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United States Department of Agriculture

USDA's
93rd
Annual

Agricultural Outlook Forum

A New Horizon: The Future of Agriculture

February 23-24, 2017 • Crystal Gateway Marriott Hotel, Arlington, Virginia

Presentation from the USDA Agricultural Outlook Forum 2017

United States Department of Agriculture
93rd Annual Agricultural Outlook Forum
“A New Horizon: The Future of Agriculture”

February 23-24, 2017
Arlington, Virginia



United States Department of Agriculture

Situation and Outlook for the U.S. Dairy Industry

Presentation for USDA Agricultural Outlook Forum

Jerry Cessna

Agricultural Economist

USDA, Economic Research Service

Marketing and Trade Economics Division

Animal Products and Cost of Production Branch

February 24, 2017

Economic Research Service
www.ers.usda.gov



Fun Facts Related to the U.S. Dairy Industry



- U.S. milk per cow:
4,167 pounds in 1924. 22,770 pounds in 2016.
- U.S. national record for a cow in one year: 77,480 pounds.
- Per capita cheese consumption:
7 pounds in 1970. 35 pounds in 2015.
- Clyde Vernon Cessna, U.S. aviation pioneer and founder of the Cessna Aircraft Company was the son of a cousin of the great grandfather of Jerry Cessna, Agricultural Economist for the U.S. Department of Agriculture, Economic Research Service. That's me, and I specialize in dairy industry outlook issues.





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Who comes up with these forecasts and projections?

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USDA Dairy Interagency Commodity Estimates Committee (ICEC)

- Chaired by USDA World Agricultural Outlook Board (WAOB)—part of the USDA Office of the Chief Economist.
- Committee members are from USDA: Agricultural Market Service (AMS), Economic Research Service (ERS), Foreign Agricultural Service (FAS), and Farm Service Agency (FSA).
- Dairy ICEC produces:
 - Short-term forecasts published and discussed monthly in:
 - World Agricultural Supply and Demand Estimates (WASDE) report by WAOB.
 - Livestock, Dairy, and Poultry Outlook (LDP Outlook) report by ERS.
 - USDA Long Term Projections (annual 10-year projections).
- Note: This presentation has been updated to reflect the latest NASS *Milk Production* report. It has not been updated to reflect the latest NASS *Cold Storage* Report.





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Brief Lesson on Milk-Equivalent Estimates Used Throughout This Presentation

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Why we use milk-equivalent estimates

- Dairy product manufacturers separate and reassemble milk components to make various dairy products. Components include milk fat and skim solids (protein, lactose, minerals, and trace components).
- Milk-equivalent estimates are used for aggregate quantities of dairy products: domestic use, imports, exports, and stocks.
- USDA uses two estimates:
 - Milk-fat basis.
 - Skim-solids basis.
- Some organizations use a total-solids basis estimate.
 - Advantage: One number instead of two seems simpler. (Media organizations often like this.)
 - Disadvantage: Less informative.



Examples: Butter and Nonfat Dry Milk (NDM)

Approximate milk-equivalent conversion factors

Product	Basis	Pounds of farm milk equivalent to 1 pound of the product
Butter	Milk fat	22
	Skim solids	0.1
	Total solids	6.5
NDM	Milk fat	0.2
	Skim solids	12
	Total solids	7.6

For imports and exports, conversion factors change each month depending upon the milk-fat and skim-solids content of U.S. milk.





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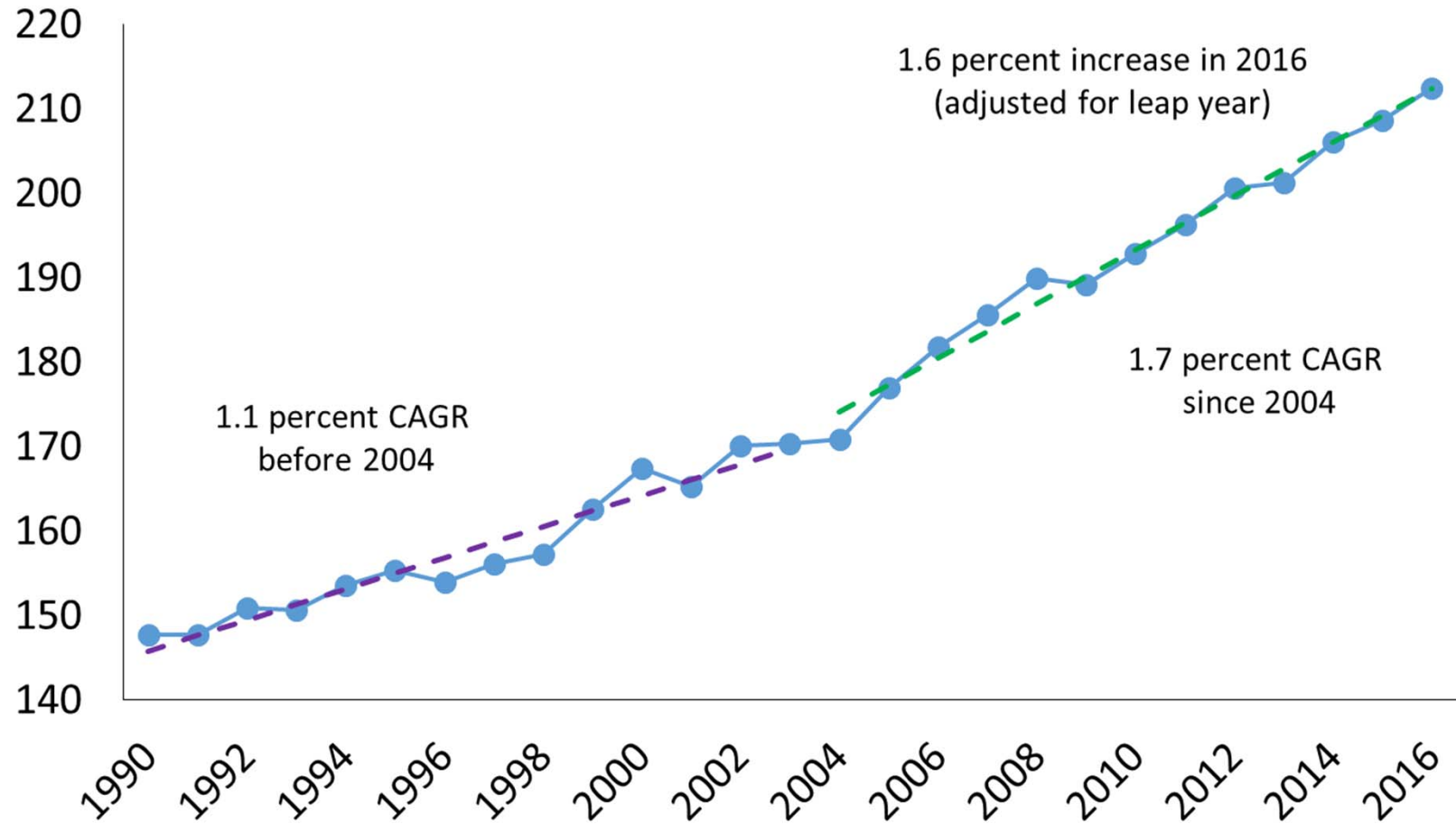
The 2016 Dairy Situation in Historical Context

Economic Research Service
www.ers.usda.gov



Milk Production

Billion
pounds



CAGR = compound annual growth rate.

Source: U.S. Dept. of Agriculture, National Agricultural Statistics Service.

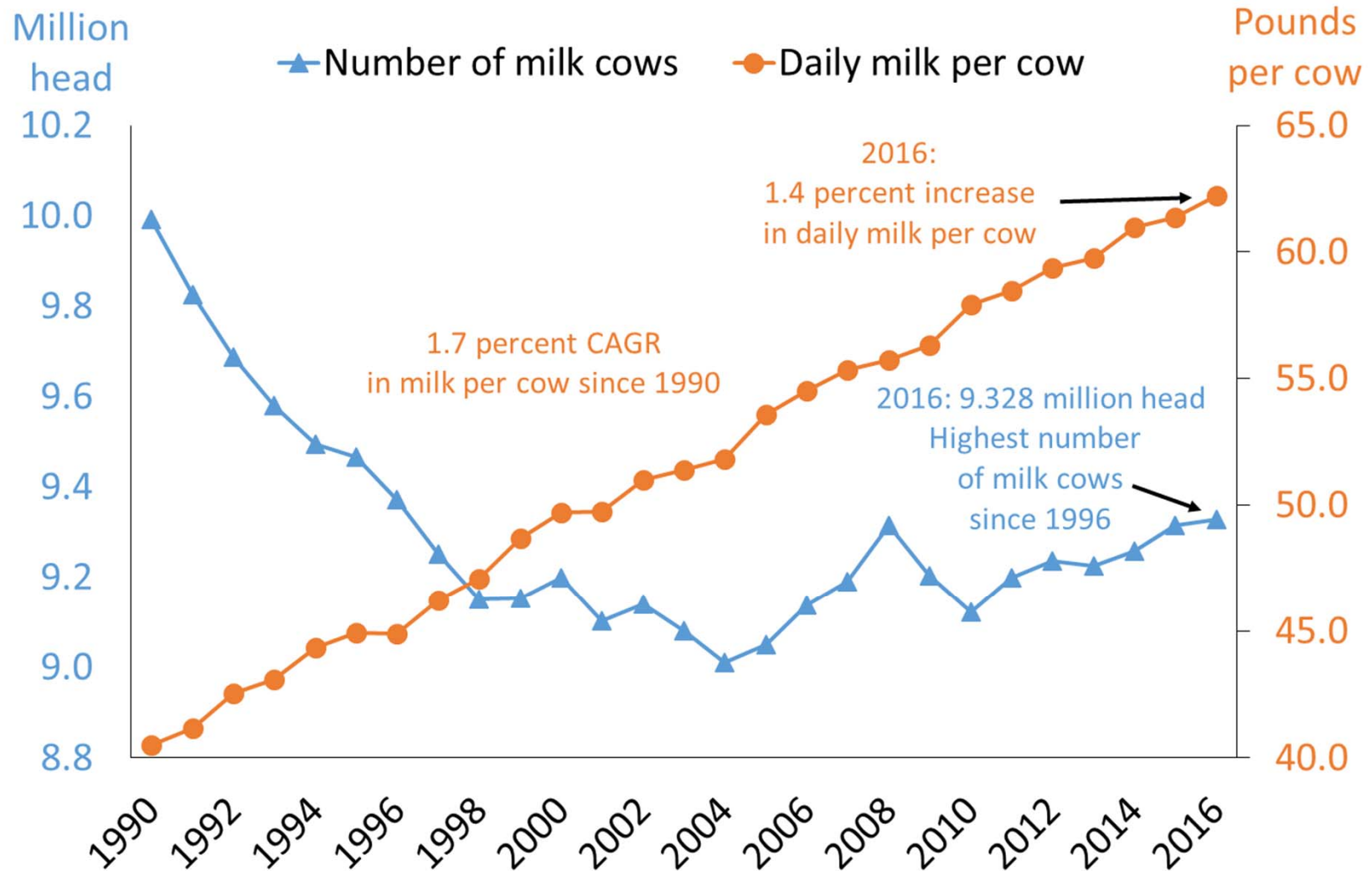


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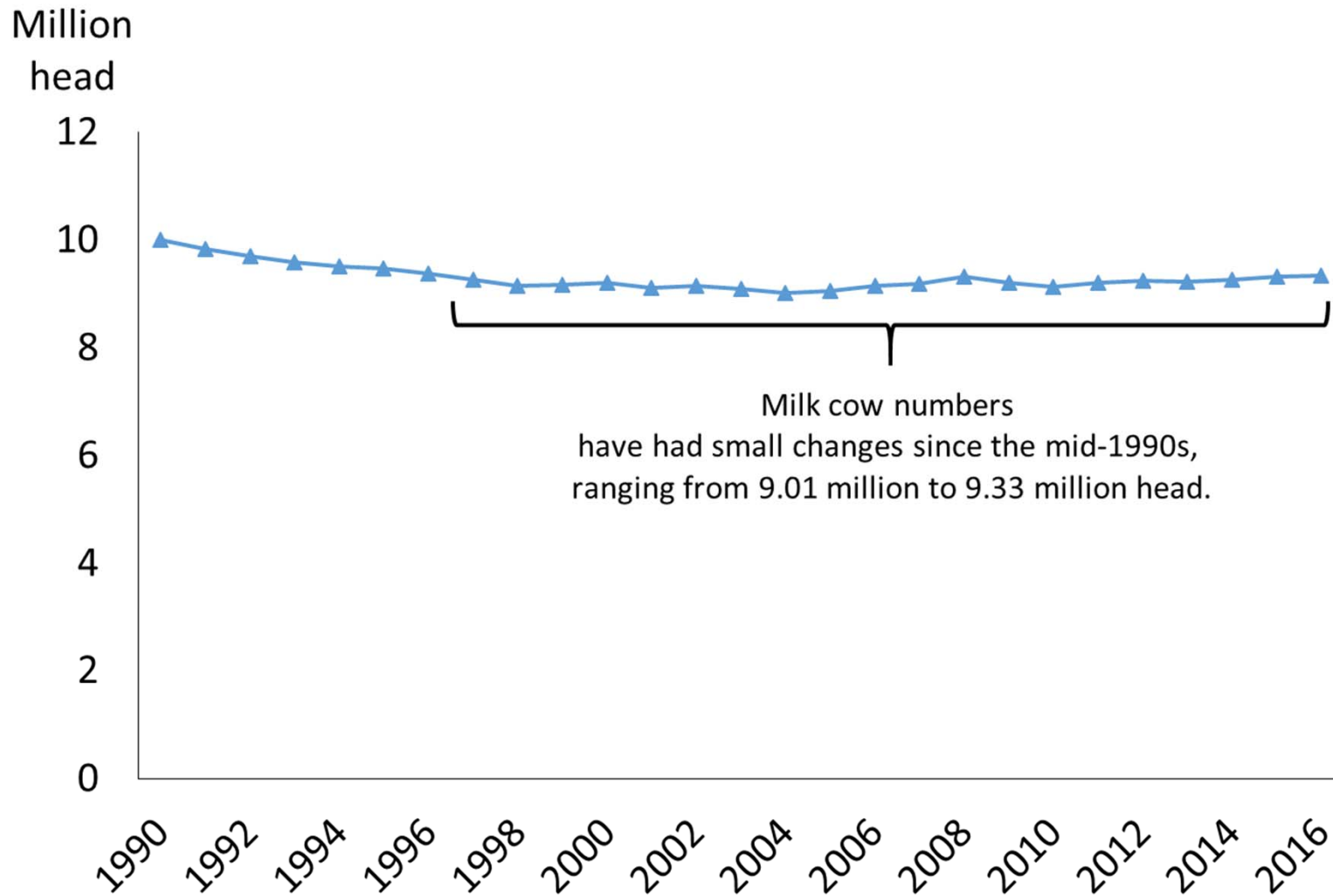
Milk cow numbers and milk per cow



Source: U.S. Dept. of Agriculture, National Agricultural Statistics Service.



