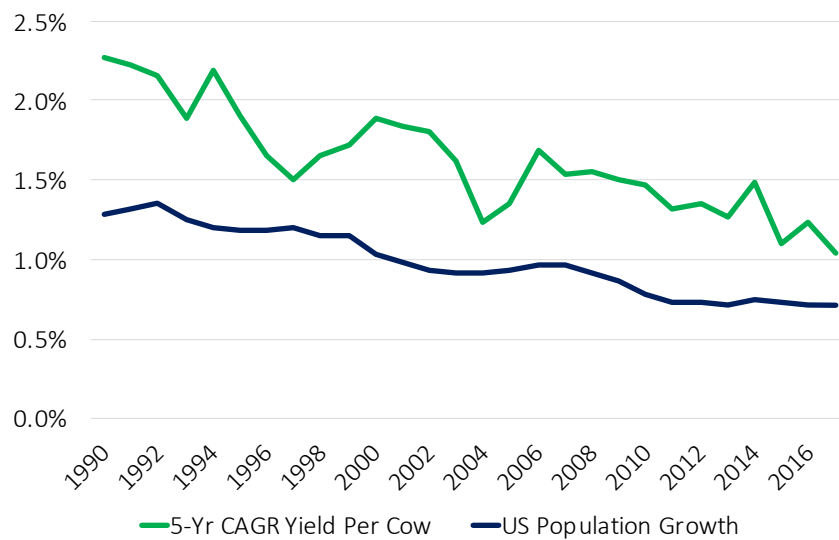


Consumption, Trade, and the End of the World as We Know it (and I feel fine)

NWDEPA 2019
 Grand Rapids, MI
 April 30

Dr. Marin Bozic
 University of Minnesota

Cow Productivity Gains vs. U.S. Population Growth Rate



Cow Productivity Gains vs. U.S. Population Growth Rate: Implications

Supply

Milk pounds growth: $23,000 \text{ lbs/cow} \times 1\% \times 9,400,000 \text{ cows} = 2.16$
billion lbs

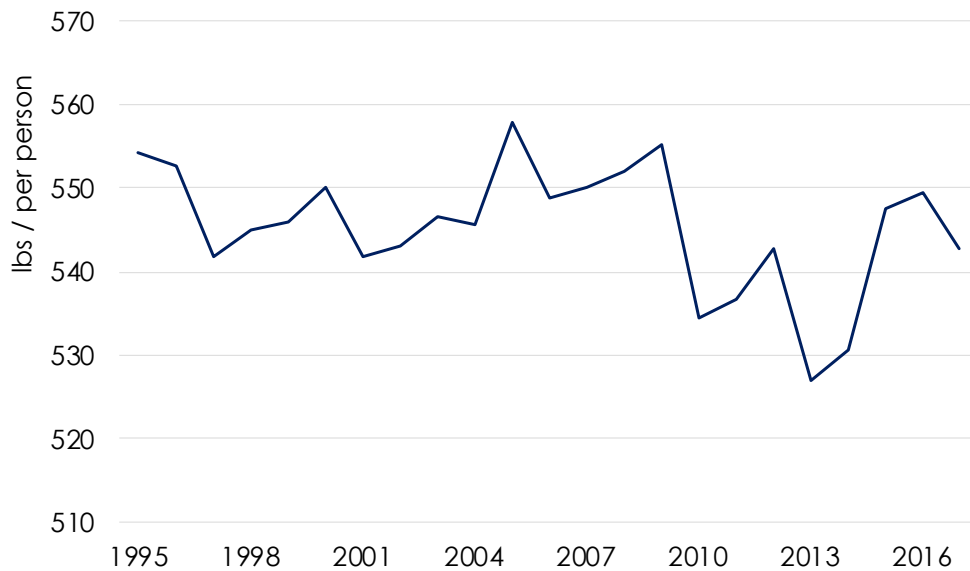
1.2% yield growth (276 lbs/cow or 0.75 lb/cow/day) → 2.6 billion lbs

