supplemental pools, such as Order 33, are estimated in ratio to the milk pooled on Order 1. Continuing to use Order 33 as an example supplemental pool, the primary driver for movements to Order 33 relative to movements to Order 1 is the ratio of the Order 33 over the Order 1 blend prices. This means that there must be a greater increase in Order 33's effective blend price than in Order 1's to draw milk away from Order 1.

Example: Allocation of Northeast Milk to Federal Orders	
Dependent Variable	Parameter
log (Northeast Milk to Order 5 / Northeast Milk to Order 1)	Intercept log (Trend from 2000) Dummy 2006-2007 lag (log (Order 5 Blend Price / Order 1 Blend Price))
log (Northeast Milk to Order 33 / Northeast Milk to Order 1)	Intercept Dummy 2005-2007 lag (log (Order 33 Blend Price / Order 1 Blend Price))
log (Unregulated Northeast Milk / Northeast Milk to Order 1)	Intercept Dummy 2004 Dummy 2006-2008 log (Order 1 Class I Price/ Order 1 Class III Price) Dummy 2001

The milk movements to non-Federal order or California pools are allocated to an unregulated pool, which lacks a set of classified prices, and are estimated using a variety of data. The milk movements to unregulated areas are driven, depending on the supply region, by relative classified prices from the supply region's predominant pool, percentage of classified utilization within the predominant pool, or a proxy unregulated pool price. Classified prices and classified utilizations are discussed in a later section, but all such data are based on MA data. Data for the supply allocation equations begin from order reform in 2000 and ends with the most recently available annual data, 2014. The data for classified prices and classified utilization is regional. Since it is historic data, the data reflects regional changes in the orders' policies, handlers' marketing policies (such as base plans), plant capacities, transportation costs and demands for each class of milk.

[9] The Unregulated marketing area is not a "pool" in the strict sense of the word. However, for purposes of simplicity and to differentiate it from the Unregulated West supply region, here it is called a pool.

In certain supply regions, where milk is assumed to only go to two processing regions, the use of compositional regressions is unnecessary. In these milk supply regions, a logistic regression is used, in which the ratio of the percentages of raw milk allocated to each of the two pools is estimated. Given that the two percentages must sum to one, the estimated ratio can be easily be solved for each percentage. The percentages are multiplied by the milk supply region total to determine the pool allocations. The milk movement estimates from the supply regions to the pools are in Tables 15 – 28.

Milk Classification and Consumer Products

After milk is produced in the supply regions, it is allocated to the various pools for bottling or processing into manufactured dairy products. Under the FMMO system, milk is classified based on how it is utilized:

Class I—fluid uses
Class II—soft manufactured products (frozen products and other Class II)
Class III—cheese and dry whey
Class IV—butter, non-fat dry milk, whole dry milk, and canned milk.[10]

Because milk for fluid use is highly regional and commands the highest price, fluid use per capita is estimated first and separately from the other classes, driven by the Class I price within each pool. Some fluid demand equations may also include personal disposable income, the population of the U.S. under five years old, and/or other variables. Income data are available from BLS. Population data are available from the U.S. Census Bureau. Fluid use is estimated at the pool level based on MA data from 2000 – 2014. Fluid use is estimated for each of the ten Federal orders, California, and the unregulated pool. The fluid use estimates are presented in Table 29. Butterfat and non-fat solids pounds required to produce the quantity of fluid milk demanded are calculated using conversion factors found in Table 30.

The remaining milk is allocated to Class II, III, or IV using compositional regressions, as explained earlier. For the FMMOs, the fill-up value is Class II milk. Class III allocations are driven by national average cheddar cheese prices, national average dry whey prices, Class III prices at test for a given pool, and/or a weighted average of the prices of frozen dairy products and other Class II products, as reported by BLS. Class IV allocations are driven by national average butter prices, national average non-fat dry milk prices, and/or Class IV prices at test for a given pool. All classified prices and class allocation variables are based on MA data, estimated from 2000 – 2014. Data for classification in the unregulated pool is unavailable. Fluid use in the unregulated pool estimation is driven by income and are classified as Class I. The remaining milk in the unregulated pool is assumed to have the same proportional breakdown as in seen in the Federal orders. The FMMO non-fluid classification equation estimates are found in Tables 31 – 40. Classified butterfat, non-fat solids, and protein (where appropriate) are calculated by applying pool test values to classified milk estimates. Forecast test values are assumed to be an average of the pool test values from 2011 – 2014.

[10] The term “canned milk” in this documentation refers to evaporated or sweetened condensed milk in consumer-type packages.

The California pool has a different structure from the FMMO system. Total solids by classification, defined as the sums of butterfat and non-fat solids within each class, are estimated as opposed to the total amount of milk allocated to each class, because milk pounds by classification are not reported. Class 2 remains the fill-up value. Class 3 solids are a function of the CPIs of frozen dairy products and other Class 2 dairy products, deflated by the CPI for all products. Class 4a solids are driven by the national average price of non-fat dry milk. Class 4b solids are driven by the national average price of cheddar cheese and the CPI of other dairy products. The estimates for non-fluid classified milk allocation in the California marketing area can be found in Table 41. In the absence of a California Federal order, California classified solids are converted to their FMMO equivalents to account for classification differences.

National Level Aggregations and Estimations

Manufacturing Allocation

Supply and demand for manufactured dairy products is handled at the national level. The manufactured milk in each class and their corresponding components are aggregated from the pools to create a national supply of milk, butterfat, and non-fat solids for each class. The aggregated class supplies are used to estimate the national manufactured product supplies. The

The aggregated Class II total milk solids are divided using a logistic regression to estimate the production of frozen products and other Class II products. The other Class II solids requirements were established in the historical data by the residual butterfat and non-fat solids left when accounting for all solids in Class I, III, IV, and total frozen products. Frozen products and other Class II products are treated as aggregations of their respective products. The proportions of the solids in frozen products for the forecast period are held at recent year averages. The percentage of Class II total milk solids used to manufacture frozen products relative to the percentage of Class II milk used to manufacture all other Class II products is estimated as a function of the price of frozen goods relative to the price of other dairy products and other variables.

Class III milk is primarily used to produce cheese, with dry whey being produced as a result of the cheese manufacturing process. Total cheese production is calculated by applying conversion factors based on the most recent three years' average of the fat available for total cheese to the amount of total cheese production.[11] American and other cheese production percentages are estimated with a logistical function which responds to the price of cheddar and the price of mozzarella. The estimated production percentages are applied to the amount of total cheese produced to obtain pounds of American and other cheese production. Cheese production is assumed to use all necessary non-fat solids, with conversion factors determined in a like manner to those used for cheese butterfat. Dry whey production is driven by its own price, the amount of cheese produced, and other variables. Dry whey has a separate production equation because more than enough whey is produced as a result of cheese manufacture to meet dry whey demand. The CPI for food is used in the production of whey to account for inflation. Food CPI data comes from BLS and is estimated using the CPI for all products in projection years. Butterfat and non-fat product pounds of dry whey are calculated using conversion factors. All the conversion

[11] Non-fat dry milk and condensed skim milk used in cheese production are accounted for in this calculation.

factors can be found in Table 30. The conversion factors represent the pounds of solids required to create one pound of product.

Class IV milk is allocated to the production of butter, non-fat dry milk, dry whole milk, and canned milk. Because dry whole milk and canned milk are relatively minor products, dry whole milk's production is assumed to be a constant, and the production of canned milk is a function of that constant. For this reason, the production of dry whole milk and canned milk converted to fat and non-fat solids is taken first from the Class IV milk fat and non-fat solids supply. The remaining quantities of fat and non-fat solids that are available are used for butter and non-fat dry milk. The bulk of remaining Class IV fat goes to the production of butter. Therefore, butter production is not explicitly estimated; rather a small portion of Class IV fat is allocated to the production of non-fat dry milk, and the rest is assumed to be used for butter. Butter production is assumed to take what is needed from non-fat solids, and all remaining non-fat solids are allocated for the production of non-fat dry milk. The production of butter is calculated by using the residual Class IV fat divided by a fat conversion factor for butter. The remaining non-fat solids needed are used to calculate the non-fat dry milk production using non-fat dry milk non-fat solids conversion factors. The fat-test for non-fat dry milk is indirectly calculated as a result in the model. The manufacturing allocation equation estimates can be found in Table 42.

To accurately account for butterfat and non-fat solids content, it is necessary to make some adjustment to avoid duplication. Historical data used to account for duplication are taken for the most part from the American Dairy Products Institute (ADPI).[12] For the forecast period, the proportion of non-fat dry milk used in cheese to total cheese production is estimated as a function of butter and cheese prices. Condensed skim milk used in cheese is estimated as an inverse function of non-fat dry milk used in cheese. Other types of duplication such as non-fat solids used for fluid milk fortification are accounted for as constant percentages of the applicable dairy product quantities produced.

Demand, Stocks, and Trade for Non-Fluid Dairy Products

Per capita demands for manufactured dairy products are estimated as functions of product prices, per capita income, and other factors. Dairy product prices are deflated by the CPI for all products or the CPI for food. Per capita disposable income is deflated by the CPI for all products. Total consumption for each specific product or product aggregate is specified as per capita demand times the projected population for each year. National average wholesale prices for cheese, butter, non-fat dry milk, and dry whey are taken from Dairy Product Mandatory Reporting Program data. Equations in this section are based on the model used to estimate the national baseline.[13] Adjustments for leap year are included in the forecast period. The estimates for non-fluid per capita product demand can be found in Table 43.

[12] American Dairy Products Institute (2014) *Dairy Products, Utilization and Production Trends*, Retrieved from: https://www.adpi.org/tabid/128/newsid545/49/Default.aspx

[13] U.S. Department of Agriculture, Office of the Chief Economist, World Agricultural Outlook Board, OCE-2016-1 (2016 February) *USDA Agricultural Projections to 2025*, Retrieved from: http://ers.usda.gov/publications/oce-usda-agricultural-projections/oce-2016-1.aspx and U.S. Department of Agriculture, Agricultural Marketing Service, Dairy Programs Economic Research, (2016 April) *USDA Agricultural Marketing Service Dairy Programs National Econometric Model Documentation (Model Calibrated to USDA Agricultural Baseline Projections to 2016,* Retrieved from:

Year-end stocks are estimated for American cheese, other cheese, butter, and non-fat dry milk. Estimating ending stock values is complicated by their volatility. For this reason a two-step process is used. First, average stock values are estimated, as seen in Table 44. For each year, this value is the simple average of the monthly ending stocks from the last half or last quarter of each year. For each equation, the average stock value has a negative relationship with the product. Second, year-end stocks are estimated from average stocks, reflecting the typical seasonal relationship that exists between average stocks and year-end stocks. Year-end stocks estimates are found in Table 45.