Milk cow numbers, origin on graph at 0



Source: U.S. Dept. of Agriculture, National Agricultural Statistics Service.

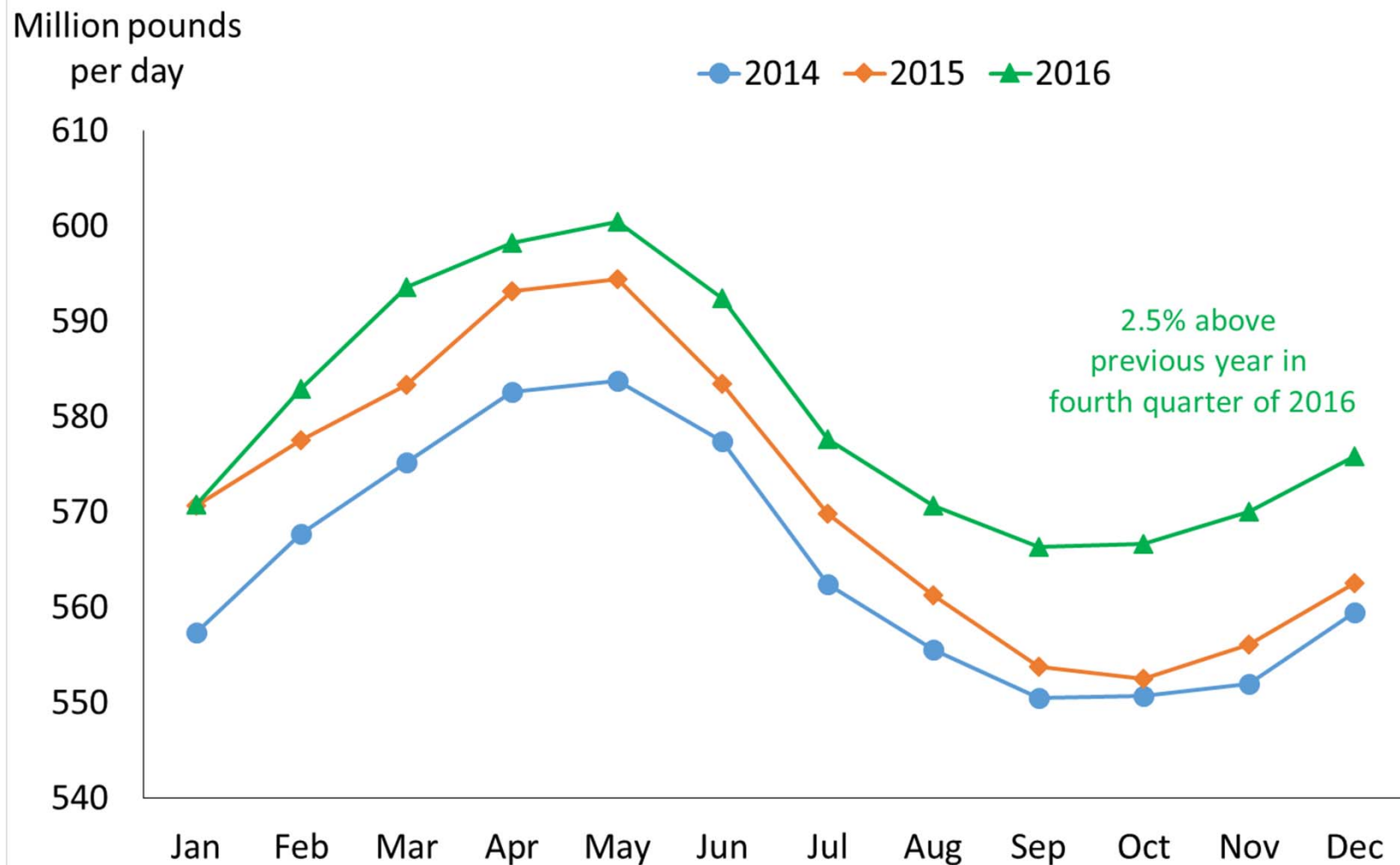


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U.S. daily milk production by month



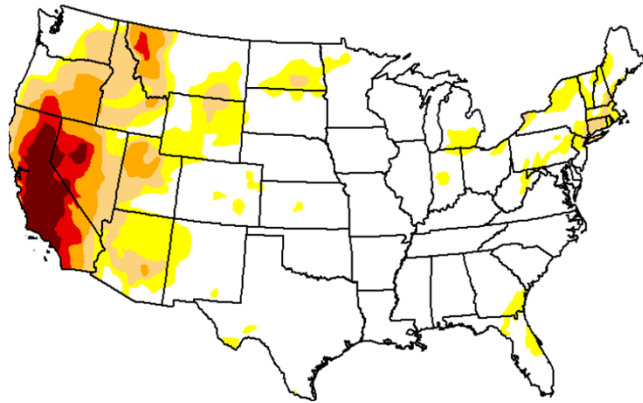
Source: U.S. Dept. of Agriculture, National Agricultural Statistics Service.



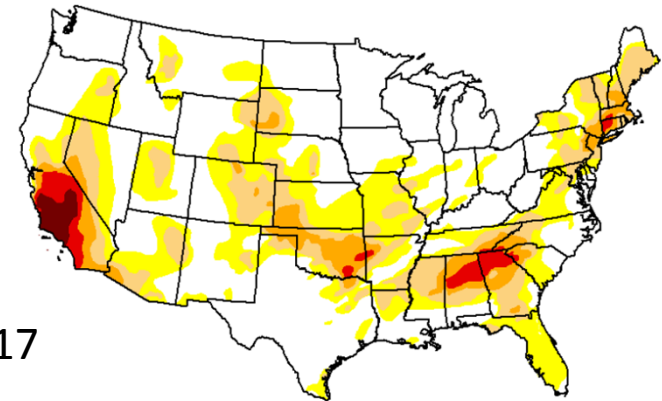
California and Drought

In California, milk production in 2016 was 1.3 percent lower (adjusted for leap year) than 2015. But, in the fourth-quarter, it was 0.9 percent higher than the fourth quarter of 2015. Attenuation of the drought likely played a role in the milk-production increase.

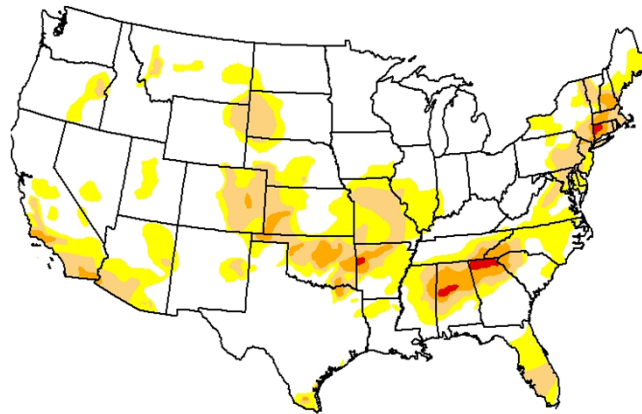
January 5, 2016



January 3, 2017



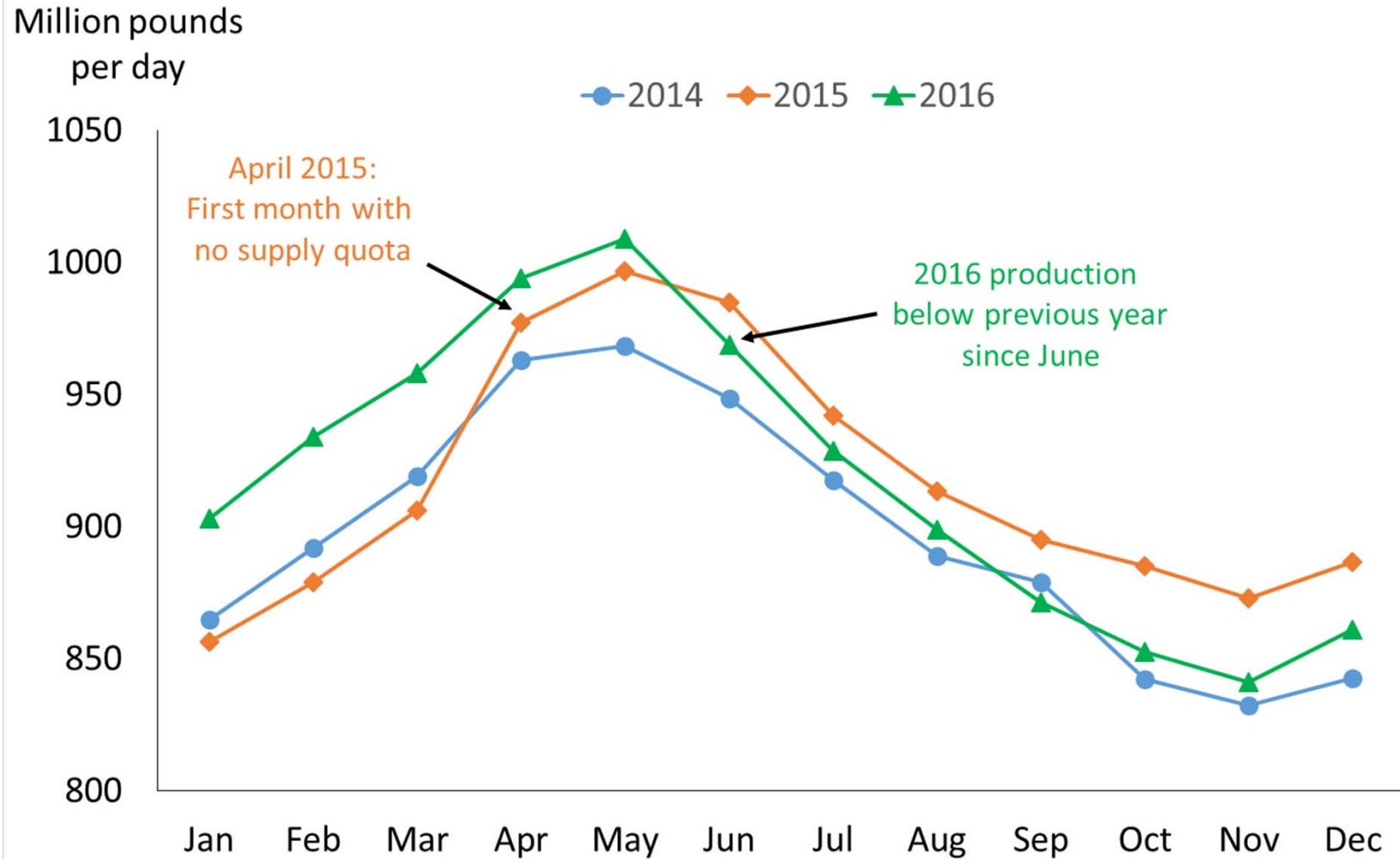
February 21, 2017



The U.S. Drought Monitor is produced through a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration.



European Union daily milk deliveries by month



Source: Eurostat.

Converted from thousands of metric tons to millions of pounds per day.

