2020 Ag Forum – AZ ASFMRA

Economic Outlook & Implications for Agriculture

Mark Manfredo, Ph.D.
Director – Morrison School of Agribusiness
W. P. Carey School of Business
Arizona State University

ASU W. P. Carey School of Business
Arizona State University

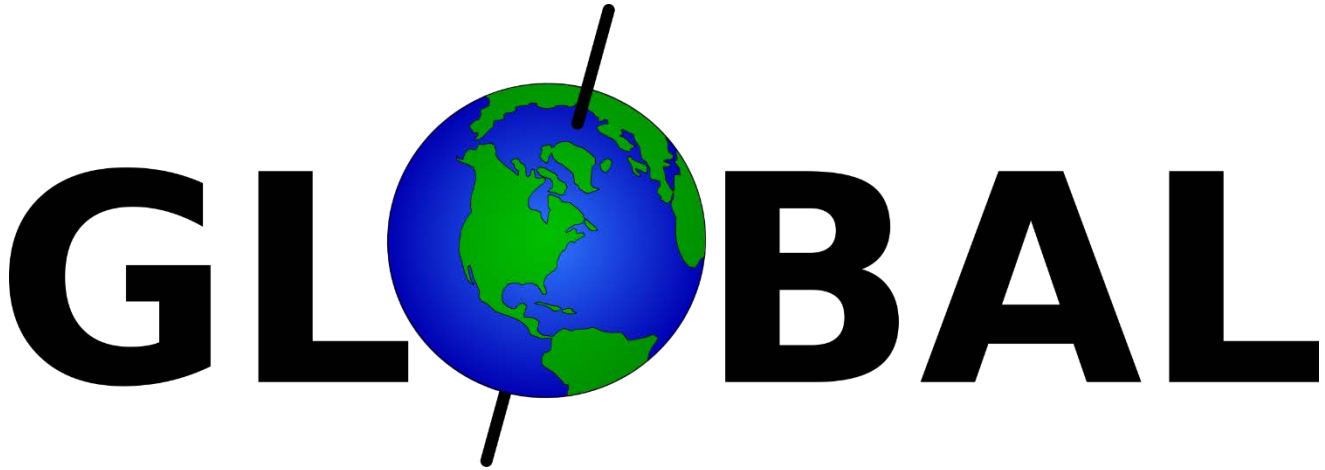
Morrison School of Agribusiness

Image by Tucker Nichols as shown in What Is Economics Good For?, by A. Rosenberg & T. Curtain, NY Times, 8.24.2013 https://opinionator.blogs.nytimes.com/2013/08/24/what-is-economics-good-for/

“The trouble with economics is that it lacks the most important of science’s characteristics – a record of improvement in predictive range and accuracy.”

A. Rosenberg & T. Curtain
NY Times – 8.24.2013

economic data: view through your own lens

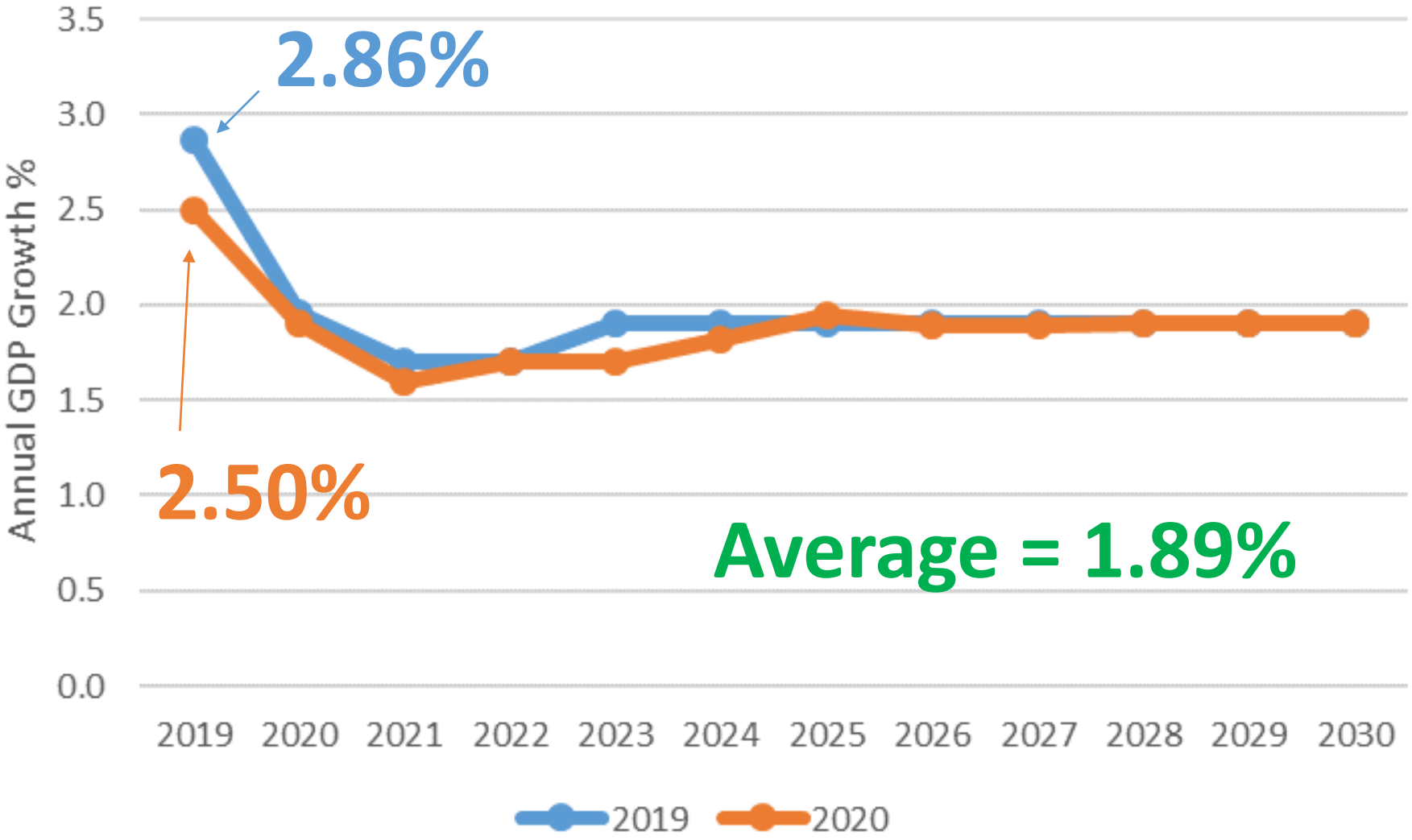


baseline GDP forecasts

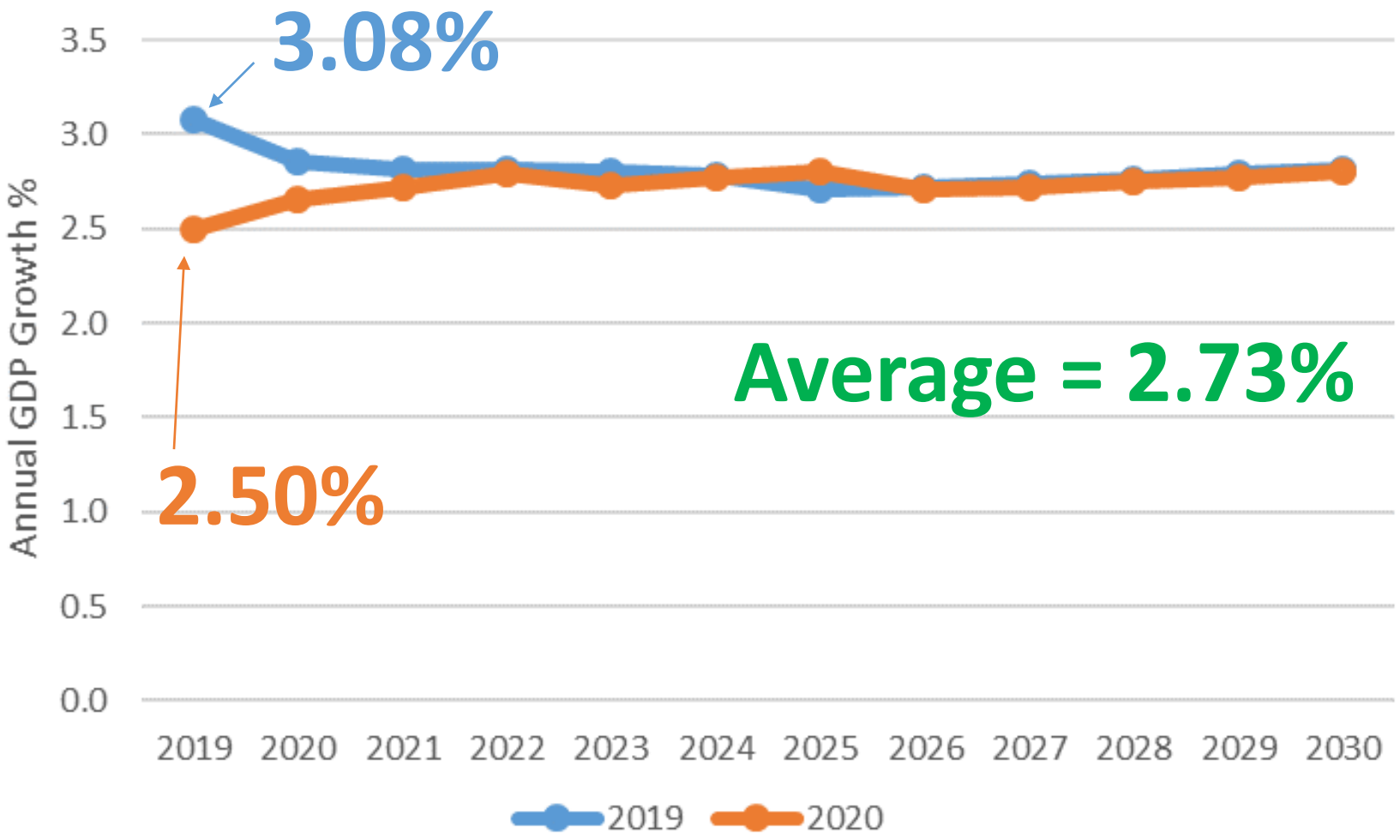
2019 vs. 2020

Source: USDA-ERS International Macroeconomic Dataset at
https://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx

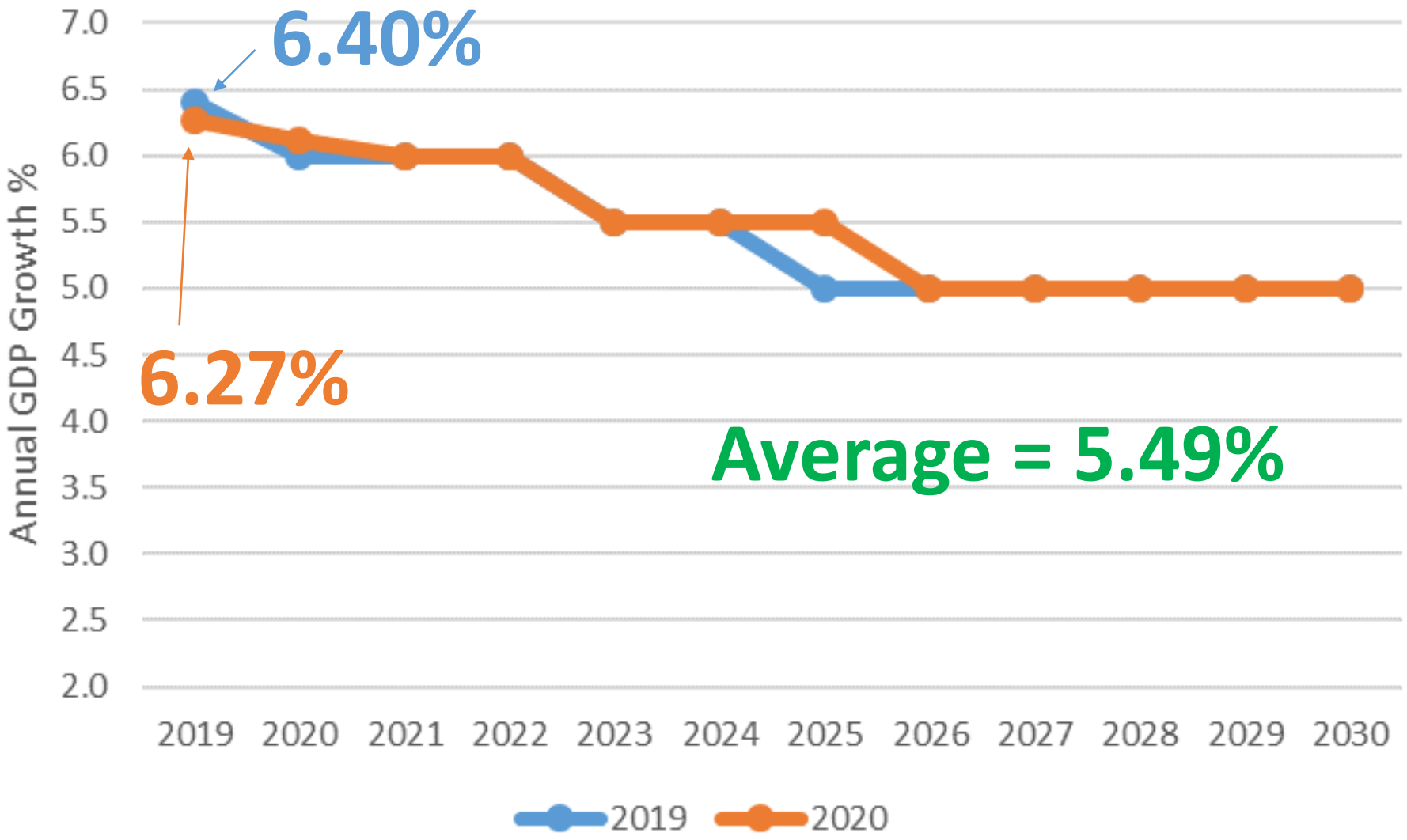
United Sates GDP Growth Forecasts: 2019 to 2030