Imports and commercial exports for American cheese, other cheese, and butter are projected by the model, along with commercial exports of non-fat dry milk and dry whey. In observing the history of imports and exports of the various products included in the model, they appear to be the most price responsive. Imports and exports for all other dairy products are exogenous in the model. Cheese and butter imports are controlled to some extent by a tariff rate quota (TRQ) that allows limited imports at lower in-quota tariff rates and unlimited imports at higher over-quota tariff rates. Those imports have usually exceeded the TRQ since it has been in place. The model assumes that the quota is filled each year, and thus only over-quota imports are estimated. Imports data are available from the Foreign Agriculture Service, and the equation is estimated using 1995 – 2014 data.[14] Exports and over-quota imports are estimated as a function of the difference between the domestic product price and the free-on-board international price, represented by the Oceania price with regards to butter, cheese, and non-fat dry milk and the European Union price for dry whey. Trade equation estimates can be found in Table 46.

Aggregated product supply is balanced against national consumer product demands, with price varied until a supply/demand balance is reached. In this manner, the prices estimated at the national level affect each pool's effective blend price, which drive the all-milk prices that influence milk production, connecting the system.

Price Relationships, Elasticities, and Statistics

Milk and dairy products, in aggregate, are expected to respond to changes in price in a certain manner. Milk production variables (cows and yield-per-cow) and imports are expected to move in the same direction as domestic own prices, like the all-milk price: higher domestic prices will encourage farmers to produce more, while making foreign products more appealing to the consumer. Conversely, demand variables (e.g. fluid use per capita) and exports are expected to move in the opposite direction from domestic own prices: higher prices will decrease domestic consumption, while making domestic sales more appealing to producers. Competing prices, or those representing costs of production, such as the price of feed, are expected to have the opposite relationships. Income is expected to move in the same direction with both supply and demand variables, with higher income meaning greater capacity for farm investment, as well as greater capacity to purchase dairy products.

https://www.ams.usda.gov/sites/default/files/media/National%20Econometric%20Model%20Documentation%20april%202007.pdf

[14] U.S. Department of Agriculture, Foreign Agricultural Service (March 2016) *Dairy Monthly Imports*, Retrieved from: http://www.fas.usda.gov/data/dairy-monthly-imports

Parameter sizes vary based on specification, and they do not necessarily provide a clear picture of the variable-in-question's impact. To provide a clearer picture of the actual impact, each price and income variable have an additional statistic reported called the "elasticity": It is the percent change in the left-hand side variable in response to a percent change in the right-hand side variable. For example, the Northeast supply region's all-milk price is driven by the Order 1 effective blend price (see Table 1). This price-price elasticity is 0.9088. This means that, for every 1 percent increase in the Order 1 effective blend price, the Northeast supply region's all-milk price will increase by about 0.91 percent. The positive sign in the elasticity means that the all-milk price and the effective blend price move together, which follows expectations. The elasticities presented are averaged over the relevant data period for each equation.

Statistical fit is represented by the R-Square for each equation. R-Square is the percent of variation in the data explained by the given equation, and therefore falls between 0 – 1. A higher R-Square is better, and represents how closely the model estimates historical data. Statistical significance is best represented by the p-value for each variable. The p-value is defined as the level of significance at which one can reject the default hypothesis that the variable is not significantly different from zero. In other words, it is a measure of confidence in the estimates the model produces: a smaller p-value indicates a higher level of statistical significance, and therefore greater confidence that the model produces reliable estimates.

Conclusion

The Dairy Program's Economics Analysis Branch maintains a regional econometric model of the U.S. dairy industry to support its economic analysis and forecasting responsibilities. The model's construction is regional and covers milk produced in all fifty States. It includes a framework to estimate the allocation and classification of milk under the FMMO system. It estimates the supply of classified milk solids, which are used to estimate product supplies through the use of logistic functions and conversion factors. The product supplies are balanced against demand for dairy products by varying prices until a balance is reached. The model's responses to price and policy changes follow economic theory and are statistically validated. This documentation serves to outline the model's sources, capabilities, and methods. The model is used for impact analyses, discussions of specific impacts are reserved for other publications.

Table 1: Northeast Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Northeast All Milk Price / CPI all)	Intercept	0.2255	0.1074	2.10	0.0559		0.9772
	log (Order 1 Blend Price at Test/ CPI all)	0.9088	0.0511	17.80	<.0001	0.9088	
log (Northeast Number of Cows)	Intercept	2.8403	0.5363	5.30	<.0001		0.9958
	lag (log((Northeast All Milk Price + Northeast Average Dairy Market Loss Payments + Average Dairy Economic Loss Assistance Payments) / Boning Cow Slaughter Price))	0.0197	0.0098	2.00	0.0550	0.0197	
	Trend from 1980	-0.0045	0.0010	-4.55	<.0001		
	Dummy from 1980 to 1986	0.0406	0.0057	7.16	<.0001		
	lag (log (Northeast Number of Cows))	0.6188	0.0701	8.82	<.0001		
log (Northeast Milk Per Cow)	Intercept	4.6934	1.1336	4.14	0.0003		0.9960
	lag (log ((Northeast All Milk Price + Northeast Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.0386	0.0149	2.59	0.0149	0.0386	
	lag (log (Northeast Milk Per Cow))	0.4965	0.1221	4.07	0.0004		
	Trend from 1980	0.0095	0.0024	4.01	0.0004		
	Dummy: Dairy Diversion Program	-0.0242	0.0119	-2.04	0.0514		
	Dummy for years after 1999	-0.0293	0.0099	-2.96	0.0062		

Table 2: Appalachian Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Appalachian All Milk Price / CPI all)	Intercept	0.0958	0.0991	0.10	0.3514		0.9873
	log (Order 5 Blend Price at Test / CPI all)	0.9649	0.0461	20.95	<.0001	0.9649	
log (Appalachian Number of Cows)	Intercept	24.0580	1.2392	19.42	<.0001		0.9825
	lag (log (Appalachian Milk Per Cow))	-1.8848	0.1280	-14.72	<.0001		
	log ((Appalachian All Milk Price + Appalachian Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value)	0.1614	0.0550	2.94	0.0063	0.1614	
	Dummy for years after 1997	-0.1654	0.0355	-4.66	<.0001		
log (Appalachian Milk Per Cow)	Intercept	9.2477	0.0197	469.89	<.0001		0.9901
	log ((Appalachian All Milk Price + Appalachian Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value)	0.0295	0.0156	1.89	0.0684	0.0295	
	Trend from 1980	0.0150	0.0003	48.93	<.0001		
	Dummy: Dairy Diversion Program	-0.0702	0.0165	-4.27	0.0002		

Table 3: Florida Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Florida All Milk Price / CPI all)	Intercept	0.1314	0.1179	1.12	0.2867		0.9885
	log (Order 6 Blend Price at Test / CPI all)	0.9123	0.0527	17.32	<.0001	0.9123	
	Trend from 2000	0.0068	0.0014	4.91	0.0004		
log (Florida Non-Farm Earnings Per Capita /CPI all)	Intercept	6.4771	0.0768	84.35	<.0001		0.9955
	log (Personal Disposable Income Per Capita / CPI all)	1.0399	0.0293	35.49	<.0001		
	Dummy for years after 2008	-0.0141	0.0113	-12.48	<.0001		
log (Florida Number of Cows)	Intercept	3.5254	0.9868	3.57	0.0013		0.9599
	lag (log ((Florida All Milk Price + Florida Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.0602	0.0362	1.66	0.1072	0.0602	
	lag (log (Florida Number of Cows))	0.8287	0.0627	13.22	<.0001		
	Dummy for years after 1985	0.0488	0.0200	2.44	0.0210		
	log (Florida Non-Farm Earnings Per Capita / CPI all)	-0.3020	0.0826	-3.66	0.0010		
log (Florida Milk Per Cow)	Intercept	0.1542	0.3035	0.05	0.6151		0.9786
	log ((Florida All Milk Price + Florida Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value)	0.0662	0.0311	2.13	0.0421	0.0662	
	lag (log (Florida Milk Per Cow))	0.9773	0.0311	31.38	<.0001		
	Dummy for 1998	-0.0831	0.0234	-3.55	0.0013		
	Dummy for years after 2007	0.0396	0.0168	2.36	0.0254		

Table 4: Southeast Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Southeast All Milk Price / CPI all)	Intercept	-0.0711	0.1087	-0.65	0.5246		0.9876
	log (Order 7 Blend Price at Test / CPI all)	1.0164	0.0504	20.18	<.0001	1.0164	
(Southeast Non-Farm Earnings Per Capita / CPI All)	Intercept	-28.7837	243.3000	-0.12	0.9066		0.9946
	Personal Disposable Income Per Capita	291.0514	87.0727	3.34	0.0022		
	Dummy for years after 2008	-455.1300	124.7000	-3.65	0.0010		
	lag (Southeast Non-Farm Earnings Per Capita / CPI All)	0.6050	0.1141	5.30	<.0001		
log (Southeast Number of Cows)	Intercept	34.3265	1.8300	18.76	<.0001		0.9601
	log ((Southeast All Milk Price + Southeast Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value)	0.5937	0.0929	6.39	<.0001	0.5937	
	Dummy for years 1980 to 1987	-0.3089	0.0661	-4.67	0.0001		

	lag(log (Southeast Non-Farm Earnings Per Capita / CPI all))	-3.0962	0.1944	-15.93	<.0001		
	log ((Southeast All Milk Price	0.2835	0.1087	2.61	0.0142	0.2835	
	+ Southeast Average Dairy Market Loss Payments						
	+ Average Dairy Economy Loss Assistance						
	Payments) /Boning Cow Slaughter Price)						
log (Southeast Milk Per Cow)	Intercept	9.1383	0.0287	318.53	<.0001		0.9755
	log ((Southeast All Milk Price	0.0938	0.0233	4.02	0.0003	0.0938	
	+ Southeast Average Dairy Market Loss Payments						
	+ Average Dairy Economy Loss Assistance						
	Payments) / 16% Protein Feed Value)						
	Dummy from 1991 to 1995	0.0571	0.0112	5.07	<.0001		
	Trend from 1980	0.0147	0.0004	33.51	<.0001		