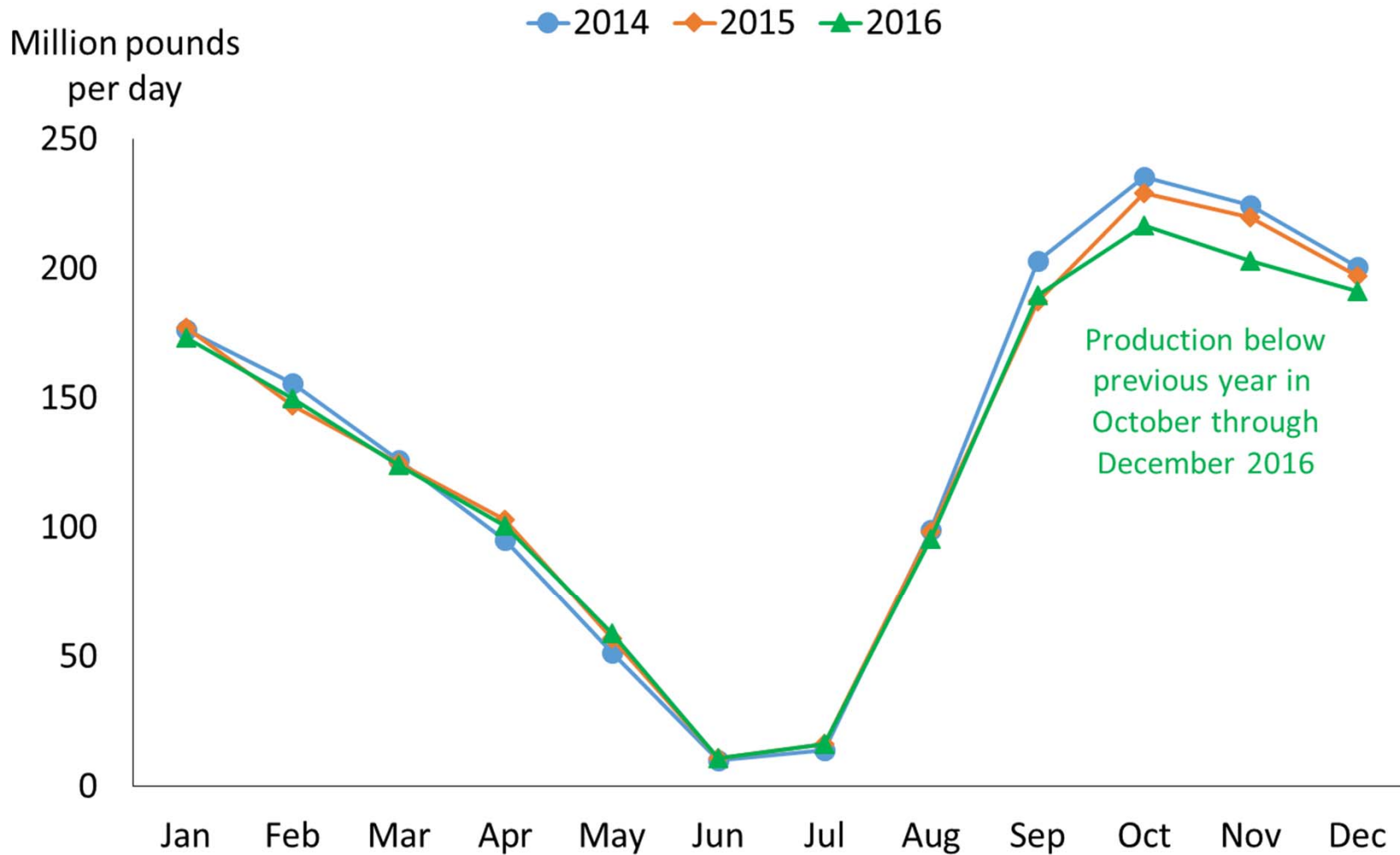


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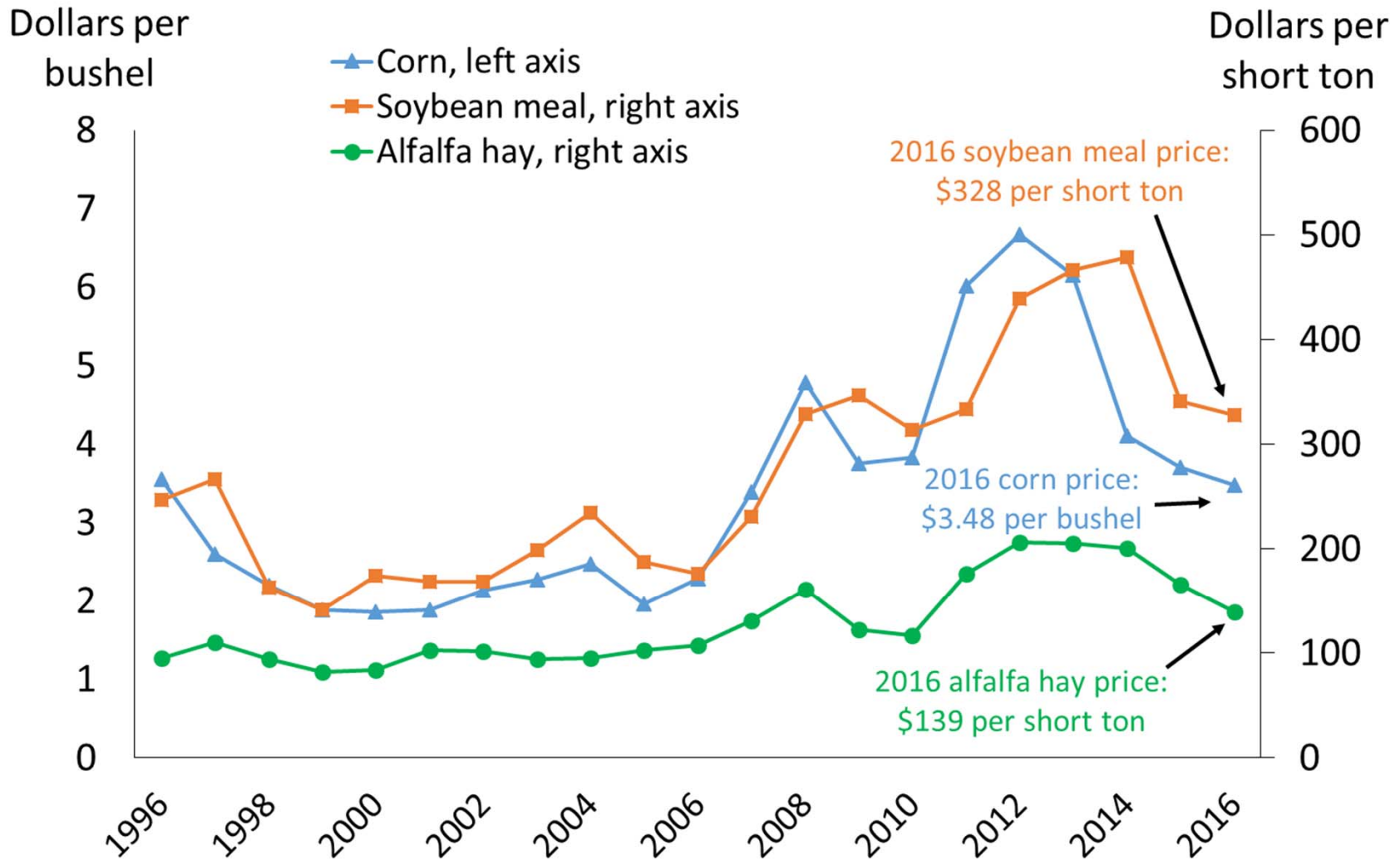
New Zealand daily milk production by month



Source: Dairy Companies of New Zealand (DCANZ).
 Converted from thousands of metric tons to millions of pounds per day.



Feed Prices (averages for calendar years)



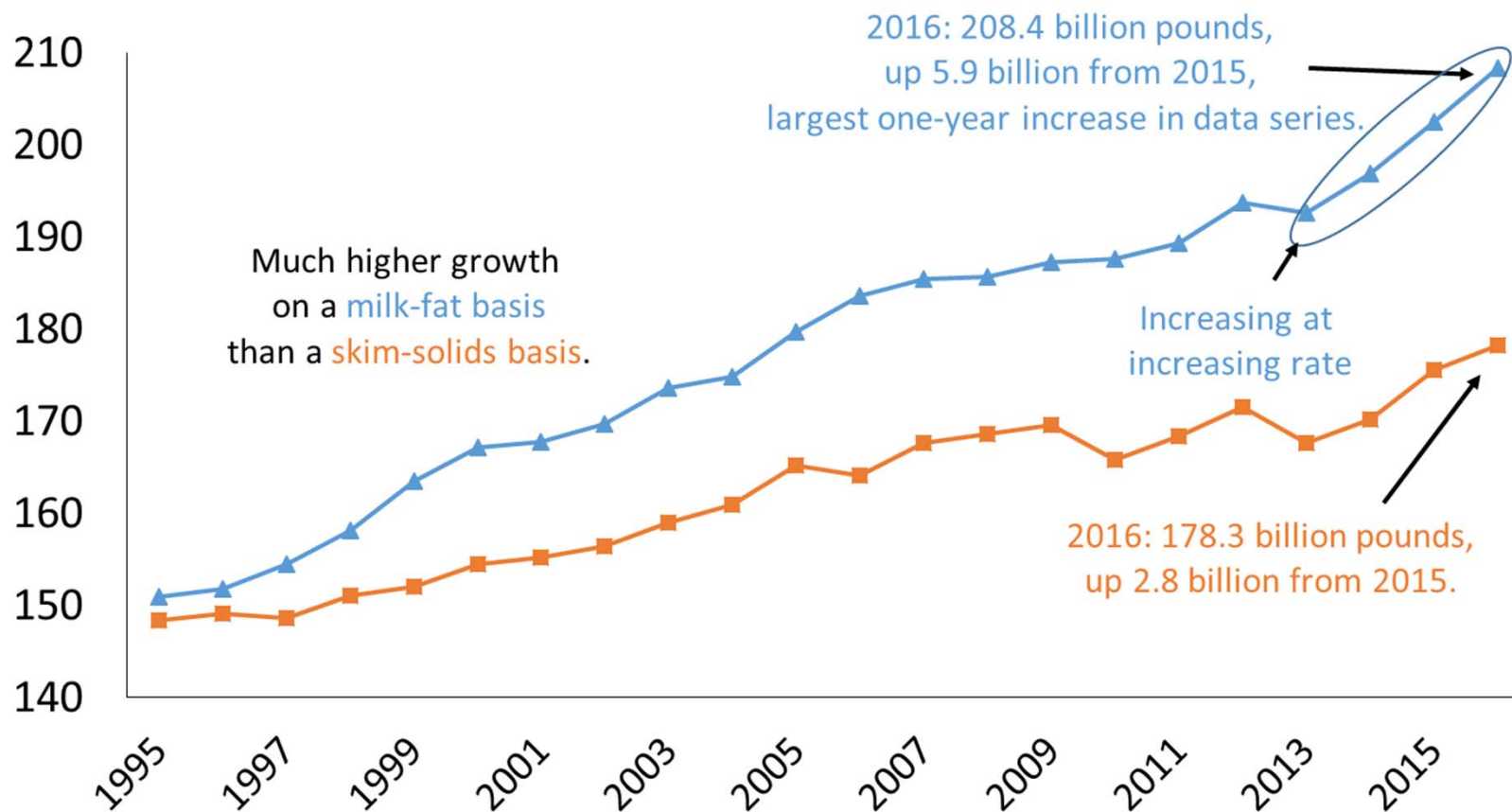
Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service and Agricultural Marketing Service.



Domestic Commercial Use

▲ Milk-fat basis ■ Skim-solids basis

Billion pounds



Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, Farm Service Agency, Foreign Agricultural Service, Economic Research Service calculations; U.S. Dept. of Commerce, Bureau of the Census.



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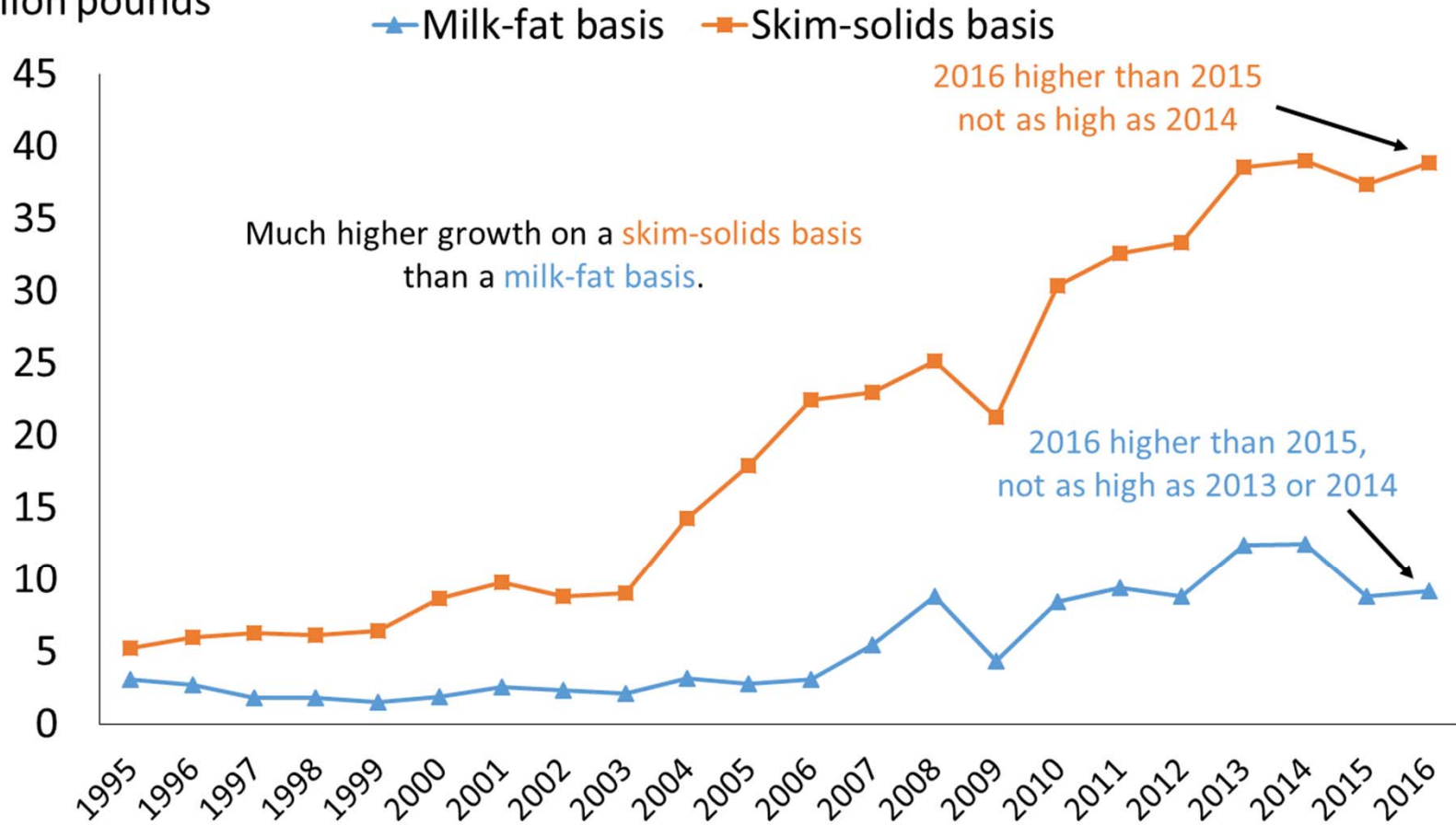
Shift in demand for butterfat

- Butter perceived as healthier than trans fat after a 2013 announcement by the U.S. Food and Drug Administration (FDA):
 - Trans fat no longer “generally regarded as safe.”
 - Processed products with trans fat are to be removed from the market over a 3-year period.
- Several studies have indicated possible health benefits of butterfat, or less risk than previously perceived.
- Major media outlets have reported widely on risks of trans fat and health benefits, or less risk, associated with butterfat.
- Note: U.S. Dietary Guidelines (2015-2020), published by the U.S. Department of Health and Human Services and USDA encourage consumption of “fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages.”