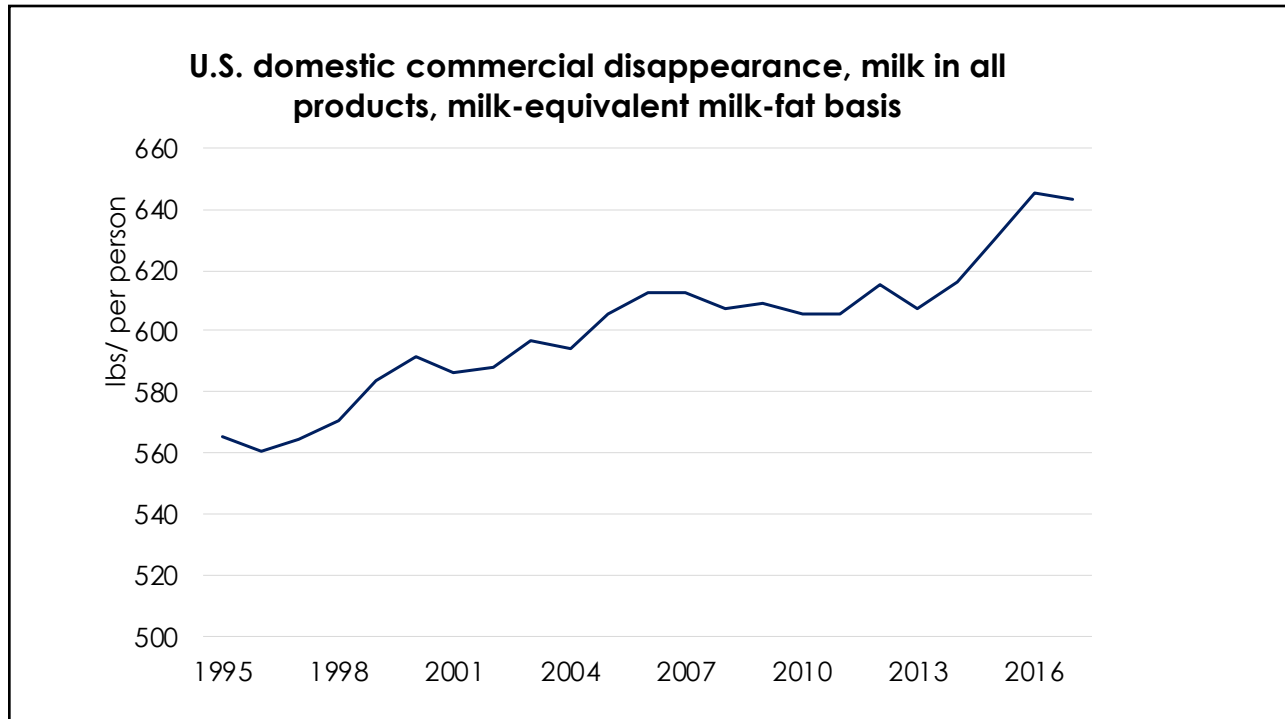
1.5% yield growth (345 lbs/cow or 0.95 lb/cow/day) → 3.2 billion lbs

Demand

???

U.S. domestic commercial disappearance, milk in all products, milk-equivalent skim-solids basis





Milkfat deficit, skim solids surplus

Supply

Milk pounds growth: $23,000 \text{ lbs/cow} \times 1\% \times 9,400,000 \text{ cows} = 2.16$ billion lbs

1.2% yield growth (276 lbs/cow or 0.75 lb/cow/day) → 2.6 billion lbs

1.5% yield growth (345 lbs/cow or 0.95 lb/cow/day) → 3.2 billion lbs

Demand

Using per capita commercial disappearance, milk in all products, skim-solids basis (no per capita consumption growth)

542 lbs / per person \times 330 million \times 0.7% → 1.25 bil lbs

560 lbs / per person \times 330 million \times 0.7% → 1.29 bil lbs

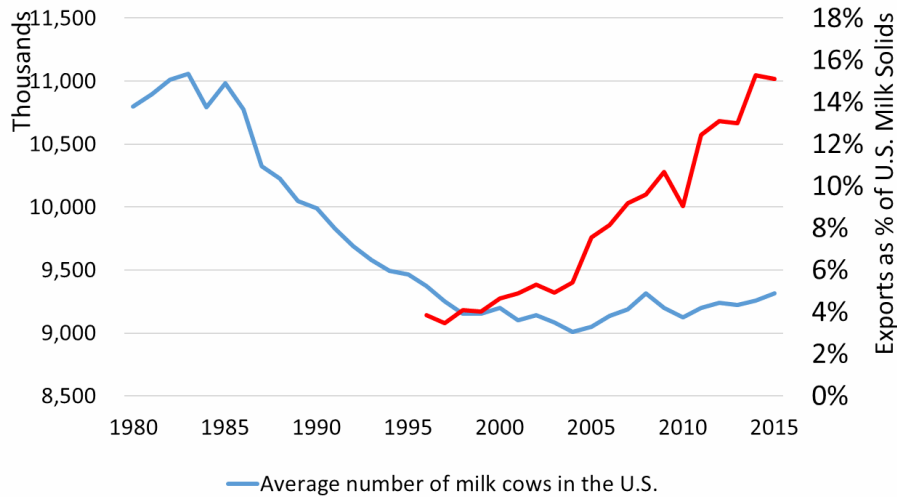
Milk-fat basis

643 lbs / per person \times 330 million \times (0.7% + 0.5% per head) → 2.5 bil lbs

643 lbs / per person \times 330 million \times (0.7% + 1% per head) → 3.6 bil lbs

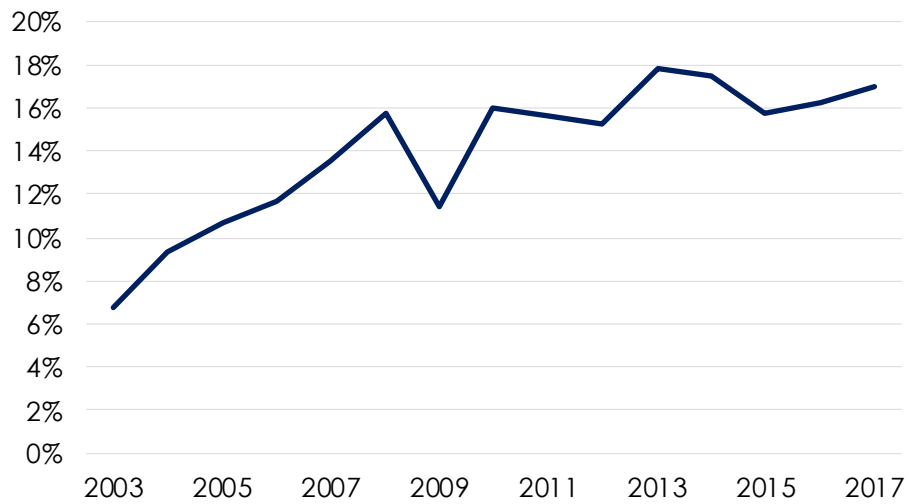
643 lbs / per person \times 330 million \times (0.7% + 2% per head) → 4.2 bil lbs

U.S. Dairy Herd Stabilized when Dairy Exports Took Off



Relying on world trade growth not enough, we would have to increase market share to export enough...