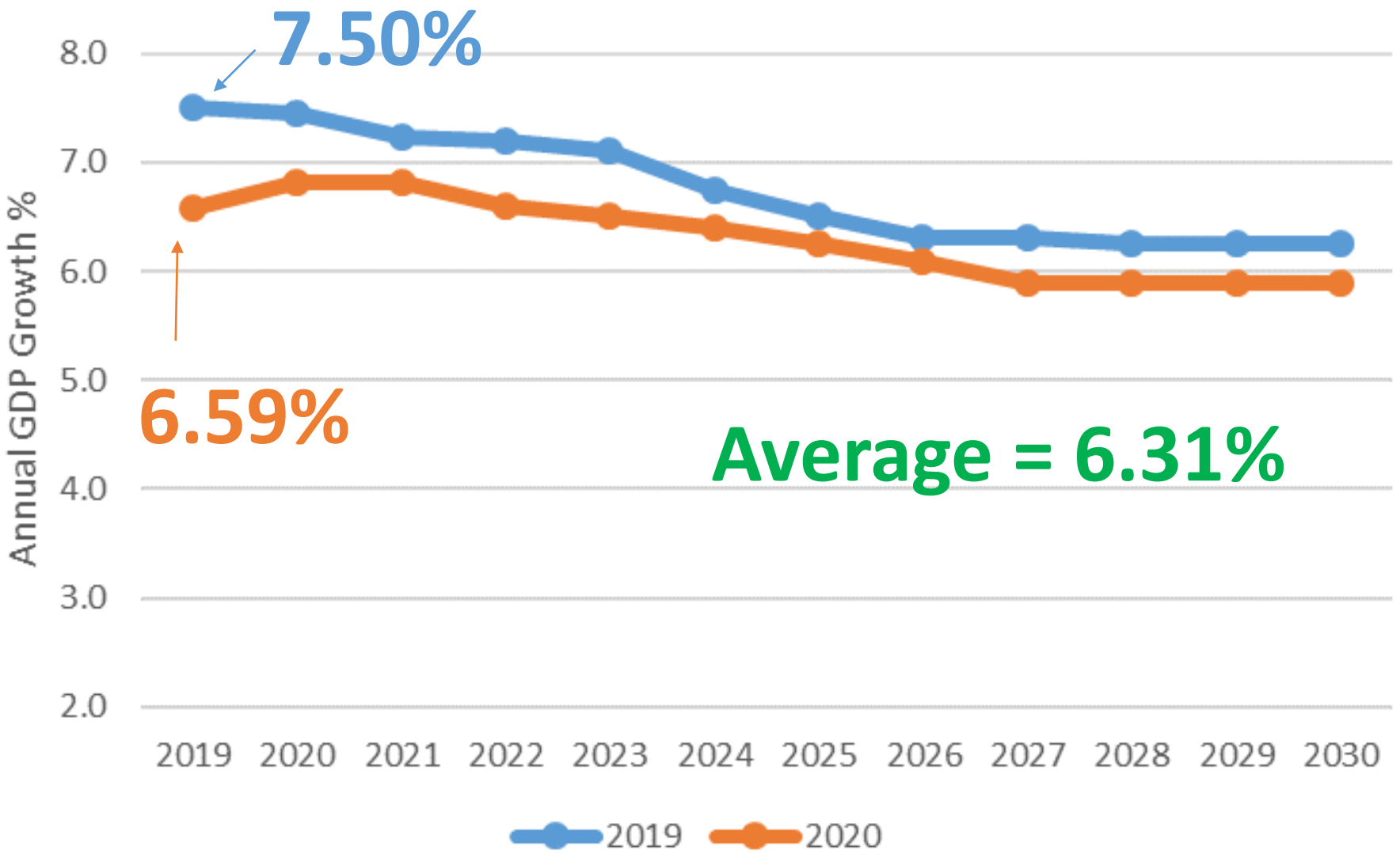
World GDP Growth Forecasts: 2019 to 2030



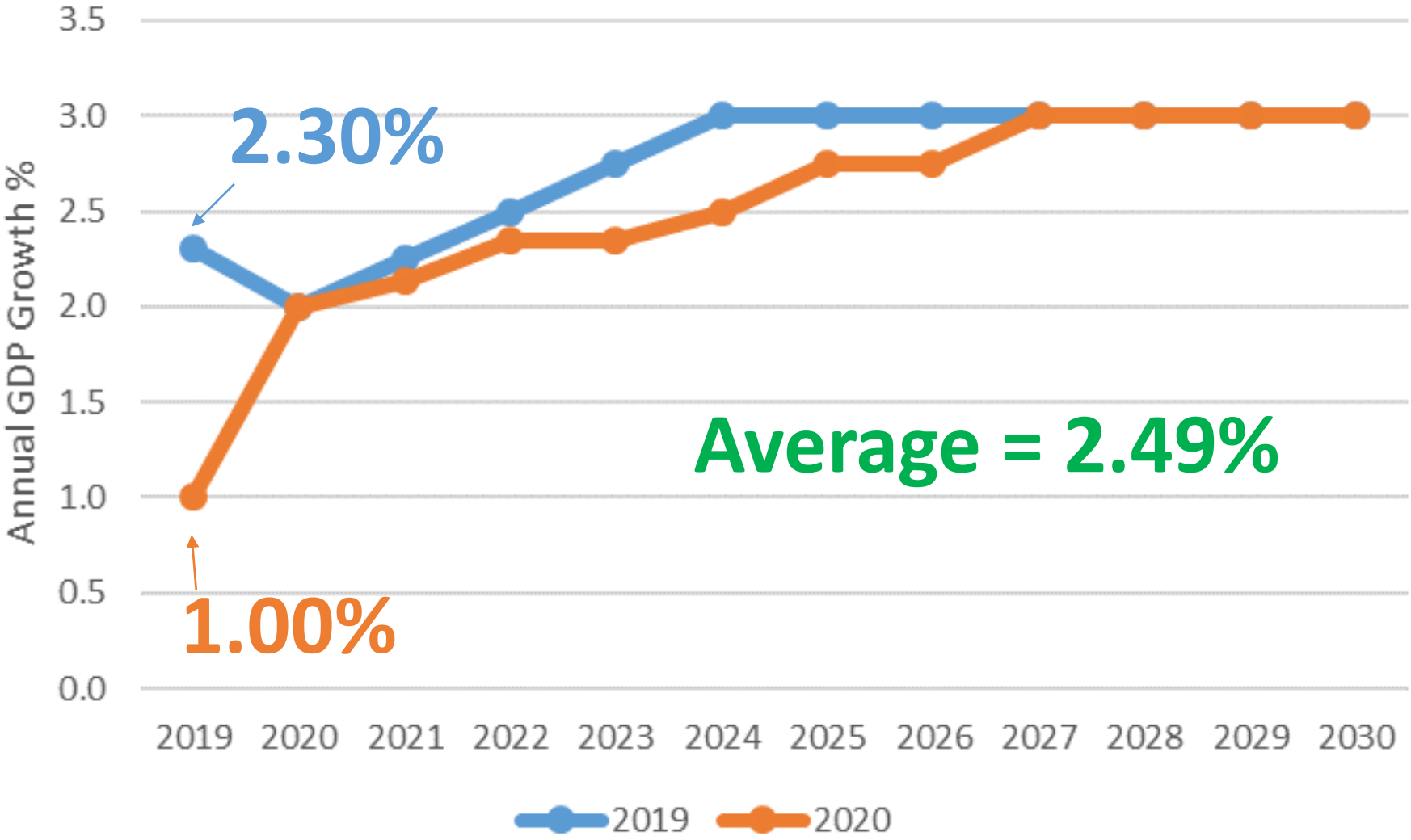
China GDP Growth Forecasts: 2019 to 2030



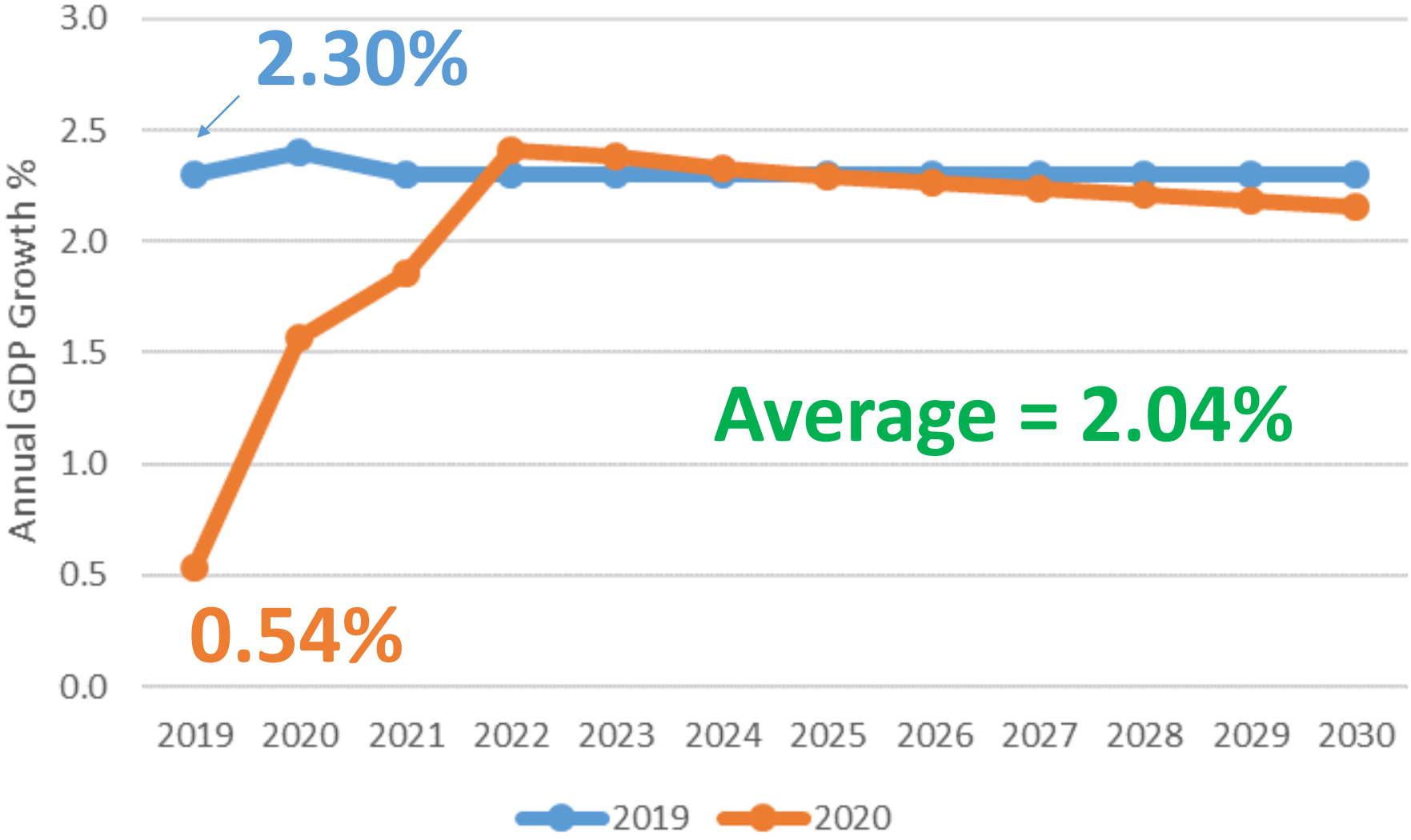
India GDP Growth Forecasts: 2019 to 2030



Brazil GDP Growth Forecasts: 2019 to 2030



Mexico GDP Growth Forecasts: 2019 to 2030



Long-Run Average GDP Growth (2019 to 2030)

Country	Avg. growth 2019 to 2030	Difference in avg. growth 2018 to 2020
U.S.	1.89%	- 0.19%
China	5.49%	+ 0.16%
India	6.31%	- 1.02%
Mexico	2.04%	- 0.26%
Brazil	2.49%	- 0.70%
World	2.73%	- 0.15%