Commercial exports of dairy products, milk-equivalent quantities

Billion pounds

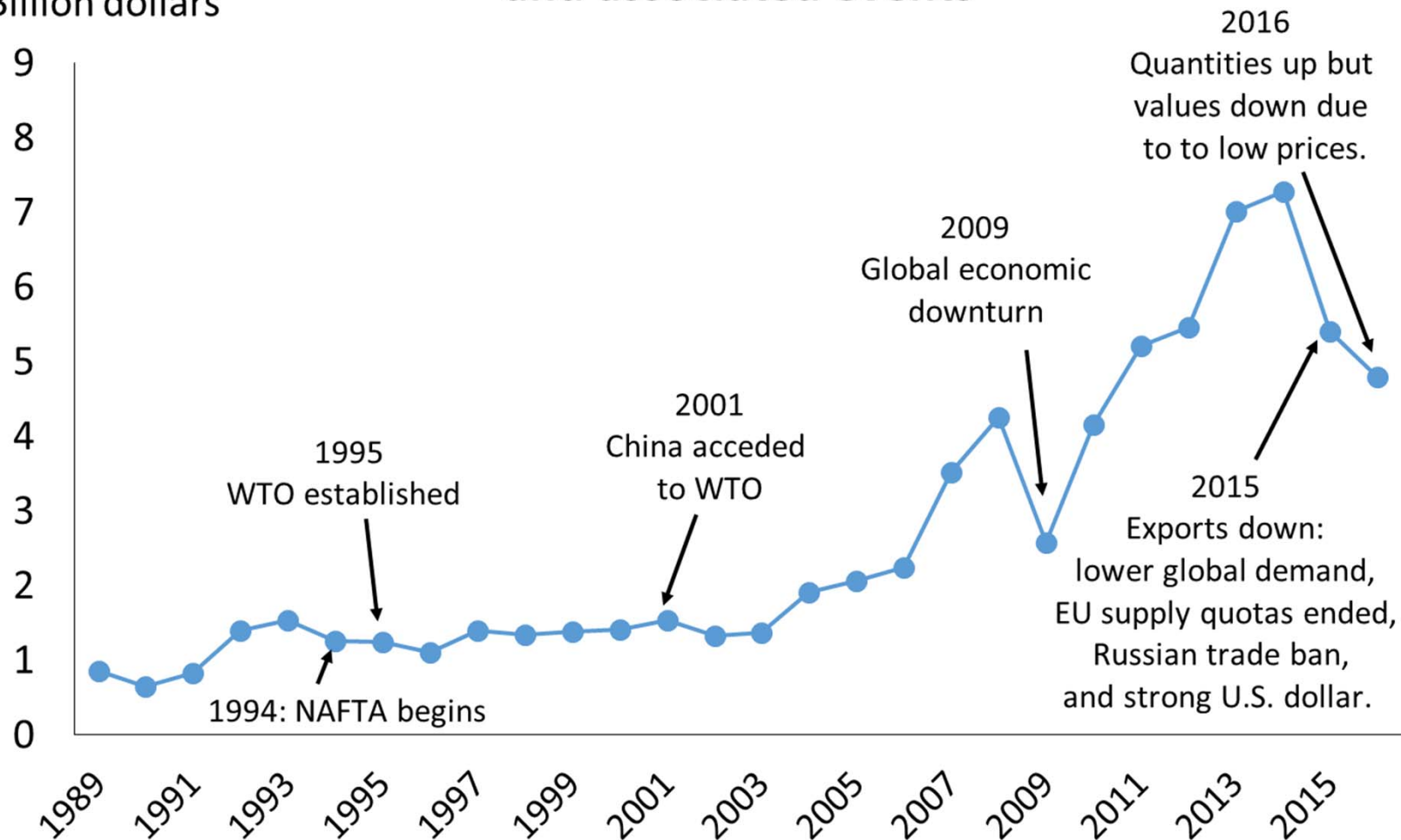


Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, Farm Service Agency, Foreign Agricultural Service, Economic Research Service calculations; U.S. Dept. of Commerce, Bureau of the Census.



Dairy export values (in 2016 constant dollars) and associated events

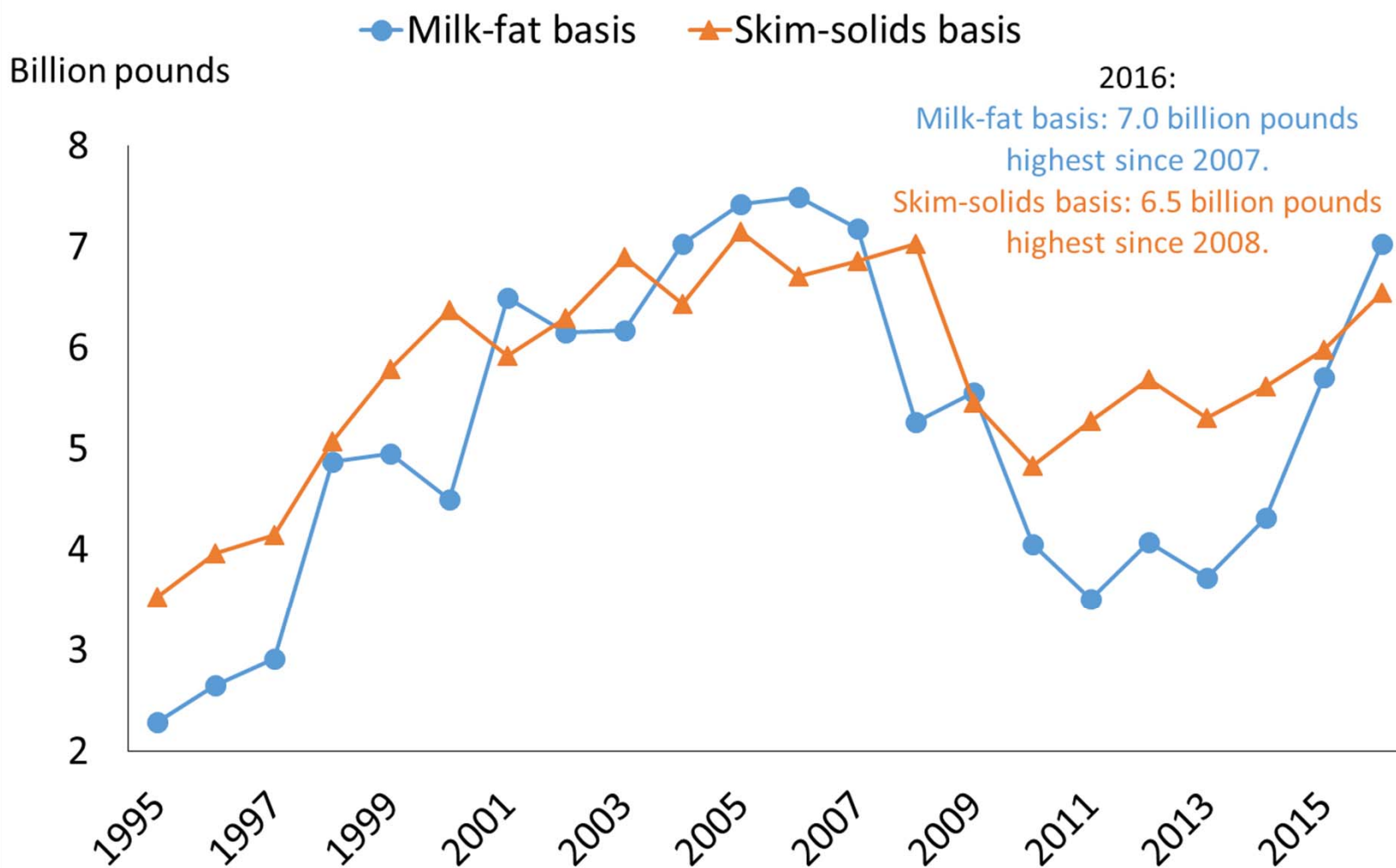
Billion dollars



Sources: U.S. Dept. of Agriculture: Economic Research Service and Foreign Agricultural Service;
U.S. Dept. of Commerce, Bureau of the Census.



Imports of dairy products, milk-equivalent quantities



Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, Foreign Agricultural Service, Economic Research Service calculations; U.S. Dept. of Commerce, Bureau of the Census.

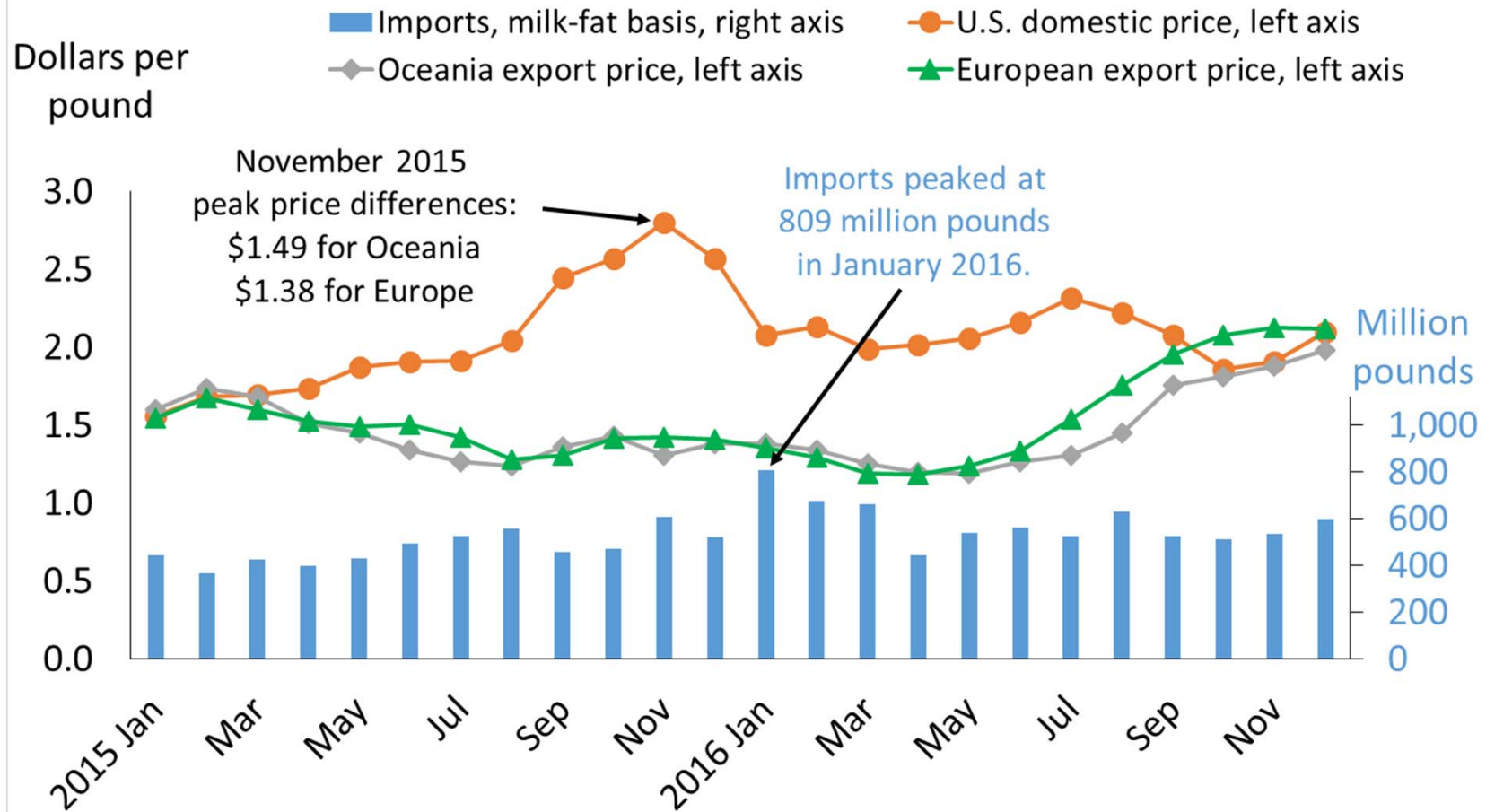


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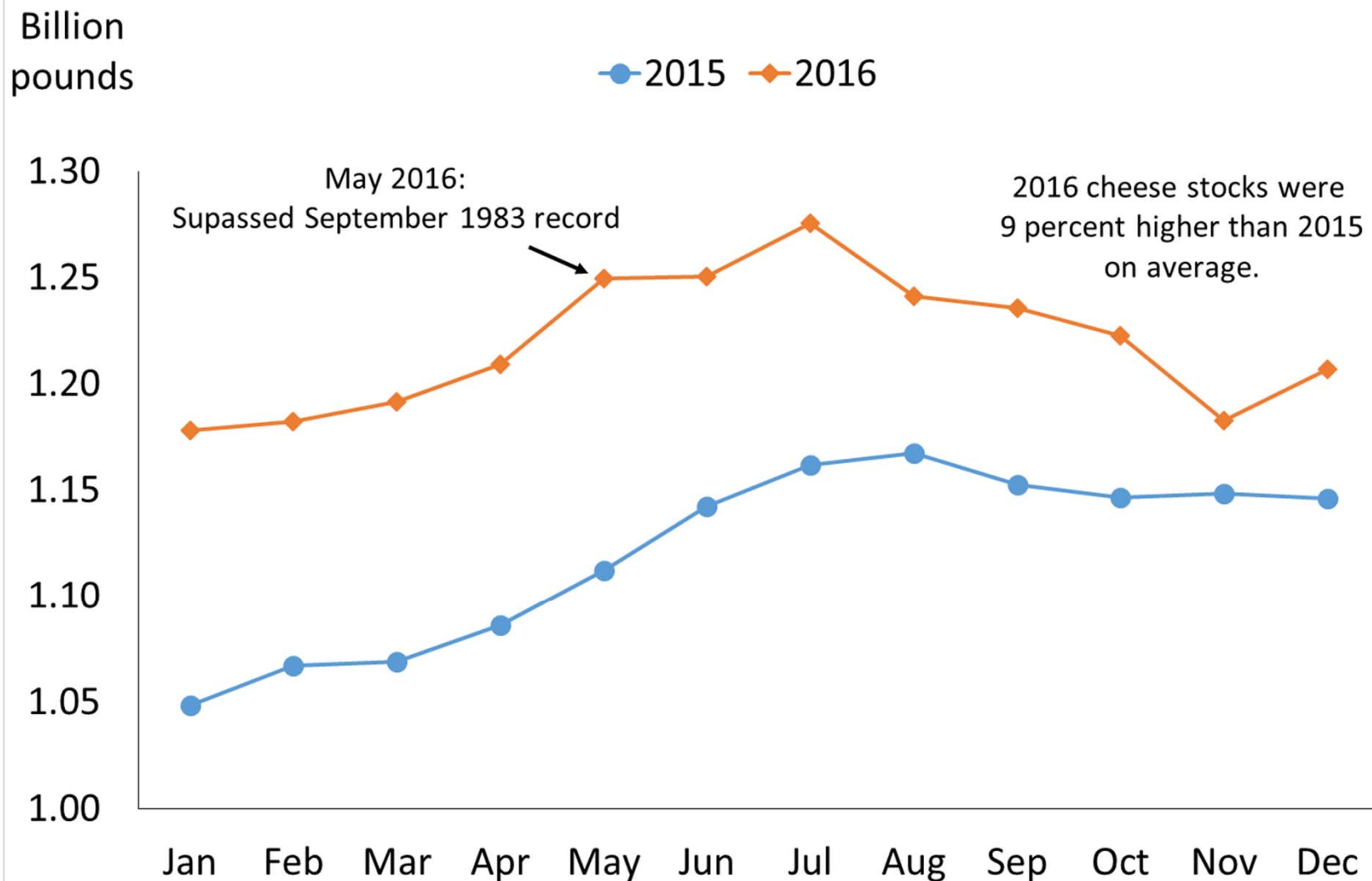
Imports on a milk-fat basis, U.S. domestic wholesale butter price and foreign export prices for butter



Sources: U.S. Dept. of Agriculture: Agricultural Marketing Service, Foreign Agricultural Service; U.S. Dept. of Commerce, Bureau of the Census.