U.S. Share of World Dairy Trade Volume



Domestic Milk Demand 2018-2027, Milk-fat basis

	USDA	Bozic (High)	Bozic (Low)
Population Growth	0.7%	0.7%	0.8%
Per Capita Growth	0.76%	1%	0.4%
Total CAGR	1.46%	1.7%	1.2%
Domestic Milk Demand in 2017	210.9	210.9	210.9
Domestic Milk Demand in 2028	243.8	249.6	237.6
Additional Milk Needed	32.9	38.7	26.7

Domestic Milk Demand 2018-2027, Skim-solids basis

	USDA	Bozic (High)	Bozic (Low)
Population Growth	0.7%	0.7%	0.7%
Per Capita Growth	0.52%	0.3%	0.0%
Total CAGR	1.26%	1.0%	0.7%
Domestic Milk Demand in 2017	177.9	177.9	210.9
Domestic Milk Demand in 2028	201.8	196.5	190.7
Additional Milk Needed	23.9	18.6	12.9

Projected exports needed to absorb exportable surplus

Period	Milk Production Growth	Exports Growth Needed (Milkfat basis)	Exports Growth Needed (Skim-solids basis)	Milk-Fat Basis	Skim-Solids Basis
2007-2017				13%	59%
2007-2014				34%	79%
2014-2017				-31%	18%
USDA*	30.5	1.6	13.4	5%	44%
Bozic (High)	27.3	-11.4	8.7	-59%	32%
Bozic (Low)	27.3	0.6	14.4	-9%	53%

* USDA projected yield * 9.4 mil cows; actual USDA export projections

But exports are not a reliable year-to-year demand channel

Period	Milk-Fat Basis	Skim-Solids Basis
2007-2017	13%	59%
2007-2014	34%	79%
2015-2017	-31%	18%

In 2017, U.S. exported 'only' cca 18.8% of milk on skim-solids basis or 4.2% on milk-fat basis, but exports have been absorbing most of the *growth* of U.S. milk production over the past decade. In 2015, decline in exports acted as if the U.S. milk production growth was twice as strong as it was – depressing domestic prices.

Trade Policy: Competitors Gaining Meaningful Advantage

Preferential Dairy Access – Selected Markets				
	U.S.	EU	NZ	Australia
Mexico	◆	◆	◆ *	◆ *
Canada	◆	◆	◆ *	◆ *
China			◆	◆
South Korea	◆	◆	◆	◆
Japan	◆	◆	◆ *	◆ *
Indonesia		◆	◆	◆
Malaysia		◆	◆	◆
Vietnam		◆	◆ *	◆ *
Thailand			◆	◆
Mercosur		◆	◆	◆
Chile	◆		◆	◆
Colombia	◆	◆		

- ◆ Concluded FTA (implemented or pending near-term implementation)
- ◆ Negotiating FTA, with potential dairy access
- ◆ Re-negotiating FTA

* - Negotiations via TPP

Source: Al Levitt, USDEC



Trump and Trade

Timely legal updates on the Trump administration's international trade activities and policies

Mexico Prepares Additional Retaliatory Tariffs on U.S. Products

By Thompson Hine International Trade on March 12, 2019
 POSTED IN [MEXICO](#), [SECTION 232 \(ALUMINUM\)](#), [SECTION 232 \(STEEL\)](#), [TRADE REMEDY/ENFORCEMENT](#)

WTO Dispute Settlement Panel's Decision to Rule on National Security Exception May Have a Major Impact on Trump Administration's Section 232 Tariffs

By Thompson Hine International Trade on April 11, 2019
 POSTED IN [SECTION 232 \(ALUMINUM\)](#), [SECTION 232 \(STEEL\)](#)

President Trump Announces Trade Enforcement Actions to Address China's Unfair Practices Related to Technology Transfer and Intellectual Property

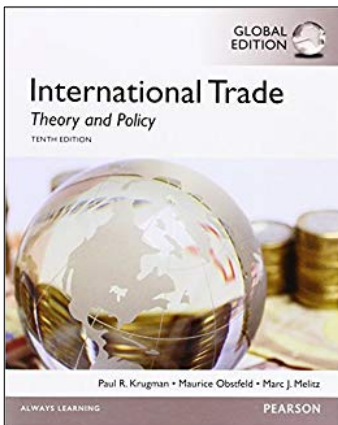
By Thompson Hine International Trade on March 23, 2018
 POSTED IN [CHINA](#), [SECTION 301 INVESTIGATION](#)



Do these events confuse you?



