

U.S. Dairy Trade and Class III and IV Pricing

Bob Cropp, Professor Emeritus
University of Wisconsin-Madison
January 30, 2008

I will cover:

- The Class III and IV product price formulas
- Recent U.S. prices for nonfat dry milk, dry whey, butter and cheese—impact on Class III & IV
- The role international dairy trade played in higher dairy product prices.

Class III and Class IV prices are calculated with a product-price formula.

- **First**, milk component prices are calculated with the ***product-price formula***

Component price per pound = (NASS dairy product price – make allowance) X yield

- **Second**, the sum of the milk component values per hundredweight of milk = ***Class price***

The Class III price:

- *Butterfat price per pound:*

(NASS monthly AA butter price - 0.1202)X1.20

NASS is the USDA National Agricultural Statistical Reporting Service survey of selling prices of manufacturing plants.

0.1202 is the “make allowance”

1.20 is the assumed pounds of butter made from one pound of butterfat

Class III continued:

- ***Other solids price per pound:***

(NASS monthly dry whey price - 0.1956) X 1.03

0.1956 is make allowance

1.03 is the assumed pounds of dry whey made from one pound of nonfat dry solids

Class III price continued:

- **Protein price per pound:**

$$\underline{\quad} (\text{NASS monthly cheese price} - 0.1682) \times 1.383 + \{[(\text{NASS monthly cheese price} - 0.1682) \times 1.572] - \text{butterfat price}\} \times 1.17$$

The first line represents the net value of protein in cheese.

0.1682 is make allowance; 1.383 is the assumed pounds of cheese made from one pound of protein

The second line accounts for the value of butterfat in cheese in excess of its value in butter. The added value is attributable to the fact that casein in protein allows retention of butterfat in cheese.

The 1.572 is the assumed pounds of cheese made from one pound of butterfat

Class III continued:

- **Class III skim milk value per hundredweight:**

3.1 X protein price + 5.9 X other solids price

- **Class III price per hundredweight:**

3.5 X butterfat price X 0.965 X Class III skim milk price

Therefore, as product prices change the ***Class III price per hundredweight*** will change by:

- 10 cent change in ***butter price***---\$0.05
- 10 cent change in ***cheese price***---\$0.97
- 10 cent change in ***dry whey price***---\$0.59

Class IV price:

- *Butterfat price per pound:*

The same as Class III butterfat price

- *Nonfat solids price per pound:*

(NASS monthly nonfat dry milk price - 0.1570)X 0.99

0.1570 is the make allowance

0.99 is the assume pounds of nonfat dry milk made from one pound of nonfat dry solids

Class IV continued:

- **Skim milk price per hundredweight:**

9.0 X nonfat solids price

- **Class IV price per hundredweight:**

3.5 X butterfat price + 0.965 X skim milk price

Therefore as product prices change the ***Class IV price per hundredweight*** will change by:

- 10 cent in ***nonfat dry milk price***---\$0.86
- 10 cent in ***butter price***---\$0.42

Class II price:

- *An advanced Class IV skim milk price is determined (example, the April Class II price is announced on or before March 23rd.)*
- *To this advanced Class IV price a \$0.70 per hundredweight differential is added.*

- **Class II butterfat price:**

The Class IV butterfat price + \$0.007

- **Class II price per hundredweight:**

0.965 X Class II advanced skim milk price + 3.5 X butterfat price.

Class I price:

- **Base price:**

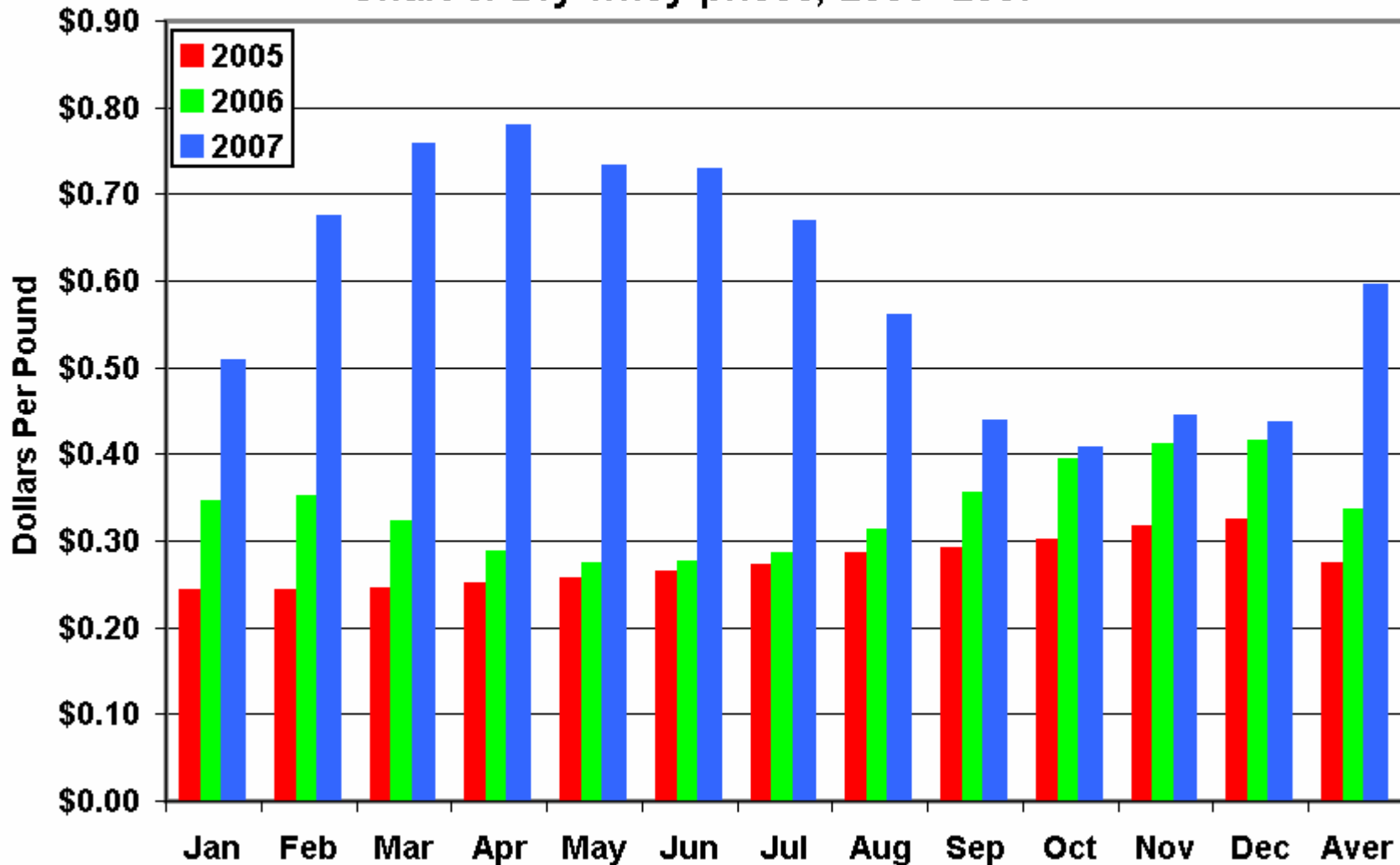
The “higher of” an advanced Class III or Class IV per hundredweight price.

The skim milk and butterfat values of the “higher of” are used.

- **Class I differential is added to the base price:**

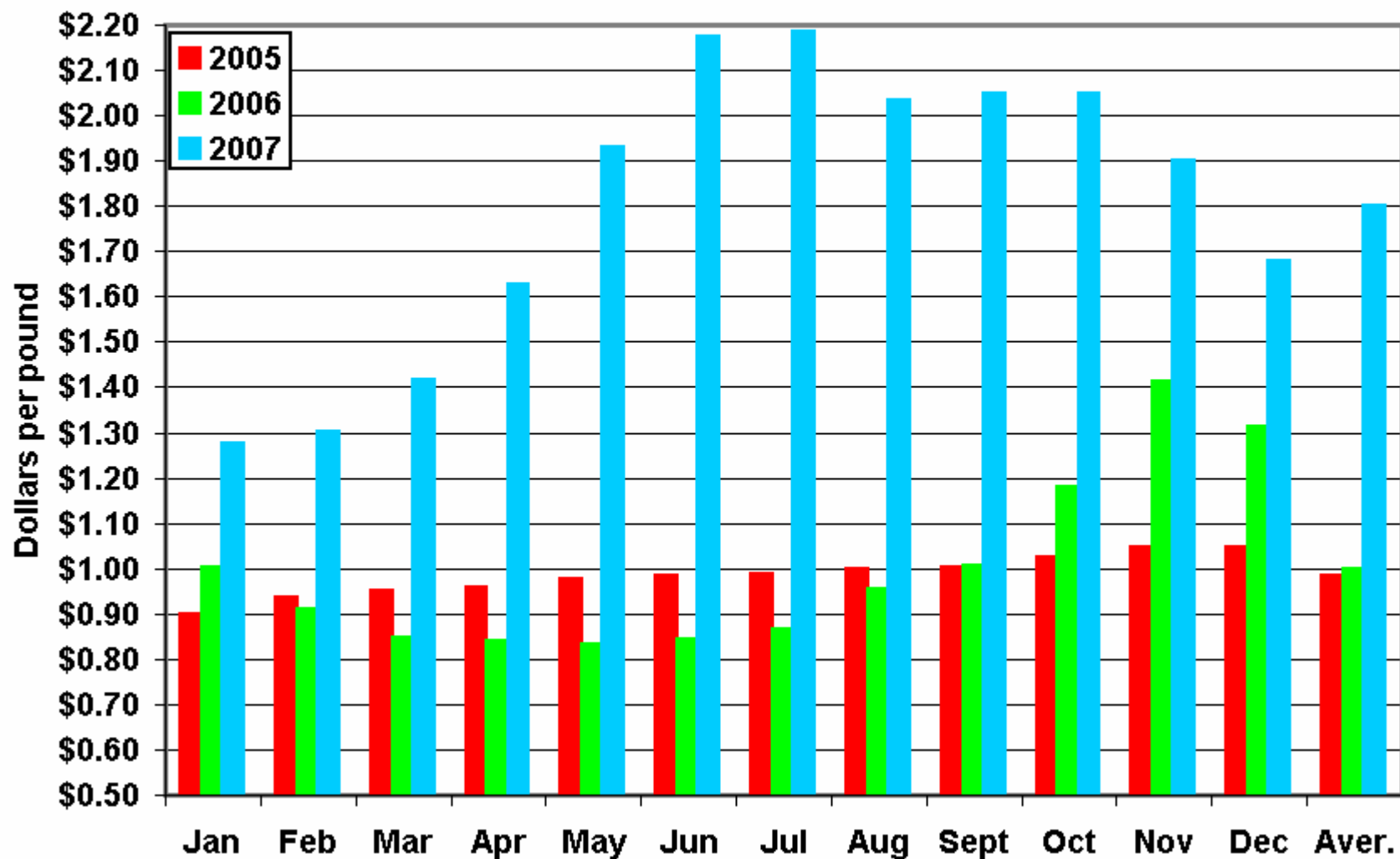
This differential varies for each county in the U.S. and ranges from \$1.60 per hundredweight to \$4.30 per hundredweight. The appropriate differential is where the milk plant is located