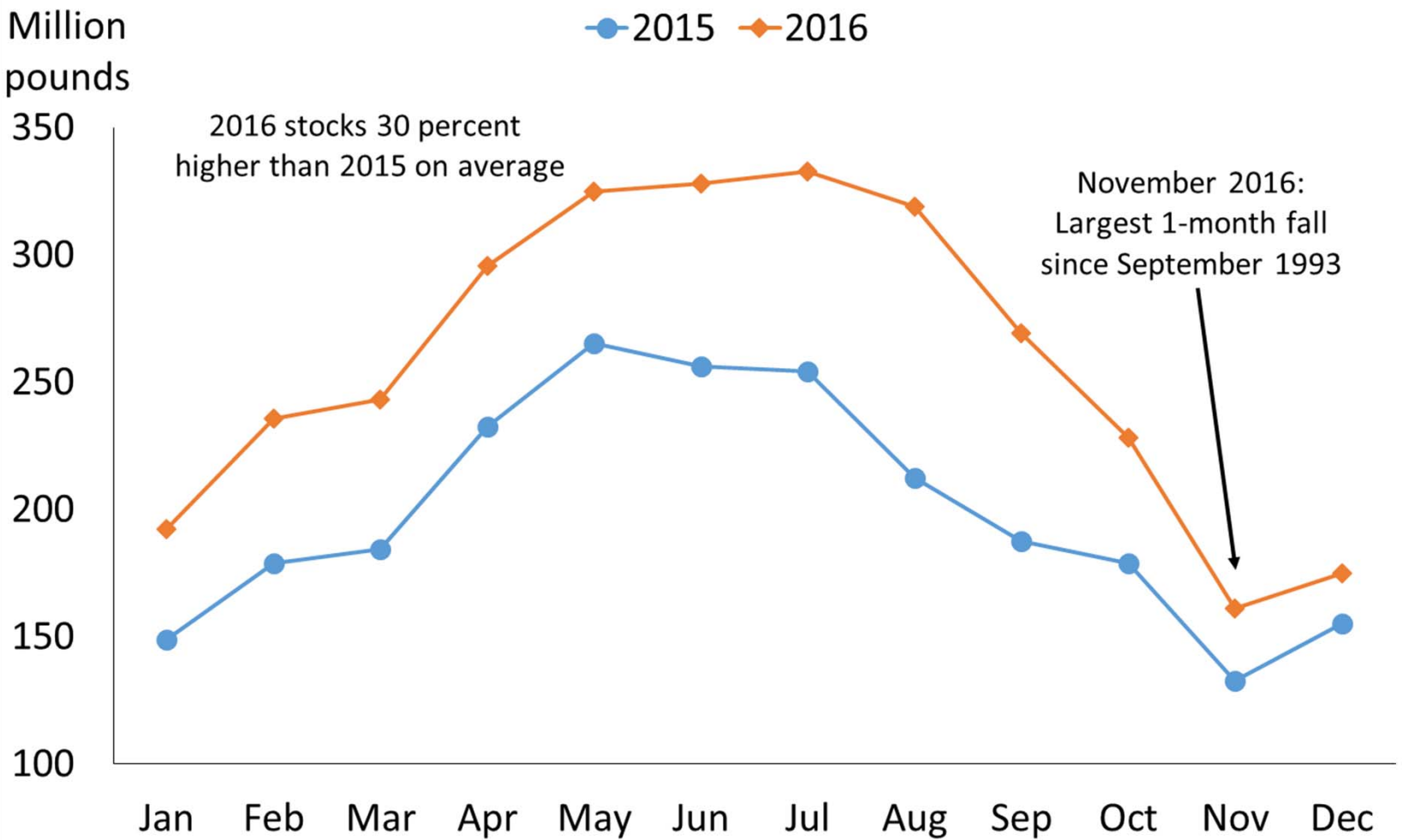
Cheese ending stocks



Source: U.S. Dept. of Agriculture, National Agricultural Statistics Service.



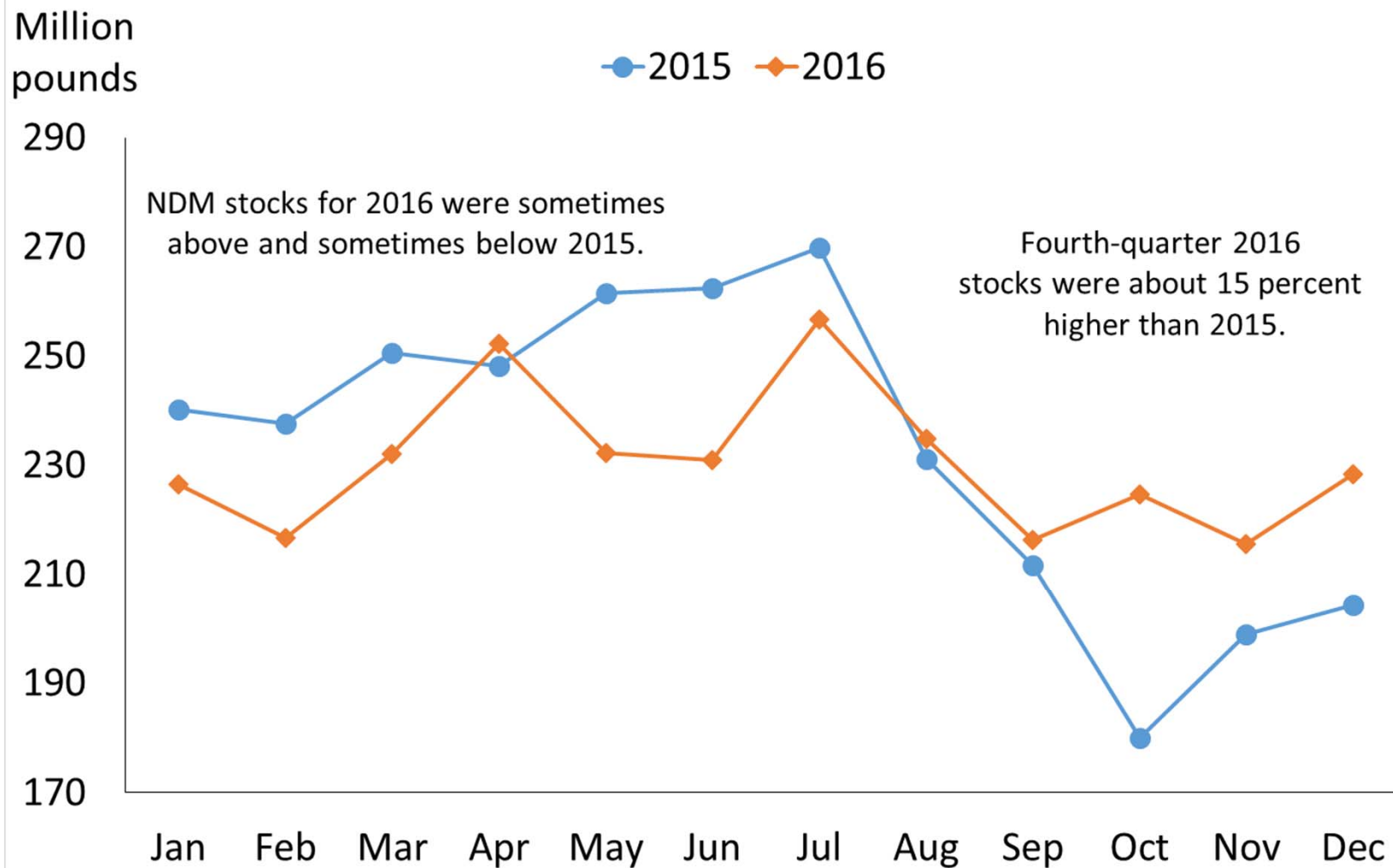
Butter ending stocks



Source: U.S. Dept. of Agriculture, National Agricultural Statistics Service.



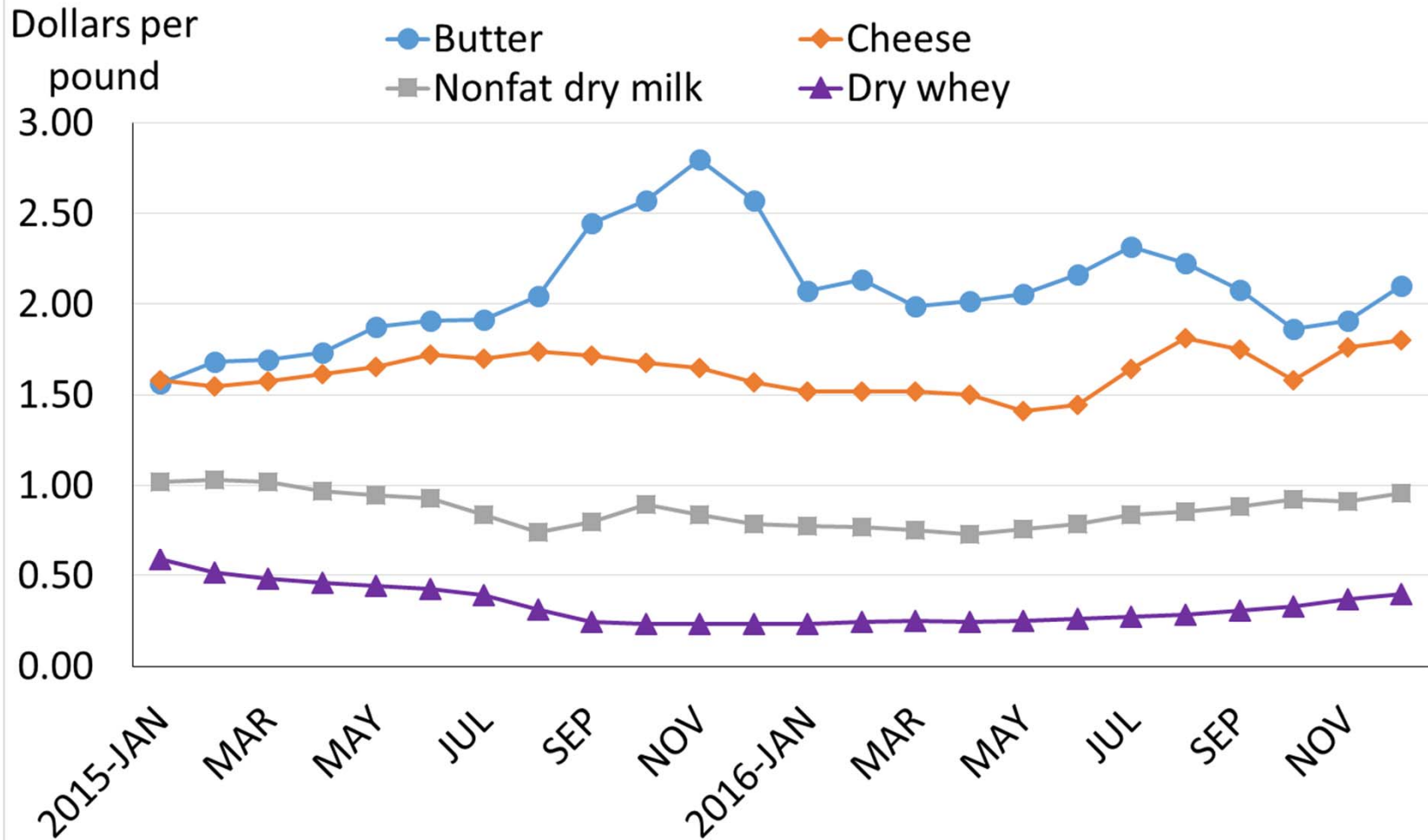
Nonfat dry milk (NDM) ending stocks



Source: U.S. Dept. of Agriculture, National Agricultural Statistics Service.



Monthly dairy product prices in 2015 and 2016



Source: U.S. Dept. of Agriculture: Agricultural Marketing Service.





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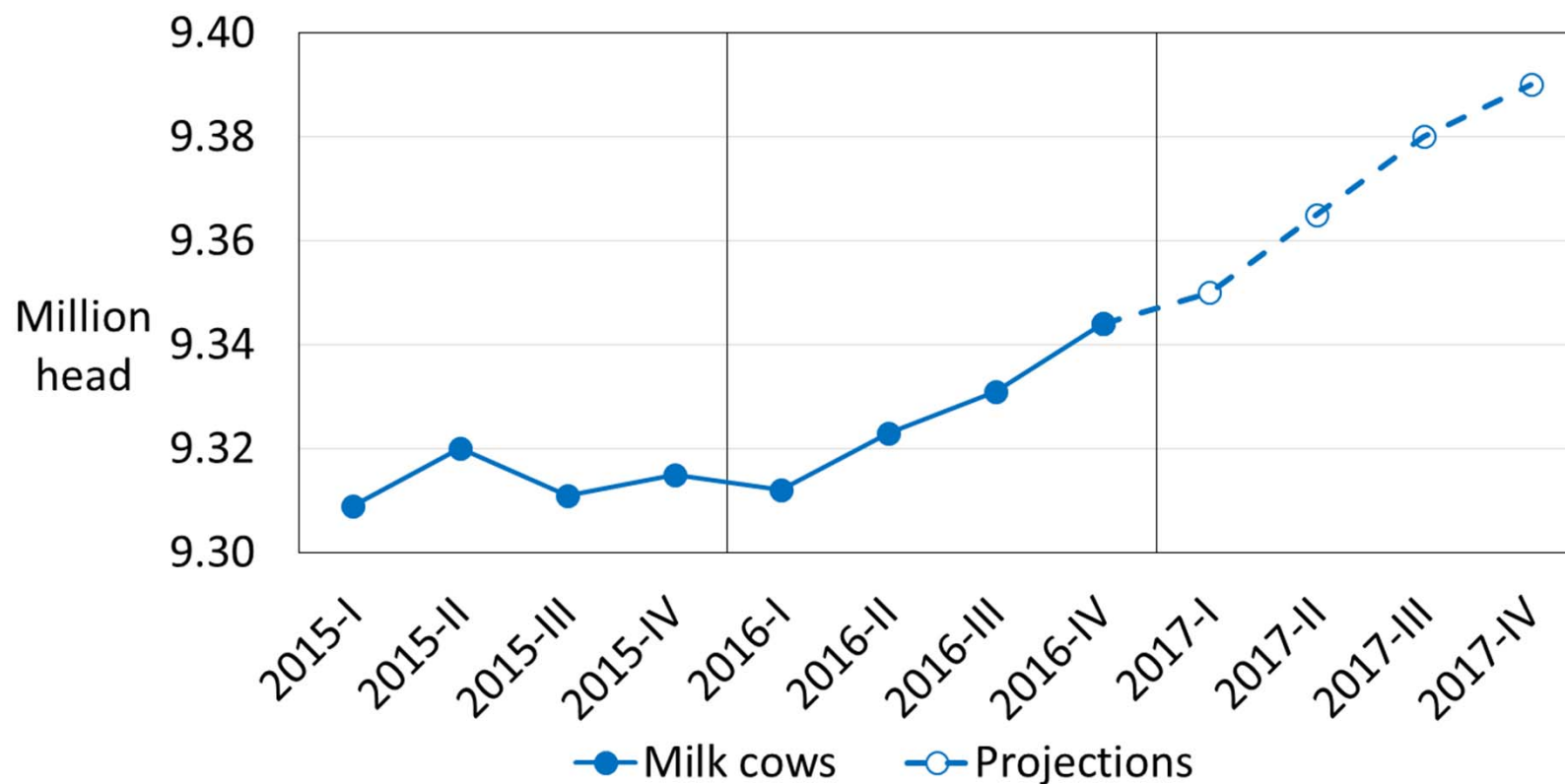
Forecasts for 2017

