



Sources of Risk in the Milk Price

Mark Stephenson, Ph.D.

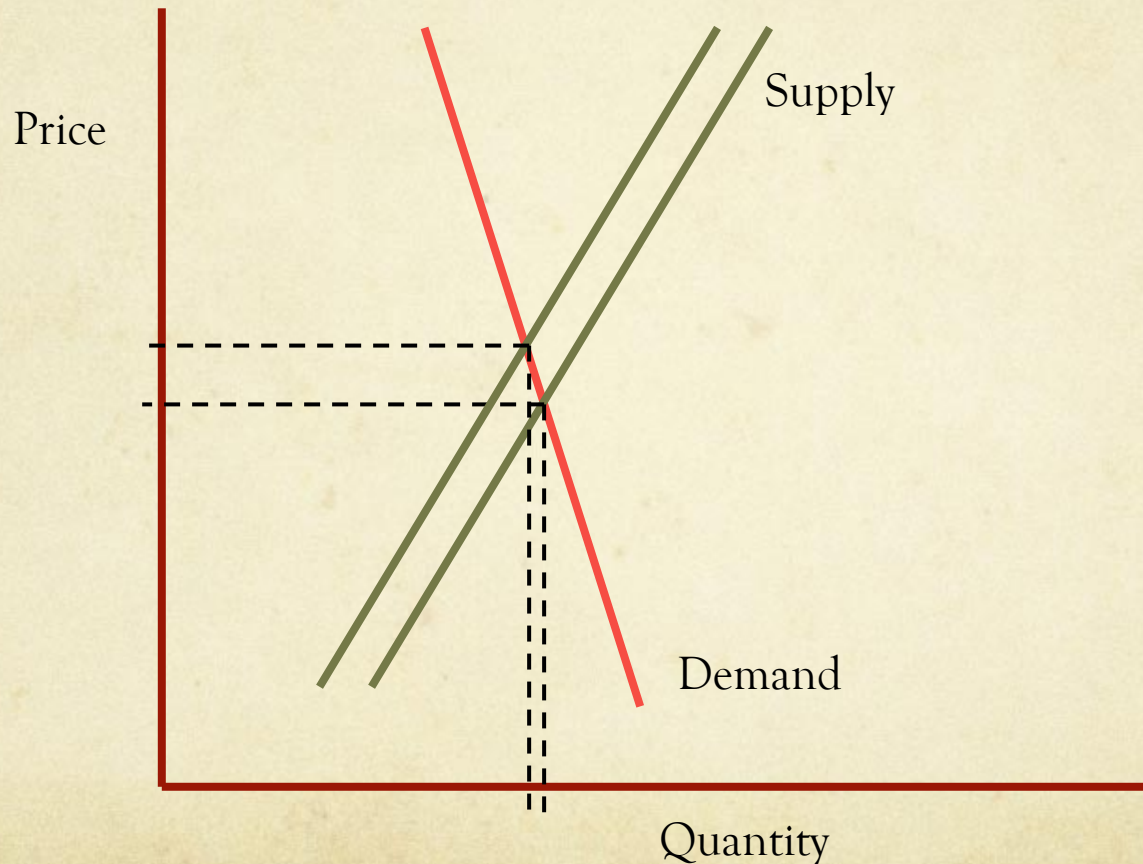
Director of Dairy Policy Analysis



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Inelastic Supply and Demand



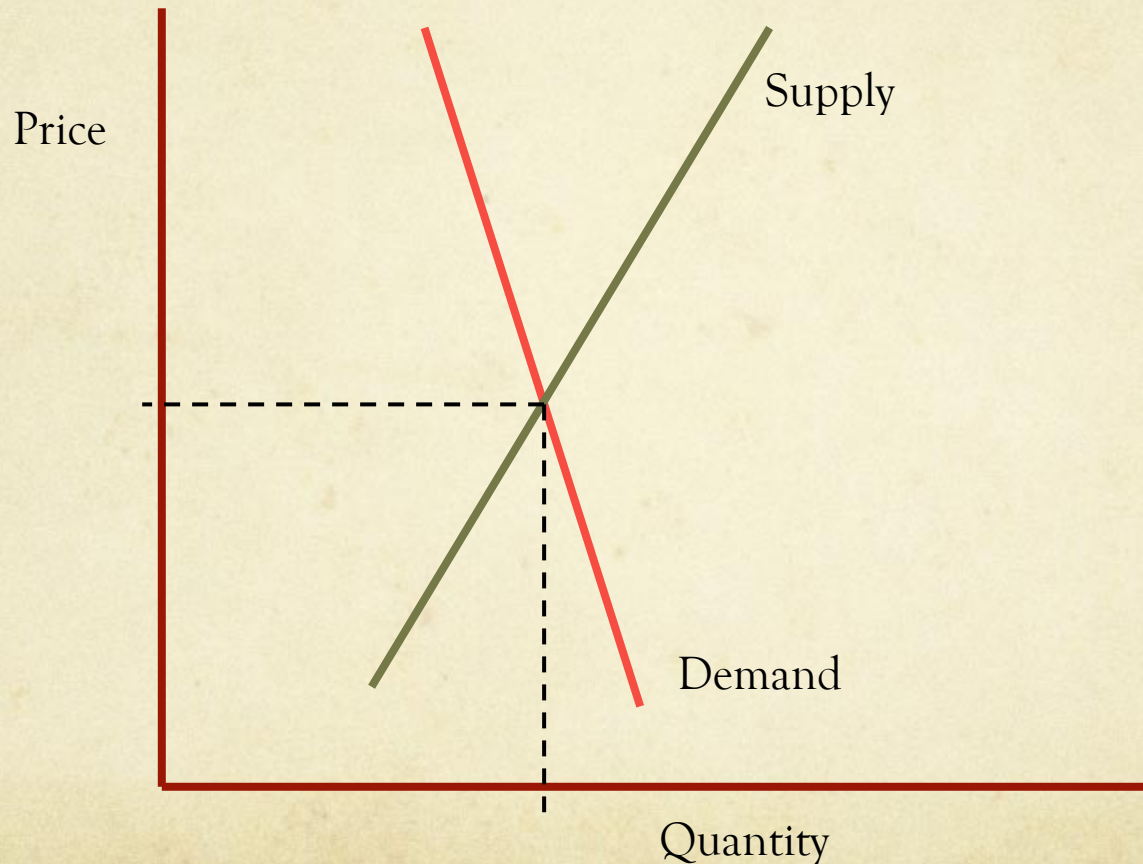
Why is Supply Inelastic?

- Specialized equipment—e.g., milking parlor
- High capacity utilization
- Expensive to significantly increase production
- Perishable product
- Even of stocks that are less perishable, relatively small inventories

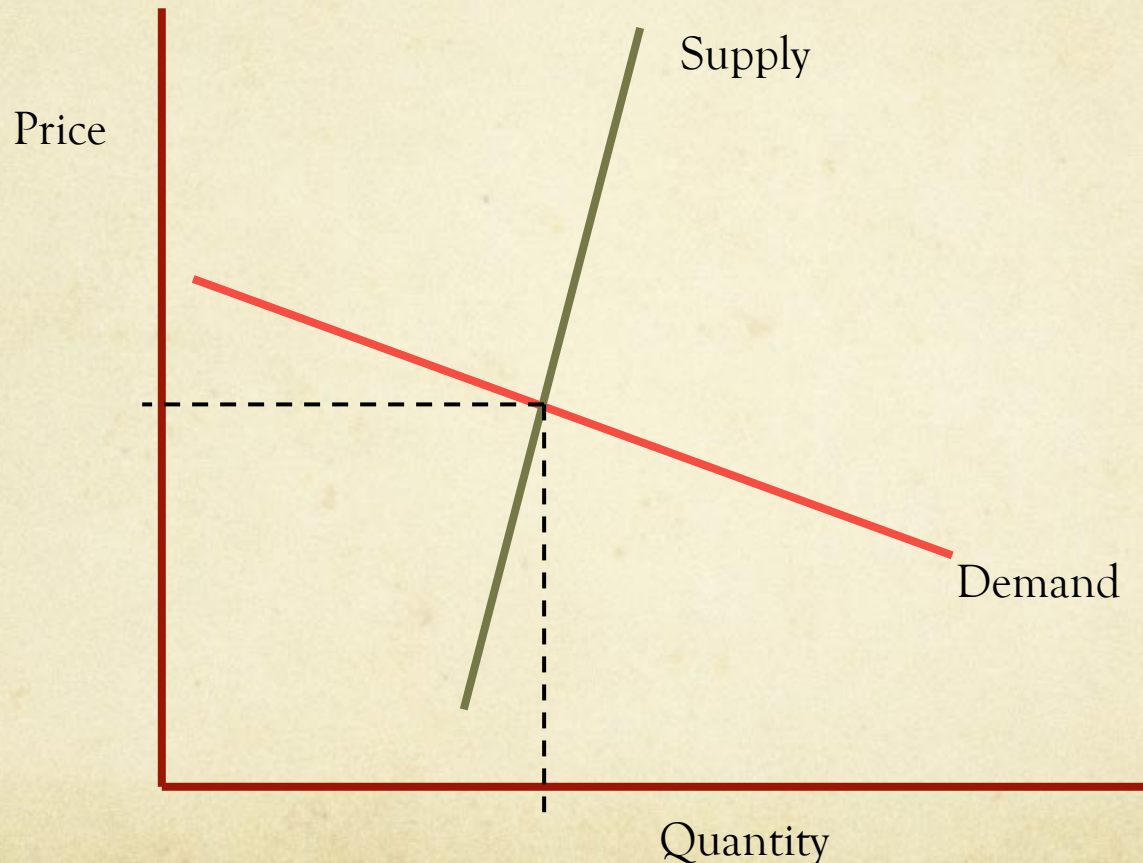
Why is Demand Inelastic?