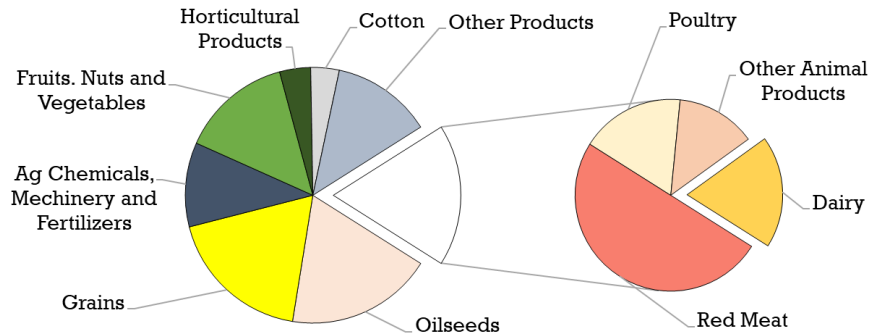
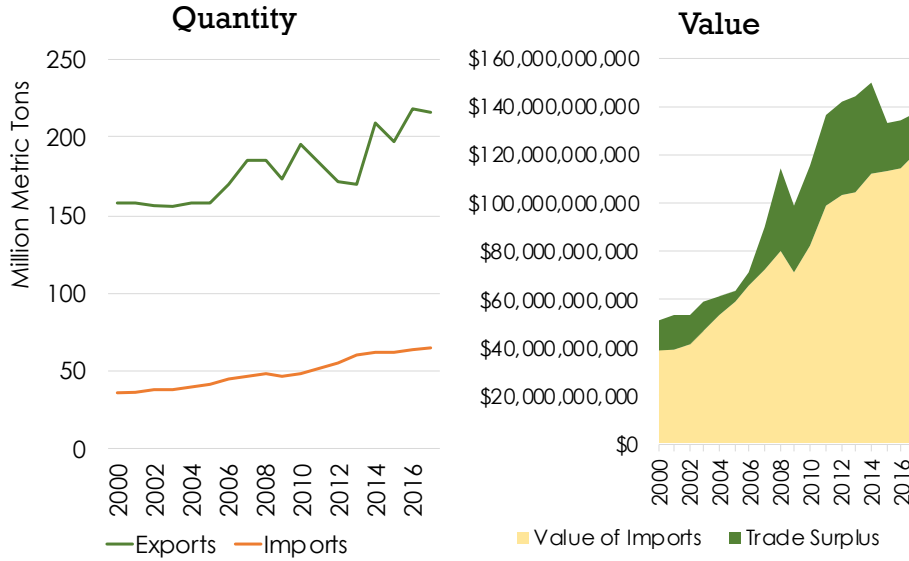
Why do nations trade?



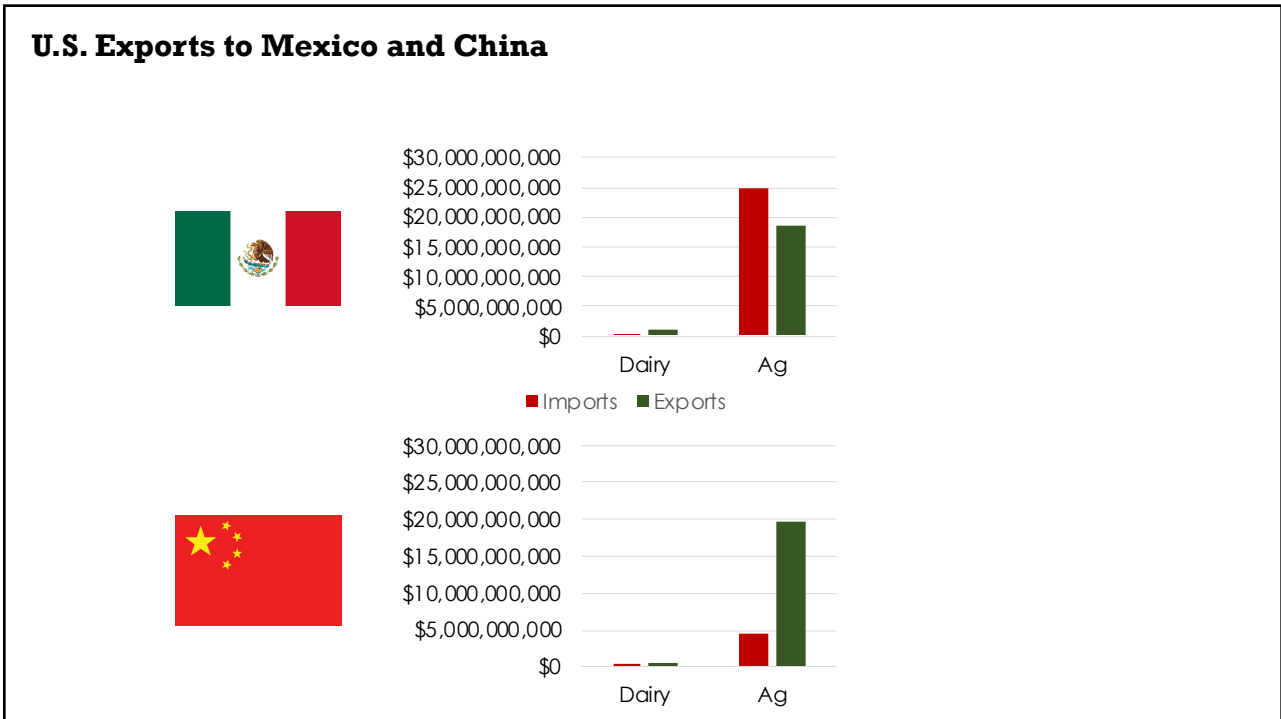
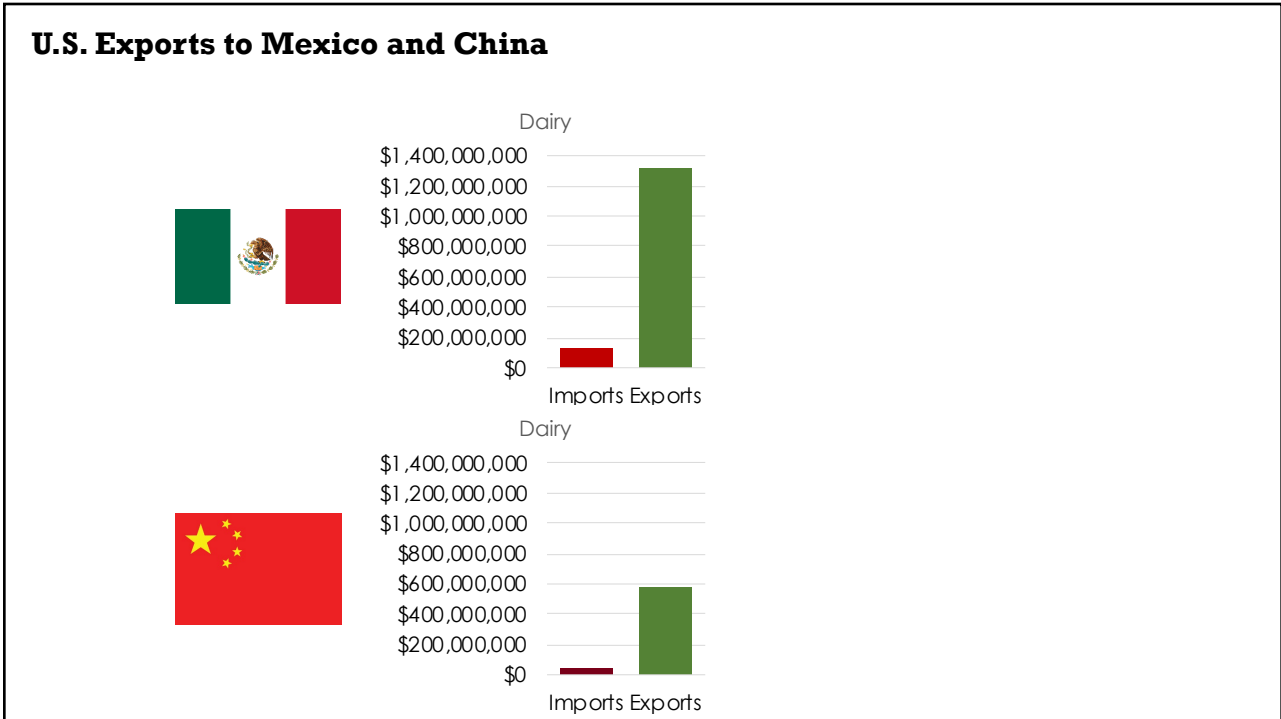
- Comparative advantage is when a country produces a good or service for a lower **opportunity cost** than other countries. Opportunity cost measures a trade-off.
- Producing a narrow range of goods and services for the domestic and export market means that a country can produce in at higher volumes, which provides further cost benefits in terms of **economies of scale**.
- Trade increases **competition** and breaks down domestic monopolies, which face competition from more efficient foreign firms.
- The quality of goods and services is likely to increase as competition encourages innovation, design and the application of new technologies. Trade will also encourage the **transfer of technology** between countries.