Table 5: Upper Midwest Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Upper Midwest All Milk Price	Intercept	0.2476	0.0542	4.57	0.0005		0.9949
/ CPI all)	log (Order 30 Blend Price at Test / CPI all)	0.9089	0.0269	33.85	<.0001	0.9089	
log (Upper Midwest Number of Cows)	Intercept	0.3433	0.1571	2.18	0.0368		0.9594
	lag (log (Upper Midwest Number of Cows))	0.9386	0.0236	39.85	<.0001		
	lag (log ((Upper Midwest All Milk Price	0.0648	0.0204	3.18	0.0034	0.0648	
	+ Upper Midwest Average Dairy Market Loss Payments						
	+ Average Dairy Economy Loss Assistance Payments						
	- 16% Protein Feed Value)/ CPI all))						
	Dummy for years after 2009	0.0341	0.0106	3.23	0.0030		
log (Upper Midwest Milk Per Cow)	Intercept	9.3238	0.0131	713.24	<.0001		0.9969
	lag (log ((Upper Midwest All Milk Price	0.0283	0.0111	2.55	0.0165	0.0283	
	+ Upper Midwest Average Dairy Market Loss Payments						
	+ Average Dairy Economy Loss Assistance Payments)						
	/ 16% Protein Feed Value))						
	Trend from 1980	0.0200	0.0005	44.42	<.0001		
	Dummy for years after 1983	-0.0295	0.0080	-3.67	0.0010		
	Dummy for years after 2000	-0.0312	0.0076	-4.08	0.0003		

Table 6: Central Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Central All Milk Price	Intercept	-4.3413	0.0625	-69.44	<.0001		0.9936
/ CPI all)	log (Order 32 Blend Price at Test / CPI all)	0.8914	0.0307	29.05	<.0001	0.8914	

log (Central Number of Cows)	Intercept	0.5919	0.1988	2.98	0.0058		0.9902
	lag (log ((Central All Milk Price + Central Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.0376	0.0184	2.05	0.0497	0.0376	
	lag (log (Central Number of Cows))	0.9076	0.0286	31.73	<.0001		
	Dummy for years after 1985	-0.0387	0.0114	-3.38	0.0021		
	Dummy for years after 2005	0.0234	0.0088	2.66	0.0126		
log (Central Milk Per Cow)	Intercept	0.2071	0.1518	1.36	0.1827		0.9909
	lag (log((Central All Milk Price + Central Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.0535	0.0259	2.07	0.0473	0.0535	
	lag (log (Central Milk Per Cow))	0.9750	0.0159	61.49	<.0001		
	Dummy for years after 2008 * Trend from 2000	0.0020	0.0011	1.78	0.0849		

Table 7: Mideast Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Mideast All Milk Price / CPI All)	Intercept	-4.4019	0.0620	-70.96	<.0001		0.9941
	log (Order 33 Blend Price at Test / CPI All)	0.9232	0.0302	30.59	<.0001	0.9232	
log (Mideast Number of Cows)	Intercept	6.4006	0.1044	61.31	<.0001		0.9421
	Dummy for years after 1988	-0.1152	0.0197	-5.86	<.0001		
	log ((Mideast All Milk Price + Mideast Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / CPI All)	0.1909	0.0407	4.69	<.0001	0.1909	
	Dummy from 1995 to 2004	-0.0921	0.0125	-7.36	<.0001		
log (Mideast Milk Per Cow)	Intercept	9.3252	0.0196	475.95	<.0001		0.9933
	lag (log ((Mideast All Milk Price + Mideast Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.0432	0.0163	2.65	0.0127	0.0432	
	Trend from 1980	0.1954	0.0003	62.15	<.0001		

Table 8: Pacific Northwest Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Pacific Northwest All Milk Price / CPI All)	Intercept	-4.4345	0.0678	-65.37	<.0001		0.9913
	log (Order 124 Blend Price at Test/ CPI All)	0.9363	0.0334	28.05	<.0001	0.9363	

log (Pacific Northwest Number of Cows)	Intercept	-0.2064	0.4978	-0.41	0.6815		0.8941
	log ((Pacific Northwest All Milk Price + Pacific Northwest Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / CPI All)	0.0699	0.0342	2.04	0.0507	0.0699	
	lag (log (Pacific Northwest Milk Per Cow))	0.2973	0.0948	3.14	0.0040		
	Dummy from 1998 to 2001	-0.0351	0.0133	-2.63	0.0137		
	Dummy from 1992 to 1995	0.0326	0.0129	2.53	0.0173		
	lag (log (Pacific Northwest Cows))	0.5076	0.1472	3.45	0.0018		
log (Pacific Northwest Milk Per Cow)	Intercept	2.1231	0.5761	3.69	0.0009		0.9944
	lag (log ((Pacific Northwest All Milk Price + Pacific Northwest Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.0383	0.0155	2.48	0.0194	0.0383	
	lag (log (Pacific Northwest Milk Per Cow))	0.7761	0.0616	12.61	<.0001		
	Trend from 1980	0.0042	0.0013	3.27	0.0028		
	Dummy for years after 1999	-0.0308	0.0085	-3.64	0.0011		

Table 9: Southwest Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Southwest All Milk Price / CPI All)	Intercept	-4.5000	0.0704	-63.89	<.0001		0.9935
	log (Order 126 Blend Price at Test / CPI All)	0.9436	0.0340	27.77	<.0001	0.9436	
log (Southwest Land Value / CPI All)	Intercept	-0.5925	0.2583	-2.29	0.0290		0.9761
	lag (log (Southwest Land Value / CPI All))	0.8588	0.0518	16.58	<.0001	0.8588	
	log (Personal Disposable Income Per Capita / CPI All)	0.5963	0.1324	4.50	<.0001	0.5963	
	Dummy for years after 1986	-0.1650	0.0484	-3.41	0.0019		
log (Southwest Number of Cows)	Intercept	-0.1822	0.1602	-1.14	0.2641		0.9460
	lag (log ((Southwest All Milk Price + Southwest Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.0747	0.0256	2.92	0.0065	0.0747	
	lag (log (Southwest Number of Cows))	1.0209	0.0227	44.93	<.0001		

log (Southwest Milk Per Cow)	Intercept	0.1501	0.2305	0.65	0.5198		0.9839
	lag (log (Southwest Milk Per Cow))	0.9818	0.0229	42.81	<.0001		
	lag (log ((Southwest All Milk Price	0.0432	0.0255	1.70	0.0998	0.0432	
	+ Southwest Average Dairy						
	Market Loss Payments						
	+ Average Dairy Economy Loss Assistance						
	Payments) / 16% Protein Feed Value))						
	log ((Southwest All Milk Price	0.0366	0.0213	1.72	0.0958	0.0366	
	+ Southwest Average Dairy						
	Market Loss Payments						
	+ Average Dairy Economy Loss Assistance						
	Payments) / 16% Protein Feed Value)						
	* Dummy for years after 2007						

Table 10: Arizona Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Arizona All Milk Price	Intercept	-4.5802	0.0385	-119.06	<.0001		0.9977
/ CPI all)	log (Order 131 Blend Price at Test/ CPI All)	0.9884	0.0189	52.27	<.0001	0.9884	
log (Arizona Number of Cows	Intercept	-31.7117	13.3167	-2.38	0.0238		0.9917
- lag (Arizona Number of Cows))	log ((Arizona All Milk Price	7.1405	3.6365	1.96	0.0589	7.1405	
	+ Arizona Average Dairy Market Loss Payments						
	+ Average Dairy Economic Loss Assistance						
	Payments) / Boning Cow Slaughter Price)						
	Trend from 1980	0.1928	0.0735	2.62	0.0136		
	lag (log ((Arizona All Milk Price	7.5733	3.2780	2.31	0.0279	7.5733	
	+ Arizona Average Dairy Market Loss Payments						
	+ Average Dairy Economy Loss Assistance						
	Payments) / 16% Protein Feed Value))						
log (Arizona Milk Per Cow)	Intercept	9.3971	0.0255	368.40	<.0001		0.9866
	lag (log ((Arizona All Milk Price	0.1251	0.0210	5.94	<.0001	0.1251	
	+ Arizona Average Dairy Market Loss Payments						
	+ Average Dairy Economy Loss Assistance						
	Payments) / 16% Protein Feed Value))						
	Dummy for 1994 to 1997	0.0403	0.0114	3.54	0.0014		
	Trend from 1980	0.0216	0.0006	35.58	<.0001		
	Dummy for years after 2004	-0.0899	0.0134	-6.73	<.0001		

Table 11: Former Western Order Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Former Western Order All Milk	Intercept	0.1464	0.1177	1.24	0.2373		0.9880
Price / CPI All)	log (California All Milk Price / CPI All)	0.9295	0.0610	15.23	<.0001	0.9295	
	log (Post-Order Reform Class II Price / CPI All)	0.0213	0.0099	2.15	0.0523	0.0213	
	* Dummy After 2010						

log (Former Western Order Number of Cows)	Intercept	-0.1800	0.1004	-1.79	0.0832		0.9932
	lag (log (Former Western Number of Cows))	1.0253	0.0142	72.02	<.0001		
	lag (log ((Former Western Order All Milk Price + Former Western Order Average Dairy Market Loss Payments + Average Dairy Economic Loss Assistance Payments) / 16% Protein Feed Value))	0.0558	0.0273	2.04	0.0497	0.0558	
	Dummy from 1994 to 2000	0.0461	0.0112	4.12	0.0003		
log (Former Western Order Milk Per Cow)	Intercept	9.3480	0.0326	286.32	<.0001		0.9800
	log ((Former Western Order All Milk Price + Former Western Order Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value)	0.1030	0.0289	3.56	0.0012	0.1030	
	Trend from 1980	0.0202	0.0006	36.48	<.0001		

Table 12: Unregulated West Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Unregulated West All Milk Price / CPI All)	Intercept	0.4057	0.0982	4.13	0.0012		0.9852
	log (Central Region All Milk Price / CPI All)	0.7960	0.0472	16.86	<.0001	0.7960	
log (Unregulated West Number of Cows)	Intercept	0.0862	0.0881	0.98	0.3353		0.9708
	lag (log (Unregulated West Number of Cows))	0.8098	0.0614	13.19	<.0001		
	lag (log ((Unregulated West All Milk Price + Unregulated West Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.1170	0.0428	2.73	0.0105	0.1170	
	log ((Unregulated West All Milk Price + Unregulated West Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / CPI All)	0.1863	0.0687	2.71	0.0109	0.1863	
log (Unregulated West Milk Per Cow)	Intercept	9.2118	0.0309	297.90	<.0001		0.9881
	lag(log ((Unregulated West All Milk Price + Unregulated West Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value))	0.0705	0.0258	2.74	0.0103	0.0705	
	Dummy for 2006 to 2008	-0.0410	0.0161	-2.55	0.0160		
	Trend from 1980	0.0208	0.0005	39.75	<.0001		