- Necessity versus luxury
- Availability of substitutes
- Proportion of your income that is spent on dairy
- Possibility of postponing consumption (shelf life)
- Who is making the choices (restaurant menus)

Changes in Elasticity?



Changes in Elasticity?

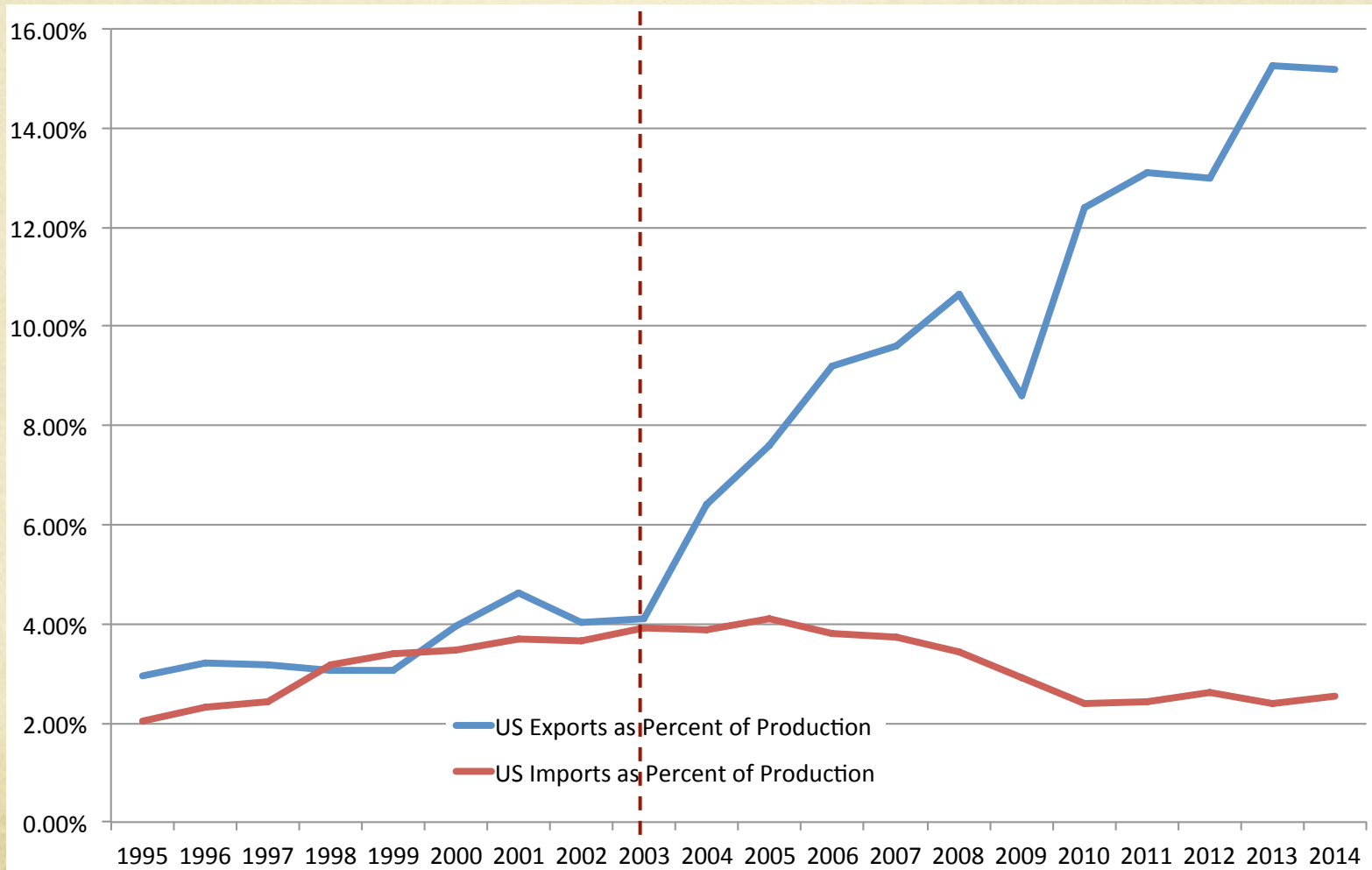


- Supply more inelastic?
- Demand less inelastic?
- Demand shocks more important to price risk?

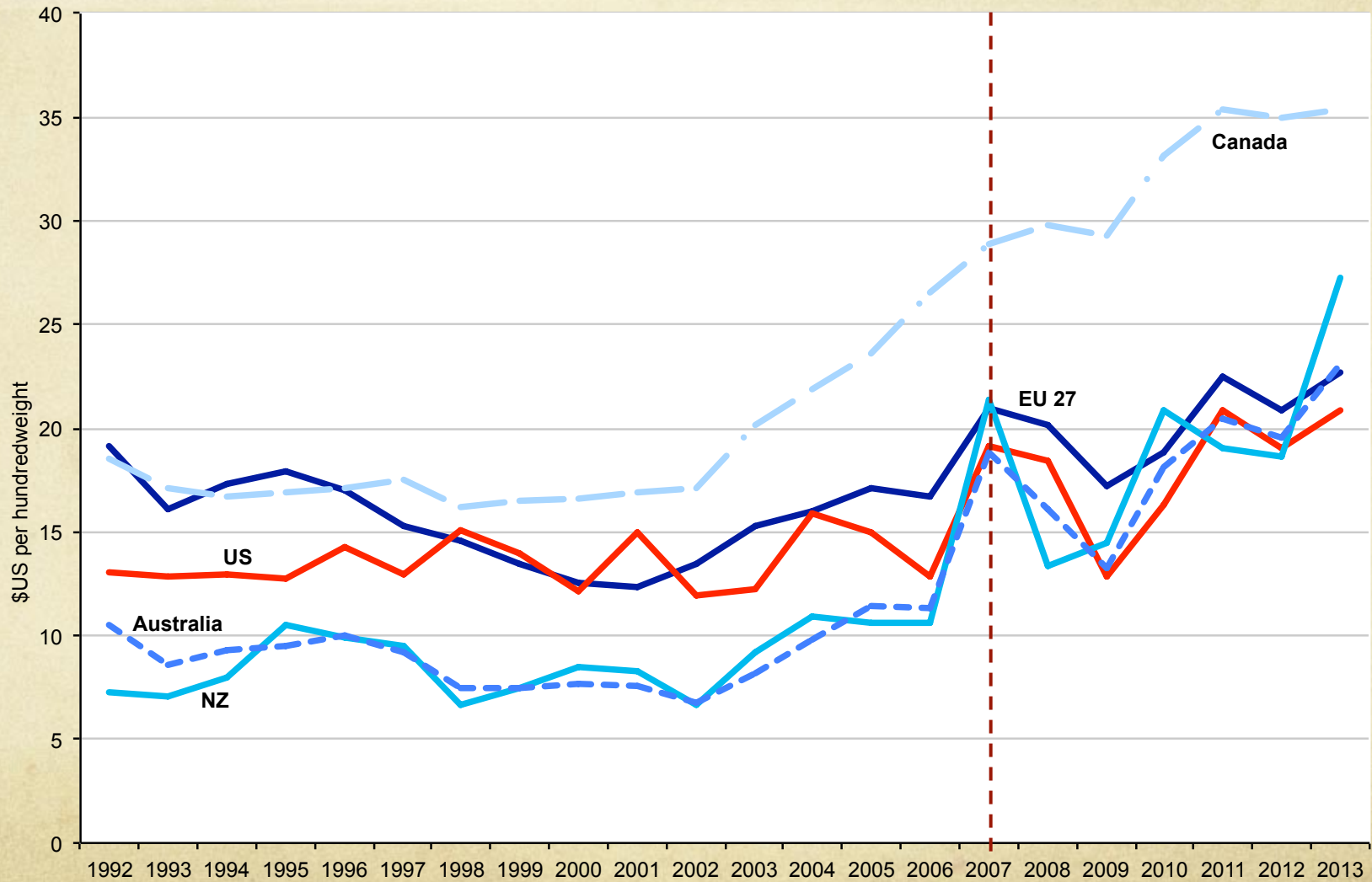


U.S. Role in World Dairy Trade

Trade as a Percent of Production



U.S. Role in World Markets



More or Less Volatility?