Chart 3. Dry whey prices, 2005 -2007



Source: USDA, AMS

Monthly nonfat dry milk prices, 2005 -2007



Impact of dry whey and nonfat dry milk prices On Class III & Class IV prices

	<u>Class III</u>	<u>Dry Whey</u>	<u>Increase in Class III</u>
2006	\$11.89	\$0.33/Lb.	
2007	\$18.04	\$0.60/Lb.	\$1.59
	<u>Class IV</u>	<u>Nonfat Dry Milk</u>	<u>Increase in Class IV</u>
2006	\$11.06	\$0.89/Lb.	
2007	\$18.36	\$1.69/Lb.	\$6.88

Monthly Butter Prices, 2005 - 2007

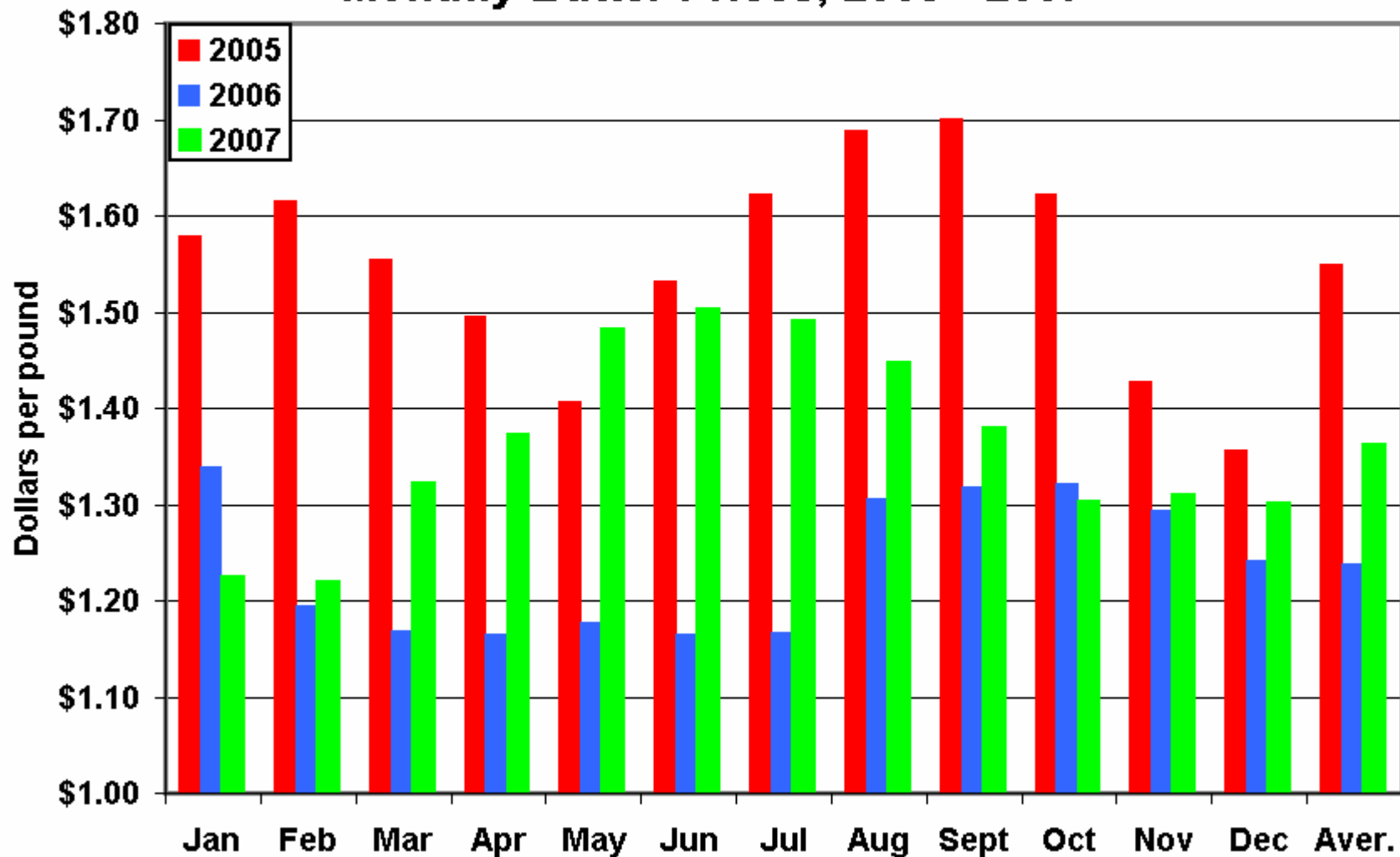
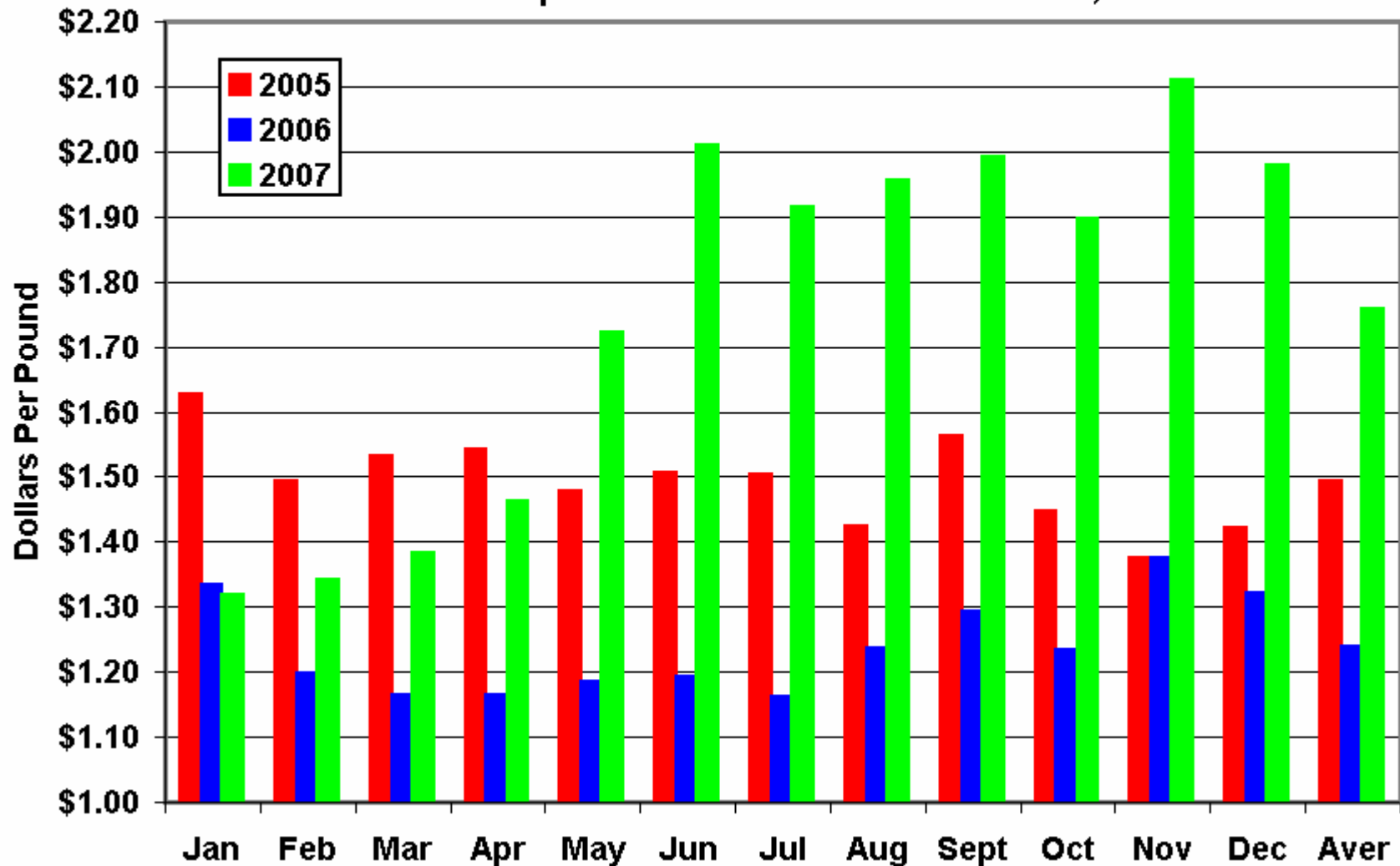