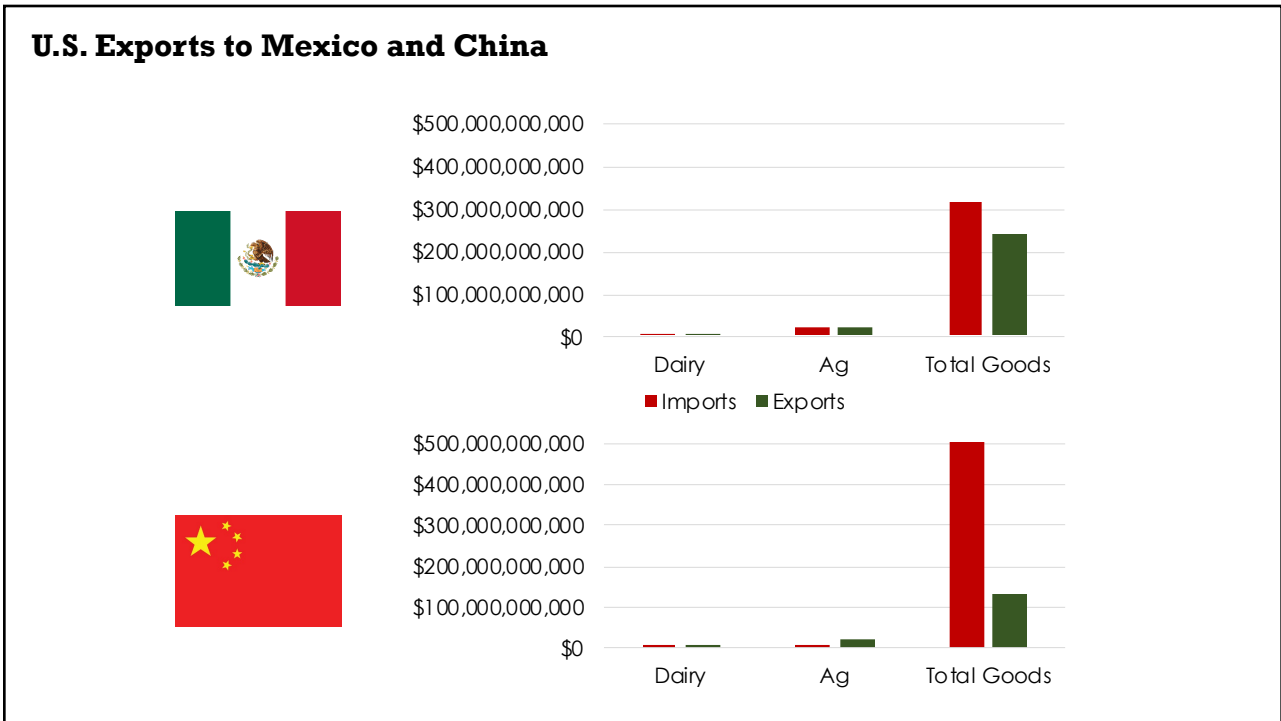
Source: https://www.economicsonline.co.uk/Global_economics/Why_do_countries_trade.html