- Can argue that joining world trade enlarges the size of the “ballast” in the market—i.e., greater stocks
- Can argue that we—and the rest of world—have diversified our supply and thus spread risk
- Might also argue that our supply chain is even less coordinated



Dairy Farm Business Models

Returns to Farmland

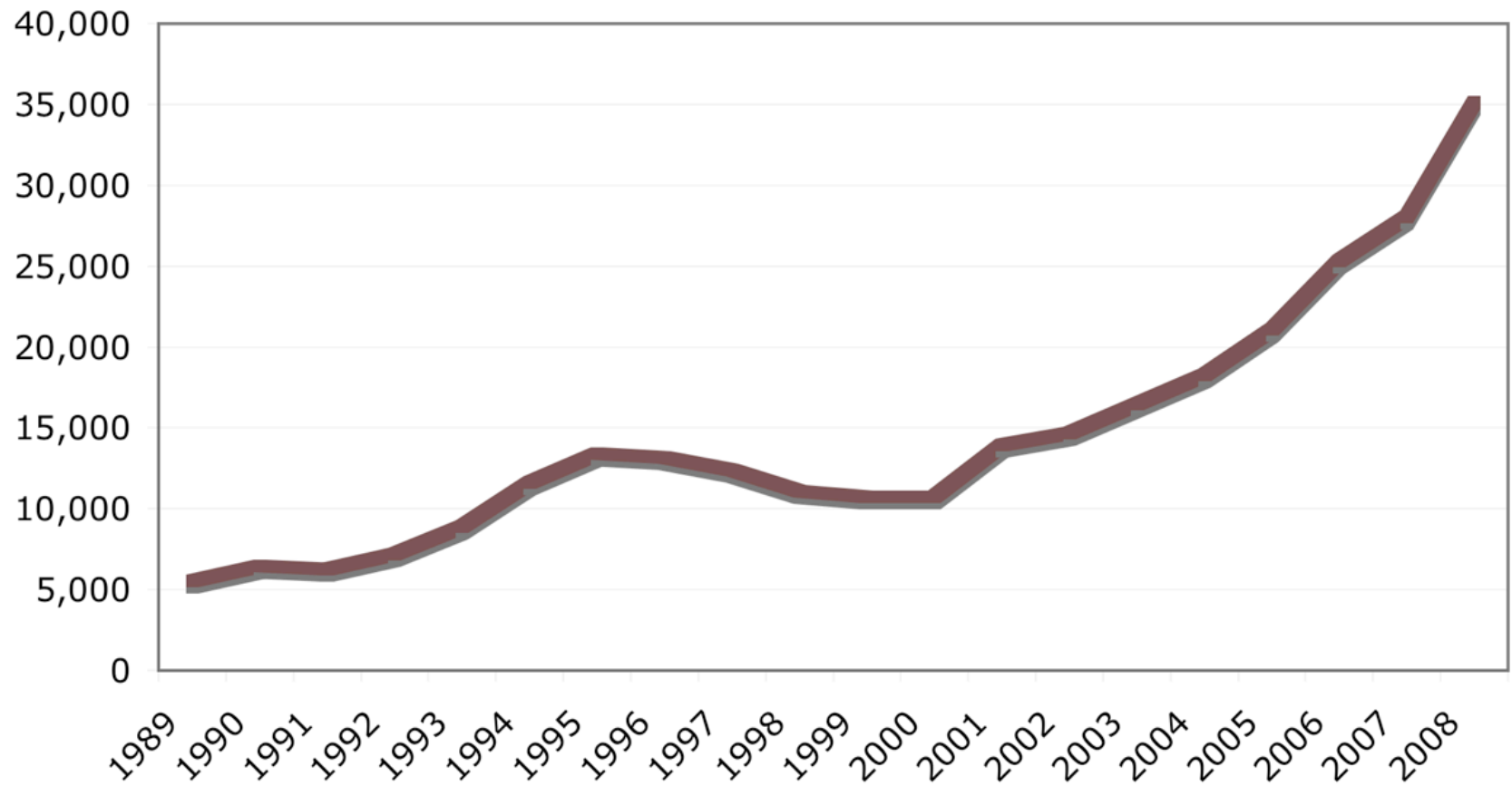
Income, Capital Gain and Total Farmland Investment Yields (1990 - 2005)

	<u>Income Yield</u>		<u>Capital Gain Yield</u>		<u>Total Yield</u>		<u>Coefficient of Variation</u>
	<u>Avg Yield</u>	<u>Std Dev</u>	<u>Avg Yield</u>	<u>Std Dev</u>	<u>Avg Yield</u>	<u>Std Dev</u>	
Australia	3.8%	1.2%	6.0%	4.9%	9.8%	5.4%	0.55
Canada	2.3%	0.3%	3.6%	3.0%	5.9%	3.3%	0.56
NZ	2.7%	1.1%	11.7%	16.3%	14.4%	16.3%	1.13
US	2.4%	0.3%	6.1%	4.5%	8.5%	4.4%	0.52