Bloomberg
Businessweek
FRAGILE
CHINA
CORONAVIRUS
DEBT BURDEN
TRADE WAR
PROTESTS
HANDLE WITH CARE

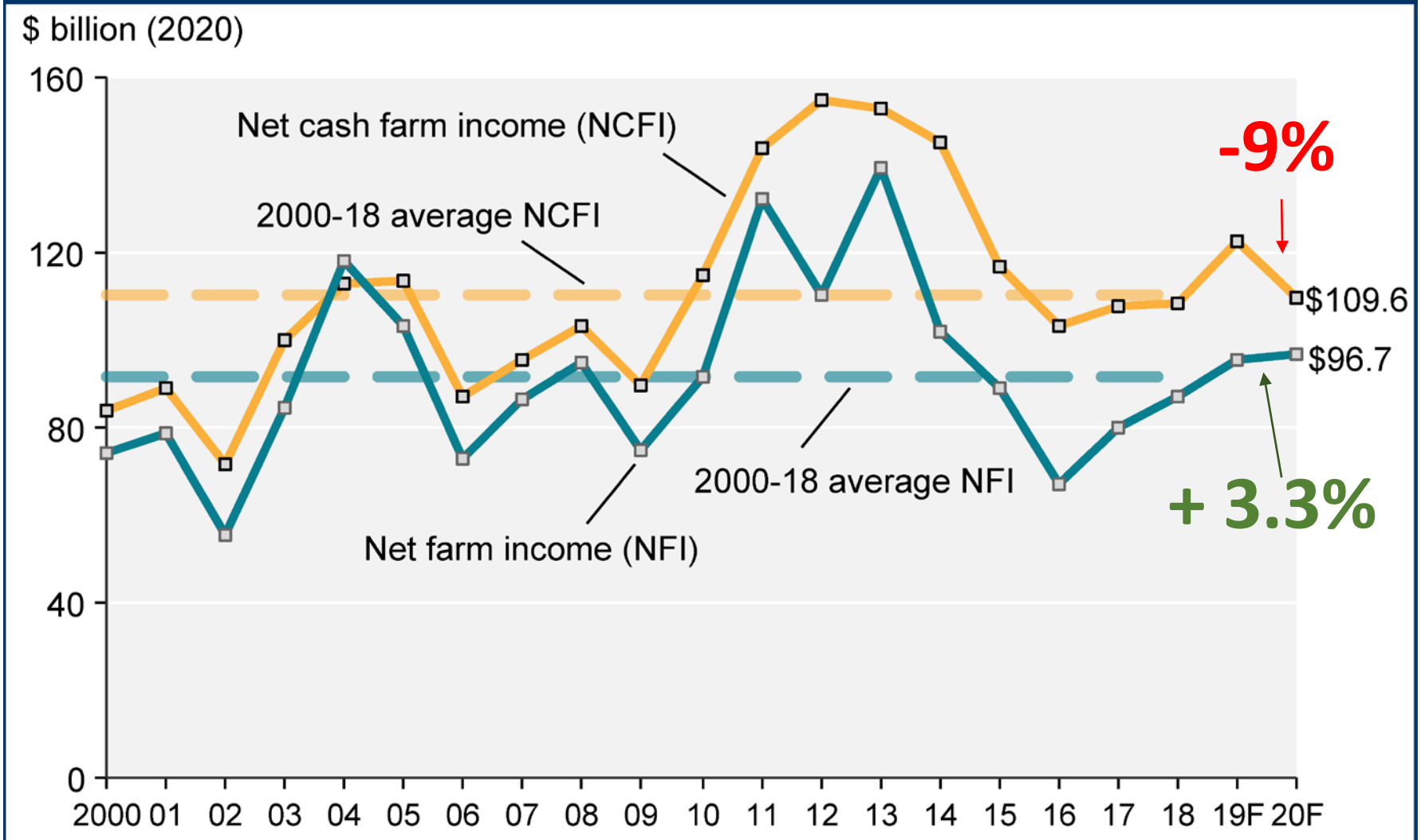
Feb 17, 2020

thoughts on global output

- GDP growth steady
- small downward adjustments
- susceptible to short-run shocks
- > 3% look to developing world

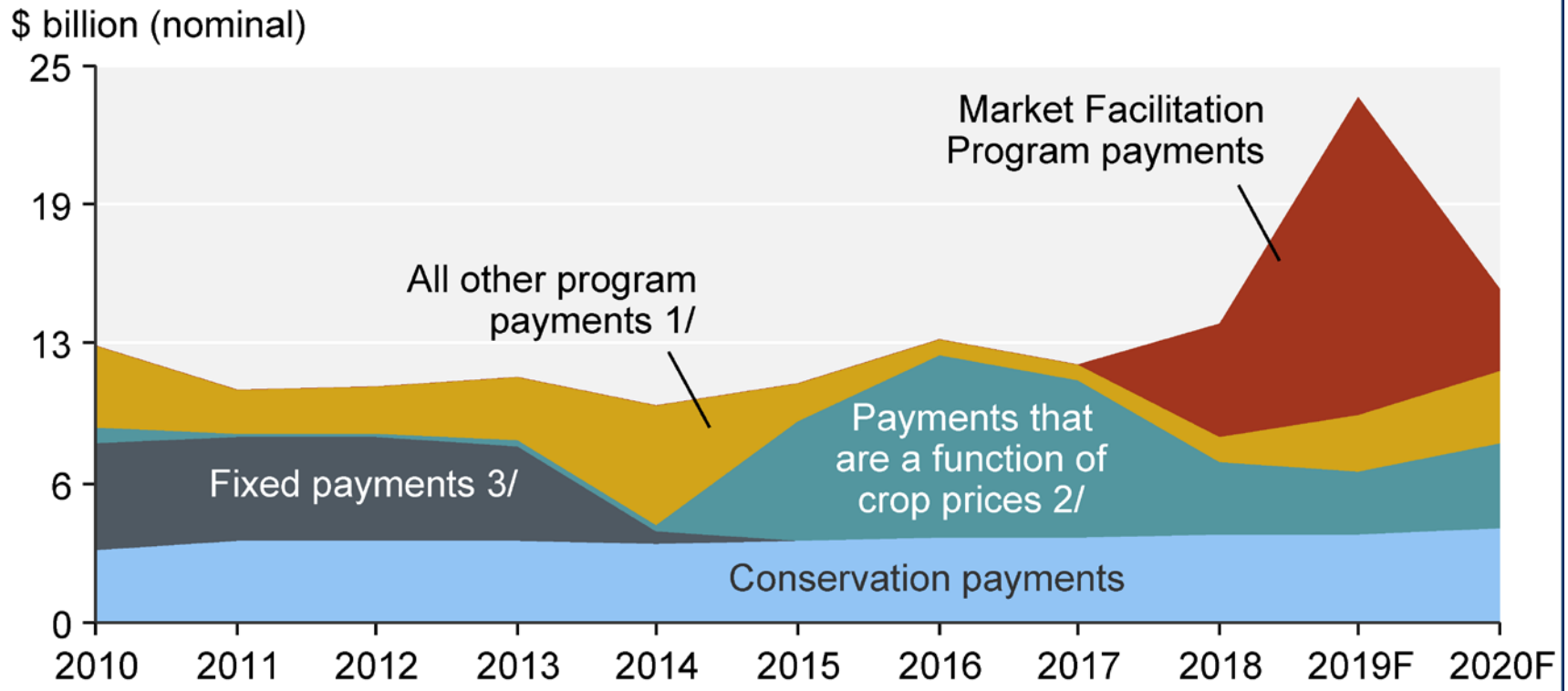
farm financial outlook

Net farm income and net cash farm income, 2000–20F



Note: F = forecast. Values are adjusted for inflation using the chain-type GDP deflator, 2020=100.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of February 5, 2020.

Government farm program payments to farm producers, 2010–20F



Note: F = forecast.

1/ All other payments include supplemental and ad hoc disaster assistance, tobacco transition, Cotton Ginning Cost Share, dairy, and miscellaneous programs.

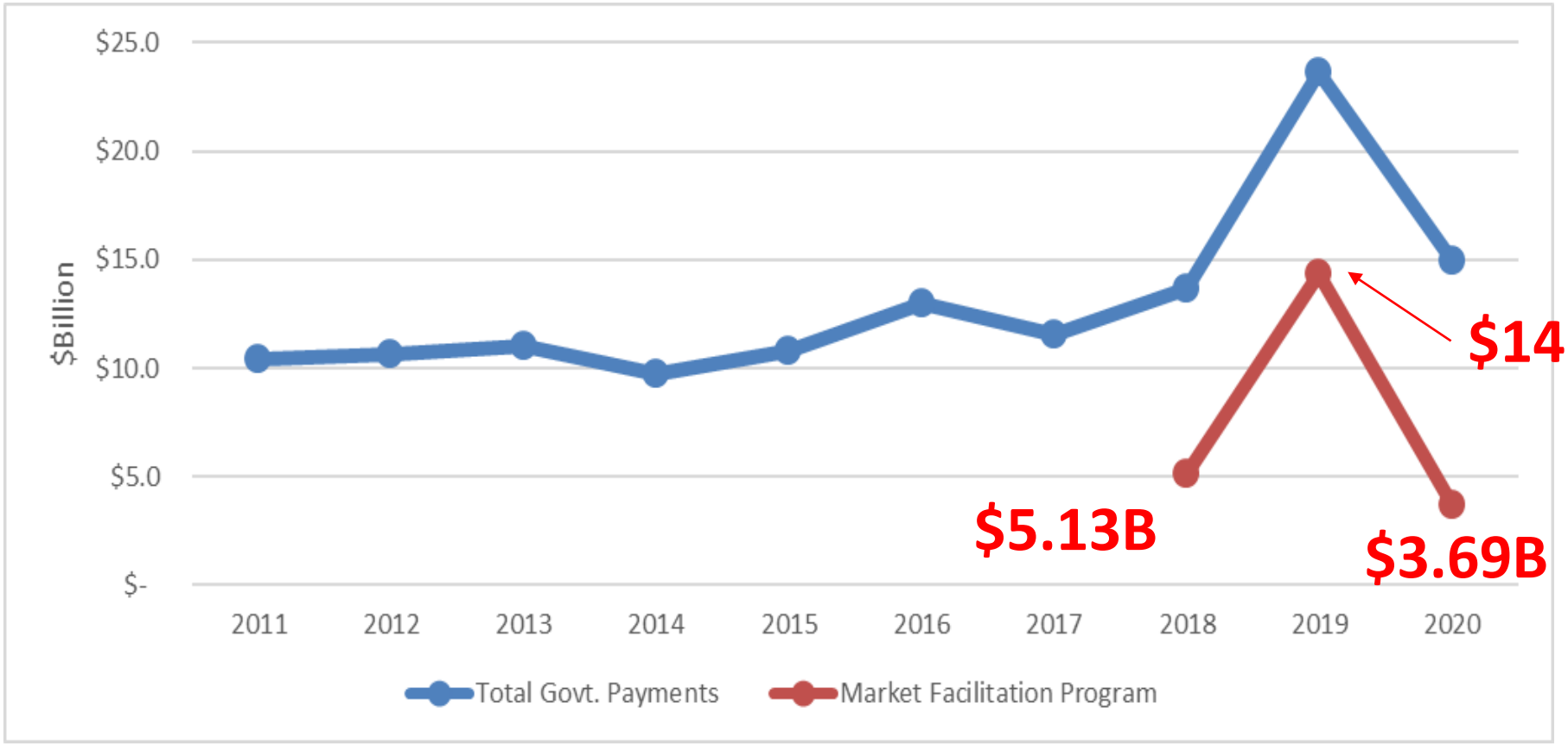
2/ Includes Price Loss Coverage (PLC), Agriculture Risk Coverage (ARC), counter-cyclical payments (CCP), Average Crop Revenue Election (ACRE) payments, loan deficiency payments (excluding grazeout payments), marketing loan gains, and certificate exchange gains. CCP and ACRE were not continued in the 2014 Farm Bill. PLC and ARC payments began in 2015.

3/ Includes direct fixed payments portion of Direct and Counter-Cyclical Program (DCP) and Cotton Transition Assistance Program (CTAP) payments (in 2014/15).