Chart 2: CME 40-pound block cheddar cheese, 2005 - 2007



Source: USDA, AMS

Impact of butter and cheese prices On Class III & Class IV

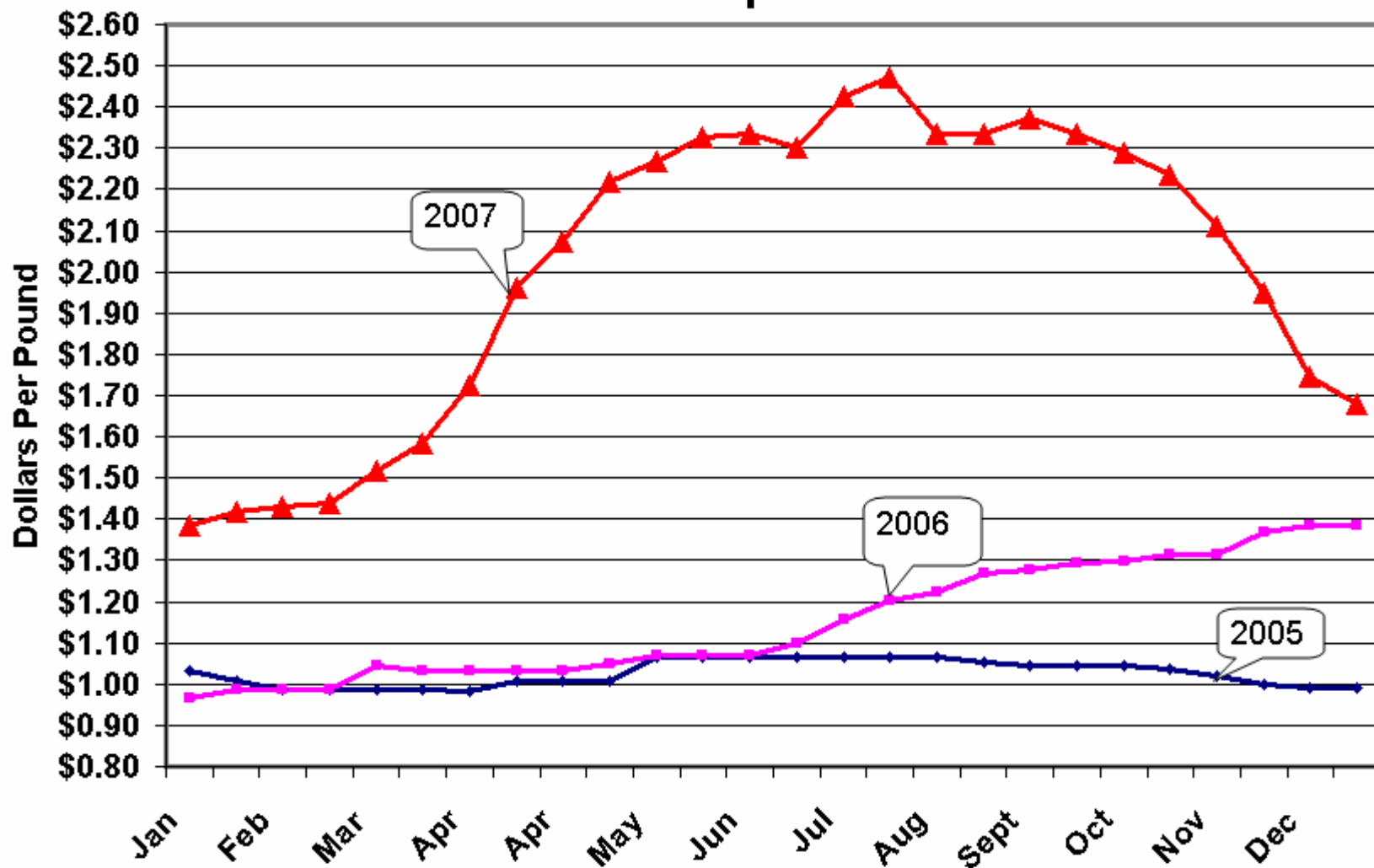
	<u>Class III</u>	<u>Butter Price</u>	<u>Increase in Class III</u>
2006	\$11.89	\$1.22/Lb.	
2007	\$18.04	\$1.34/Lb.	\$0.06
	<u>Class III</u>	<u>Cheese Price</u>	<u>Increase in Class III</u>
2006	\$11.89	\$1.25/Lb.	
2007	\$18.04	\$1.72/Lb.	\$4.56
	<u>Class IV</u>	<u>Butter Price</u>	<u>Increase in Class IV</u>
2006	\$11.06	\$1.22/Lb.	
2007	\$18.36	\$1.34/Lb.	\$0.50

NASS reported prices.