U.S. Agricultural Trade



Oilseeds	\$30.0 billion	Poultry	\$5.1 billion
Grains	\$29.7 billion	Red Meat	\$14.4 billion
Fruits, Nuts and Vegetables	\$22.7 billion	Dairy	\$5.4 billion
Ag Chem., Mach. and Fertilizers	\$17.2 billion	Other	\$3.9 billion
Animal Products	\$28.9 billion	Animal Products	\$28.9 billion
Horticultural Products	\$6.3 billion	U.S. Agricultural Exports in 2017	
Cotton	\$5.8 billion		
Other Products	\$20.4 billion		
Total U.S. Ag Exports in 2017	\$161.3 billion		





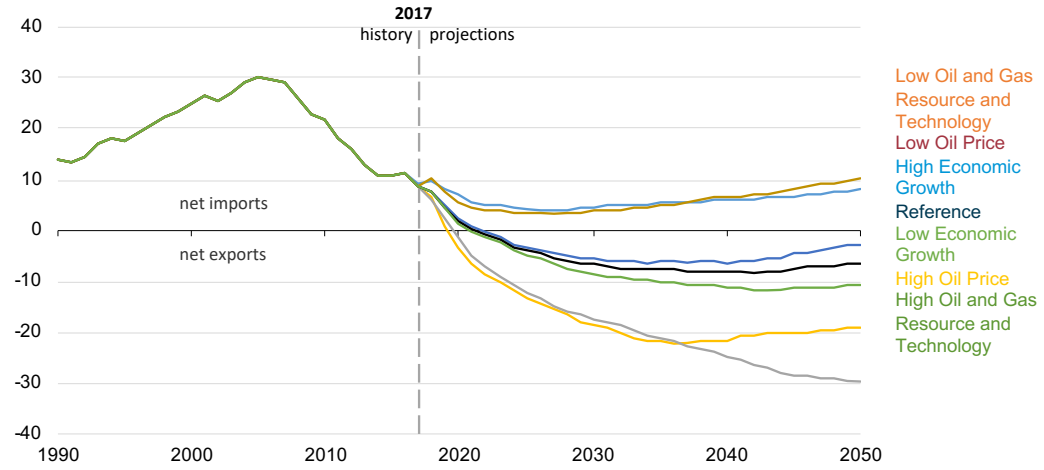
Does U.S. still have a primary strategic adversary?

If that is China, what is strategy for the new Cold War?

U.S. is Energy Independent

Net energy trade

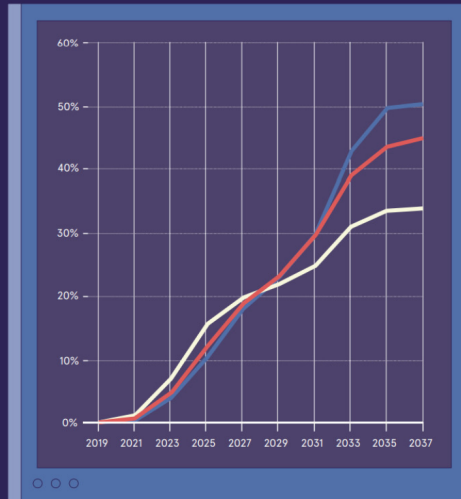
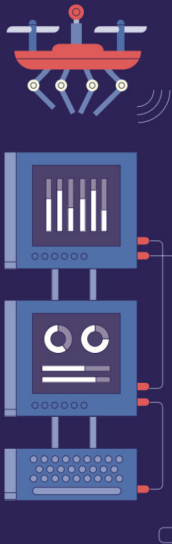
quadrillion British thermal units



AUTOMATION'S IMPACT ON THE JOBS MARKET WILL START TO BE FELT FROM THE MID-2020S

Share of jobs with a high potential of automation

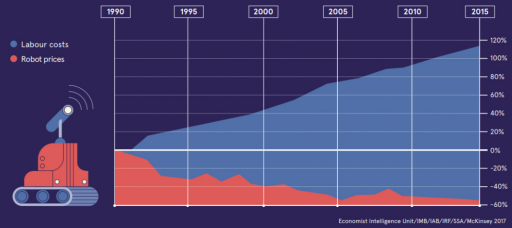
● Transportation and storage ● Manufacturing ● Wholesale and retail trade



PwC/OECD 2018

DECLINING ROBOT PRICES COULD ENCOURAGE MORE INVESTMENT AS LABOUR COSTS CREEP HIGHER

Example shown is for average robot prices and labour compensation in US manufacturing (1990 = 0%)