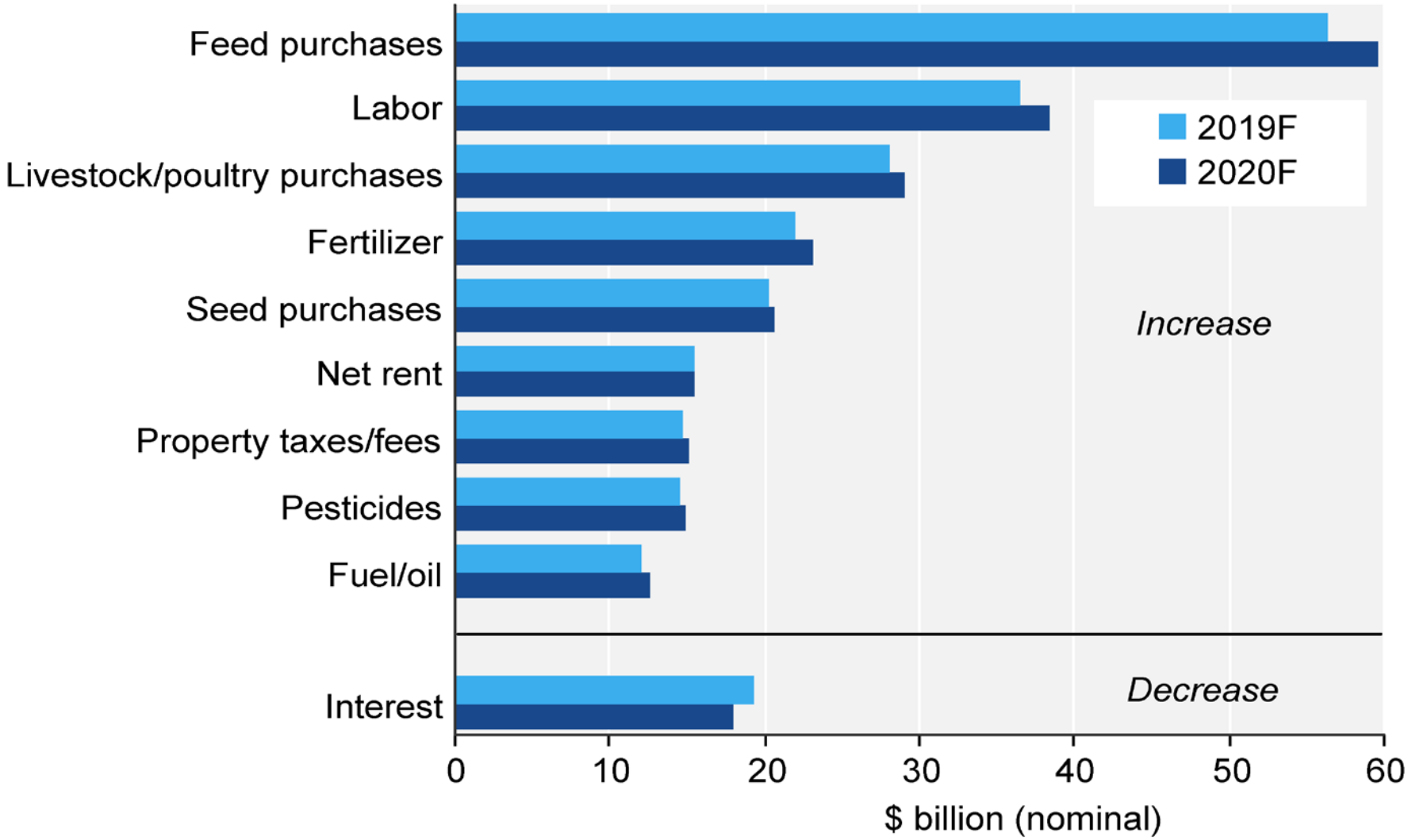
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.

Data as of February 5, 2020.

Government Farm Program Payments 2011 to 2020F

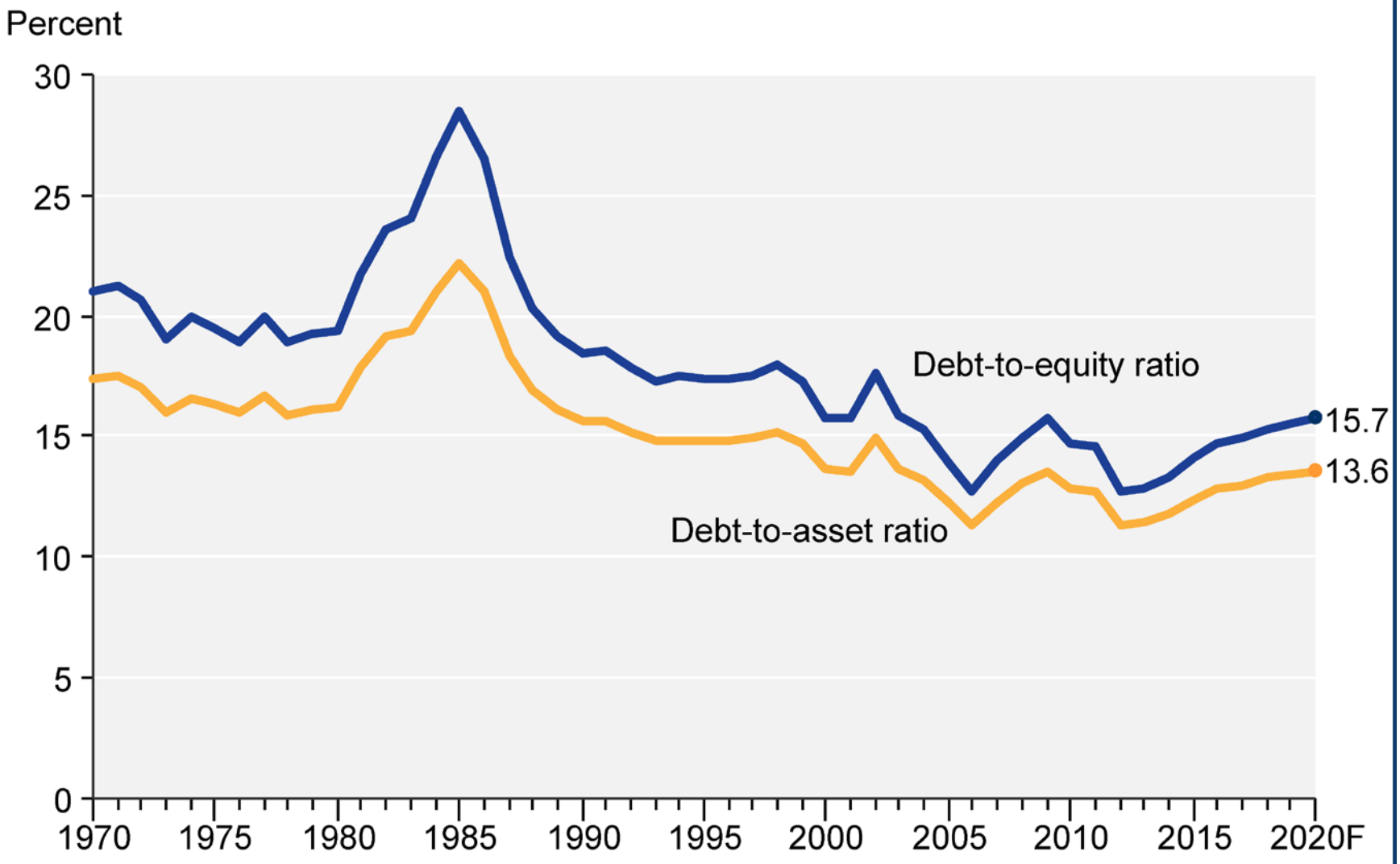


Selected farm production expenses, 2019F–20F

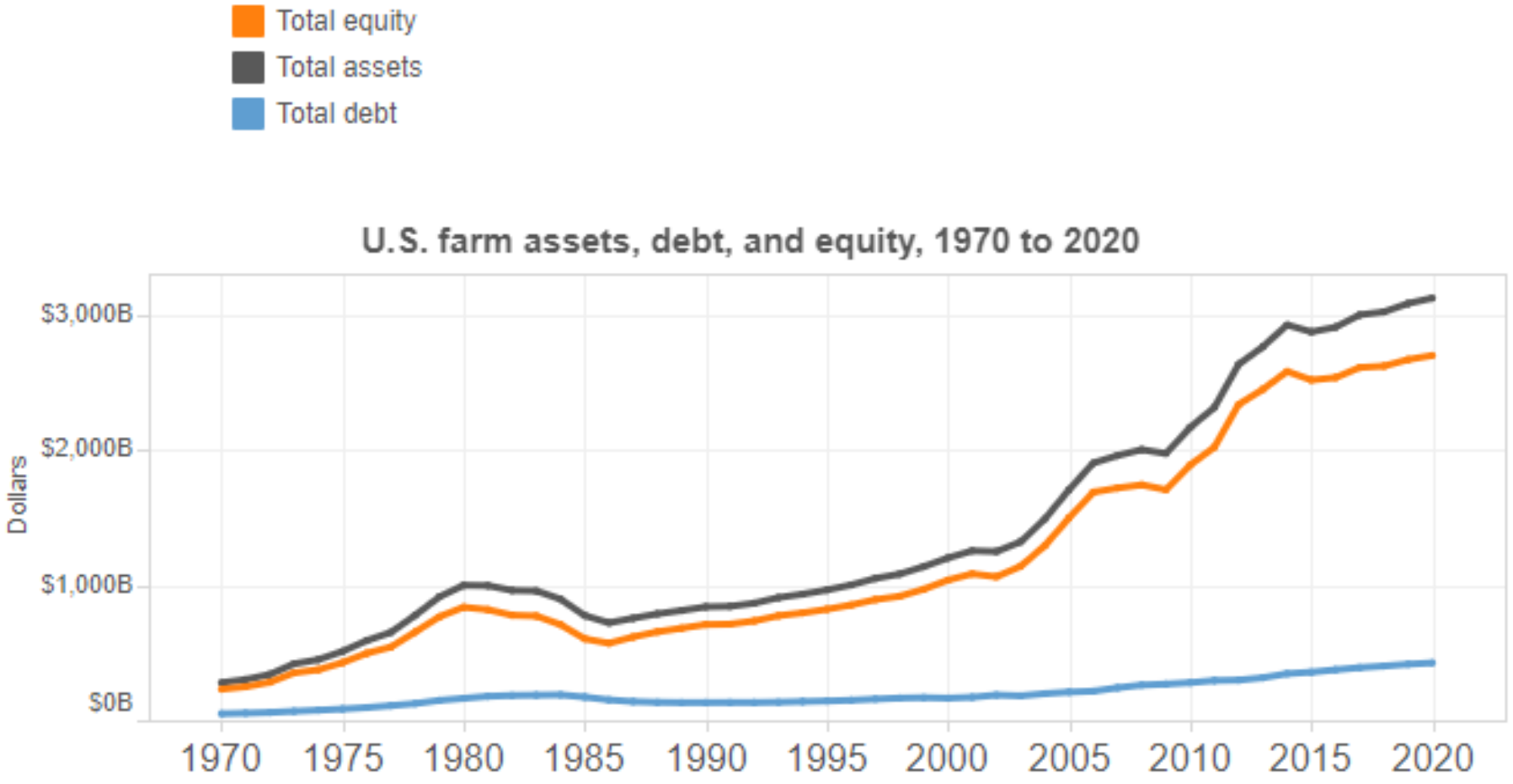


Note: F = forecast.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of February 5, 2020.

Farm sector solvency ratios, 1970–2020F

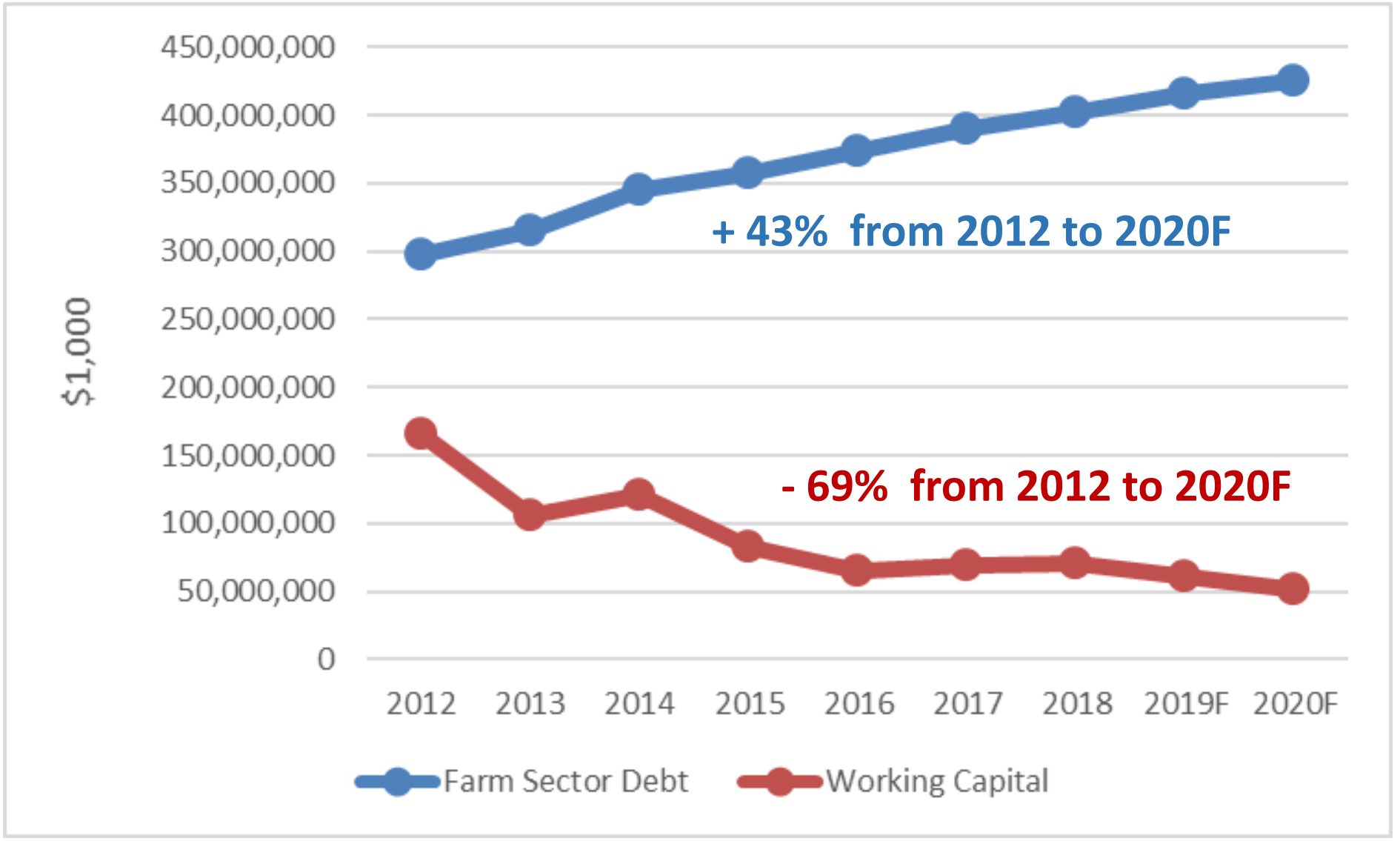


Note: F = forecast.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of February 5, 2020.