Economic Research Service
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Milk cows (million head)

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Milk cows	9.317	9.328	9.370
% chg. prev. yr.	+0.6%	+0.2%	+0.5%

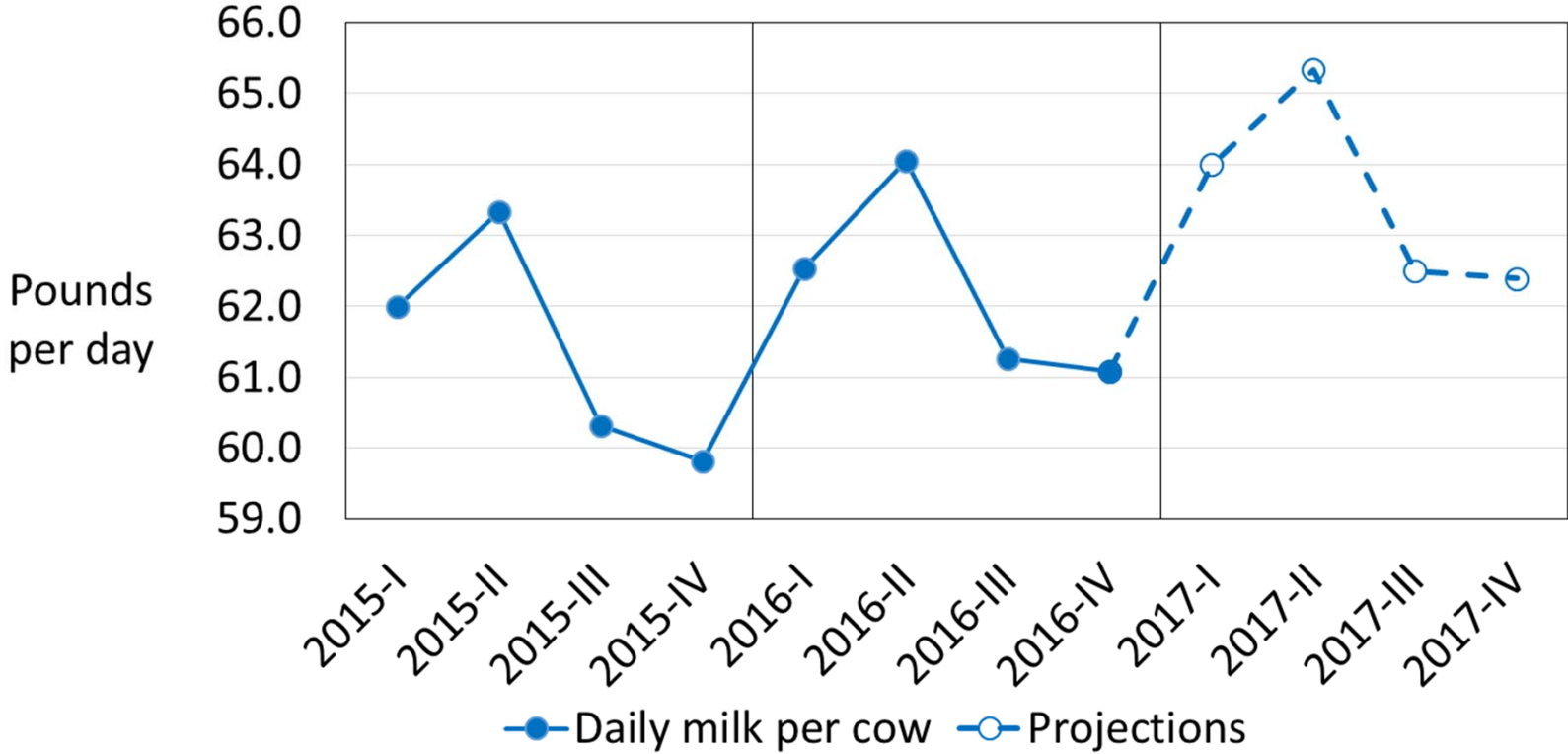


Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service.



Daily milk per cow (pounds)

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Daily milk per cow	61.4	62.2	63.5
% chg. prev. yr.	+0.6%	+1.4%	+2.1%

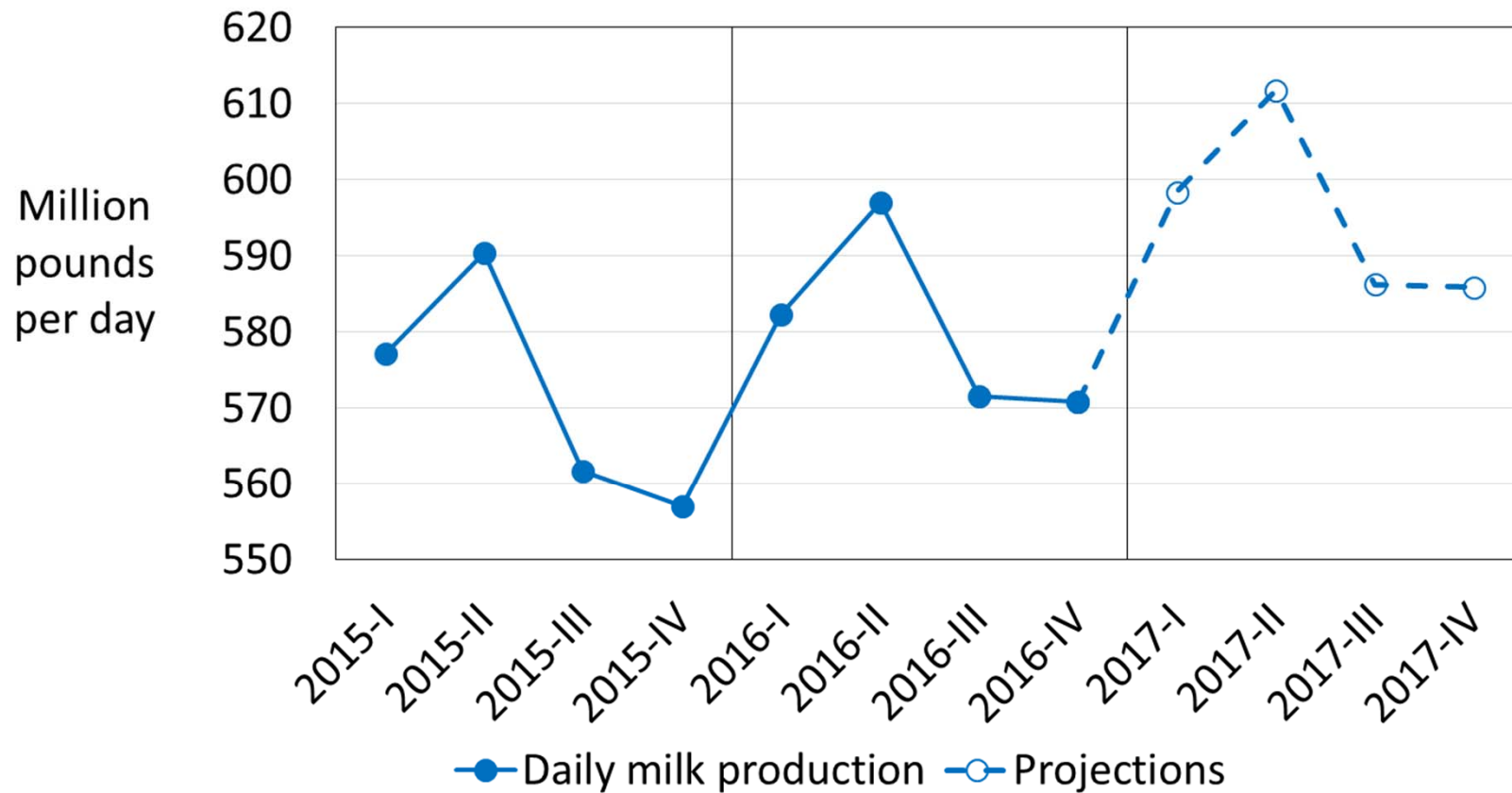


Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service.



Daily milk production (million pounds)

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Daily milk prod.	571.5	580.4	595.5
% chg. prev. yr.	+1.2%	+1.6%	+2.6%



Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service.



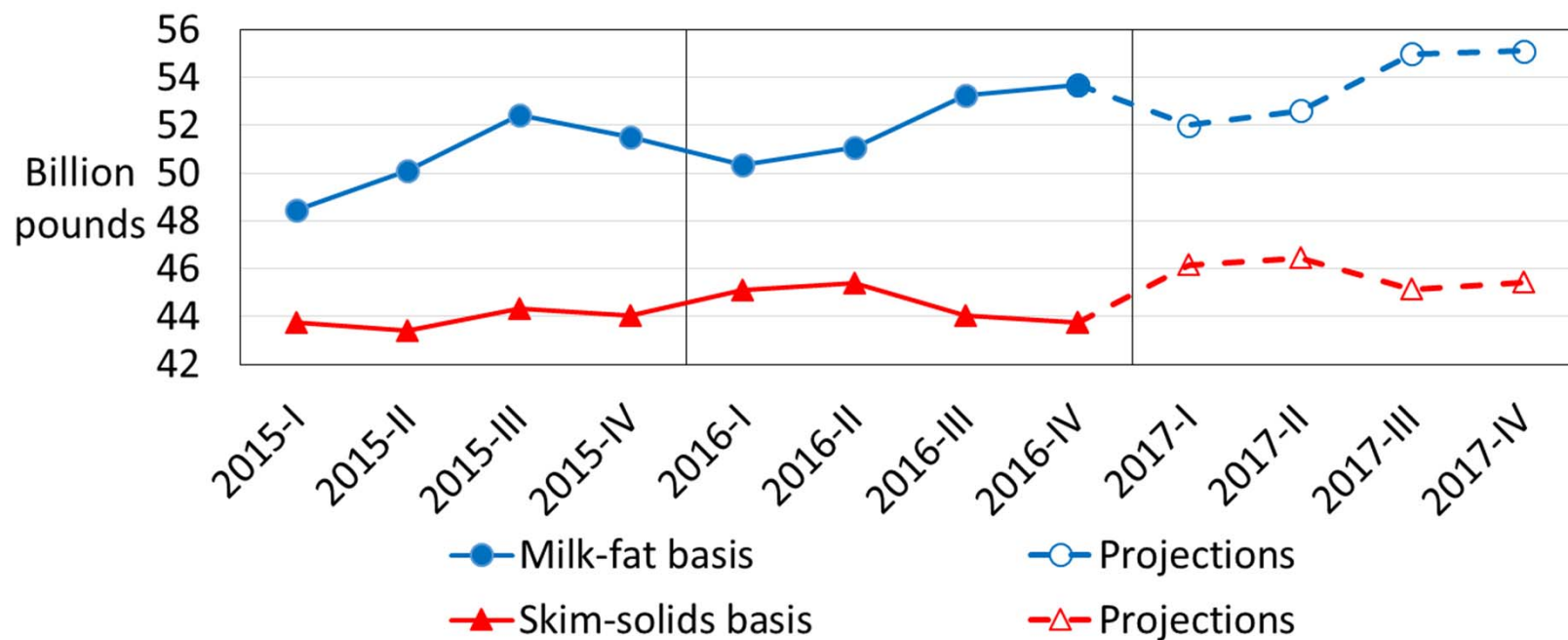
**USDA Foreign Agriculture Service
milk production forecasts for major exporters
published December 2016
(in millions of metric tons)**

	2015	2016 Estimated	2017 Forecast	Forecast Change %
Argentina	11.6	10.4	10.6	2%
Australia	9.8	9.2	9.5	3%
EU-28	150.2	152.0	152.5	0%
New Zealand	21.6	21.4	21.6	1%
United States	94.6	96.3	98.3	2%
Major Exporter Total	287.8	289.3	292.5	1%



Domestic commercial use (billion pounds)

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Milk-fat basis	202.5	208.4	214.7
% chg. prev. yr.	+2.8%	+2.9%	+3.0%
Skim-solids basis	175.5	178.3	183.2
% chg. prev. yr.	+3.1%	+1.6%	+2.8%

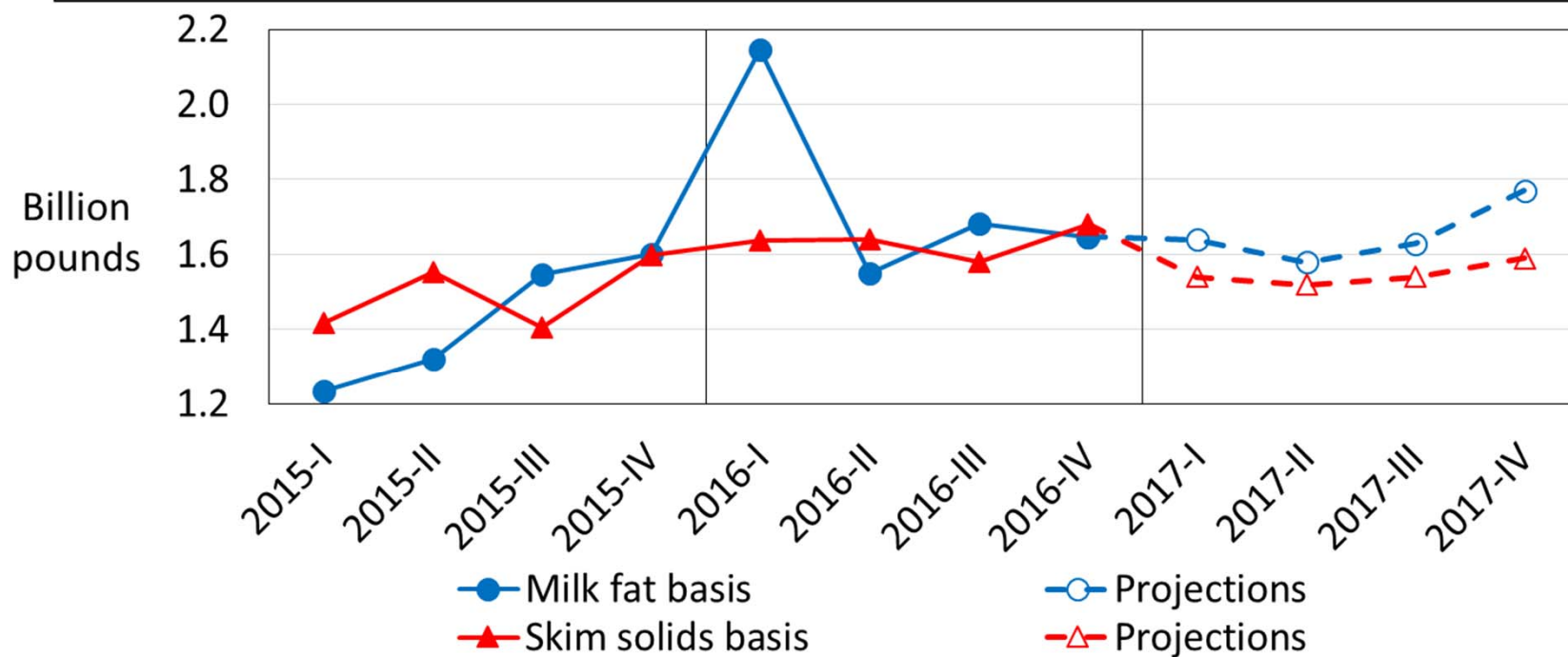


Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, Foreign Agricultural Service, World Agricultural Outlook Board, Economic Research Service calculations; U.S. Dept. of Commerce, Bureau of the Census.



