

Trade Wars and the Macroeconomics of Wheat & Other Agricultural Goods

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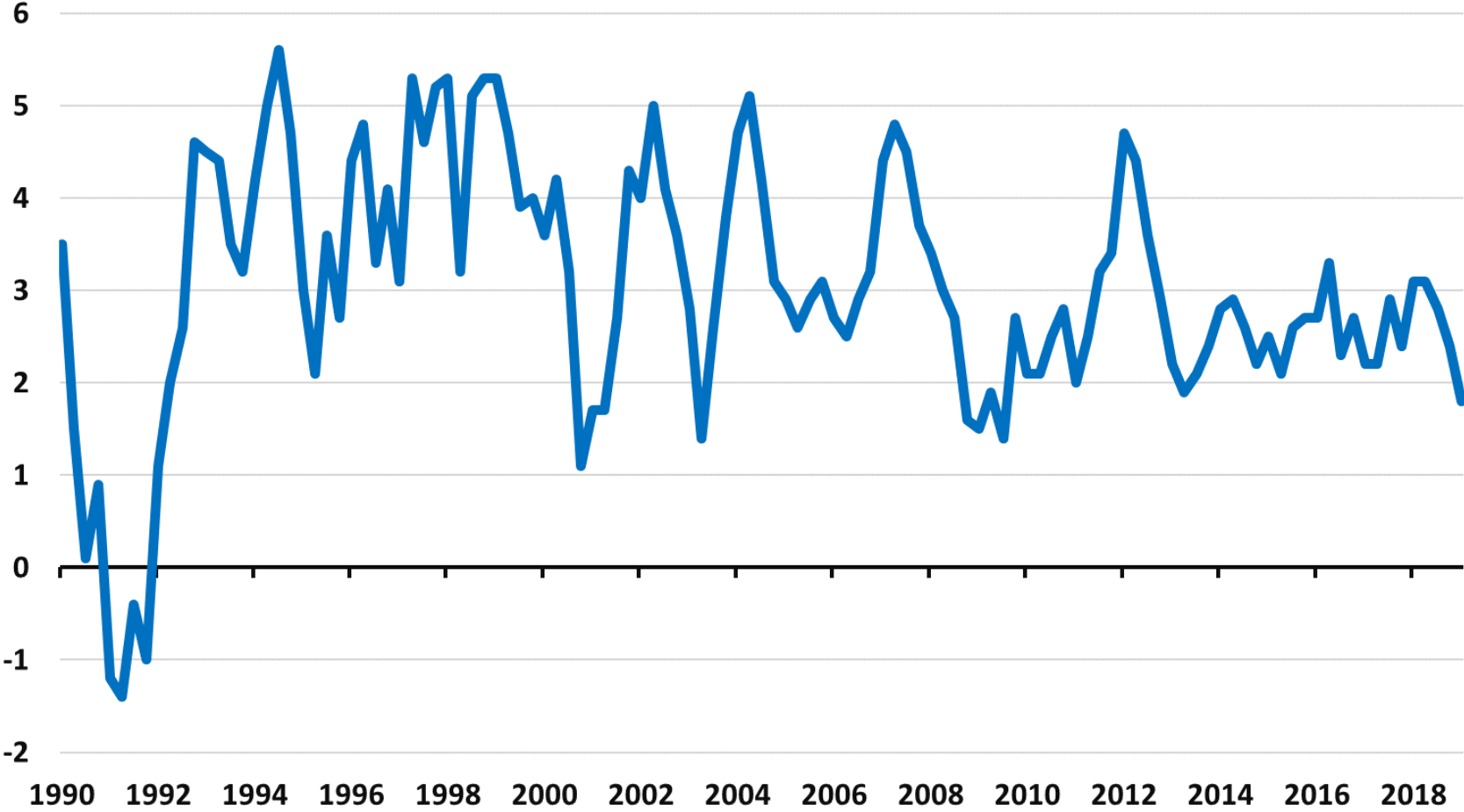
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Economics of soymeal and agricultural products