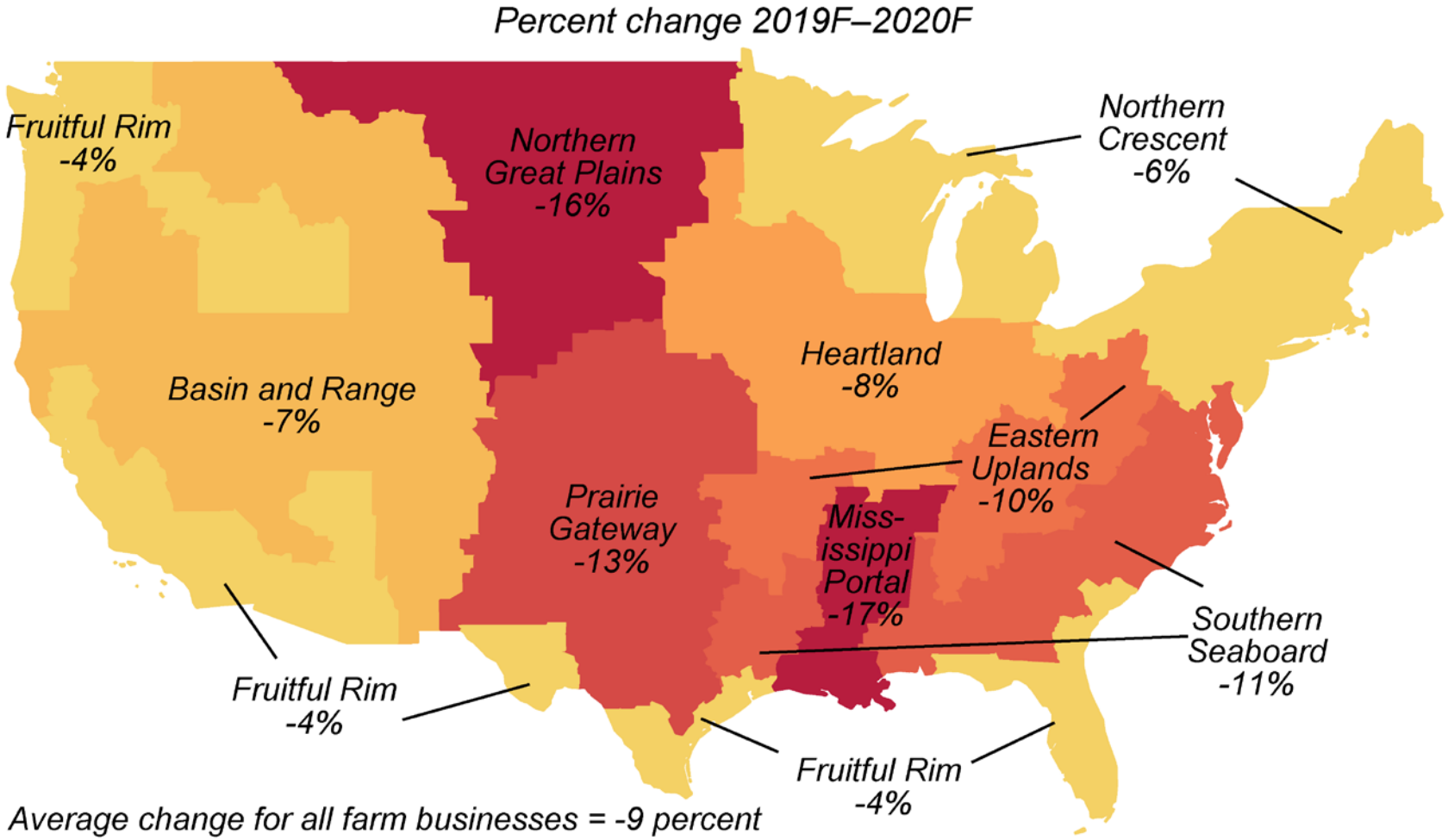


Data for 2019 and 2020 are forecasts. Data values are rounded to the nearest thousand dollars. Inflation-adjusted values use the chain-type GDP deflator, 2020=100. K=thousand, M=million, B=billion, T=trillion.

Debt vs. Working Capital



Farm business average net cash farm income by resource region, 2020F compared with 2019F



Note: F = forecast. The partial budget forecast model is based on the Agricultural Resource Management Survey (ARMS) using parameters from the sector forecasts. The model is static and does not account for changes in crop rotation, weather, and other location-based production impacts that occurred after the base year. Data as of February 5, 2020.

Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.

Average Net Cash Farm Income: Farms > $350K

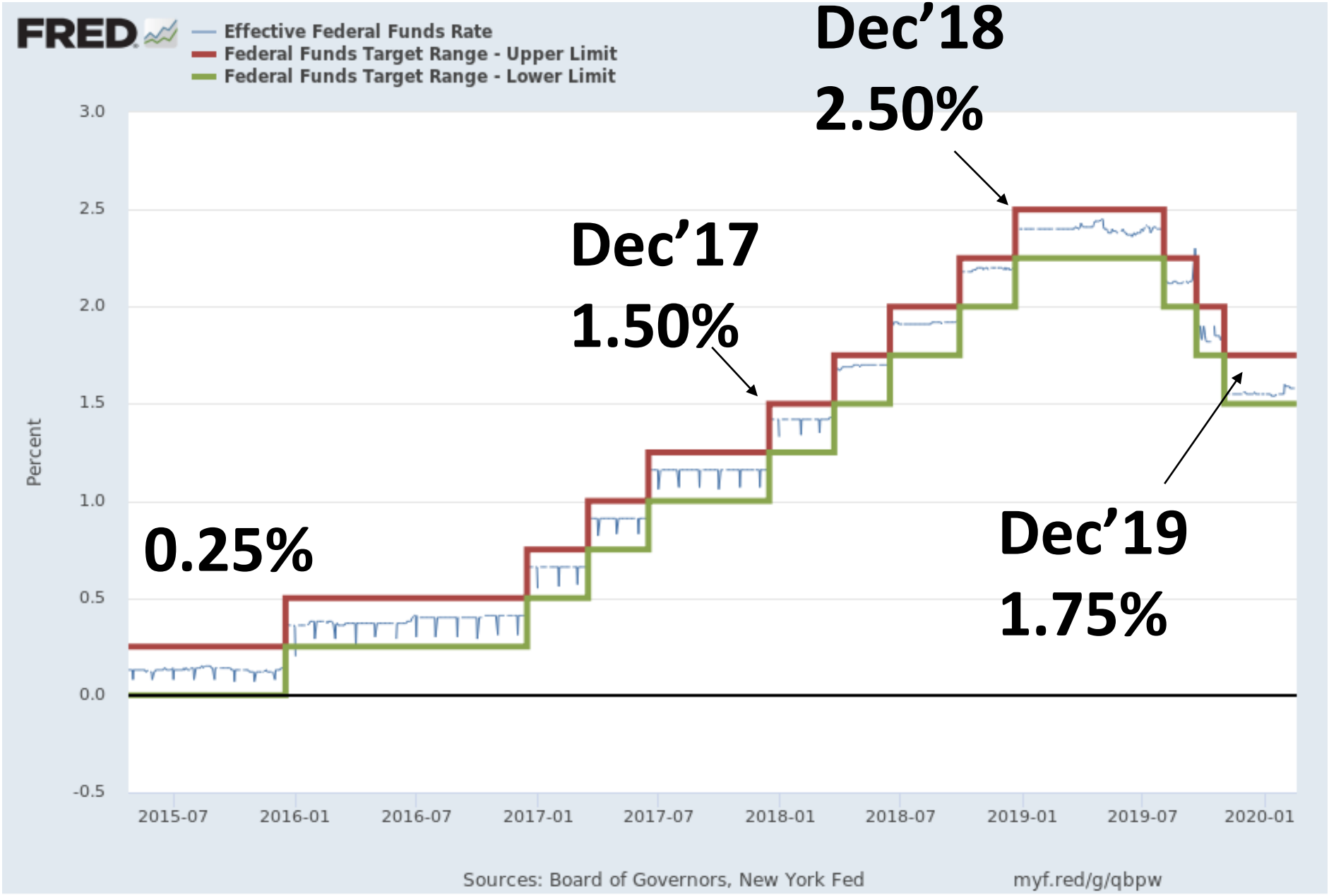
Commodity Specialization / Resource Region	Change 2019F to 2020F	Correlation w/Fruitful Rim (2011 to 2020)
Fruitful Rim	-4.4%	1.00
Cotton	-16.7%	0.16
Specialty Crops	-6.0%	0.76
Other Crops	-14.4%	0.68
Cattle / Calf	-13.4%	0.74
Dairy	+4.0%	-0.13

AZ net farm income correlation with Fruitful Rim (2011 to 2018) = - 0.34

thoughts on farm finance

- revenue flat – less govt. support
- higher expenses (baring interest)
- equity keeping solvency in check
- debt vs. liquidity divergence
- AZ better diversified

INTEREST
RATES


FRED
Effective Federal Funds Rate
Federal Funds Target Range - Upper Limit
Federal Funds Target Range - Lower Limit
Dec'18
2.50%
Dec'17
1.50%
0.25%
Dec'19
1.75%
Percent
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
2015-07
2016-01
2016-07
2017-01
2017-07
2018-01
2018-07
2019-01
2019-07
2020-01
Sources: Board of Governors, New York Fed
myf.red/g/qbpw

CME Fed Watch: a market-based forecast

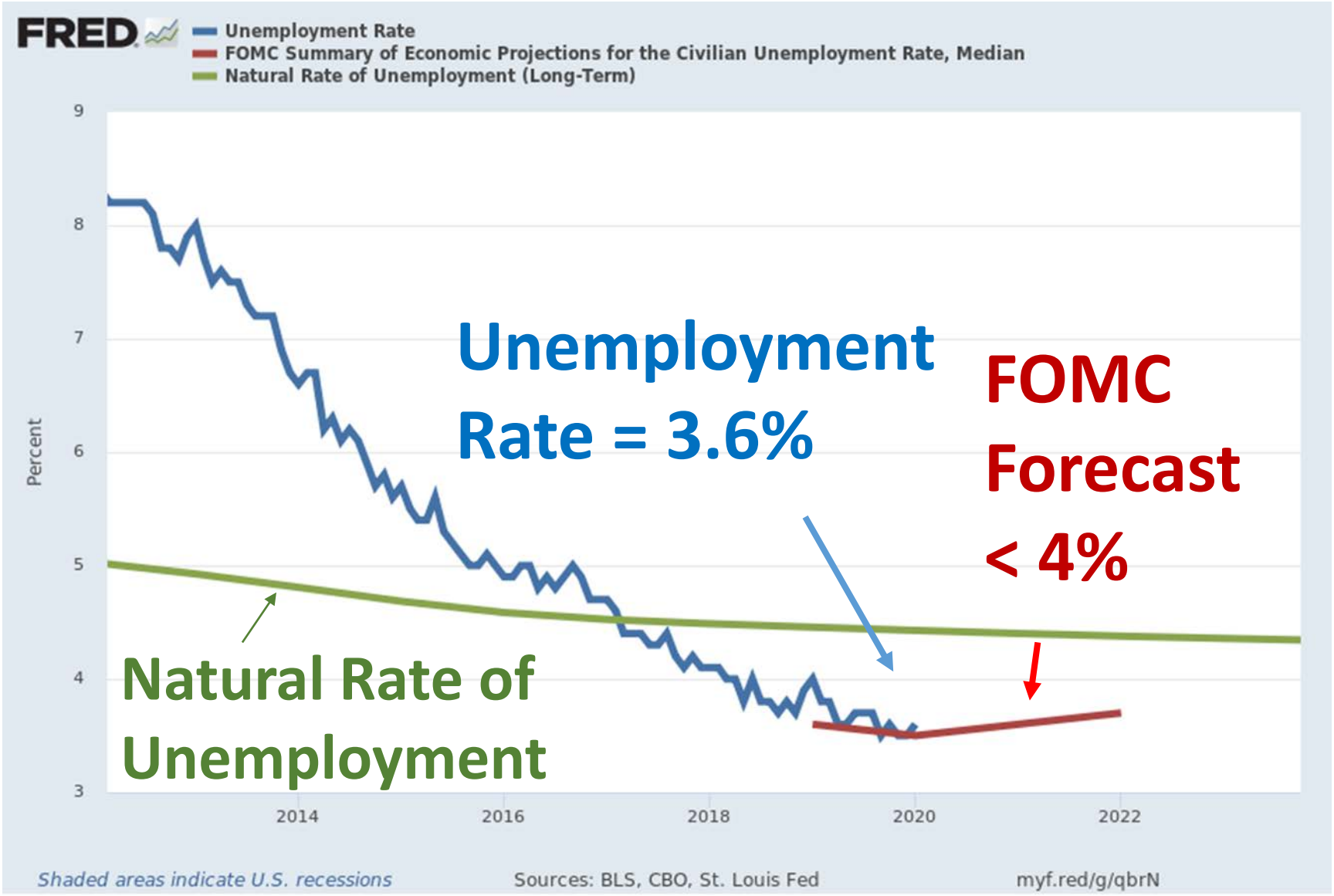
https://www.cmegroup.com/trading/interest-rates/countdown-to-fomc.html