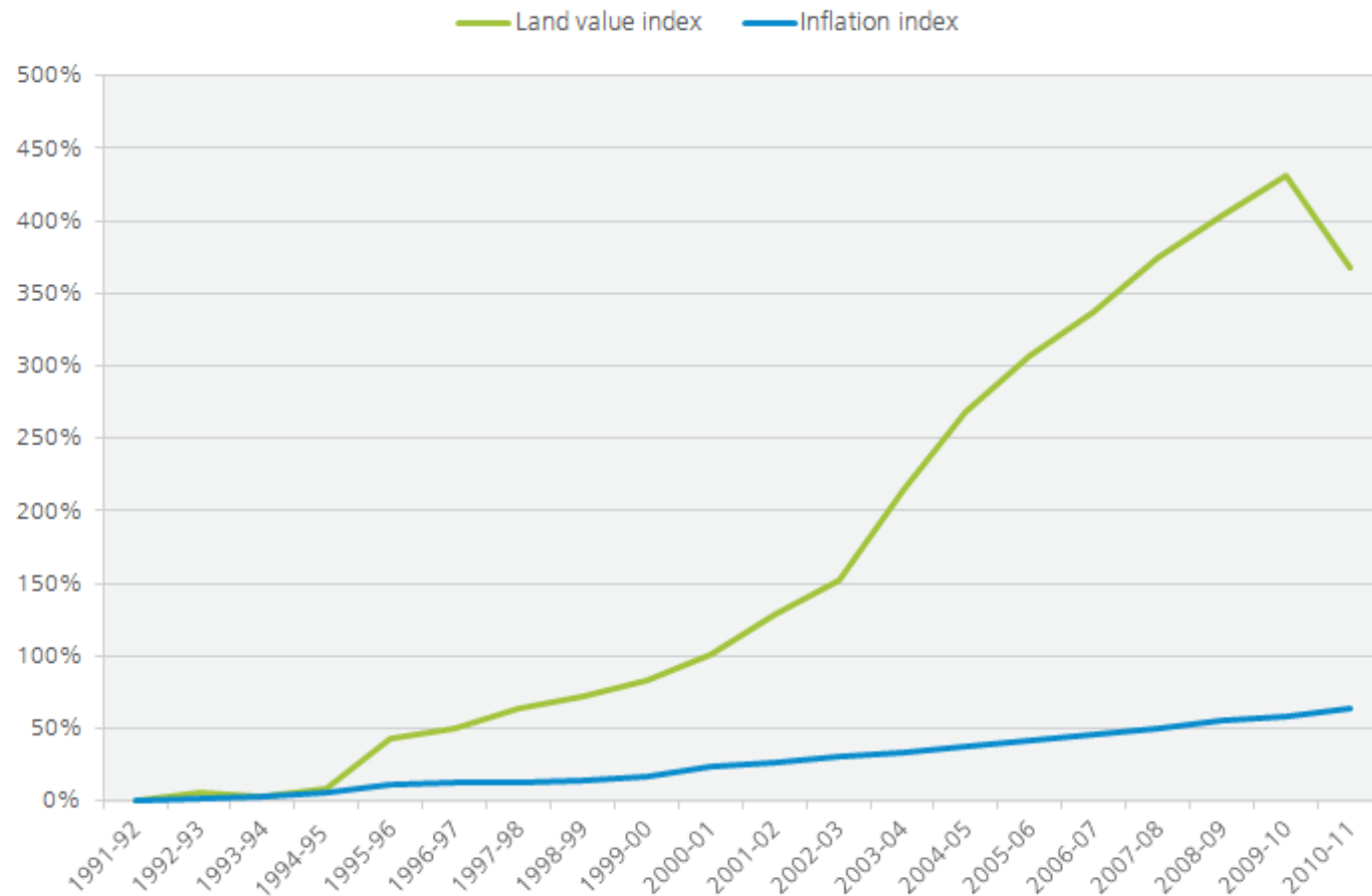
Source: Eves and Painter 2008

New Zealand Land Values

NZ\$ / Hectare



Australia Land Values



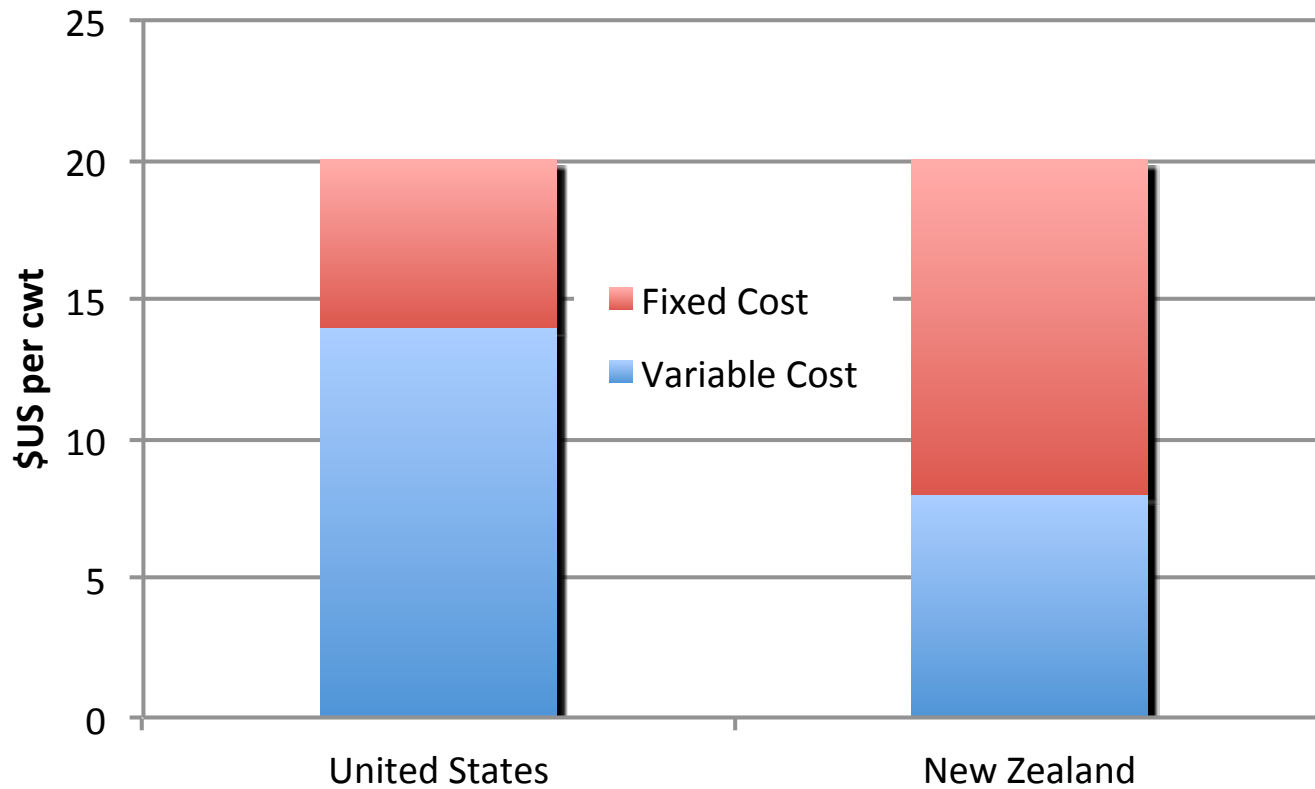
Source: Land Commodities Research

© Land Commodities

Dairy Farm Business Models

- Milk price is similar across countries competing for world trade
- Total costs of production is similar across countries competing for world trade
- Cost structure is quite different

Grazing versus Intensive



Production Risk v.s. Price Risk

New Zealand

- Large fixed costs in land assets
- Lose money when price falls below total cost of production
- Price has to drop a long way before there is any change in production strategy
- More production risk in this business model

United States

- High variable costs in feed and labor
- Lose money when price falls below total cost of production
- Price may fall below variable cost of production and can cause cessation of production or operating below capacity
- More price risk in this business model

Business Structure has Consequences



We are fast sprinters...

...But we tire quickly





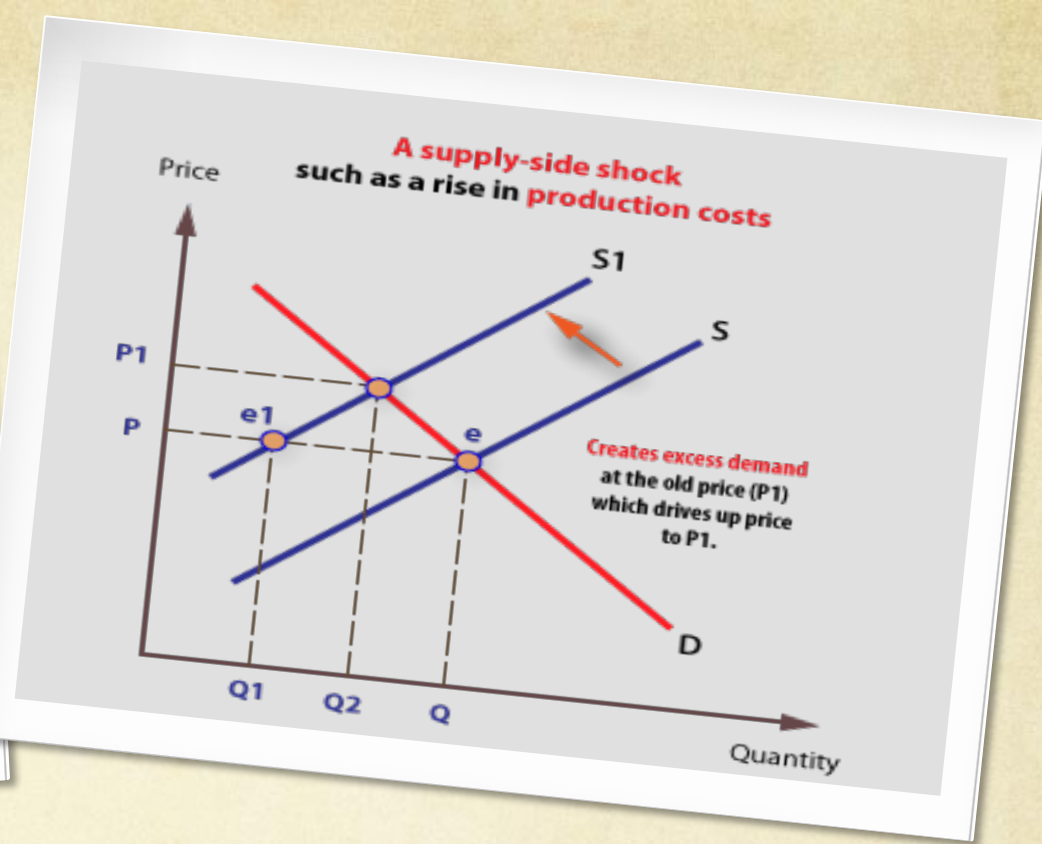
Product Mix for Exports

Implications

- For lower income countries, SMP and WP are luxury items
- For countries purchasing as food ingredients, these are close substitutes
- For U.S. utilization, SMP (NFDM) is a price sensitive input for standardizing cheese vats
 - Alternatives include skim, condensed skim, MPC, etc.
- These nature of these items contribute significantly to balancing world supply/demand gaps

Export Metrics

- About 50% of our SMP/NFDM is exported
 - U.S. exports represent about 25-30% of world trade
- About 50% of whey powder is exported
 - U.S. exports represent about 20% of world trade
- About 75% of lactose is exported