LOWER EDUCATED HARDEST HIT AS MANUAL TASKS PHASED OUT

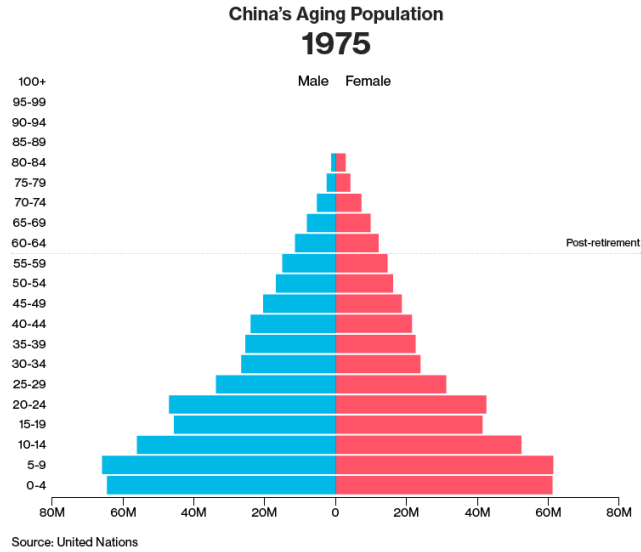
Share of jobs with a high potential of automation by education level

● Low education (GCSE or lower) ● Medium education ● High education (graduates)



PwC/OECD 2018

World is graying...



REUTERS

Business Markets World Politics TV More


WORLD NEWS OCTOBER 12, 2018 / 4:49 PM / 5 MONTHS AGO

U.S. security adviser Bolton vows tougher approach to China

5 MIN READ



WASHINGTON (Reuters) - U.S. national security adviser John Bolton has vowed to further intensify the Trump administration's tough approach to China, saying Beijing's "behavior needs to be adjusted in the trade area, in the international, military and political areas."



NEWS VOICES SPORT CULTURE **NO LIFE** INDUSTRY VIDEO DAILY EDITION COUPONS


US produces cheese that could include up to 20 insect fragments in a 100g of peanut butter

Fears rat hair, maggots and mould might start appearing in British food following post-Brexit trade deal

US Trade Representative said it was concerned about EU measures for food safety and protecting human, animal, or plant life or health

Adam Payne Business Insider | Tuesday 9 October 2018 15:29

154K shares | 21 comments



South China Morning Post

Top US negotiator Robert Lighthizer 'read Chinese the riot act' to get trade talks back on track, Larry Kudlow says

- US trade representative was not pleased when deputy-level negotiations hit an impasse last week, according to the White House economic adviser
- Kudlow appeared optimistic during an interview on CNBC, citing 'terrific' progress in talks

Owen Churchill
Updated: Friday, 3 Mar 2019 11:31pm



US Trade Representative Robert Lighthizer reportedly read the riot act to Chinese delegates during a stand-off in trade negotiations last week. Photo: Bloomberg

**“Our Sovereign Lord the King
chargeth and commandeth all
persons, being assembled,
immediately to disperse
themselves, and peaceably
depart to their habitations, or
their lawful business, upon the
pains contained in the Act made
in the first year of King George
the First for preventing tumults
and riotous assemblies.”**

GOD SAVE THE KING

Monday, March 04, 2019

Washington Examiner

[Politics](#) ▾ [Policy](#) ▾ [News](#) [Opinion](#) ▾ [Business](#) [Magazine](#) ▾ [Videos](#) ▾ [Beltway Confidential](#) [Washing](#)

John Bolton: 'We're not afraid to use the word Monroe Doctrine'





REUTERS Business Markets World Politics TV More

BUSINESS NEWS JULY 2, 2018 / 6:30 AM / 8 MONTHS AGO

Trump threatens action on WTO after reports he wants to withdraw

Forbes Billionaires Innovation Leadership Money Consumer Industry Life

2,163 views | Sep 27, 2018, 02:42pm

Trump Is Close To Shutting Down The WTO's Appeals Court

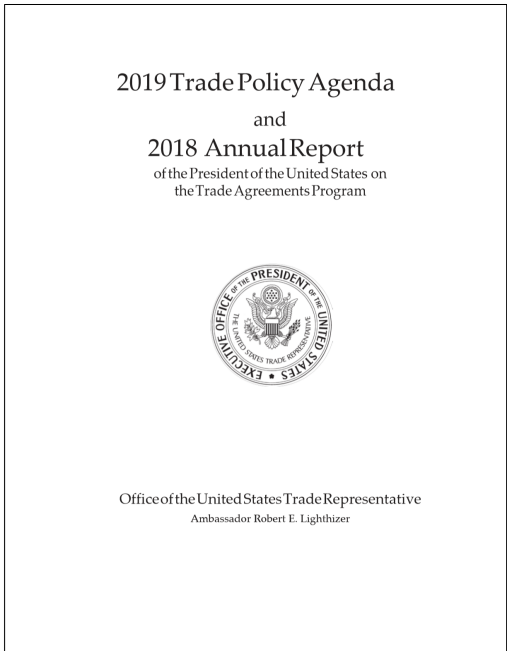
Menu Q Search Bloomberg Businessweek

February 28, 2019, 3:00 AM CST

U.S.-China Negotiations Risk Shutting Out the Rest of the World



Most-favored-nation (MFN): treating other people equally. Under the WTO agreements, countries cannot normally discriminate between their trading partners. **Grant someone a special favor (such as a lower customs duty rate for one of their products) and you have to do the same for all other WTO members.**



Source: https://ustr.gov/sites/default/files/2019_Trade_Policy_Agenda_and_2018_Annual_Report.pdf

“The current healthy state of the U.S. economy – and the recent boom in employment, including manufacturing employment – shows that the **U.S. government can and should adjust trade policy as necessary to avoid the type of challenges inherited by this Administration. Trade policy, like tax policy, must reflect the wishes, concerns, and priorities of the American people** – and should not be dictated by technocrats who are not responsible to Americans. The United States remains an independent nation, and our trade policy will be made here – not in Geneva. **We will not allow the WTO Appellate Body and dispute settlement system to force the United States into a straitjacket of obligations to which we never agreed.**”

Meanwhile in China...