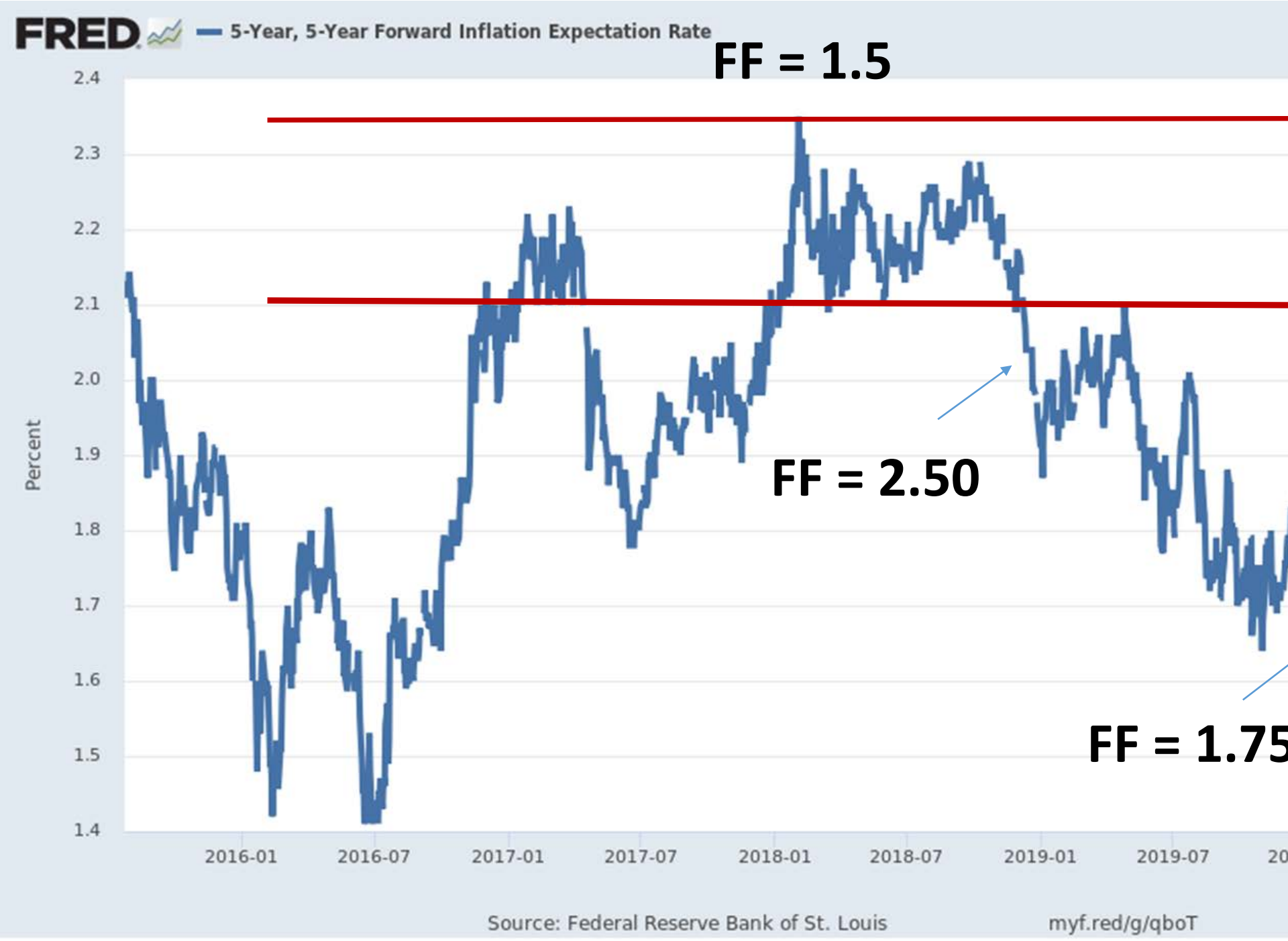
Jan 2020 FOMC Meeting - This time last year

Probability	Federal Funds Target
0.9%	175 - 200 bps
15.3%	200 - 225 bps
78.9%	***225 – 250 bps***
4.8%	250 – 275 bps
0.1%	275 – 300 bps

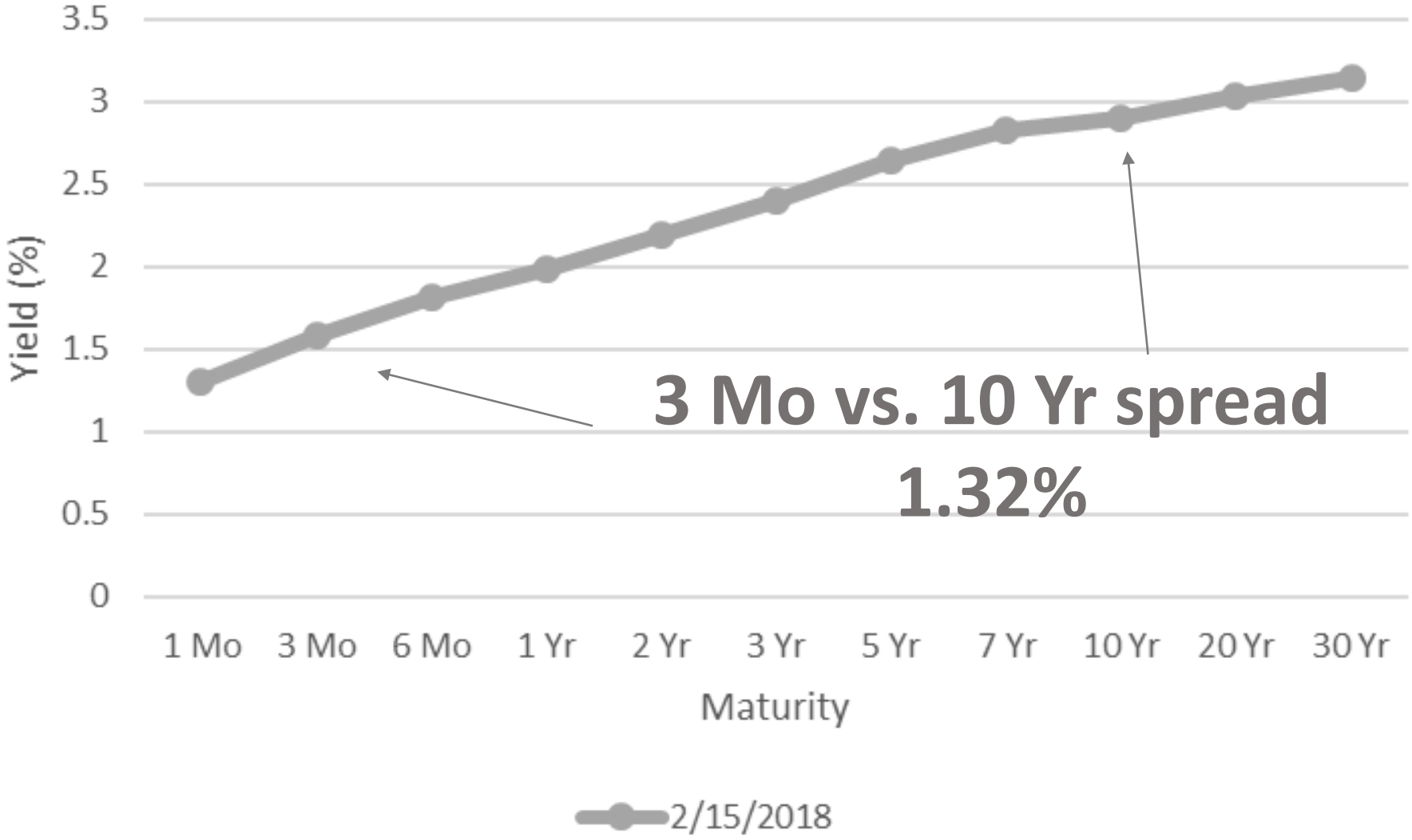
Dec 2020 FOMC Meeting

Probability	Federal Funds Target
0.8%	25 - 50 bps
5.2%	50 - 75 bps
17.3%	75 – 100 bps
32.3%	100 – 125 bps
31.7%	125 – 150 bps
12.7%	150 – 175 bps

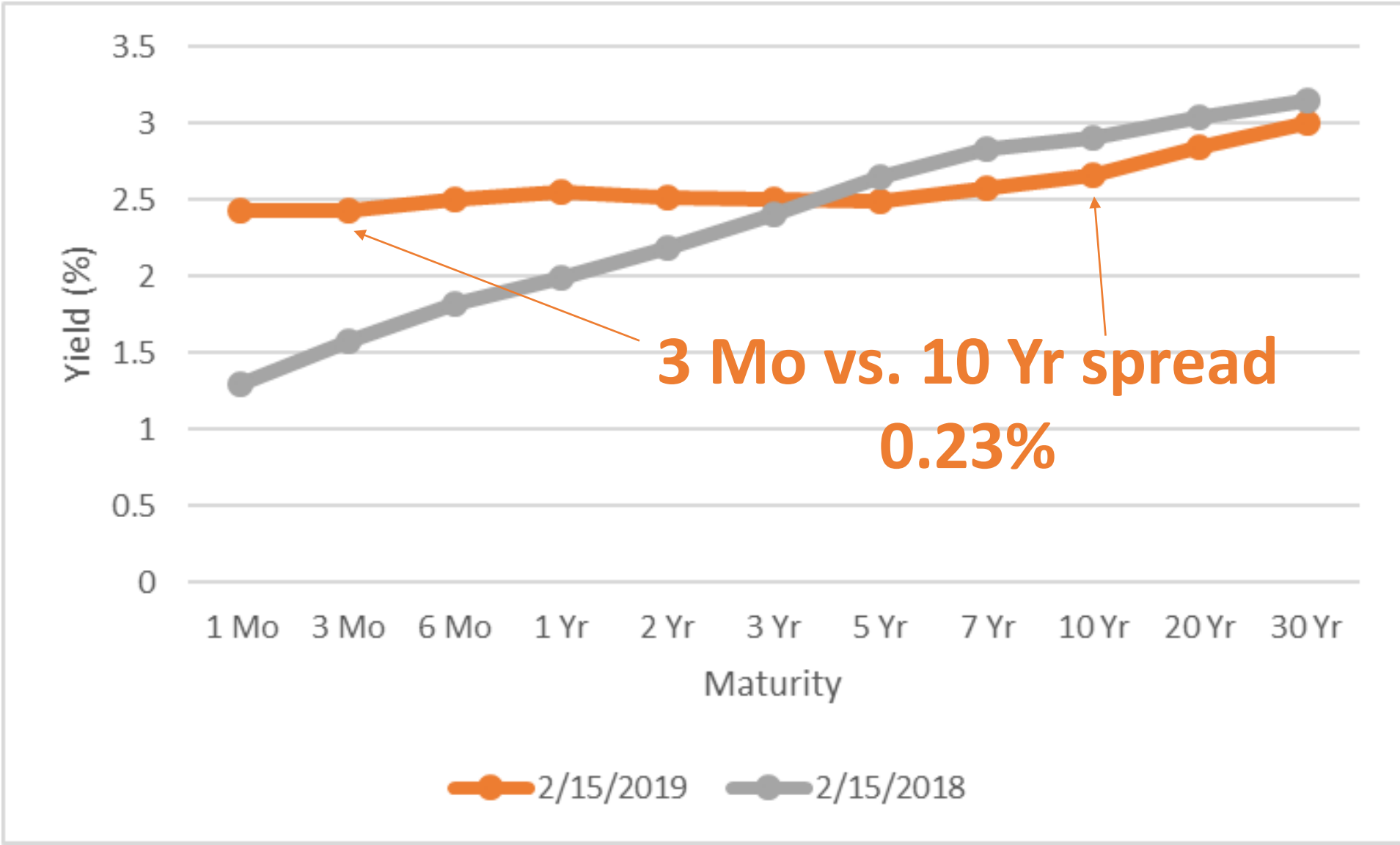

FRED
Unemployment Rate
FOMC Summary of Economic Projections for the Civilian Unemployment Rate, Median
Natural Rate of Unemployment (Long-Term)
Percent
9
8
7
6
5
4
3
2014
2016
2018
2020
2022
Unemployment Rate = 3.6%
FOMC Forecast < 4%
Natural Rate of Unemployment
Shaded areas indicate U.S. recessions
Sources: BLS, CBO, St. Louis Fed
myf.red/g/qbrN