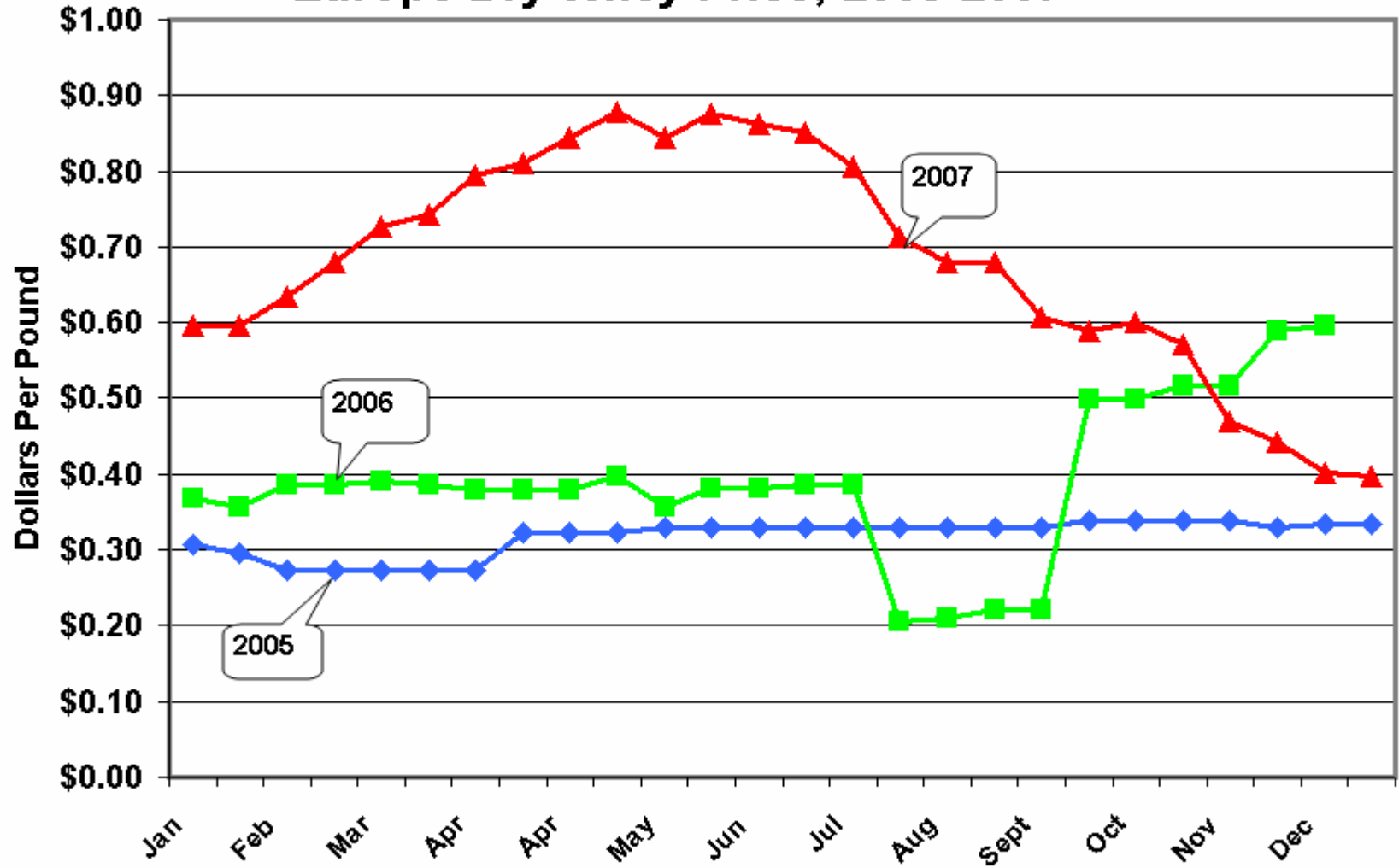
Impact of International Trade

- U.S. Dairy exports were a record in 2006 and set a new record in 2007.
- Commercial exports of nonfat dry milk (skim milk powder), and dry whey were exceptionally strong.
- Cheese and butter exports improved in 2007
- World market prices allowed for commercial exports