Table 13: California Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (California All Milk Price / CPI All)	Intercept	-0.0039	0.0055	-0.70	0.4978		1.0000
	log (California Blend Price at Test / CPI All)	1.0011	0.0028	357.71	<.0001	1.0011	
log (California Number of Cows)	Intercept	0.1070	0.1011	1.06	0.2978		0.9681
	log ((California All Milk Price + California Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value)	0.0314	0.0148	2.12	0.0419	0.0314	
	log (lag (California Number of Cows))	0.9841	0.0130	75.51	<.0001		
log(California Milk Per Cow)	Intercept	3.7213	1.0658	3.49	0.0016		0.9723
	log ((California All Milk Price + California Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value)	0.0454	0.0187	2.42	0.0220	0.0454	
	lag (log (California Milk Per Cow))	0.6094	0.1109	5.49	<.0001		
	Trend from 1980	0.0057	0.0016	3.62	0.0012		
	Dummy for 1994	0.0670	0.0184	3.64	0.0011		
	Dummy for 1998	-0.0373	0.0191	-1.95	0.0607		

Table 14: Hawaii and Alaska Regional Milk Supply Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Hawaii and Alaska All Milk Price / CPI All)	Intercept	0.2706	0.1274	2.12	0.0417		0.8796
	log (Wholesale AA Butter Price / CPI All)	0.0471	0.0324	1.45	0.1566	0.0471	
	lag (log (Hawaii and Alaska All Milk Price / CPI All))	0.8218	0.0692	11.88	<.0001	0.8218	
log (Hawaii and Alaska Cows)	Intercept	-12.8134	2.3686	-5.41	<.0001		0.9828
	log ((Hawaii and Alaska All Milk Price + Hawaii and Alaska Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / CPI All)	0.6352	0.1163	5.46	<.0001	0.6352	
	log (Hawaii and Alaska Milk Per Cow)	1.1724	0.2335	5.02	<.0001		
	lag (log (Hawaii and Alaska Cows))	0.9464	0.0244	38.77	<.0001		
log (Hawaii and Alaska Milk Per Cow)	Intercept	8.8019	0.1557	56.54	<.0001		0.8043
	lag (log ((Hawaii and Alaska All Milk Price + Hawaii and Alaska Average Dairy Market Loss Payments + Average Dairy Economy Loss Assistance Payments) / 16% Protein Feed Value)	0.1999	0.0519	3.86	0.0006	0.1999	
	Dummy for years after 1985	0.1048	0.0160	6.53	<.0001		
	Dummy for years after 2003	-0.0903	0.0176	-5.13	<.0001		
	Dummy for 2008	-0.1552	0.0307	-5.05	<.0001		

Table 15: Allocation of Northeast Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (Northeast Milk to Order 5)	Intercept	-3.4951	0.1858	-18.81	<.0001	0.7550
/ Northeast Milk to Order 1)	log (Trend from 2000)	-0.1891	0.0684	-2.77	0.0199	
	Dummy from 2006 to 2007	0.3555	0.1019	3.49	0.0058	
	lag (log (Order 5 Blend Price at Test/ Order 1 Blend Price at Test))	2.9296	1.3187	2.22	0.0506	
log (Northeast Milk to Order 33	Intercept	-2.1939	0.0352	-62.27	<.0001	0.7367
/ Northeast Milk to Order 1)	Dummy from 2005 to 2007	0.2771	0.0371	7.47	<.0001	
	lag (log (Order 33 Blend Price at Test / Order 1 Blend Price at Test))	1.1106	0.5164	2.15	0.0546	
log (Unregulated Northeast Milk	Intercept	-2.8698	0.0173	-165.86	<.0001	0.9045
/ Northeast Milk to Order 1)	Dummy for 2004	0.3553	0.0398	8.93	<.0001	
	Dummy from 2006 to 2008	0.1878	0.0272	6.91	<.0001	
	log (Order 1 Class I Price at Test / Order 1 Class III Price at Test)	-0.3931	0.1493	-2.63	0.0273	
	Dummy for 2001	0.2784	0.0408	6.82	<.0001	

Table 16: Allocation of Appalachian Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (Appalachia Milk to Order 1	Intercept	-1.4853	0.5443	-2.73	0.0212	0.9436
/ Appalachia Milk to Order 5)	log (Order 5 Blend Price at Test / CPI all)	-0.5831	0.2552	-2.28	0.0454	
	Dummy for years after 2005	-0.7126	0.0947	-7.52	<.0001	
	Dummy for years after 2008	-0.2512	0.0909	-2.76	0.0200	
log (Appalachia Milk to Order 7	Intercept	-0.0240	0.3245	-0.07	0.9427	0.8960
/ Appalachia Milk to Order 5)	log (Order 5 Blend Price at Test / CPI all)	-0.3157	0.0961	-3.29	0.0094	
	Dummy for years after 2006	0.2131	0.0285	7.48	<.0001	
	Dummy for 2012	0.1401	0.0508	2.76	0.0222	
	lag(log (Order 5 Blend Price at Test / CPI all))	-0.3033	0.1113	-2.72	0.0234	
log (Unregulated Appalachia Milk	Intercept	-1.1200	0.2480	-4.52	0.0015	0.9265
/ Appalachia Milk to Order 5)	log (Order 5 Class III Price at Test / Order 5 Class I Price at Test)	0.9792	0.1388	7.06	<.0001	
	Dummy for 2011	-0.3944	0.0507	-7.78	<.0001	
	Dummy for 2013	0.2354	0.0504	4.67	0.0012	
	lag(log(Order 5 Class I Price at Test / CPI all))	-0.4803	0.1200	-4.0000	0.0031	

Table 17: Allocation of Florida Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
All Florida Milk is assumed to be used within either Order 6 or Order 7.						
log (Percentage of Florida Milk to Order 7	Intercept	-10.3010	2.3632	-4.36	0.0009	0.7370
/ 1 - Percentage of Florida Milk to	log (Order 7 Blend Price at Test / CPI All)	2.7805	1.1031	2.52	0.0269	
Order 7)	Dummy for years after 2008	1.6348	0.3070	5.33	0.0002	

Table 18: Allocation of Southeast Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (Southeast Milk to Order 5	Intercept	-4.5498	0.3611	-12.60	<.0001	0.8706
/ Southeast Milk to Order 7)	log (Order 5 Blend Price at Test / Order 7 Blend Price at Test)	68.4685	24.5755	2.79	0.0212	
	Trend from 2000	0.4028	0.0926	4.35	0.0018	
	log (Order 6 Blend Price at Test / Order 7 Blend Price at Test) * Dummy for years after 2004	-30.4085	7.4998	-4.05	0.0029	
	Dummy from 2000 to 2001	0.9549	0.3366	2.84	0.0195	
log (Southeast Milk to Order 6	Intercept	-2.5487	0.2370	-10.75	<.0001	0.8570
/ Southeast Milk to Order 7)	lag (log (Order 6 Blend Price at Test / Order 7 Blend Price at Test)) * Dummy for years after 2002	2.0215	1.0924	1.85	0.094	
	Dummy for years after 2013	-0.5582	0.1761	-3.17	0.01	
	log(Trend from 2000)	0.4969	0.0843	5.89	0.0002	
log (Southeast Milk to Order 32	Intercept	-1.3915	0.1472	-9.45	<.0001	0.9231
/ Southeast Milk to Order 7)	log (Order 32 Blend Price at Test / Order 7 Blend Price at Test)	5.6495	1.0717	5.27	0.0004	
	Dummy for years after 2004	0.2227	0.0551	4.04	0.0023	
	Dummy from 2005 to 2006	0.2935	0.0621	4.73	0.0008	
log (Unregulated Southeast Milk	Intercept	-2.4207	0.0577	-41.94	<.0001	0.6622
/ Southeast Milk to Order 7)	log (Order 7 Class III Milk at Test / Order 7 Class I Milk at Test)	1.0366	0.6609	1.57	0.1478	
	Dummy for 2007	0.5195	0.1867	2.78	0.0194	
	Dummy for 2010	0.4651	0.1858	2.50	0.0313	

Table 19: Allocation of Upper Midwest Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (Upper Midwest Milk to Order 32	Intercept	-0.5725	0.0981	-5.84	0.0001	0.9744
/ Upper Midwest Milk to Order 30)	lag (log (Order 32 Blend Price at Test / Order 30 Blend Price at Test))	17.6522	1.5390	11.47	<.0001	
	lag (log (Upper Midwest Milk to Order 32 / Upper Midwest Milk to Order 30))	0.9854	0.0817	12.06	<.0001	
log (Upper Midwest Milk to Order 33	Intercept	-1.4004	0.1648	-8.49	<.0001	0.9589
/ Upper Midwest Milk to Order 30)	lag (log (Order 33 Blend Price at Test / Order 30 Blend Price at Test))	7.8262	2.0435	3.83	0.0033	
	Dummy for years after 2005	-1.1607	0.3013	-3.85	0.0032	
	lag (log (Upper Midwest Milk to Order 33 / Upper Midwest Milk to Order 30))	0.3564	0.1376	2.59	0.0269	
log (Unregulated Upper Midwest Milk	Intercept	-2.2947	0.1680	-13.66	<.0001	0.9327
/ Upper Midwest Milk to Order 30)	Dummy from 2003 to 2004	1.6370	0.1619	10.11	<.0001	
	log (Order 30 Class III Milk at Test / Order 30 Class I Milk at Test)	2.1538	0.8608	2.50	0.0313	
	Dummy from 2007 to 2008	0.7154	0.2166	3.30	0.0080	