Shocks to the System

Demand Shock



Demand Shock

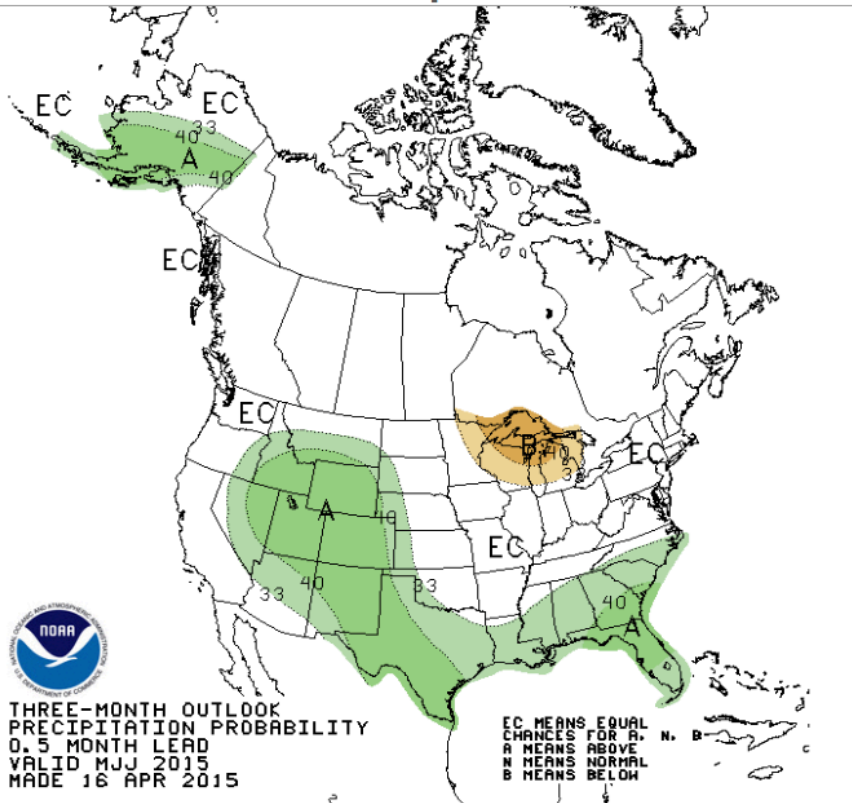


Supply Shocks

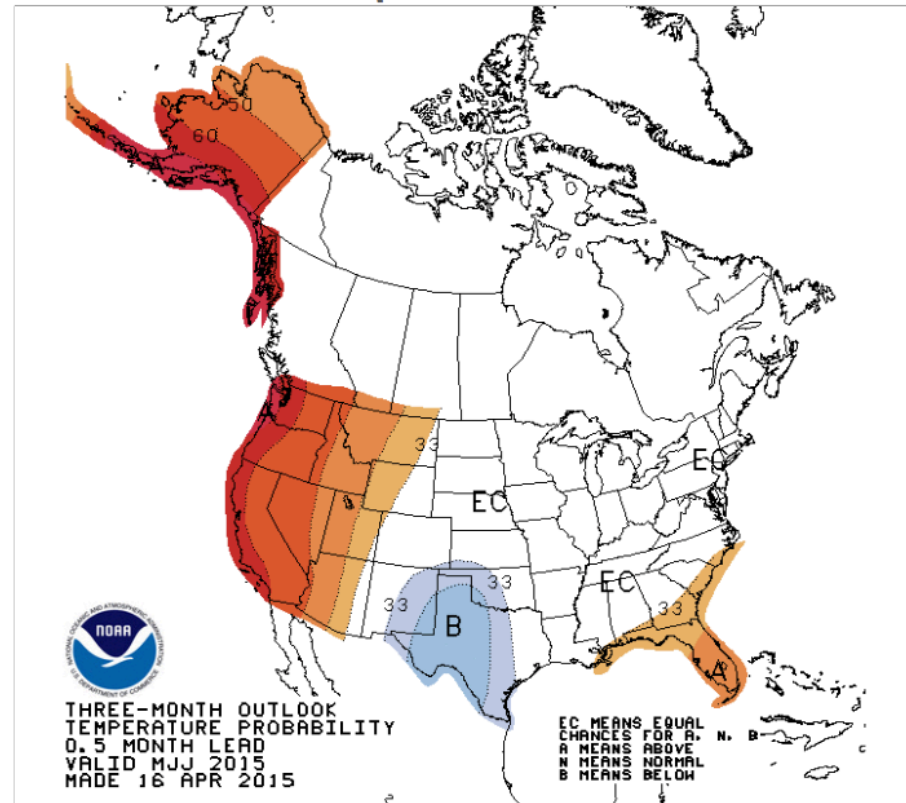
- Far more common than demand shocks
- Most often related to weather
 - Can be other things—ethanol demand for corn
- Because of world markets, we must be vigilant about conditions home and abroad
 - Monitor El Niño/Southern Oscillation (ENSO)
 - 70% chance of persistent El Niño this Summer & Fall

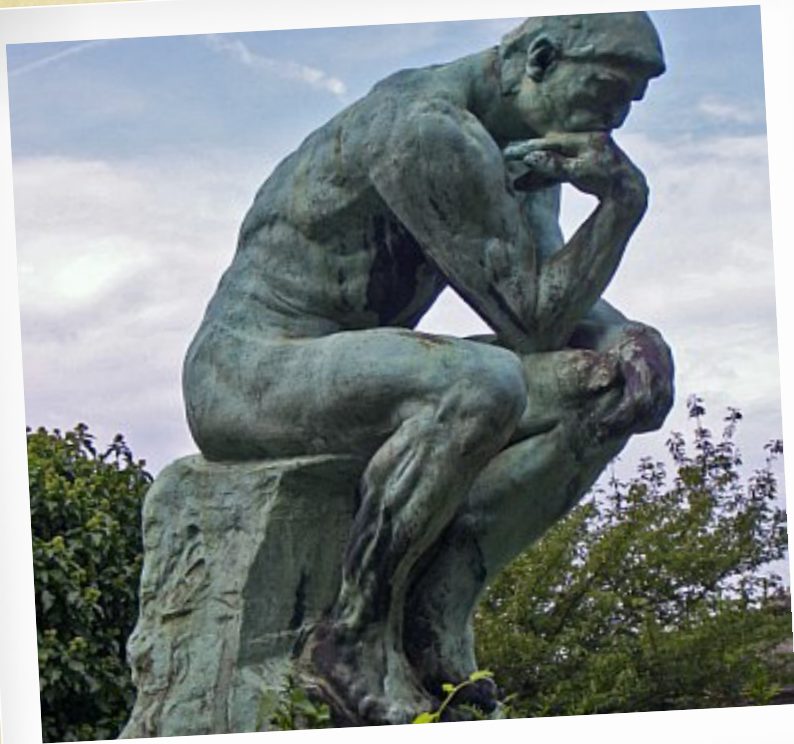
Warmer but Wetter in U.S. West— Drier in Australia & New Zealand