Imports (billion pounds)

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Milk-fat basis	5.7	7.0	6.6
chg. from prev. yr.	+1.4	+1.3	-0.4
Skim-solids basis	6.0	6.5	6.2
chg. from prev. yr.	+0.4	+0.6	-0.4

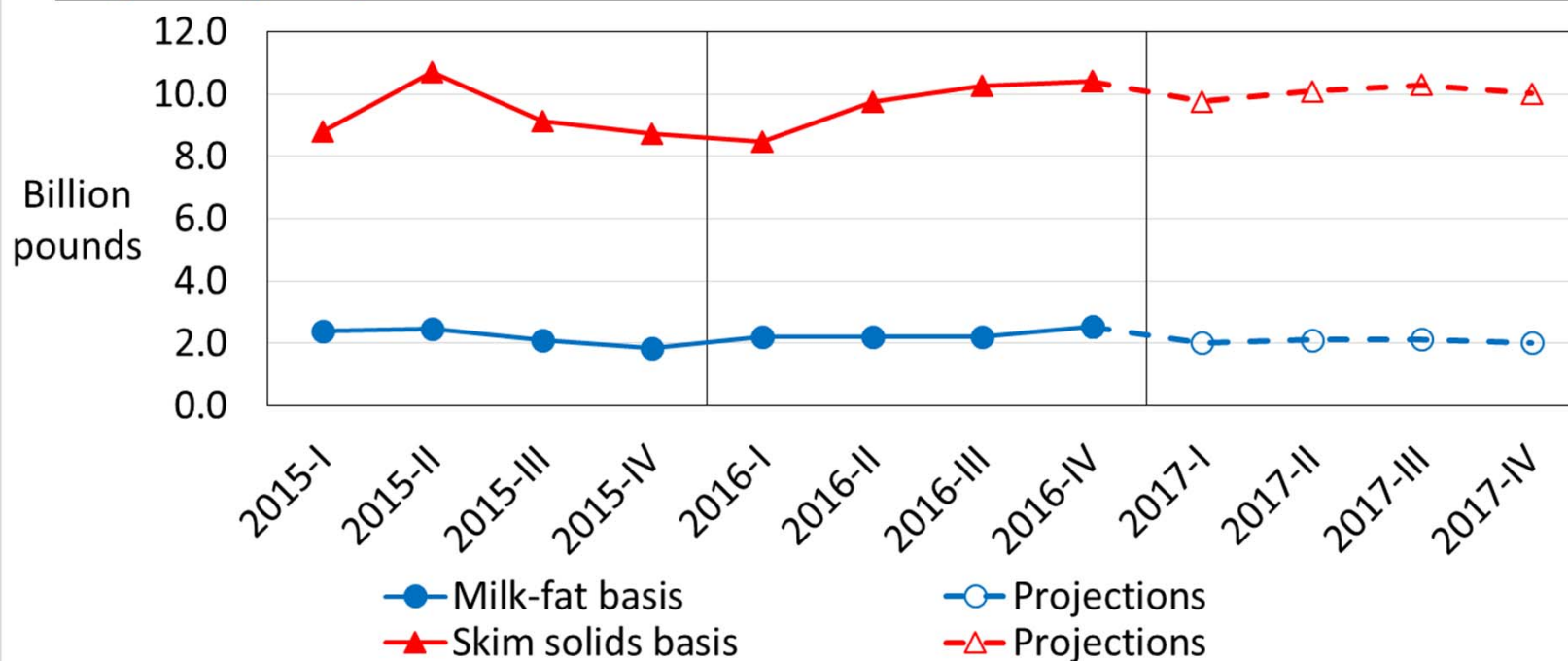


Sources: U.S. Dept. of Agriculture: Foreign Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service; U.S. Dept. of Commerce, Bureau of the Census.



Commercial exports (billion pounds)

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Milk-fat basis	8.8	9.2	8.3
chg. from prev. yr.	-3.7	+0.4	-0.9
Skim-solids basis	37.3	38.9	40.1
chg. from prev. yr.	-1.7	+1.5	+1.3

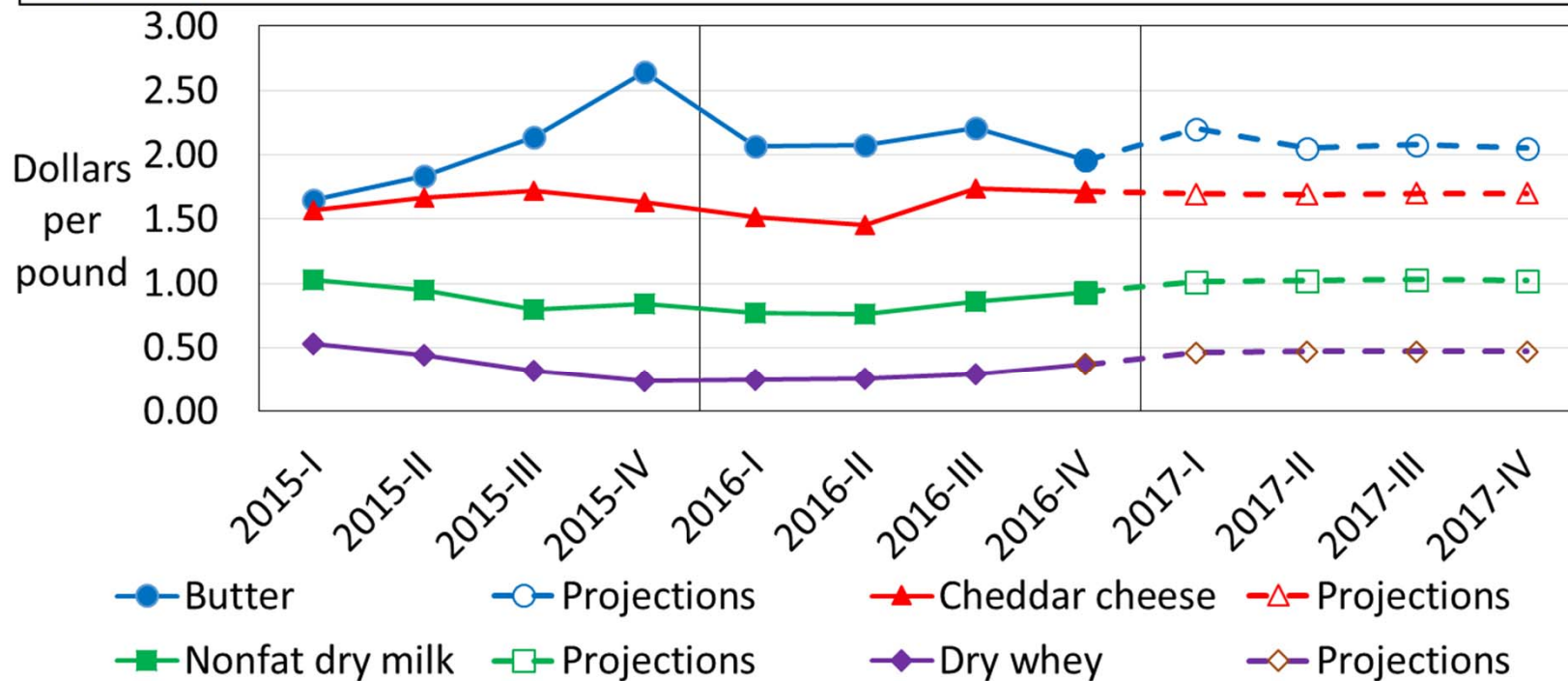


Sources: U.S. Dept. of Agriculture: Foreign Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service; U.S. Dept. of Commerce, Bureau of the Census.



Dairy product prices (dollars per pound)

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Butter	2.067	2.078	2.045-2.145
Cheese	1.645	1.605	1.660-1.730
Nonfat dry milk	0.902	0.829	0.990-1.050
Dry whey	0.380	0.288	0.455-0.485

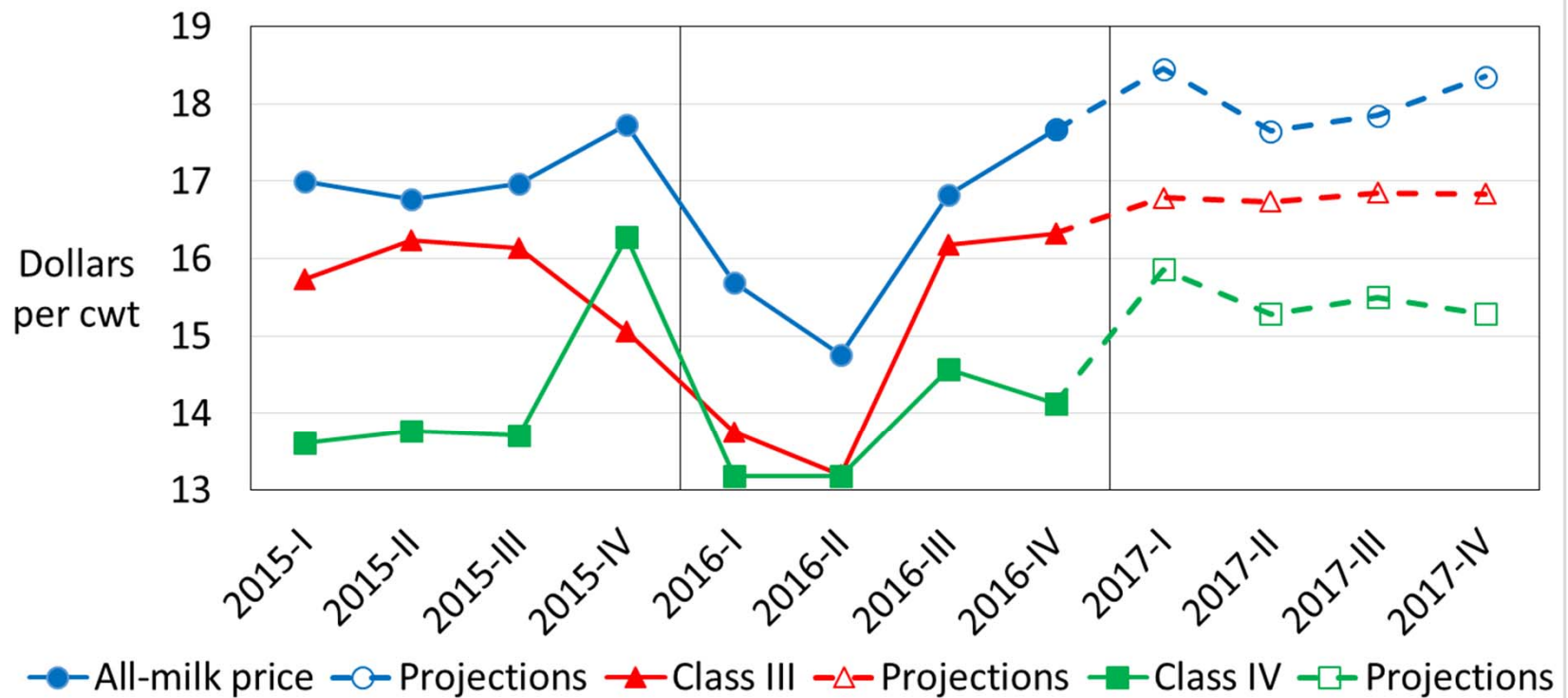


Sources: U.S. Dept. of Agriculture: Agricultural Marketing Service, World Agricultural Outlook Board, Economic Research Service.



Milk prices (dollars per hundredweight (cwt))

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Class III	15.80	14.87	16.45-17.15
Class IV	14.35	13.77	15.10-15.90
All milk	17.12	16.24	17.70-18.40



Sources: U.S. Dept. of Agriculture: Agricultural Marketing Service, National Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service.