Table 20: Allocation of Central Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (Central Milk to Order 5	Intercept	-6.9082	0.8716	-7.93	<.0001	0.8191
/ Central Milk to Order 32)	Trend from 2000 * Dummy for years after 2002	0.1270	0.0324	3.92	0.0029	
	Dummy from 2004 to 2005	1.7339	0.3247	5.34	0.0003	
	log (Order 5 Blend Price at Test / Order 32 Blend Price at Test)	10.6146	5.7441	1.85	0.0944	
log (Central Milk to Order 7	Intercept	-3.0913	0.138	-22.40	<.0001	0.8625
/ Central Milk to Order 32)	log (Order 7 Blend Price at Test / Order 32 Blend Price at Test)	3.9763	1.1041	3.60	0.0057	
	Dummy from 2003 to 2004	0.2855	0.0711	4.01	0.003	
	Dummy for years after 2007	0.2424	0.0534	4.54	0.0014	
	Dummy from 2013 to 2014	-0.1773	0.0752	-2.36	0.0428	
log (Central Milk to Order 30	Intercept	-2.4095	0.1174	-20.53	<.0001	0.7044
/ Central Milk to Order 32)	lag (log (Order 30 Blend Price at Test / Order 32 Blend Price at Test))	7.5166	2.4872	3.02	0.0116	
	Dummy for years after 2003 * log (Trend from 2000)	0.3062	0.0471	6.51	<.0001	
log (Central Milk to Order 126	Intercept	-4.8220	0.4626	-10.42	<.0001	0.8253
/ Central Milk to Order 32)	Dummy from 2006 to 2007	0.8928	0.1839	4.86	0.0007	
	Dummy for years after 2001	0.9581	0.3495	2.74	0.0208	
	lag (log (Order 126 Blend Price at Test / Order 32 Blend Price at Test))	12.1268	4.3661	2.78	0.0195	
log (Unregulated Central Milk	Intercept	-1.9067	0.0704	-27.10	<.0001	0.6757
/ Central Milk to Order 32)	log (Order 32 Class III Price at Test / Order 32 Class I Price at Test)	3.1371	0.9852	3.18	0.0097	
	Dummy for 2003	0.4316	0.1598	2.70	0.0223	
	Dummy from 2007 to 2008	0.4338	0.114	3.80	0.0035	

Table 21: Allocation of Mideast Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (Mideast Milk to Order 5	Intercept	-2.5228	0.1663	-15.17	<.0001	0.7485
/ Mideast Milk to Order 33)	log (Order 5 Blend Price at Test / Order 33 Blend Price at Test)	4.2136	1.6779	2.51	0.0332	
	Dummy for years after 2012	-0.2647	0.0653	-4.05	0.0029	
	Dummy for years before 2003	-0.2560	0.0736	-3.48	0.0070	
	Dummy for years after 2006	0.1816	0.0494	3.68	0.0051	
log (Mideast Milk to Order 7	Intercept	-2.0843	0.4498	-4.63	0.0009	0.8763
/ Mideast Milk to Order 33)	log(Order 7 Blend Price at Test / Order 33 Blend Price at Test) * Dummy After 2004	4.8970	1.3653	3.59	0.0050	
	lag (log (Mideast Milk to Order 7 / Mideast Milk to Order 33))	0.3624	0.1254	2.89	0.0161	
	Dummy for years after 2011	-0.2539	0.1071	-2.37	0.0392	

log (Mideast Milk to Order 30	Intercept	-5.7564	0.1850	-31.12	<.0001	0.7431
/ Mideast Milk to Order 33)	lag (log (Order 30 Blend Price at Test	5.8819	2.8231	2.08	0.0613	
	/ Order 33 Blend Price at Test))					
	Dummy for years after 2007 * (Trend from 2000)	0.1426	0.0155	9.19	<.0001	
log (Unregulated Mideast Milk	Intercept	-7.4341	0.5145	-14.45	<.0001	0.8769
/ Mideast Milk to Order 33)	log(Former Western Order All Milk Price / CPI All)	2.4554	0.2551	9.63	<.0001	
	Dummy for 2005	-0.8672	0.1313	-6.61	<.0001	
	Dummy for 2003	0.4184	0.1362	3.07	0.0118	

Table 22: Allocation of Pacific Northwest Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
Pacific Northwest Milk is assumed to be used within either an Unregulated Region or Order 124.						
log (Percentage of Unregulated Pacific	Intercept	-1.8197	0.1275	-14.27	<.0001	0.7550
Northwest Milk	log (Order 124 Class IV Price at Test	-4.3797	1.0966	-3.99	0.0018	
/ 1- Percentage of Unregulated Pacific	/ Order 124 Class I Price at Test)					
Northwest Milk)	Dummy for 2012	0.9346	0.3973	2.35	0.0366	

Table 23: Allocation of Southwest Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (Southwest Milk to Order 5	Intercept	-8.3693	1.0335	-8.10	<.0001	0.8993
/ Southwest Milk to Order 126)	lag (log (Order 5 Blend Price at Test/ CPI All))	2.4625	0.3802	6.48	<.0001	
	* Dummy for years after 2002					
	Dummy from 2004 to 2005	0.6532	0.0818	7.99	<.0001	
	log (Order 126 Blend Price at Test / CPI All)	-0.5068	0.2752	-1.84	0.0954	
log (Southwest Milk to Order 7	Intercept	0.4210	0.6977	0.60	0.5611	0.8853
/ Southwest Milk to Order 126)	log (Order 7 Blend Price at Test	0.5723	0.2523	2.27	0.0495	
	/ CPI All)					
	Dummy from 2004 to 2006	0.3550	0.0658	5.39	0.0004	
	lag (log (Southwest Milk to Order 7	0.4559	0.1347	3.38	0.0081	
	/ Southwest Milk to Order 126))					
	Dummy from 2013 to 2014	-0.8611	0.2500	-3.44	0.0073	
log (Southwest Milk to Order 32	Intercept	-2.0975	0.1942	-10.80	<.0001	0.8091
/ Southwest Milk to Order 126)	log (Order 32 Blend Price at Test / Order 126 Blend Price at Test)	10.6658	4.5865	2.33	0.0402	
	Dummy for years after 2007	0.5666	0.1342	4.22	0.0014	

log (Southwest Milk to Order 131 / Southwest Milk to Order 126)	Intercept	-12.4616	0.9289	-13.42	<.0001	0.9528
	lag (log (Order 131 Blend Price at Test / CPI All)) *Dummy for years after 2007	0.6739	0.3062	2.20	0.0524	
	log (Trend from 2000)	2.2241	0.3288	6.76	<.0001	
	Dummy for 2011	-2.2551	1.1443	-1.97	0.0770	
log (Unregulated Southwest Milk / Southwest Milk to Order 126)	Intercept	-0.7262	0.0964	-7.53	<.0001	0.8185
	Dummy 2014	-1.0906	0.2489	-4.38	0.0014	
	Dummy from 2004 to 2006	-1.3429	0.3475	-3.86	0.0031	
	log (Order 126 Class III Price at Test / Order 126 Class I Price at Test)	11.8995	1.9549	6.09	0.0001	

Table 24: Allocation of Arizona Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (Arizona Milk to Order 126 / Arizona Milk to Order 131)	Intercept	-6.3468	1.6674	-3.81	0.0034	0.9402
	lag(log(Order 126 Blend Price at Test / Order 131 Blend Price at Test))* Dummy After 2002	6.6690	4.4141	1.51	0.1618	
	Dummy from 2004 to 2006	3.2465	1.6668	1.95	0.0800	
	Dummy for years after 2006	2.3224	1.6675	1.39	0.1939	
log (Unregulated Arizona Milk / Arizona Milk to Order 131)	Intercept	0.2375	1.1705	0.20	0.8433	0.9189
	log (Order 131 Class I Price at Test / CPI all)	-1.1958	0.6031	-1.98	0.0755	
	Dummy for years 2008	-2.1447	0.7231	-2.97	0.0141	
	Dummy for 2004 to 2005	0.5633	0.1258	4.48	0.0012	

Table 25: Allocation of Former Western Order Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
Milk in the Former Western Order is assumed to be used within either an Unregulated Area or Order 32.						
log (Percentage of Former Western Order Milk to Order 32 / 1 - Percentage of Former Western Order Milk to Order 32)	Intercept	-6.2902	0.6659	-9.45	<.0001	0.7619
	log (Order 32 Blend Price at Test / Former Western Order All Milk Price)	20.3272	7.3295	2.77	0.0181	
	Dummy for years after 2008	1.5453	0.5416	2.85	0.0157	
	Dummy for 2009	1.2232	0.4093	2.99	0.0123	

Table 26: Allocation of Unregulated West Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
Milk in the Unregulated West Region is assumed to	Intercept					
log (Percentage of Unregulated West Milk to Order 32 / 1 - Percentage of Unregulated West Milk to Order 32)	Intercept	-4.5289	0.6945	-6.52	<.0001	0.9578
	log (Order 32 Blend Price at Test/ CPI All)	0.5730	0.3484	1.64	0.1260	
	Dummy for years after 2005	1.8803	0.1128	16.66	<.0001	

Table 27: Allocation of California Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (California Milk to Order 131 / California Milk used in California)	Intercept	-4.2598	0.5959	-7.15	<.0001	0.9144
	lag (log (Order 131 Blend Price at Test / California State Blend Price at Test))	3.8785	2.0856	1.86	0.0926	
	Dummy from 2002 to 2005	-2.0479	0.9059	-2.26	0.0473	
	lag (log (California Milk to Order 131 / California Milk used in California))	0.2501	0.1030	2.43	0.0355	
log (Unregulated California Milk / California Milk used in California)	Intercept	-2.3732	0.3851	-6.16	<.0001	0.7349
	lag (log (California State Blend Price at Test / CPI All))	-0.7572	0.2008	-3.77	0.0031	
	Dummy for 2009	0.4467	0.0848	5.27	0.0003	

Table 28: Allocation of Hawaii and Alaska Milk to Pools

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square

All milk produced in Hawaii and Alaska is assumed to be allocated to the Unregulated Pool.