U.S. President Donald Trump and First Lady Melania Trump greet Japan's Prime Minister Shinzo Abe and his wife Akie Abe at the South Portico of the White House as they arrive for dinner in Washington, on April 26, 2019. (MANDEL NGAN/AFP/Getty Images)

Trump: US, Japan Close to Reaching Trade Deal

BY EMEL AKAN

April 28, 2019 Updated: April 28, 2019

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US producers are allowed to include up to 30 insect fragments in a 100g of peanut butter

Fears rat hair, maggots and mould might start appearing in British food following post-Brexit trade deal

US Trade Representative said it was 'concerned' about EU measures for 'food safety and protecting human, animal, or plant life or health'

Adam Payne Business Insider | Tuesday 9 October 2018 15:29 |
19.4K shares | 31 comments



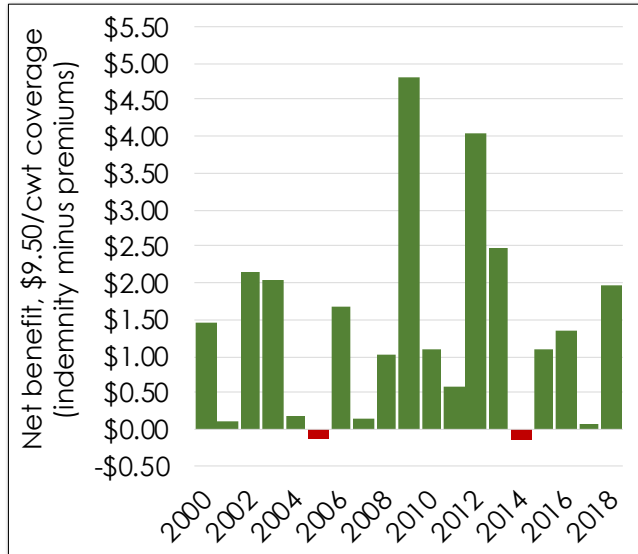
Like Click to follow The Independent

In the US, producers adhere to a "Defects Levels Handbook," which sets out the maximum number of foreign bodies like maggots, insect fragments and mould that can be in food products before they are put on the market.

For example, US producers are allowed to include up to 30 insect fragments in a 100g jar of peanut butter; as well as 11 rodent hairs in a 25g container of paprika; or 3mg of mammalian excreta (typically rat or mouse excrement) per each pound of ginger.



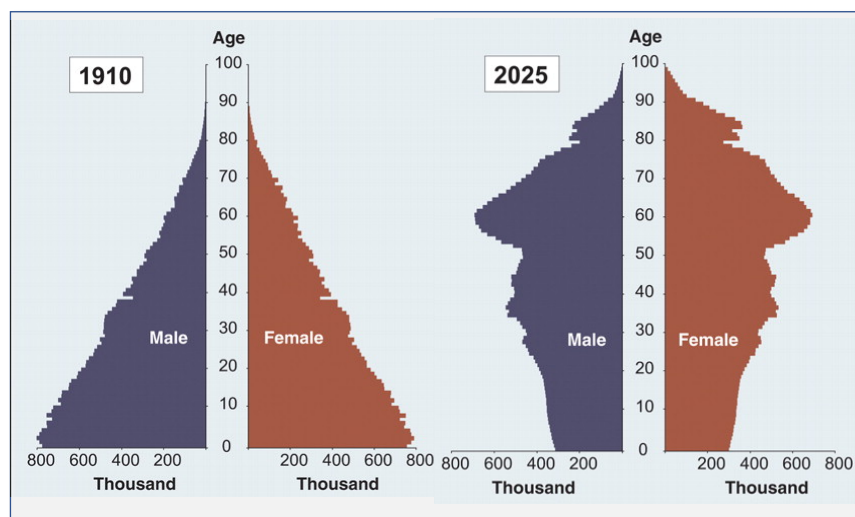
Dairy Farmers Get a Safety Net Cocoon to Withstand the Trade Wars



America First Doctrine

- Causes:
 - change in strategic adversary and optimal neutralization strategy (Russia to China)
 - Advances in artificial intelligence / robotics and impact on labor force
 - Energy independence
- Consequences:
 - Withdrawal from Trans Pacific Partnership and Paris Climate Agreement
 - Making conciliatory overtures to North Korea, abandoning Iraq, Syria, Afghanistan
 - New bully-based bilateral and regional trade agreements: South Korea, USMCA, Japan. Southeast Asia may follow
 - Trump wins 2nd term

(Developed) world without U.S. leadership will also be the world without high testosterone



Germany – Population pyramid on the verge of World War I and in 2025

Implications for dairy

- USMCA will go through, tariffs will be dropped, exports to Mexico will resume, likely already in 2019
- FTA with Japan in 2019 or 2020
- FTA with Britain in 2020 – on U.S. terms
- 50% chance of deal with China in short-term. Strict implementation mechanism –U.S. to start making noise again after 2020 presidential elections
- Global recession coming soon (2020?) – global demand for dairy may be affected. U.S. may *not* import the recession.