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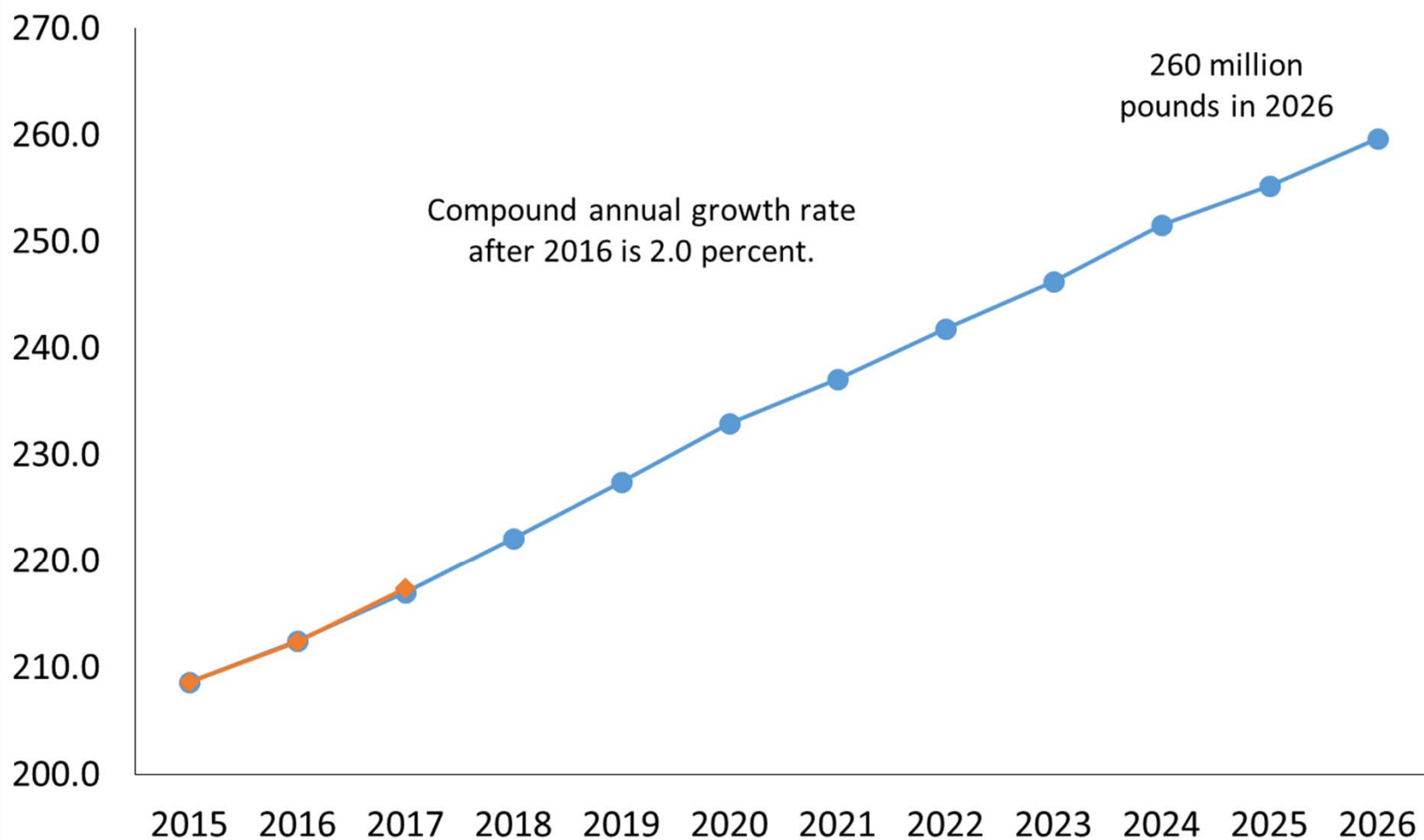
A few slides covering USDA Long-Term Projections

Economic Research Service
www.ers.usda.gov



Milk production projections

● Milk production ◆ Latest forecast



Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service.

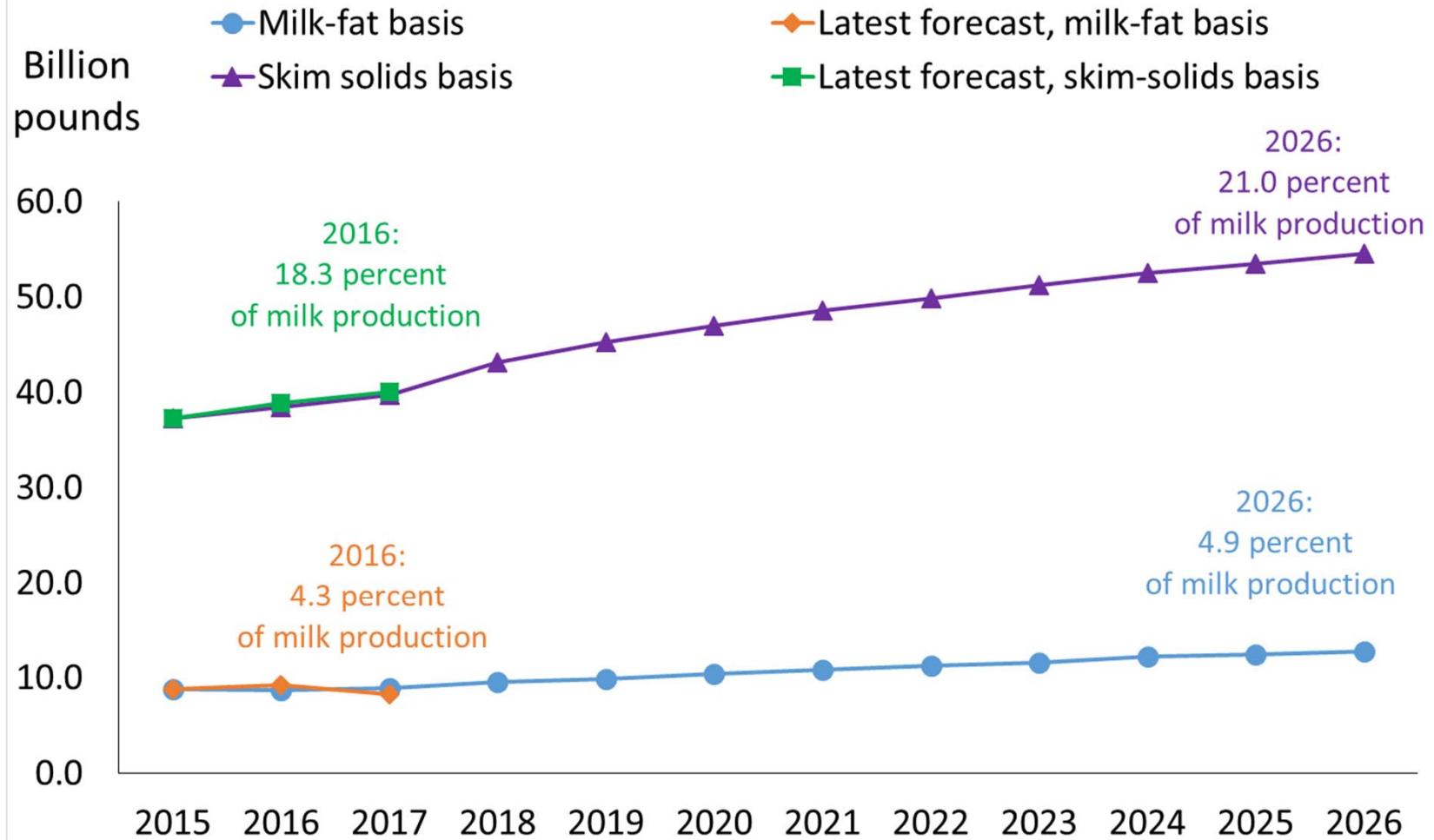


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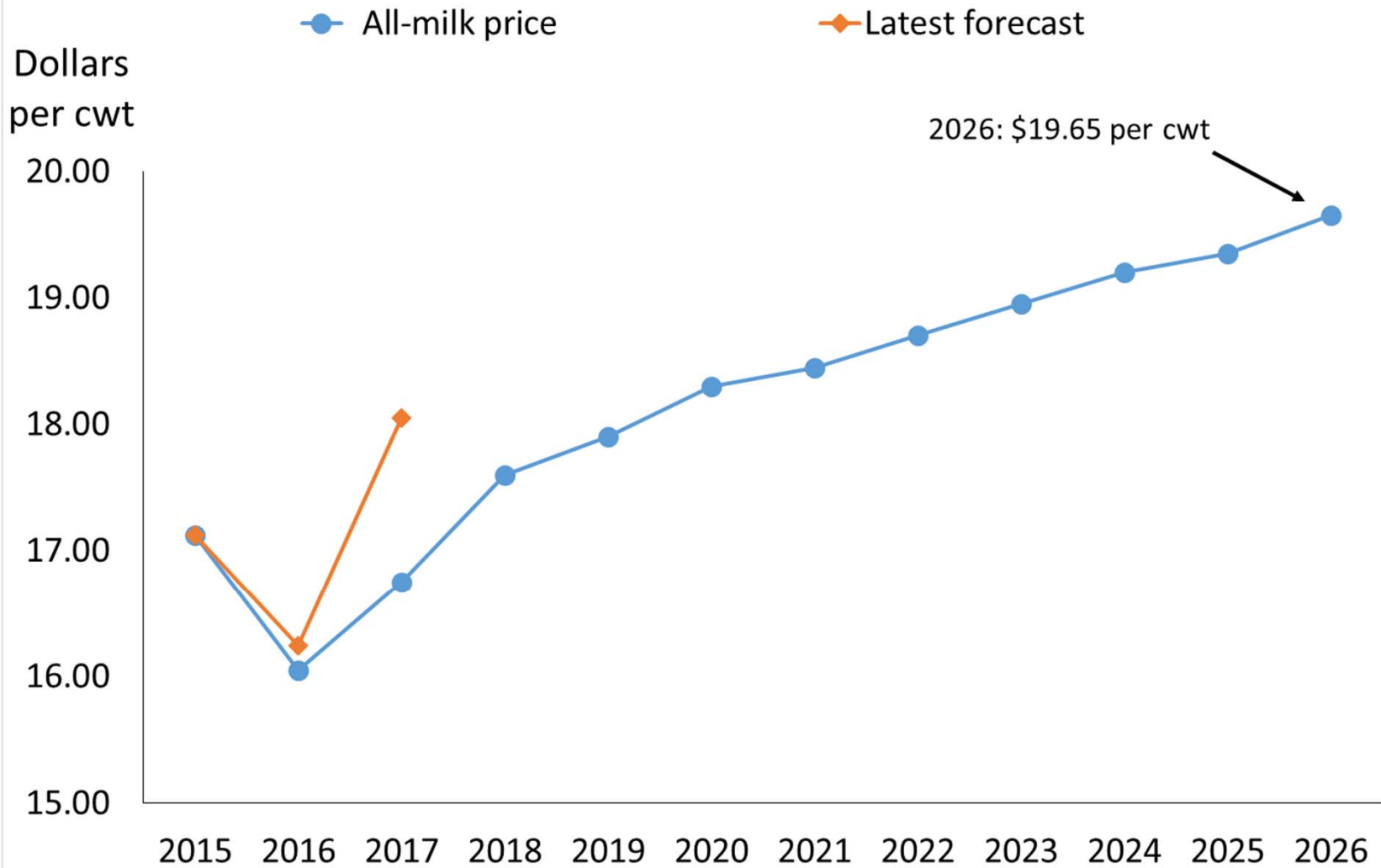
Commercial export projections



Sources: U.S. Dept. of Agriculture: Foreign Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service; U.S. Dept. of Commerce, Bureau of the Census.



All-milk price projections



Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service.

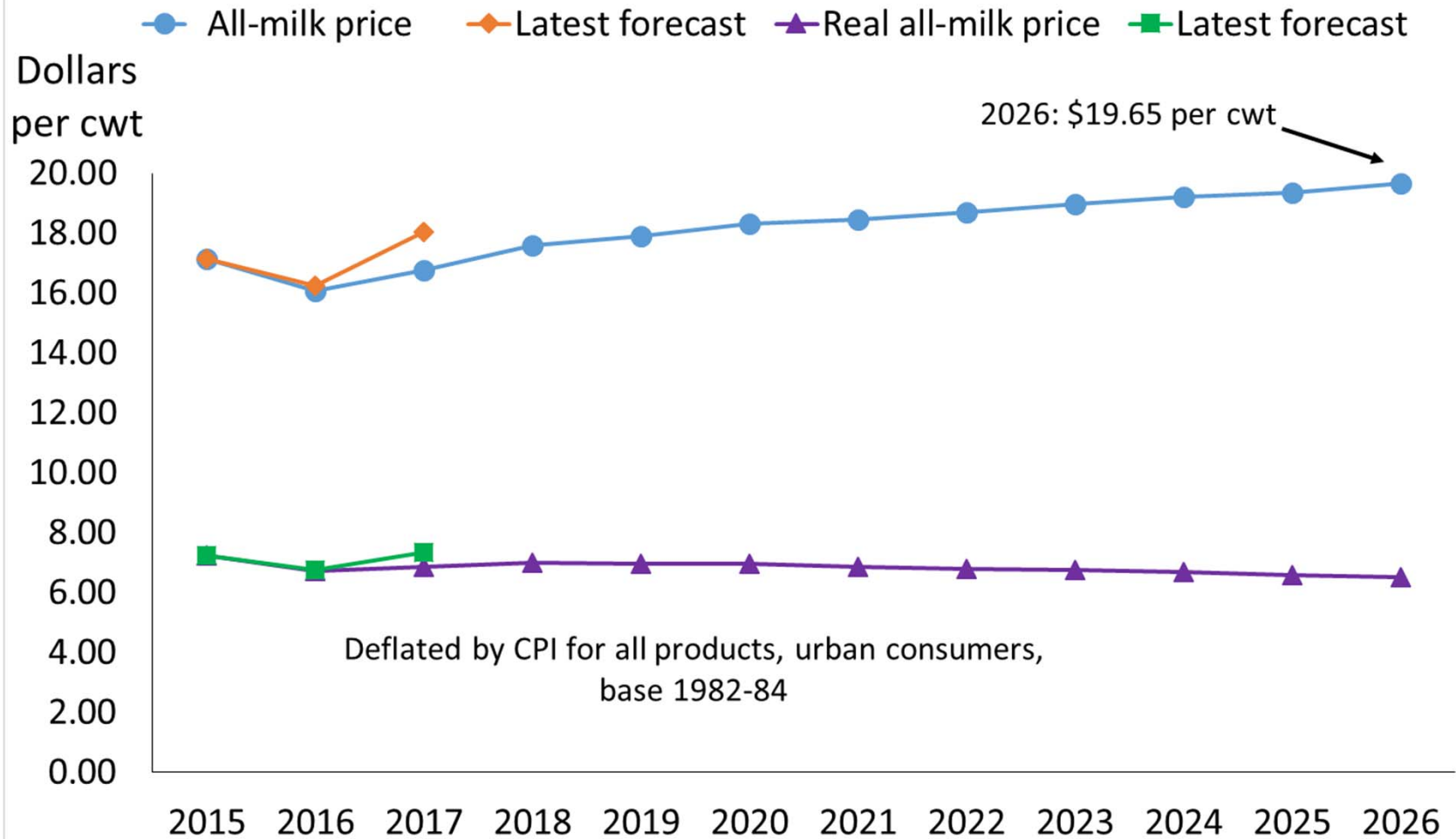


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All-milk price projections: nominal and real (adjusted for inflation)



Sources: U.S. Dept. of Agriculture: National Agricultural Statistics Service, World Agricultural Outlook Board, Economic Research Service.





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Thank you!

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