- Wheat prices closely follow the Russian Rouble-US dollar exchange rate, which isn't surprising since Russia and neighbouring Ukraine are now the world's two principal wheat exporters. The value of the rouble largely determines the global cost of production.
- China exerts a strong indirect influence over the price of wheat through its impact on global energy and metals prices, which in turn impact the currency values of major commodity exporters such as Brazil, Russia, Australia and Canada. Fluctuations in the pace of China's growth don't have much impact in terms of China's food consumption directly, but they do impact the global marginal cost of food production through their impact on energy, metals and currencies.
- The trade war isn't as harmful to China as commonly assumed, taking about 0.1%-0.3% off of Chinese growth. China does, however, have deeper long-term issues such as excessive debt and unfavourable demographics which could slow growth.
- Wheat has become increasingly negatively correlated with the US dollar. In fact, USD strength explains to a large extent why wheat and other commodity prices have suffered in US dollar terms since 2011. The US dollar might, however, go from being a strong currency to being a weak currency, which could be supportive for commodity prices.
- Tighter US monetary policy could raise the cost of agriculture options.

Can Australia's 28-Year Long Expansion Continue?

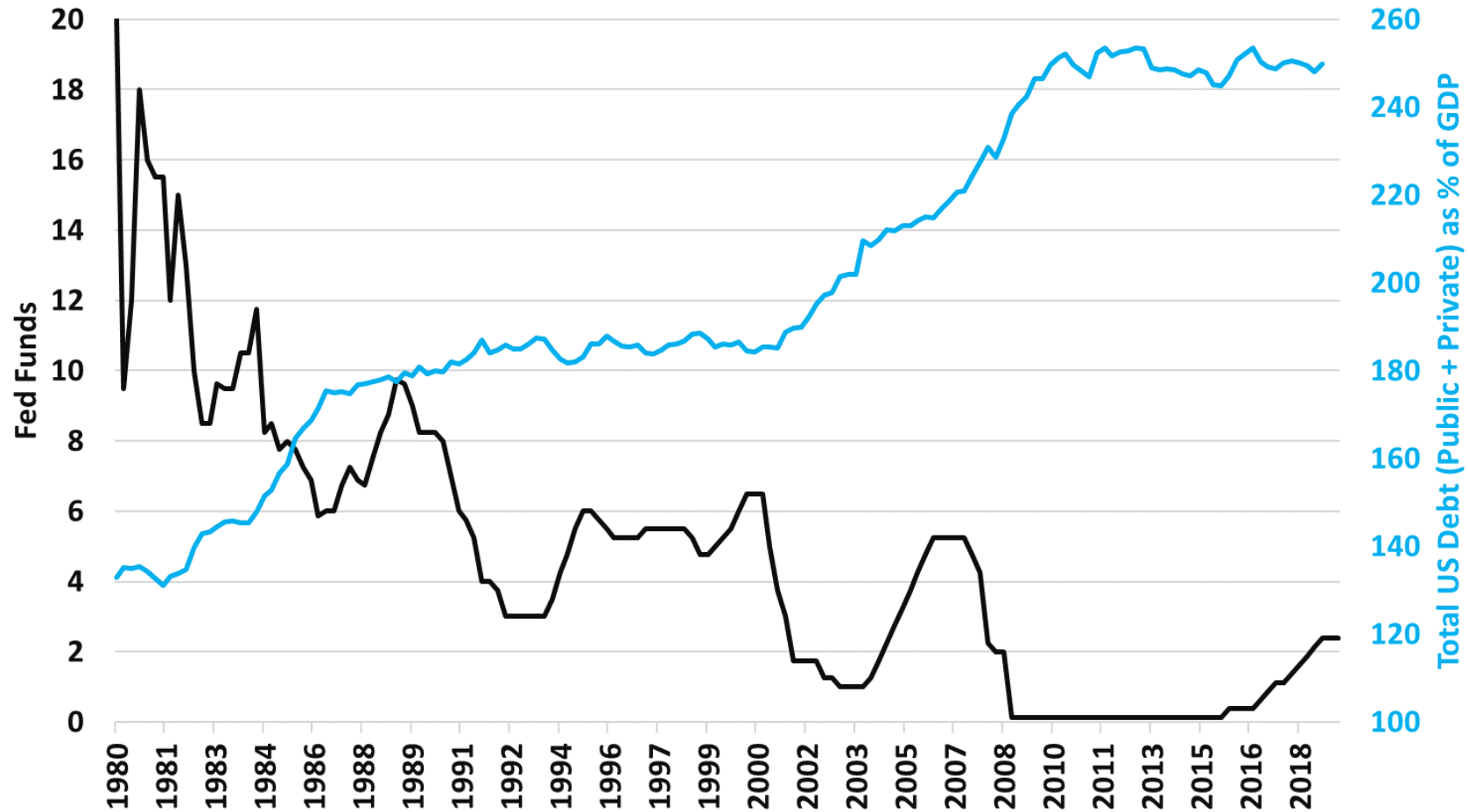
Australia Real GDP YoY



Source: Bloomberg Professional (AUNAGDPY)