Table 29: Fluid Use Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Order 1 Fluid Use Per Capita)	Intercept	4.1613	0.4260	9.77	<.0001		0.9871
	log (Order 1 Class I Price at Test / CPI All)	-0.0586	0.0174	-3.36	0.0084	-0.0586	
	Dummy for years after 2006	0.0370	0.0091	4.06	0.0028		
	lag (log (Personal Disposable Income / CPI All))	0.4553	0.1539	2.96	0.0160	0.4553	
	Trend from 2000	-0.0202	0.0014	-14.66	<.0001		
log (Order 5 Fluid Use Per Capita)	Intercept	5.6175	0.2108	26.65	<.0001		0.7322
	log (Order 5 Class I Price at Test / CPI All)	-0.2117	0.1016	-2.08	0.0593	-0.2117	
	Dummy for years after 2008	0.1440	0.0253	-5.68	0.0001		
log (Order 6 Fluid Use Per Capita)	Intercept	5.4785	0.0930	58.88	<.0001		0.9518
	log (Order 6 Class I Price at Test/ CPI All)	-0.1121	0.0428	-2.62	0.0224	-0.1121	
	Trend from 2000	-0.0155	0.0011	-14.61	<.0001		
log (Order 7 Fluid Use Per Capita)	Intercept	5.5050	0.1363	40.40	<.0001		0.7980
	log (Order 7 Class I Price at Test / CPI All)	-0.1784	0.0644	-2.77	0.0182	-0.1784	
	Dummy for years after 2008	-0.1051	0.0171	-6.16	<.0001		
	Dummy for years 2003-2005	-0.0411	0.0209	-1.96	0.0756		
log (Order 30 Fluid Use Per Capita)	Intercept	5.6679	0.0885	64.06	<.0001		0.8263
	log (Order 30 Class I Price at Test / CPI All)	-0.1448	0.0464	-3.12	0.0089	-0.1448	
	Dummy for years after 2008	-0.0896	0.0135	-6.63	<.0001		

log (Order 32 Fluid Use Per Capita)	Intercept	-0.4860	0.7698	-0.63	0.5435		0.9897
	log (Order 32 Class I Price at Test / CPI All)	-0.0406	0.0188	-2.16	0.0588	-0.0406	
	log (Personal Disposable Income / CPI All)	0.6846	0.2360	2.90	0.0176	0.6846	
	lag (log (Order 32 Fluid Use Per Capita))	0.7548	0.1855	4.07	0.0028		
	Trend from 2000 * Dummy for years after 2001	-0.0085	0.0030	-2.83	0.0197		
log (Order 33 Fluid Use Per Capita)	Intercept	0.4955	0.4536	1.09	0.2980		0.8467
	log (Order 33 Class I Price at Test / CPI All)	-0.0842	0.0244	-3.46	0.0054	-0.0842	
	lag (log (Order 33 Fluid Use Per Capita))	0.9345	0.0824	11.35	<.0001		
log (Order 124 Fluid Use Per Capita)	Intercept	-0.1537	0.4731	-0.32	0.7514		0.9061
	log (Order 124 Class I Price at Test/ CPI All)	-0.0542	0.0300	-1.80	0.0985	-0.0542	
	lag (log (Order 124 Fluid Per Capita))	1.0452	0.0829	12.61	<.0001		
log (Order 126 Fluid Use Per Capita)	Intercept	4.5691	0.3631	12.58	<.0001		0.9830
	log (Order 126 Class I Price at Test/ CPI All)	-0.0480	0.0159	-3.02	0.0128	-0.0480	
	lag (log (Personal Disposable Income / CPI All))	0.2720	0.1322	2.06	0.0666	0.2720	
	Trend from 2000	-0.0134	0.0012	-11.12	<.0001		
log (Order 131 Fluid Use Per Capita)	Intercept	5.7008	0.1098	51.91	<.0001		0.7856
	lag (log (Order 131 Class I Price at Test/ CPI All))	-0.1215	0.0516	-2.35	0.0405	-0.1215	
	log (Trend from 2000)	-0.1127	0.0215	-5.24	0.0004		
	Dummy for years 2000-2005	-0.1374	0.0263	-5.22	0.0004		
log (California Fluid Use Per Capita)	Intercept	2.4873	1.0218	2.43	0.0352		0.9116
	log (California Class I Price at Test / CPI All)	-0.0738	0.0347	-2.13	0.0594	-0.0738	
	lag (log (Personal Disposable Income / CPI All))	1.0716	0.37	2.8800	0.0165		
	Trend from 2000 * Dummy for years after 2001	-0.0194	0.0032	-6.08	0.0001		
log(Unregulated Fluid Use Per Capita)	Intercept	-0.7837	1.0476	-0.75	0.4701		0.8036
	log (Personal Disposable Income / CPI All)	2.1117	0.3752	5.63	0.0002	2.1117	
	Dummy for 2005	0.1564	0.0539	2.90	0.0144		
	Dummy from 2007 to 2009	-0.1023	0.0349	-2.93	0.0136		

Table 30: Dairy Products Conversion Table

Solids Required per Product Unit		
Products	Butterfat	Non-fat Solids
Producer Milk/1	3.74	8.90
Butter	80.4	1.0
American Cheese /2	33.7	77.8
Other Cheese /2	28.0	78.3
Non-fat Dry Milk /2	1.1	96.2
Canned Milk	7.9	18.5
Dry Whey	1.1	95.0
Dry Whole Milk	26.5	71.0
Fluid Milk /2	1.9	8.9

/1: The Butterfat and Non-fat Solids test for Producer Milk are a simple average over the forecasted years for the assumed tests.

/2: The Nonfat-Solids test for American Cheese, Other Cheese, and Fluid Milk and the Butterfat test for Other Cheese, Non-fat Dry Milk, and Fluid Milk are estimated by the model. The numbers presented are simple averages of the results for the forecasted years.

Table 31: Federal Order 1 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 1 Class III Pooled Milk	Intercept	0.4726	0.0440	10.74	<.0001	0.7973
+ Order 1 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	2.4691	0.3459	7.14	<.0001	
/ (Order 1 Class II Pooled Milk	/ Order 1 Class III Price at Test Index)					
+ Order 1 Class II Non-Pool Milk))	log (Weighted Class II CPI / Order 1 Class II Price at Test Index)	-0.6081	0.1987	-3.06	0.0099	
log ((Order 1 Class IV Pooled Milk	Intercept	-0.6838	0.0347	-19.68	<.0001	0.8291
+ Order 1 Class IV Non-Pool Milk)	log (Grade-AA Butter Wholesale Price Index	0.7909	0.2508	3.15	0.0103	
/ (Order 1 Class II Pooled Milk	/ Order 1 Class IV Price at Test Index)					
+ Order 1 Class II Non-Pool Milk))	log (Non-Fat Dry Milk Wholesale Price Index	0.7600	0.3751	2.03	0.0702	
	/ Order 1 Class IV Price at Test Index)					
	Dummy for 2008	0.3211	0.1177	2.73	0.0212	
	Dummy for 2012	0.5532	0.1104	5.01	0.0005	

Table 32: Federal Order 5 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 5 Class III Pooled Milk	Intercept	-0.6222	0.0522	-11.91	<.0001	0.7300
+ Order 5 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	1.0543	0.4767	2.21	0.0491	
/ (Order 5 Class II Pooled Milk	/ Order 5 Class III Price at Test Index)					
+ Order 5 Class II Non-Pool Milk))	log (Weighted Class II CPI / Order 5 Class II Price at Test Index)	-0.3674	0.2278	-1.61	0.1350	
	Dummy from 2006 to 2008	-0.4257	0.0929	-4.58	0.0008	
log ((Order 5 Class IV Pooled Milk	Intercept	-0.3352	0.0305	-11.01	<.0001	0.7484
+ Order 5 Class IV Non-Pool Milk)	log (Grade-AA Butter Wholesale Price Index	0.5926	0.1753	3.38	0.0061	
/ (Order 5 Class II Pooled Milk	/ Cheddar Cheese Wholesale Price Index)					
+ Order 5 Class II Non-Pool Milk))	Dummy for years after 2007	-0.2856	0.0502	-5.69	0.0001	
	Dummy for years after 2011	0.3129	0.0615	5.09	0.0004	

Table 33: Federal Order 6 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 6 Class III Pooled Milk	Intercept	-1.1480	0.0811	-14.16	<.0001	0.8196
+ Order 6 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	1.4085	0.3168	4.45	0.0010	
/ (Order 6 Class II Pooled Milk	/ Order 6 Class III Price at Test Index)					
+ Order 6 Class II Non-Pool Milk))	log (Weighted Class II CPI / Order 6 Class II Price at Test Index)	-0.9913	0.4205	-2.36	0.0380	
	Dummy for years after 2011	-0.6094	0.1680	-3.63	0.0040	
log ((Order 6 Class IV Pooled Milk	Intercept	-1.0386	0.0966	-10.75	<.0001	0.7559
+ Order 6 Class IV Non-Pool Milk)	log (Grade-AA Butter Wholesale Price Index	0.6398	0.2746	2.33	0.0399	
/ (Order 6 Class II Pooled Milk	/ Order 6 Class IV Price at Test Index)					
+ Order 6 Class II Non-Pool Milk))	log (Non-Fat Dry Milk Wholesale Price Index	0.4493	0.2477	1.81	0.0971	
	/ Order 6 Class IV Price at Test Index)					
	Dummy for years after 2004	0.2895	0.1074	2.70	0.0208	

Table 34: Federal Order 7 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 7 Class III Pooled Milk	Intercept	0.4346	0.0663	6.56	<.0001	0.8284
+ Order 7 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	3.8692	0.6173	6.27	<.0001	
/ (Order 7 Class II Pooled Milk	/ Order 7 Class III Price at Test Index)					
+ Order 7 Class II Non-Pool Milk))	log (Dry Whey Wholesale Price Index	0.6478	0.1697	3.82	0.0034	
	/ Order 7 Class III Price at Test Index)					
	Dummy from 2002 to 2004	0.2553	0.1103	2.31	0.0432	
	Dummy from 2010 to 2011	0.6086	0.1108	5.49	0.0003	
log ((Order 7 Class IV Pooled Milk	Intercept	-0.3014	0.0373	-8.08	<.0001	0.7502
+ Order 7 Class IV Non-Pool Milk)	log (Grade-AA Butter Wholesale Price Index	1.2642	0.1855	6.81	<.0001	
/ (Order 7 Class II Pooled Milk	/ Order 7 Class IV Price at Test Index)					
+ Order 7 Class II Non-Pool Milk))	log (Non-Fat Dry Milk Wholesale Price Index	0.4507	0.2286	1.97	0.0722	
	/ Order 7 Class IV Price at Test Index)					