Precipitation



Temperature



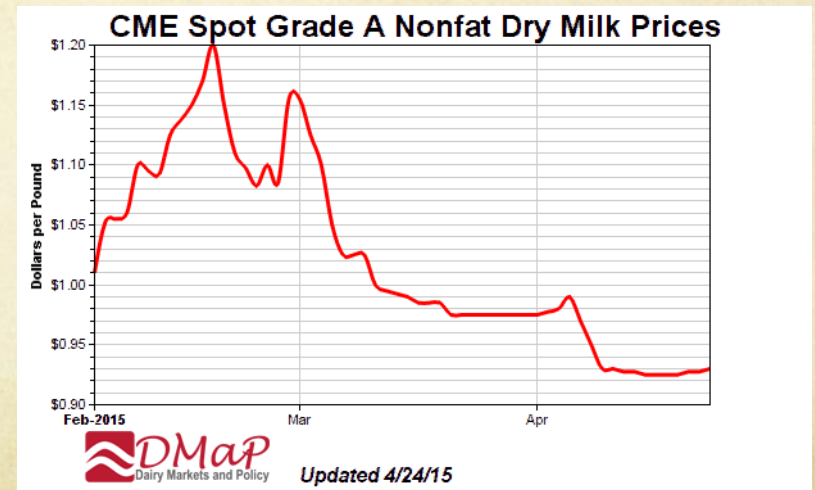
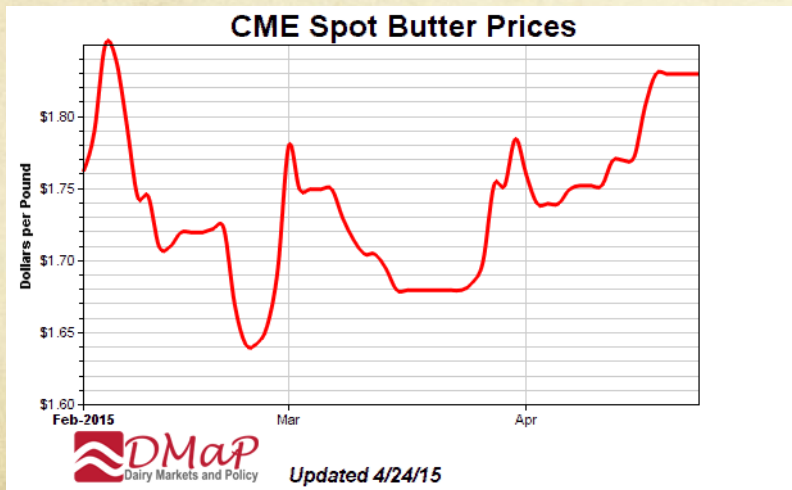
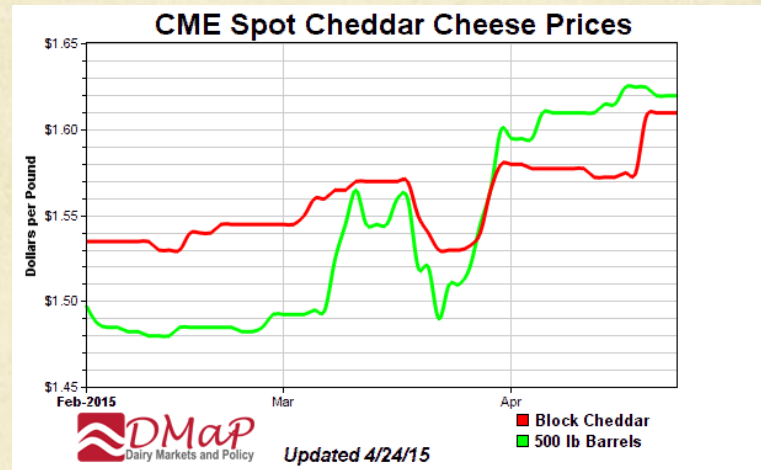


What Does It All Mean?

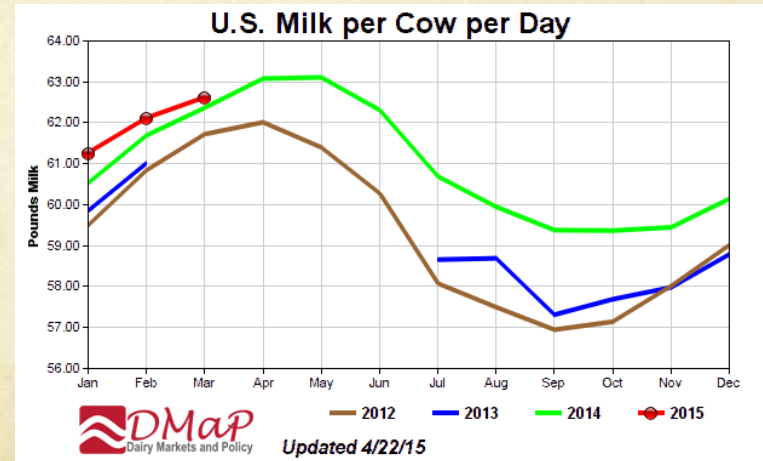
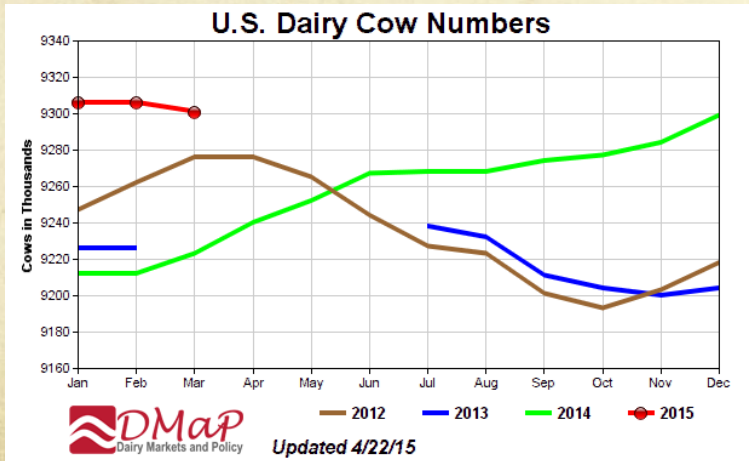
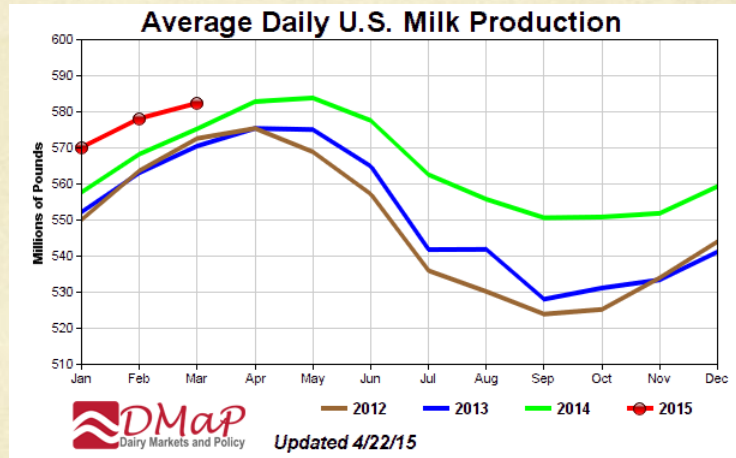
My Approach to Outlook

- Evaluate output from 3 dairy models
 - Simple econometric model
 - System dynamics model
 - Cycles model (spectral analysis)
- I look at data on a regular basis
- I keep abreast of dairy news
- My mental model
- It must “add up” (consistency check)