FRED
5-Year, 5-Year Forward Inflation Expectation Rate
FF = 1.5
FF = 2.50
FF = 1.75
Percent
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
1.4
2016-01
2016-07
2017-01
2017-07
2018-01
2018-07
2019-01
2019-07
Source: Federal Reserve Bank of St. Louis
myf.red/g/qboT

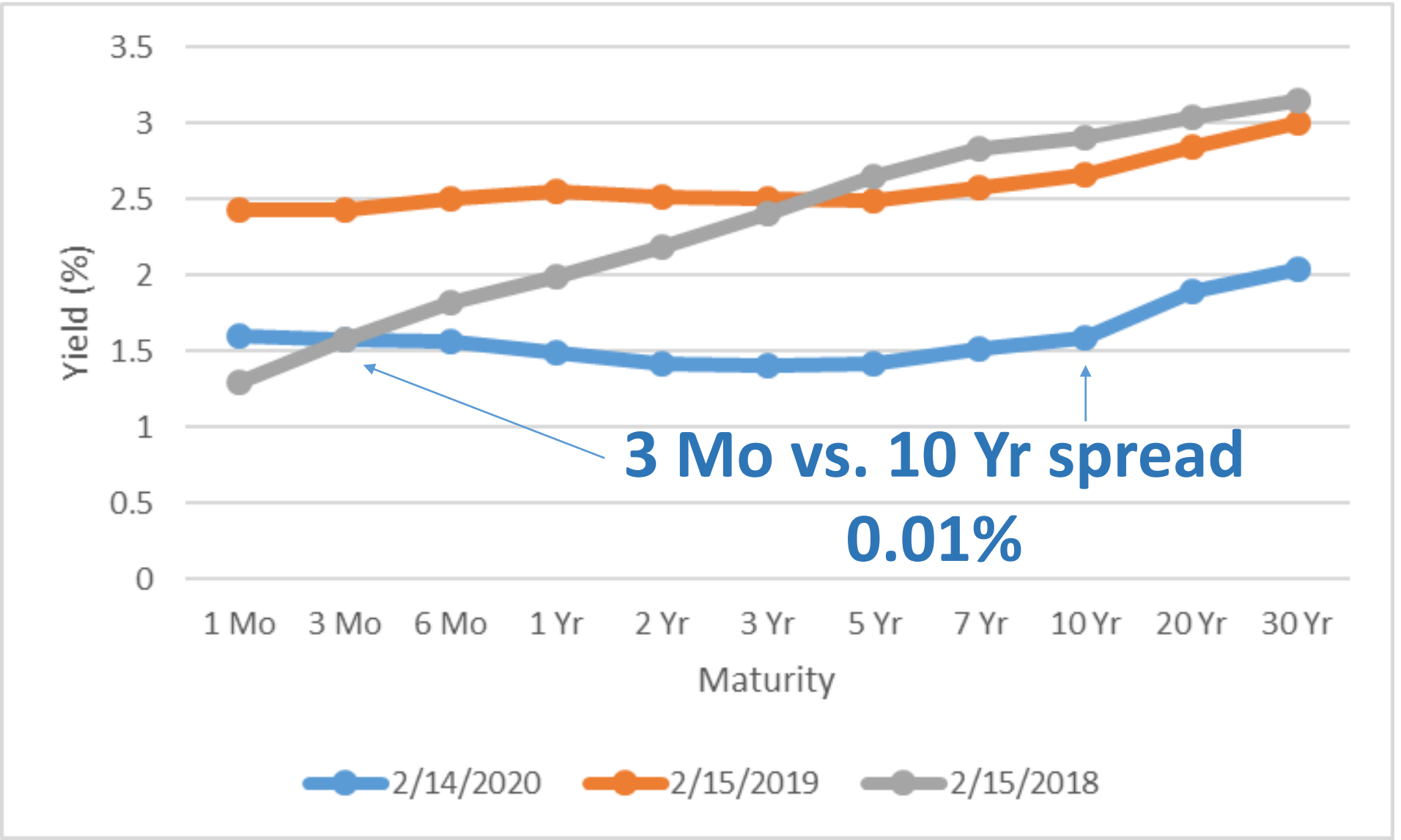
Treasury Yield Curve: Feb 2018



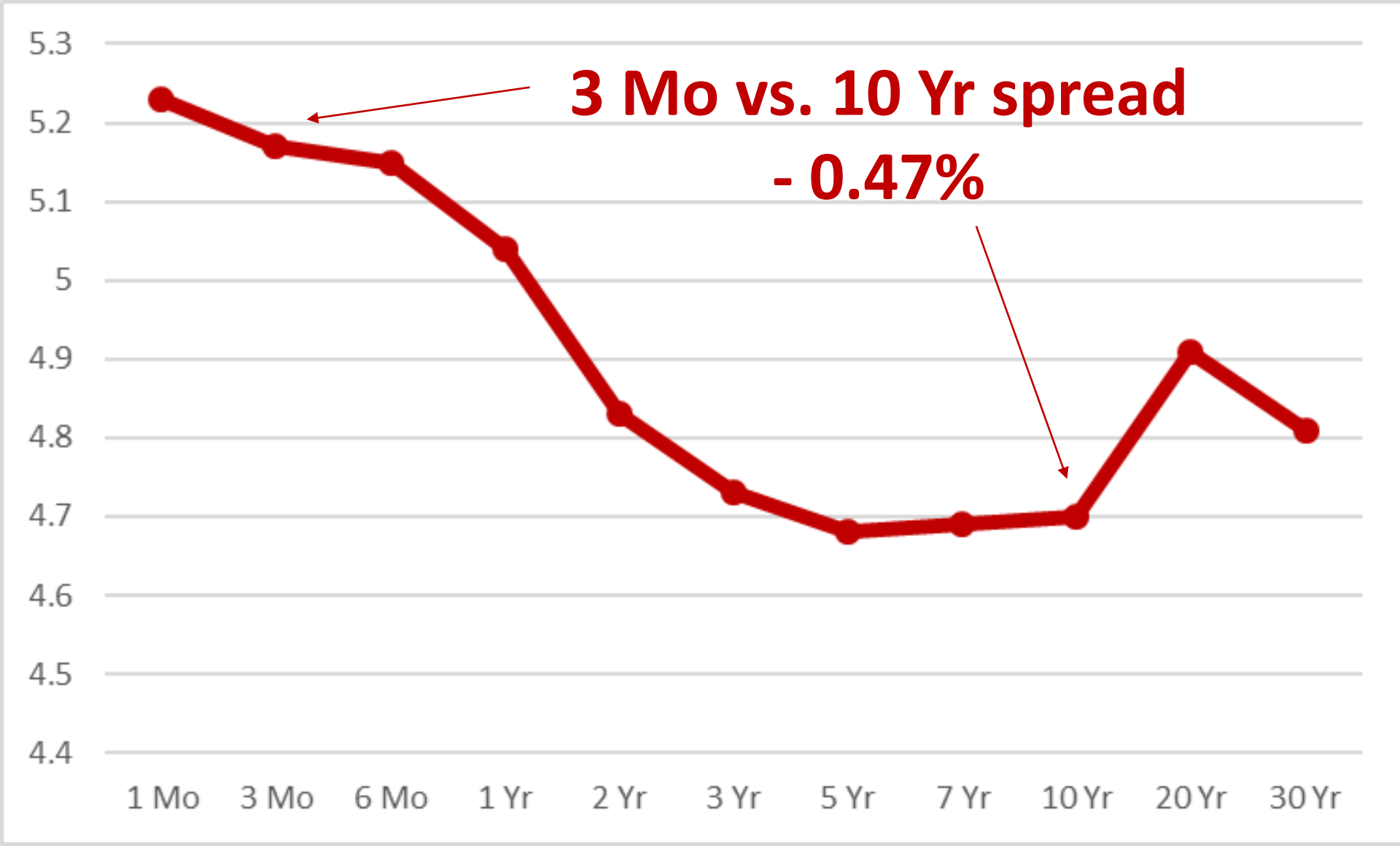
Treasury Yield Curve: Feb 2018; 2019



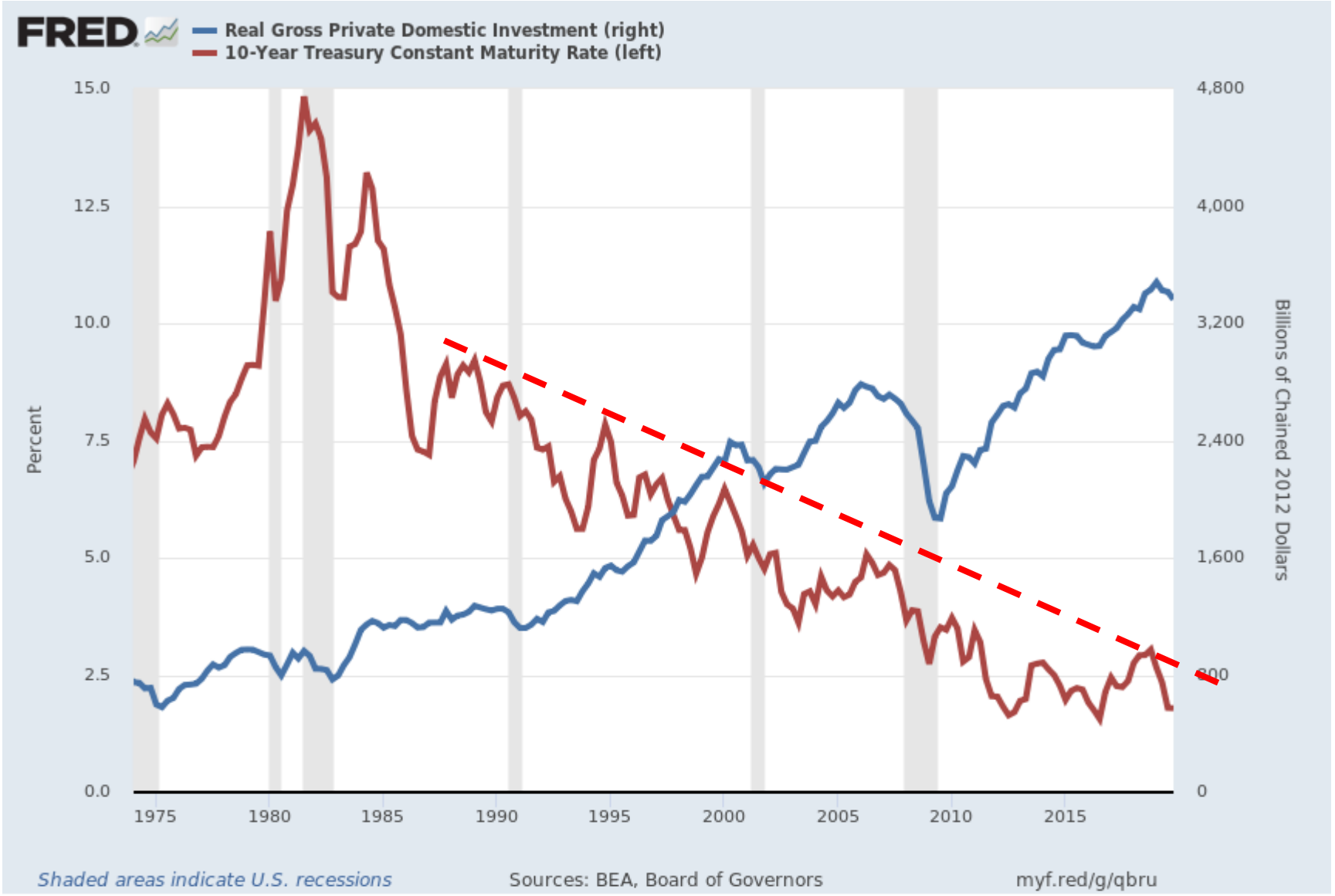
Treasury Yield Curve: Feb 2018; 2019; 2020