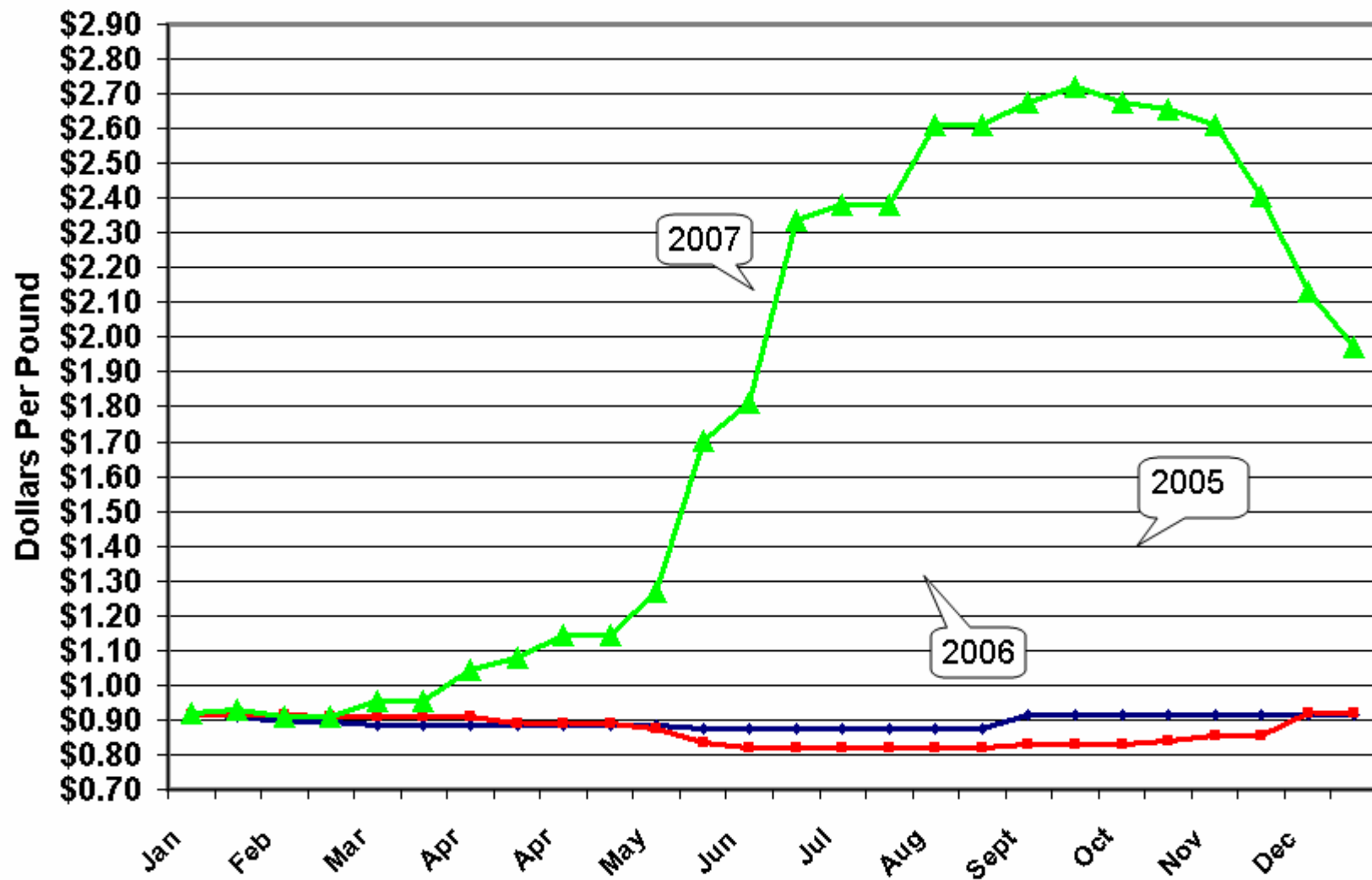
EU Skim milk powder



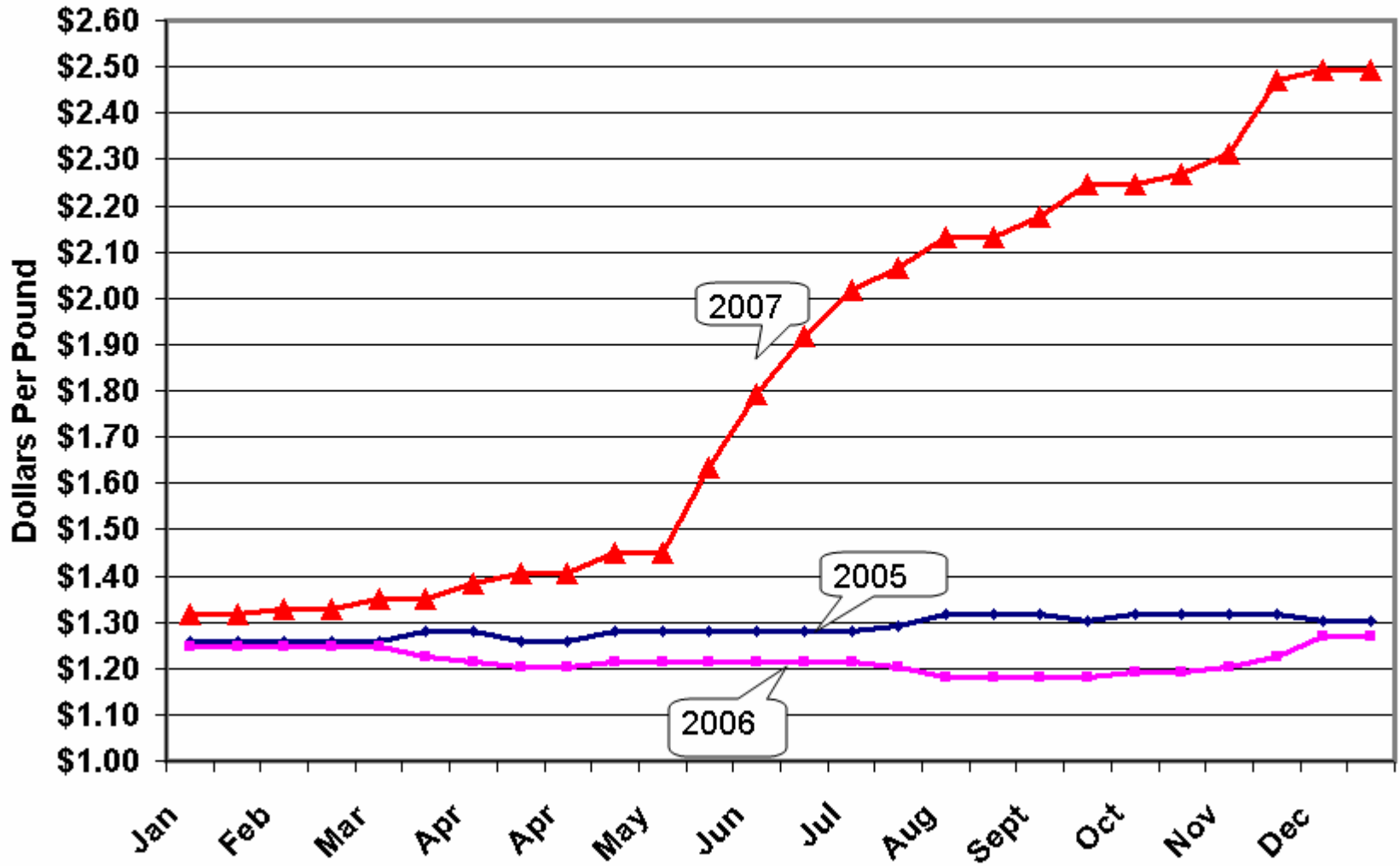
Europe Dry Whey Price; 2005-2007



EU Butter Price



Oceania Cheddar Cheese



U.S. Dairy Trade in 2006:

- Exports increased for the 4th straight year
- **Exports** on a “**total solids basis**” = 2.092 billion pounds, up 15% from 2005 and equal to 9.3% of U.S. production.
- **Imports** = 923 million pounds
- **Trade surplus** = 1.169 billion pounds
- 98% of exports were commercial
- On a “dollar basis” dairy has a trade deficit: \$2.335 B imports and \$1.870 B exports = \$0.465B deficit.
- Mexico, S.E. Asia and Canada largest customers
- In 2006, exports totaled:
 - 42% of nonfat dry milk or 632 million pounds
 - 48% of whey proteins or 766 million pounds
 - 75% of lactose or 524 million pounds
 - 1.7% of cheese or 157 million pounds