Data

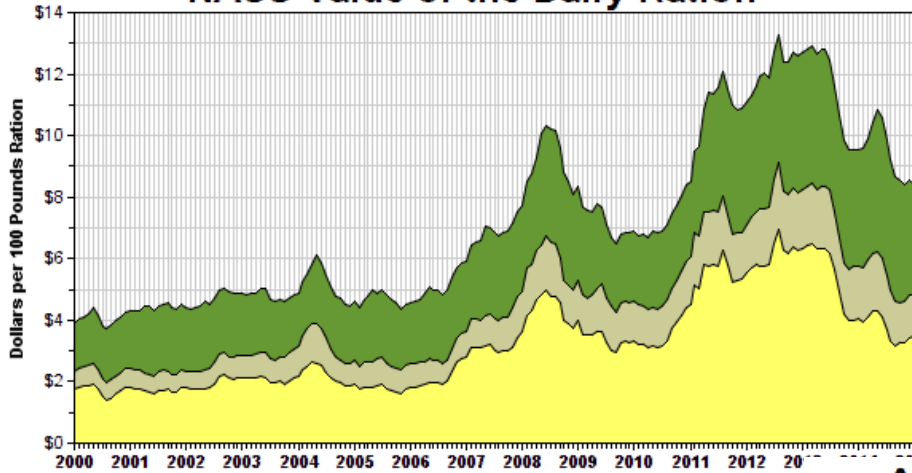


Data



Data

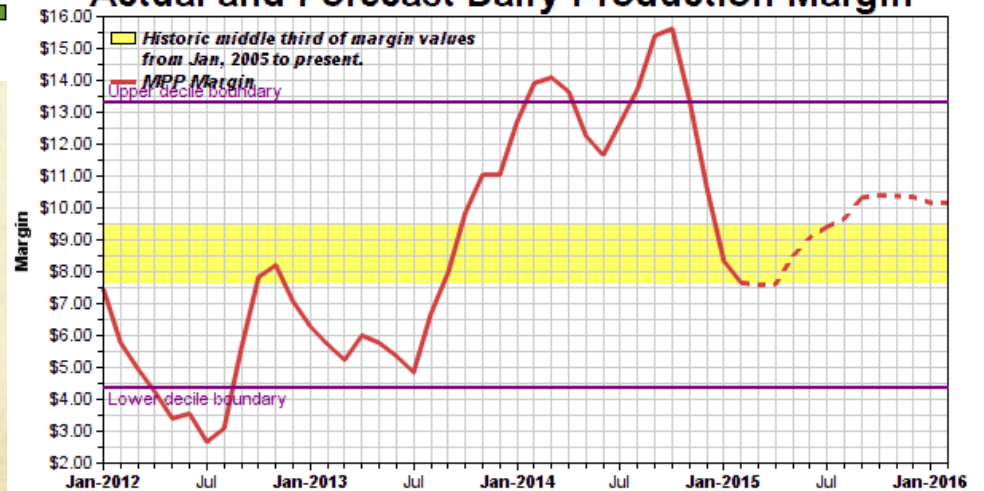
NASS Value of the Dairy Ration



■ Corn Value
 ■ Soybean Value
 ■

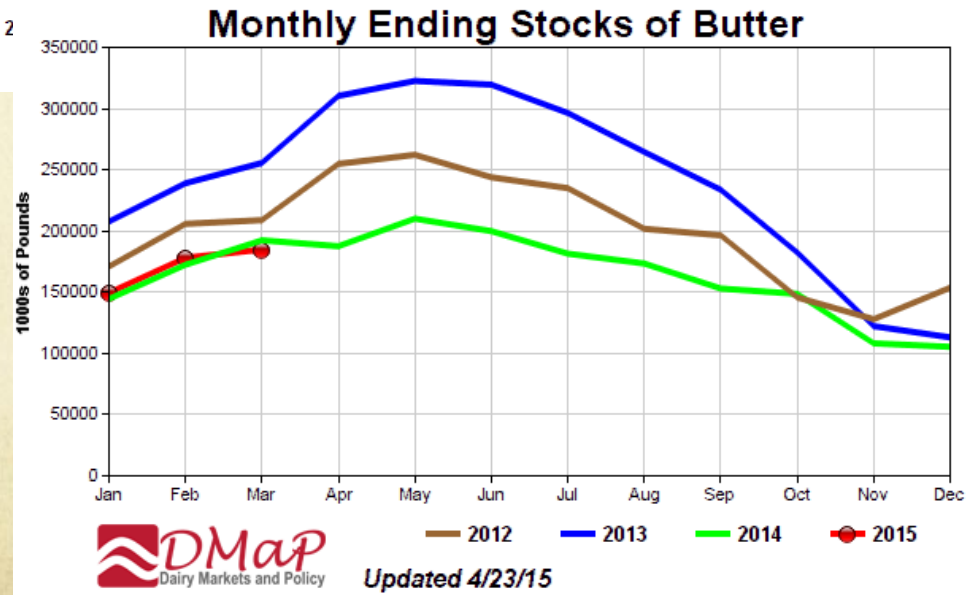
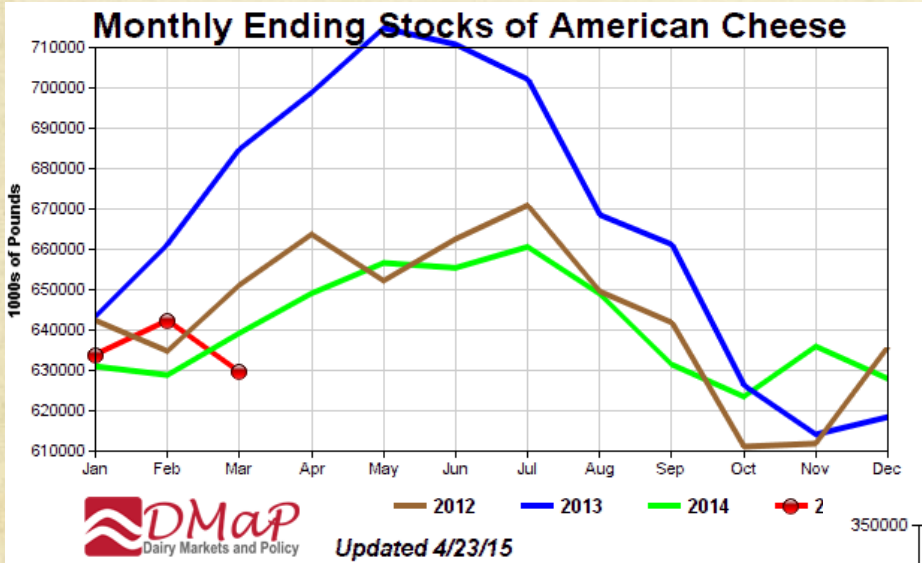
Updated 3/30/15

Actual and Forecast Dairy Production Margin



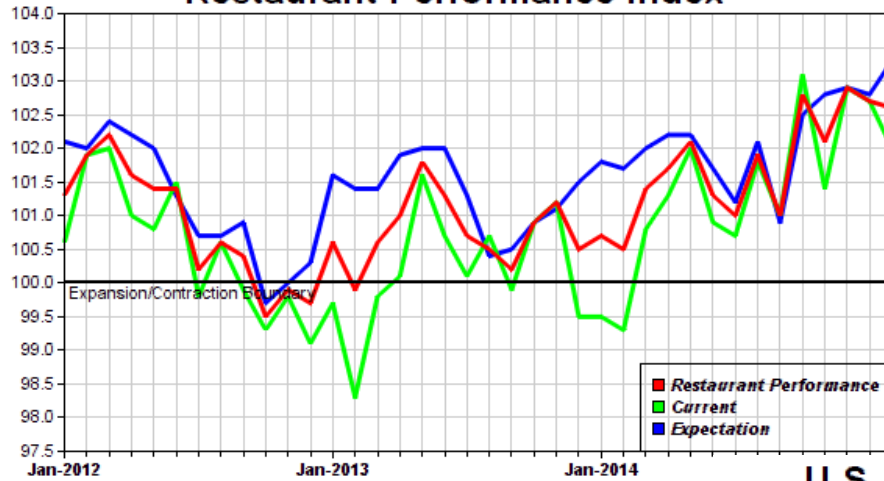
Updated 4/24/15

Data



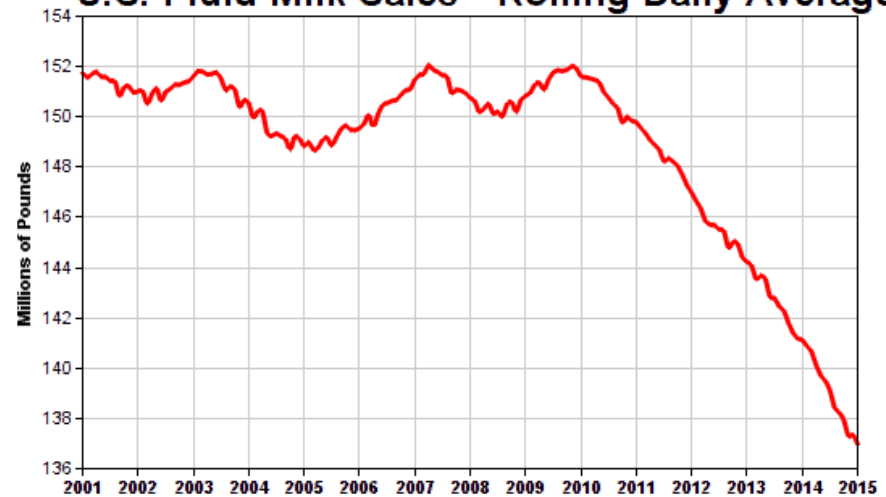
Data

Restaurant Performance Index



Updated 4/2/15

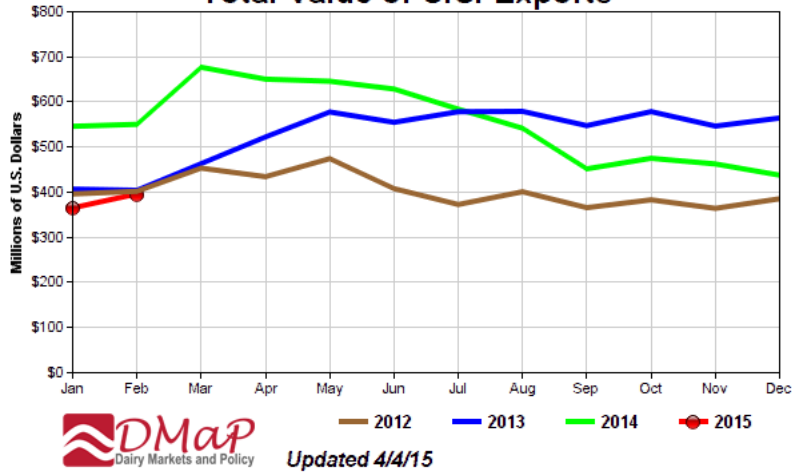
U.S. Fluid Milk Sales—Rolling Daily Average



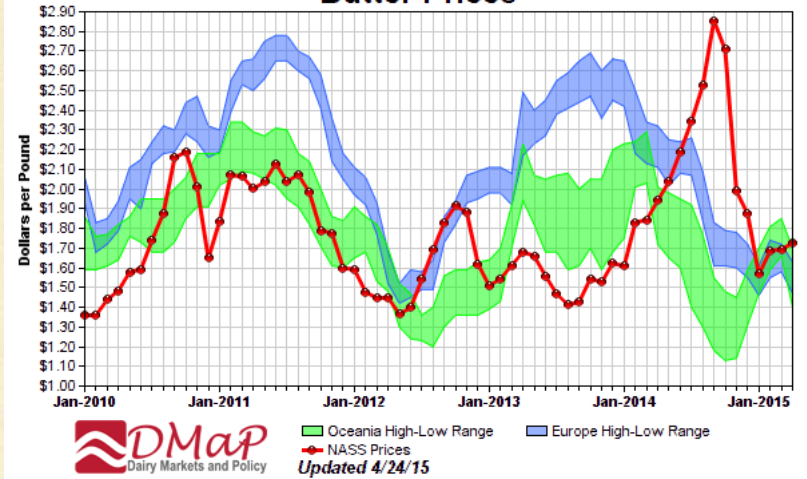
Updated 1/1/15

Data

Total Value of U.S. Exports



Butter Prices



Dollar Index of Major Currencies



News

EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

issued by

**CLIMATE PREDICTION CENTER/NCEP/NWS
and the International Research Institute for Climate and Society**
9 April 2015

ENSO Alert System Status: El Niño Advisory

Special Notice: Starting in May 2015, the ENSO Diagnostic Discussion will be released on the second Thursday of each month.