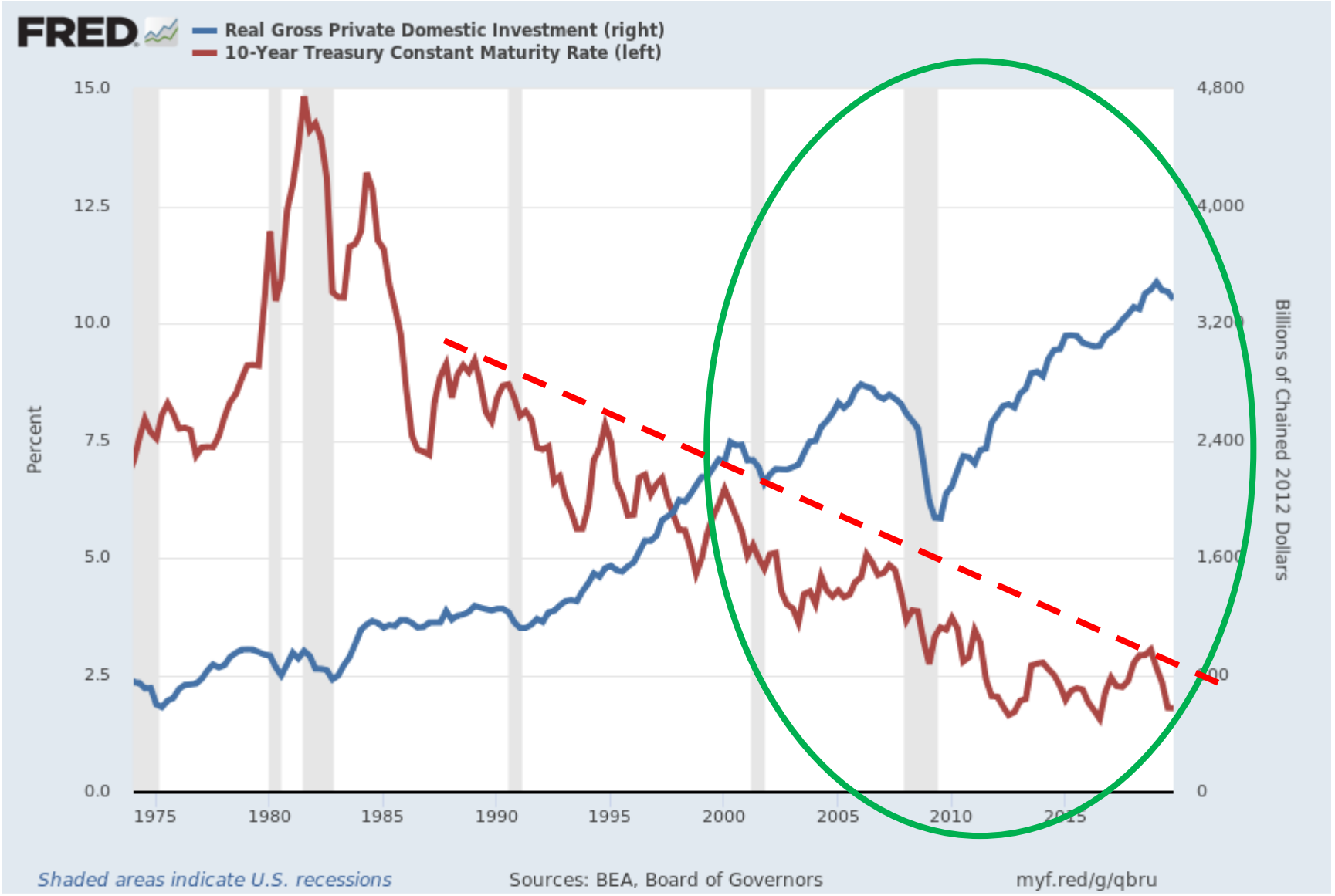
Treasury Yield Curve: Feb 2007



Real Investment vs. 10 yr. Treasury Rate



Real Investment vs. 10 yr. Treasury Rate

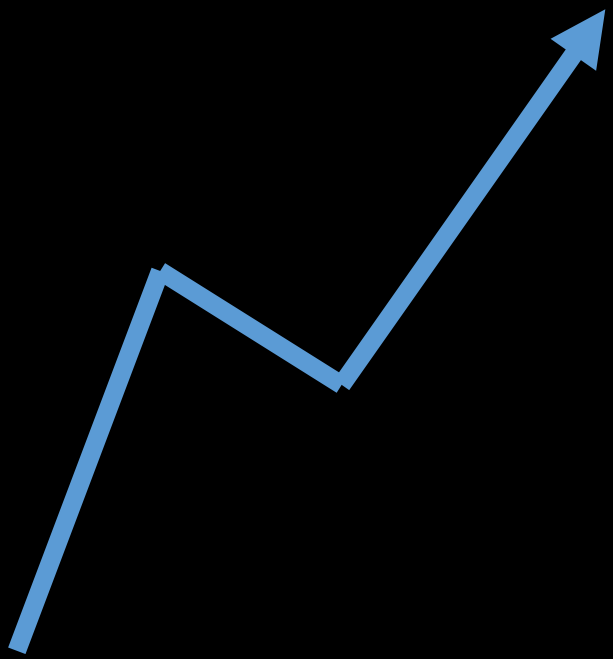


thoughts on interest rates

- Fed on the short end?
- long end more interesting
- yield curve inversion?
- long-term down trend (10 Yr)

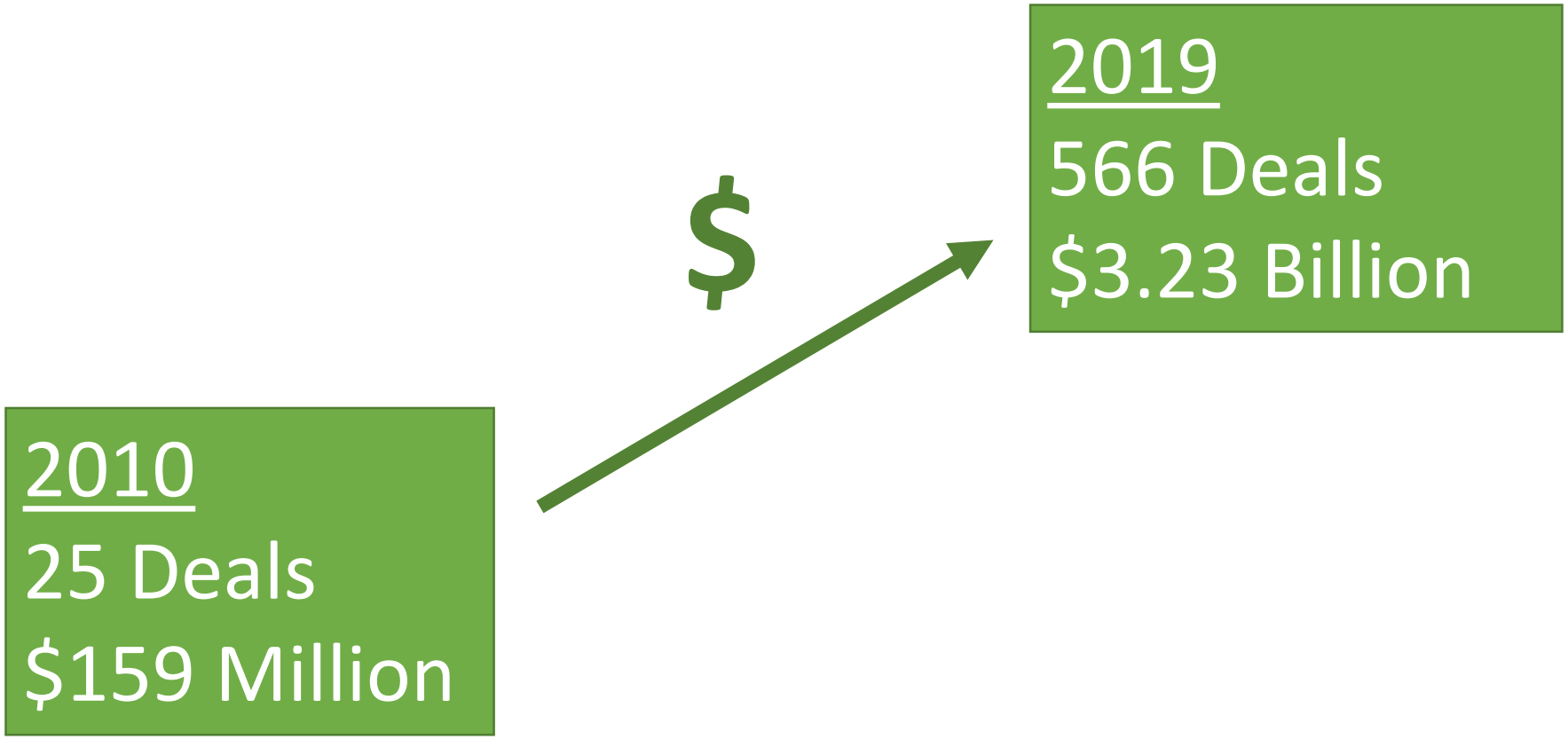
WARNING

MAY SUDDENLY START FORECASTING



ag trends: follow the money

Investments in Ag Products & Related Services; Crop Production; Animal Production (Non M&A)



Source: CB Insights

AG TECH: 100+ TECHNOLOGY COMPANIES CHANGING THE FARM

FARM MANAGEMENT SOFTWARE

Farmdok, landmapp, AEGRO, scoutpro, Granular, Agworld, agrivi, conservis, CropIn, trecker.com, PICKTRACE, FarmLogs, AgriWebb, ONFARM

PRECISION AGRICULTURE AND PREDICTIVE ANALYTICS

agronóstico, AGRIBLE, GAMAYA, Strider, GeoVisual analytics, agrilyst, S4, Observe, CropMetrics, adapt-N, FARMERS BUSINESS NETWORK, Premier Crop Systems, bovcontrol, CropZilla, MyAgData.com, AGRALOGICS, prospera, aWhere, ec2ce, FluroSat

NEXT GEN FARMS

BOWERY, alesca life, FREIGHT FARMS, FRESH BOX FARMS, BRIGHT FARMS, AeroFarms, GREEN SENSE FARMS, GOTHAM GREENS

MARKETPLACES

AgroStar, Agriconomie, LA RUCHE QUI DIT OUI !, EM3 Agri Services, YAGRO, Aggrigator

ANIMAL DATA

AAD Advanced Animal Diagnostics, Farmnote, stellapps, Mastiline, TL Biolabs, Connecterra, COWLAR, Moocall

ROBOTICS AND DRONES

mavrx, FarmBot, AIRWOOD, RAPTOR MAPS, HARVEST CROO ROBOTICS, BLUE RIVER TECHNOLOGY, SkySquirrel technologies, SKYCISION, LEADING EDGE, TerrAvion, RESSON, abundant ROBOTICS, ceresimaging

SENSORS

Centaur, SLANTRANGE, grownetics, motorleaf, pycno, SPENSA, amber AGRICULTURE, Saturas, Acuity Agriculture, FARMOBILE, Grassometer, FieldIn, Phytech, FarmersEdge, ARABLE, SMART YIELDS, flux, GardenSpace, semios, Sencrop

SMART IRRIGATION

flowius, Tevatronic, livn, HORTAU, Sprinkl, HydroPoint, SMART FARM., PowWow, cropx, AquaSpy, EDYN

PLANT DATA/ANALYSIS

CiBO TECHNOLOGIES, TRACE GENOMICS, BENSON HILL BIOSYSTEMS

CBINSIGHTS

Investments in 2019

Source: CB Insights

SANKU
PROJECT HEALTHY CHILDREN

Micronutrients - Food Security

$100K

Source: CB Insights

Organic Pea Protein

$127M

Source: CB Insights

CALYSTA.

Converting natural gas (methane) into food, creating high value fish, livestock, and pet nutritional products that don't interfere with the human food chain

$138.4M

Source: CB Insights

Cell Grown Meat

$13M

Source: CB Insights

Cargill – Acquisitions in 2019

- Beckers
- Campollo
- Kanspol
- Pro Pet
- Smet
- Swine Feed / Brazil
- Poultry / Columbia
- Poultry / Poland
- Private Label Pet Food
- Gourmet Chocolate

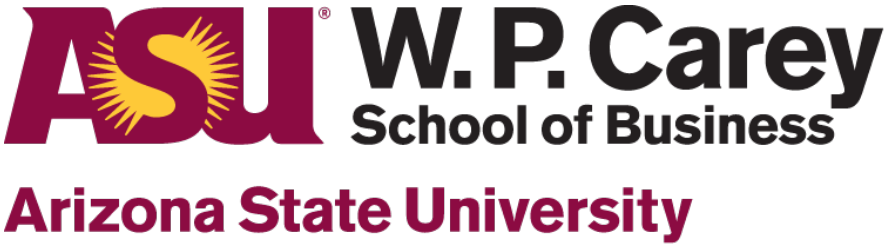
Source: CB Insights

thoughts on ag trends

- consumer driven food trends
- efficiency & sustainability needs
- cheap & plentiful capital
- developing world growth

100% certainty

Thank you!



Morrison School of Agribusiness

Mark Manfredo, Ph.D.
Professor and Director
Morrison School of Agribusiness
manfredo@asu.edu
Twitter: @AgriBizProf