Table 35: Federal Order 30 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 30 Class III Pooled Milk	Intercept	2.8798	0.0432	66.67	<.0001	0.7006
+ Order 30 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	1.3223	0.2904	4.55	0.0007	
/ (Order 30 Class II Pooled Milk	/ Order 30 Class III Price at Test Index)					
+ Order 30 Class II Non-Pool Milk))	Dummy for years before 2007	-0.1614	0.0366	-4.40	0.0009	
log ((Order 30 Class IV Pooled Milk	Intercept	-5.0278	1.3834	-3.63	0.0034	0.8178
+ Order 30 Class IV Non-Pool Milk)	log (Non-Fat Dry Milk Wholesale Price Index	1.4916	0.1671	8.93	<.0001	
/ (Order 30 Class II Pooled Milk	/ Order 30 Class IV Price at Test Index)					
+ Order 30 Class II Non-Pool Milk))	log (Grade-AA Butter Wholesale Price Index / CPI All)	0.8656	0.3186	2.72	0.0187	

Table 36: Federal Order 32 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 32 Class III Pooled Milk	Intercept	1.9770	0.1298	15.24	<.0001	0.7043
+ Order 32 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	5.3634	1.2582	4.26	0.0013	
/ (Order 32 Class II Pooled Milk	/ Order 32 Class III Price at Test Index)					
+ Order 32 Class II Non-Pool Milk))	log (Weighted Class II CPI / Order 32 Class II Price at Test Index)	-1.6959	0.4542	-3.73	0.0033	
	Dummy for 2008	-0.4402	0.2365	-1.86	0.0896	
log ((Order 32 Class IV Pooled Milk	Intercept	-0.0659	0.0490	-1.35	0.2056	0.7570
+ Order 32 Class IV Non-Pool Milk)	log (Non-Fat Dry Milk Wholesale Price Index	0.9263	0.1853	5.00	0.0004	
/ (Order 32 Class II Pooled Milk	/ Order 32 Class IV Price at Test Index)					
+ Order 32 Class II Non-Pool Milk))	Dummy for 2003	-0.3414	0.1347	-2.53	0.0277	
	Dummy for 2007	-0.6302	0.1434	-4.40	0.0011	

Table 37: Federal Order 33 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 33 Class III Pooled Milk	Intercept	1.1771	0.0602	19.56	<.0001	0.8246
+ Order 33 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	3.2987	0.4521	7.30	<.0001	
/ (Order 33 Class II Pooled Milk	/ Order 33 Class III Price at Test Index)					
+ Order 33 Class II Non-Pool Milk))	Dummy for 2000	-0.6139	0.1197	-5.13	0.0003	
	Dummy for 2008 to 2009	-0.3840	0.0842	-4.56	0.0008	
log ((Order 33 Class IV Pooled Milk	Intercept	-2.7074	0.2823	-9.59	<.0001	0.8648
+ Order 33 Class IV Non-Pool Milk)	(Grade-AA Butter Wholesale Price Index	0.8729	0.2444	3.57	0.0038	
/ (Order 33 Class II Pooled Milk	/ Order 33 Class IV Price at Test Index)					
+ Order 33 Class II Non-Pool Milk))	(Non-Fat Dry Milk Wholesale Price Index	0.8037	0.1513	5.31	0.0002	
	/ Order 33 Class IV Price at Test Index)					

Table 38: Federal Order 124 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 124 Class III Pooled Milk	Intercept	1.6738	0.0353	47.37	<.0001	0.8899
+ Order 124 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	0.8538	0.3028	2.82	0.0167	
/ (Order 124 Class II Pooled Milk	/ Order 124 Class III Price at Test Index)					
+ Order 124 Class II Non-Pool Milk))	Dummy for 2002	0.2959	0.0687	4.31	0.0012	
	Dummy for years after 2008*Trend from 2000	0.0282	0.0034	8.38	<.0001	
log ((Order 124 Class IV Pooled Milk	Intercept	1.5407	0.0213	72.46	<.0001	0.7439
+ Order 124 Class IV Non-Pool Milk)	log(Grade-AA Butter Wholesale Price Index	1.2127	0.1876	6.46	<.0001	
/ (Order 124 Class II Pooled Milk	/ Order 124 Class IV Price at Test Index)					
+ Order 124 Class II Non-Pool Milk))	log(Non-Fat Dry Milk Wholesale Price Index	1.6321	0.3157	5.17	0.0003	
	/ Order 124 Class IV Price at Test Index)					
	Dummy for 2009	-0.2770	0.0705	-3.93	0.0024	

Table 39: Federal Order 126 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 126 Class III Pooled Milk	Intercept	1.2198	0.1193	10.22	<.0001	0.8747
+ Order 126 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	4.7201	1.5075	3.13	0.0107	
/ (Order 126 Class II Pooled Milk	/ Order 126 Class III Price at Test Index)					
+ Order 126 Class II Non-Pool Milk))	log (Dry Whey Wholesale Price Index	0.5471	0.2411	2.27	0.0466	
	/ Order 126 Class III Price at Test Index)					
	Dummy for years after 2003*Trend from 2000	0.0710	0.0181	3.92	0.0029	
	log (Weighted Class 2 CPI / Order 126 Class 2 Price at Test Index)	-1.1813	0.3546	-3.33	0.0076	

log ((Order 126 Class IV Pooled Milk	Intercept	0.0210	0.0381	0.55	0.5925	0.7518
+ Order 126 Class IV Non-Pool Milk)	log(Grade-AA Butter Wholesale Price Index	0.3756	0.1046	3.59	0.0049	
/ (Order 126 Class II Pooled Milk	/ Order 126 Class IV Price at Test Index)					
+ Order 126 Class II Non-Pool Milk))	log(Non-Fat Dry Milk Wholesale Price Index	1.1286	0.1675	6.74	<.0001	
	/ Order 126 Class IV Price at Test Index)					
	log (Weighted Class II CPI / Order 126 Class II Price at Test Index)	-0.4501	0.1153	-3.90	0.0029	
	Dummy for 2011	0.2107	0.0897	2.35	0.0407	

Table 40: Federal Order 131 Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log ((Order 131 Class III Pooled Milk	Intercept	1.4062	0.0426	33.01	<.0001	0.9525
+ Order 131 Class III Non-Pool Milk)	log (Cheddar Cheese Wholesale Price Index	1.7322	0.3596	4.82	0.0005	
/ (Order 131 Class II Pooled Milk	/ Order 131 Class III Price at Test Index)					
+ Order 131 Class II Non-Pool Milk))	Dummy for years before 2003	0.7763	0.0895	8.67	<.0001	
log ((Order 131 Class IV Pooled Milk	Intercept	-0.9218	1.1529	-0.80	0.4426	0.7019
+ Order 131 Class IV Non-Pool Milk)	lag (log (Non-Fat Dry Milk Wholesale Price Index	0.5598	0.2996	1.87	0.0912	
/ (Order 131 Class II Pooled Milk	/ CPI All))					
+ Order 131 Class II Non-Pool Milk))	log(Trend from 2000)	0.3849	0.1701	2.26	0.0472	
	Dummy for years after 2002	-0.9722	0.2876	-3.38	0.0070	

Table 41: California "Order" Non-Fluid Milk Use

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	R-Square
log (California Class 3 Total Solids	Intercept	0.0305	0.0329	0.93	0.3738	0.8851
/ California Class 2 Total Solids)	log (Frozen Dairy Products CPI	2.5433	0.6575	3.87	0.0026	
	/ Other Dairy Products CPI (2000 Base Year))					
	Dummy for years after 2008	-0.3566	0.0465	-7.68	<.0001	
log (California Class 4a Total Solids	Intercept	0.9853	0.1763	5.59	0.0002	0.8668
/ California Class 2 Total Solids)	Dummy from 2005 to 2006	-0.0987	0.0199	-4.96	0.0006	
	lag (log (Grade-AA Butter Wholesale Price	0.2280	0.0430	5.31	0.0003	
	/ CPI All))					
	Trend from 2008	0.1265	0.0233	5.43	0.0003	
log (California Class 4b Total Solids	Intercept	1.0893	0.3415	3.19	0.0097	0.9247
/ California Class 2 Total Solids)	log (Cheddar Cheese Wholesale Price Index	0.1681	0.0866	1.94	0.0809	
	/ CPI All)					
	Dummy for years after 2007 * log (Trend from 2000)	-0.1176	0.0108	-10.91	<.0001	
	lag (log (Dry Whey Wholesale Price Index)	0.1380	0.0386	3.57	0.0051	
	/ CPI All)					

Table 42: National Domestic Production Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Percentage of Class II Solids Used in Frozen Production / (1 - Percentange of Class II Solids Used in Frozen Production))	Intercept	-0.0230	0.0187	-1.23	0.2429		0.9806
	log (Frozen Products CPI / Other Dairy Products CPI (2000 Base Year))	1.6309	0.3482	4.68	0.0007	1.6309	
	Dummy for 2008	0.1152	0.0437	2.63	0.0233		
	Trend from 2000	-0.0421	0.0022	-19.06	<.0001		
log (Condensed Skim Milk Used in Cheese Production)	Intercept	-7.9725	5.2994	-1.50	0.1450		0.8872
	log (Non-fat Dry Milk Ratio * (American Cheese Production + Other Cheese Production))	-0.1537	0.1305	-1.18	0.2499		
	log (American Cheese Production + Other Cheese Production)	1.4290	0.6555	2.18	0.0389		
	Dummy for years after 2005	0.8149	0.2452	3.32	0.0027		
	Dummy for 1993	0.8148	0.3494	2.33	0.0281		
log (American Cheese Production Percentage / 1- American Cheese Production Percentage)	Intercept	0.1994	0.0717	2.78	0.0092		0.8918
	log (Cheddar Cheese Wholesale Price Index / Mozzarella Price Index)	0.5076	0.2100	2.42	0.0217	0.5076	
	Dummy for years after 2008	0.1924	0.0559	3.44	0.0017		
	Trend from 1980	-0.0261	0.0024	-10.84	<.0001		
log (Dry Whey Production)	Intercept	-6.454	3.7938	-1.70	0.1052		0.8855
	log (Dry Whey Wholesale Price / CPI Food)	0.035	0.0254	1.39	0.1800	0.0353	
	log (Other Cheese Production + American Cheese Production)	1.571	0.4379	3.59	0.0020		
	Trend from 1990	-0.052	0.0120	-4.31	0.0004		
	Dummy for 2001	-0.075	0.0311	-2.42	0.0260		
	Dummy for 2014	-0.121	0.0341	-3.54	0.0022		
log (Canned Milk Production)	Intercept	7.0222	0.1675	41.93	<.0001		0.7291
	log (Dry Whole Milk Production)	-0.0589	0.0308	-1.91	0.0651		
	Trend from 1980	-0.1632	0.0198	-8.23	<.0001		
log (Non-fat Dry Milk Ratio)	Intercept	-3.4050	0.0928	-36.69	<.0001		0.6222
	lag (log (Grade-AA Butter Wholesale Price / Cheddar Cheese Wholesale Price))	-0.8008	0.5351	-1.50	0.1654	-0.8008	
	Dummy for years after 2007	-0.3683	0.1326	-2.78	0.0196		
	Dummy for 2005	0.4481	0.2528	1.77	0.1066		
CPI Food	Intercept	0.2380	0.0423	5.62	<.0001		0.9987
	log (CPI All)	0.9500	0.0085	111.37	<.0001		
	Dummy for years after 2008	0.0489	0.0067	7.25	<.0001		