Synopsis: There is an approximately 70% chance that El Niño will continue through Northern Hemisphere summer 2015, and a greater than 60% chance it will last through autumn.

CHEESE REPORTER

April 24, 2015

EDITORIAL COMMENT



DICK GROVES

Publisher / Editor
Cheese Reporter
e: dgroves@cheesereporter.com
tw: @cheesereporter

It's difficult to imagine New Zealand not gaining further inroads into the US dairy market under a TPP agreement. It's also difficult to imagine US dairy exports to New Zealand rising all that much

Trade Agreements Will Boost US Dairy Exports, And Imports

The Office of the US Trade Representative recently released its annual report detailing foreign barriers affecting US exports of dairy and other products and ser-

Second, as the USTR's report points out, the US faces several obstacles to increasing its dairy exports to the EU, including EU export certification requirements,

Then there's the TPP, which the US is negotiating with roughly a dozen countries, one of which happens to be the world's largest dairy exporter (New Zealand),

My Mental Model...

Export Balance Sheet

Pushing Down on Price

- China milk production
- China economy
- Russian sanctions/ruble
- Strength US dollar
- EU quota
- NZ production
- Big flush in NE and UMW

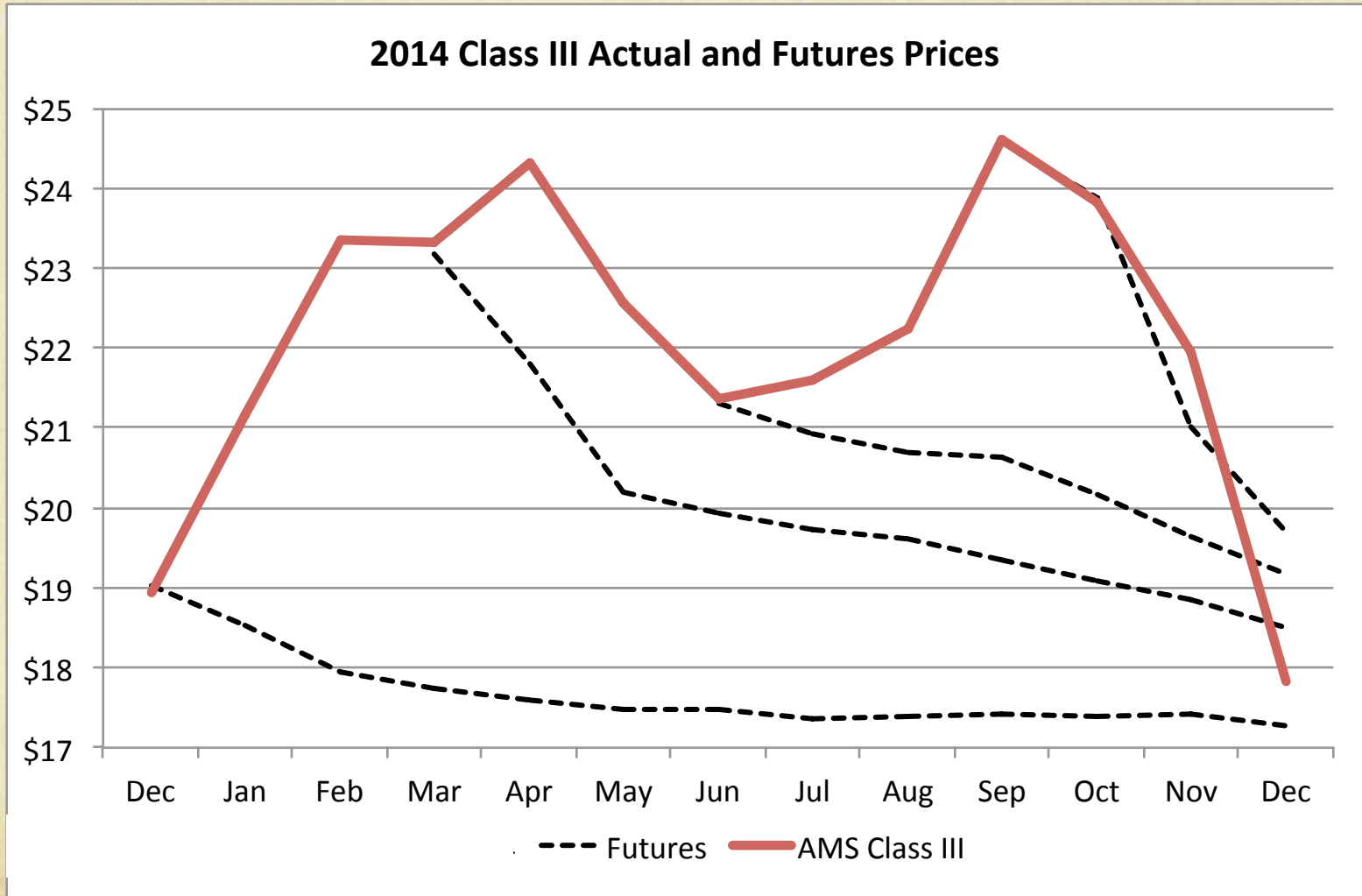
Pulling Up on Price

- Slowdown in West
- Strong domestic sales
- Maybe long-term growth in North Africa and India

It's Got to Add Up

	2005	2006	2007	2008*	2009	2010	2011	2012*	2013 ^a	2014 ^b	2015 ^c
<u>Supply</u>											
Cows Numbers (thous.)	9,043	9,137	9,189	9,315	9,203	9,119	9,194	9,232	9,221	9,255	9,325
Production/cow (lbs)	19,566	19,894	20,204	20,396	20,572	21,148	21,346	21,696	21,822	22,285	22,770
Production	176.9	181.8	185.7	190.0	189.3	192.8	196.3	200.3	201.2	206.2	212.3
Farm Use	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
Marketings	175.9	180.8	184.6	189.0	188.4	191.9	195.3	199.3	200.2	205.3	211.4
Beginning Commercial Stocks	7.2	7.9	9.5	10.3	10.0	11.3	10.8	10.9	12.2	11.2	10.5
Imports	7.4	7.5	7.2	5.3	5.6	4.1	3.5	4.1	5.3	4.2	3.8
Total Supply	190.5	196.2	201.3	204.6	203.9	207.2	209.6	214.3	217.7	220.7	225.7
<u>Utilization</u>											
Domestic Commercial Use	179.8	183.7	185.5	185.8	187.1	187.5	189.3	193.3	194.2	197.9	202.6
Ending Commercial Stocks	7.9	9.5	10.3	10.0	11.3	10.8	10.9	12.2	11.2	10.5	12.1
Commercial Exports	2.8	3.1	5.4	8.8	4.9	8.7	9.4	8.8	12.4	12.3	11.0
Net Removals (excluding exports)	0.0	0.0	0.0	0.0	0.7	0.2	0.0	0.0	0.0	0.0	0.0
Total Use	190.5	196.2	201.3	204.6	203.9	207.2	209.6	214.3	217.7	220.7	225.7

What is Your Perspective?



Futures are “Mean Reverting”

Bottom Line...

- Supply and demand are inelastic but maybe changing
 - Demand shocks could hit us harder than supply shocks
- We are fully dependent on export markets
- We are competitive but high variable cost producers
 - We can be first in, but maybe also first out
 - We will play a balancing role for the world
- Our major export products enforce the balancing role
- We've had a big decline to normalcy
- I have more concern for 4th quarter of 2015 and 2016