U.S. Dairy Exports: January – October 2007

Product	Change from 2006	Percent of production
Nonfat dry milk	-17.8%	41.9%
Cheese	+37.7%	2.2%
Butter	+153.0%	3.5% ¹
Dry whey	+18.9%	52.6%
Whey protein concentrates	+29.9%	47.3%
Lactose	+100.6%	NA

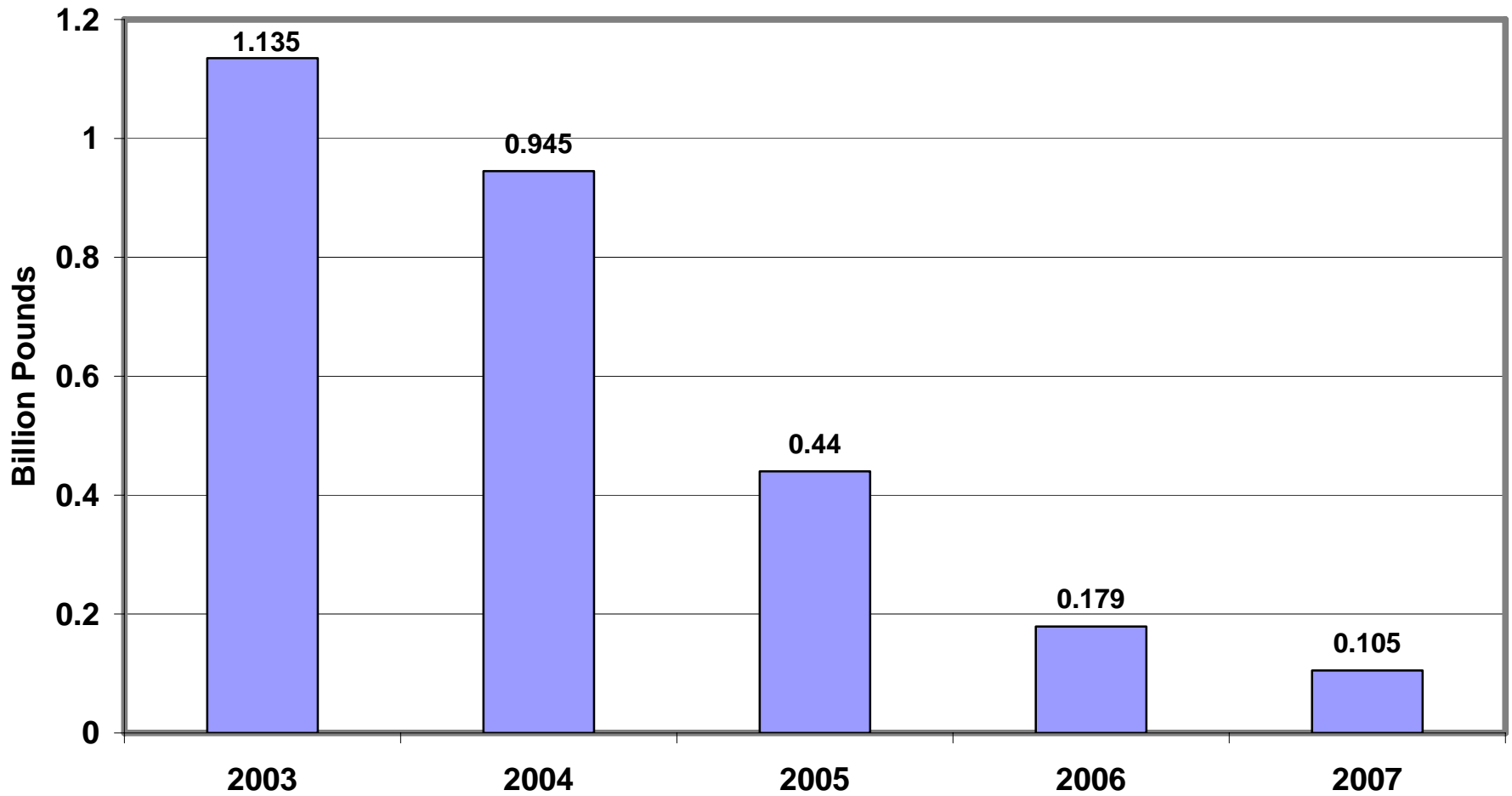
January – October U.S. Dairy Trade

Dairy Exports	<u>2006</u> (million \$) \$1,590	<u>2007</u> (million \$) \$2,373	<u>Change</u> +49%
Dairy Imports	<u>2006</u> (million \$) \$2,229	<u>2007</u> (million \$) \$2,289	<u>Change</u> +3%

Factors for higher world prices and increased U.S. dairy exports

- Reform of EU Common Agricultural Policy—led to reductions in the ability and incentive for farmers to increase milk production **plus** elimination of export subsidies
- No substantial buffer stocks in U.S. or EU
- Drought in Australia
- Export restrictions imposed by Argentina and India
- Strong and growing world demand for milk proteins and other dairy products—Asia, developing countries
- Weak U.S. dollar

U.S. Stocks of Nonfat Dry Milk As of January 1st



Increase in nonfat dry milk and dry whey prices not all due to exports

- Strong and growing demand in the U.S. for milk proteins.
- The result of increase in nutritionally enhanced food products and nutritional beverages.