Table 43: National Product Domestic Consumption Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Other Class II Per Capita Domestic Consumption)	Intercept	4.6677	1.9156	2.44	0.0300		0.8250
	log (Other Dairy Products CPI (2000 Base Year) / CPI All)	-2.3386	0.5955	-3.93	0.0017	-2.3386	
	log (Personal Disposable Income Per Capita / CPI All)	2.5518	0.7302	3.49	0.0040	2.5518	
	Trend from 1996	-0.0415	0.0114	-3.65	0.0029		
	Trend from 1996 * Dummy for years after 2003	0.0218	0.0066	3.32	0.0056		
	Dummy for 2012	-0.2078	0.0616	-3.37	0.0050		
log (Frozen Product Per Capita Domestic Consumption)	Intercept	6.1371	0.6028	10.18	<.0001		0.8475
	log (Frozen Products CPI / CPI All)	-0.7158	0.1480	-4.84	<.0001	-0.7158	
	Dummy for years after 2003	-0.1765	0.0140	-12.65	<.0001		
log (American Cheese Per Capita Domestic Consumption)	Intercept	1.2936	0.4283	3.02	0.0049		0.9462
	log (Cheddar Cheese Wholesale Price / CPI Food)	-0.1516	0.0493	-3.07	0.0043	-0.1516	
	log (Personal Disposable Income Per Capita / CPI All)	0.6912	0.0823	8.40	<.0001	0.6912	
log (Other Cheese Per Capita Domestic Consumption)	Intercept	-0.5274	0.4955	-1.06	0.2951		0.9624
	log (Mozzarella Price / CPI Food)	-0.6068	0.1513	-4.01	0.0003	-0.6068	
	log (Personal Disposable Income Per Capita / CPI All)	1.2658	0.1748	7.24	<.0001	1.2658	
log (Dry Whey Per Capita Domestic Consumption)	Intercept	1.9678	0.1614	12.19	<.0001		0.9251
	log (Dry Whey Wholesale Price / CPI All)	-0.2118	0.0662	-3.20	0.0040	-0.2118	
	Trend from 1989	-0.0427	0.0027	-15.62	<.0001		
log (Butter Per Capita Domestic Consumption)	Intercept	-0.0278	0.2792	-0.10	0.9213		0.9425
	log (Grade-AA Butter Wholesale Price / CPI Food)	-0.0114	0.0264	-0.43	0.6695	-0.0114	
	log (Personal Disposable Income Per Capita / CPI All)	0.5785	0.0694	8.33	<.0001	0.5785	
	Dummy for 1984	-0.0092	0.0387	-0.24	0.8138		
	Dummy from 1989 to 1992	-0.1359	0.0208	-6.53	<.0001		
	Dummy for years after 2010	0.1314	0.0226	5.81	<.0001		
log (Non-Fat Dry Milk Per Capita Domestic Consumption)	Intercept	-0.2968	0.8639	-0.34	0.7336		0.8443
	log (Non-Fat Dry Milk Wholesale Price / CPI Food)	-0.2505	0.1076	-2.33	0.0269	-0.2505	
	log (Personal Disposable Income Per Capita / CPI All)	0.8710	0.1762	4.94	<.0001	0.8710	
	Dummy from 1994 to 1997	0.3258	0.0508	6.42	<.0001		
	Dummy from 1985 to 1987	-0.2521	0.0602	-4.18	0.0002		

Table 44: National Average Stock Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (Fourth Quarter Average American Cheese Stocks)	Intercept	5.8994	0.0345	170.99	<.0001		0.7086
	log (Cheddar Cheese Wholesale Price / CPI Food)	-0.4585	0.1291	-3.55	0.0012	-0.4585	
	Dummy for years after 2006	0.3656	0.0770	4.75	<.0001		
log (Fourth Quarter Average Other Cheese Stocks)	Intercept	-1.2339	1.1197	-1.10	0.2787		0.8738
	log (Mozzarella Price / CPI All)	-1.3939	0.2572	-5.42	<.0001	-1.3939	
	Dummy for years after 2005	0.8319	0.1082	7.69	<.0001		

log (Second Half of the Year	Intercept	2.8630	0.1818	15.75	<.0001		0.8025
Dry Whey Average Stocks)	log (Dry Whey Wholesale Price / CPI Food)	-0.2530	0.0895	-2.83	0.0083	-0.2530	
	Trend from 1980	0.0124	0.0024	5.23	<.0001		
	Dummy from 2007 to 2008	0.4372	0.0964	4.54	<.0001		
	Dummy from 2013 to 2014	0.4475	0.1108	4.04	0.0003		
log (Second Half of the Year	Intercept	4.3872	0.0809	54.22	<.0001		0.8858
Butter Average Stocks)	log (Grade-AA Butter Wholesale Price / CPI All)	-1.6014	0.2205	-7.26	<.0001	-1.6014	
	Dummy from 1990 to 1997	-1.7911	0.1867	-9.60	<.0001		
	Dummy from 1999 to 2000	-0.7185	0.3020	-2.38	0.0237		
log (Second Half of the Year	Intercept	4.3193	0.1026	42.12	<.0001		0.6011
Non-Fat Dry Milk Average Stocks)	log (Non-Fat Dry Milk Wholesale Price / CPI All)	-0.3176	0.2298	-1.38	0.1772	-0.3176	
	Dummy for 2006	-0.5483	0.3227	-1.70	0.0996		
	Dummy for years after 2006	0.5096	0.1313	3.88	0.0005		
	Dummy for 2014	0.4561	0.3242	1.41	0.1698		

Table 45: National Ending Stock Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (American Cheese Ending Stocks)	Intercept	-0.0604	0.0798	-0.76	0.4543		0.9958
	log (Fourth Quarter Average American Cheese Stocks)	1.0102	0.0132	76.35	<.0001		
log (Other Cheese Ending Stocks)	Intercept	-0.0995	0.0486	-2.05	0.0486		0.9979
	log (Fourth Quarter Average Other Cheese Stocks)	1.0203	0.0095	107.16	<.0001		
log (Dry Whey Ending Stocks)	Intercept	0.4787	0.3436	1.39	0.1730		0.7740
	log (Second Half of the Year Dry Whey Average Stocks)	0.8847	0.0949	9.32	<.0001		
log (Butter Ending Stocks)	Intercept	0.1852	0.2668	0.69	0.4923		0.8689
	log (Second Half of the Year Butter Average Stocks)	0.8736	0.0625	13.98	<.0001		
log (Non-Fat Dry Milk Ending Stocks)	Intercept	0.2154	0.3030	0.71	0.4822		0.8585
	log (Second Half of the Year Non-Fat Dry Milk Average Stocks)	0.9575	0.0662	14.47	<.0001		

Table 46: National Product Import and Export Equations

Dependent Variable	Parameter	Estimate	Std. Error	t-Value	Pr>|t|	Elasticity	R-Square
log (American Cheese Imports over	Intercept	0.2087	0.0871	2.40	0.0292		0.7915
Tariff Rate Quota)[1]	(Cheddar Cheese Wholesale Price - Oceania Cheddar Cheese Price)^3	1.4253	0.7491	1.90	0.0752	0.0747	
	Dummy for 2002	0.5265	0.2639	2.00	0.0634		
	Dummy for years after 2009	-0.7944	0.1456	-5.45	<.0001		
log (Other Cheese Imports over	Intercept	-0.7159	0.0953	-7.51	<.0001		0.8755
Tariff Rate Quota)[1]	(Mozzarella Price - Oceania Cheddar Cheese Price)	0.2013	0.0439	4.59	0.0003	0.1596	
	lag (Other Cheese Imports)	0.0023	0.0003	9.23	<.0001		

log (American Cheese Exports)	Intercept	3.8265	0.1697	22.54	<.0001		0.9671
	(Cheddar Cheese Wholesale Price - Oceania Cheddar Cheese Price)	-2.0131	0.4332	-4.65	0.0002	-0.3839	
	Dummy for years after 2010	1.0763	0.3631	2.96	0.0087		
	Dummy for 2014	0.7524	0.6011	1.25	0.2276		
log (Other Cheese Exports)	Intercept	5.3200	0.3411	15.60	<.0001		0.9131
	(Mozzarella Price - Oceania Cheddar Cheese Price)	-1.1295	0.3801	-2.97	0.0086	-0.8956	
	Dummy for years after 2008	0.8982	0.2579	3.48	0.0028		
	Dummy for years after 2011	0.7803	0.3106	2.51	0.0224		
log (Dry Whey Exports)	Intercept	5.6156	0.0652	86.11	<.0001		0.8238
	(Dry Whey Wholesale Price - EU Dry Whey Price)	-1.0716	0.5935	-1.81	0.0878	0.0251	
	Dummy for years after 2004	0.5524	0.0800	6.90	<.0001		
log (Butter Imports over Tariff Rate Quota)[1]	(Grade AA Butter Wholesale Price - Oceania Butter Price)^3	0.7667	0.3429	2.24	<.0001	0.1651	0.7235
log (Butter Exports)	Intercept	4.3415	0.1055	41.15	<.0001		0.8977
	(Grade AA Butter Wholesale Price - Oceania Butter Price)	-3.6802	0.4976	-7.40	<.0001	-1.2873	
	Dummy for years after 2014	2.3078	0.3395	6.80	<.0001		
log (Non-Fat Dry Milk Exports)	Intercept	12.5981	0.8103	15.55	<.0001		0.9590
	(Non-Fat Dry Milk Wholesale Price/Oceania Skim Milk Powder Price)	-7.1716	0.9410	-7.62	<.0001	-7.7961	
	Dummy for years after 2010	0.7465	0.0844	8.84	<.0001		
	Dummy for 2014	1.1977	0.1761	6.80	<.0001		

[1] In-quota butter imports are assumed to be filled over the projection period.

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