High Debt Necessitates Low Rates

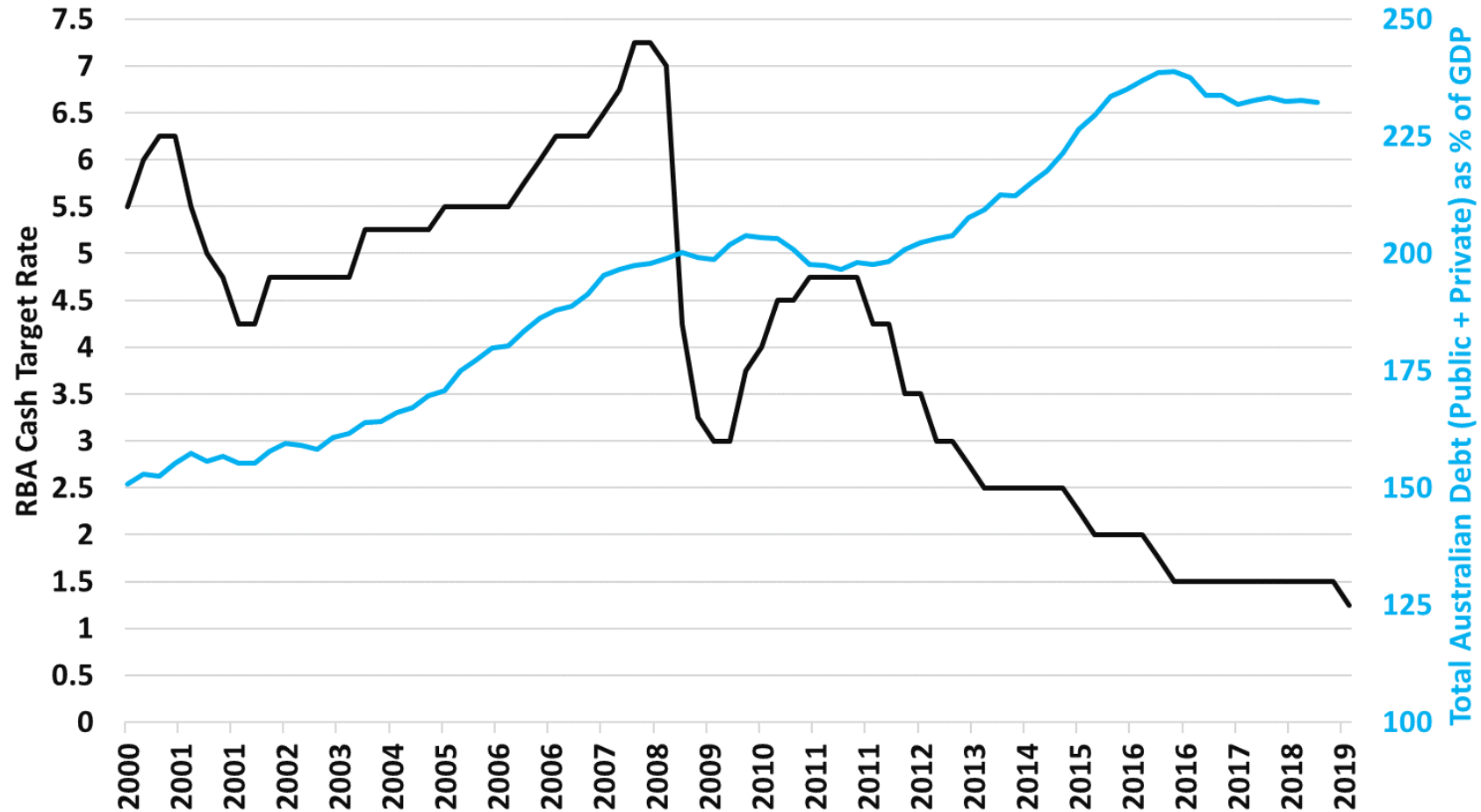
Fed Funds and US Total Debt/GDP



Source: [Bank for International Settlements, Total Credit to the Non-Financial Sector, Q4, 2018](#) & Bloomberg Professional (FDTRMID)

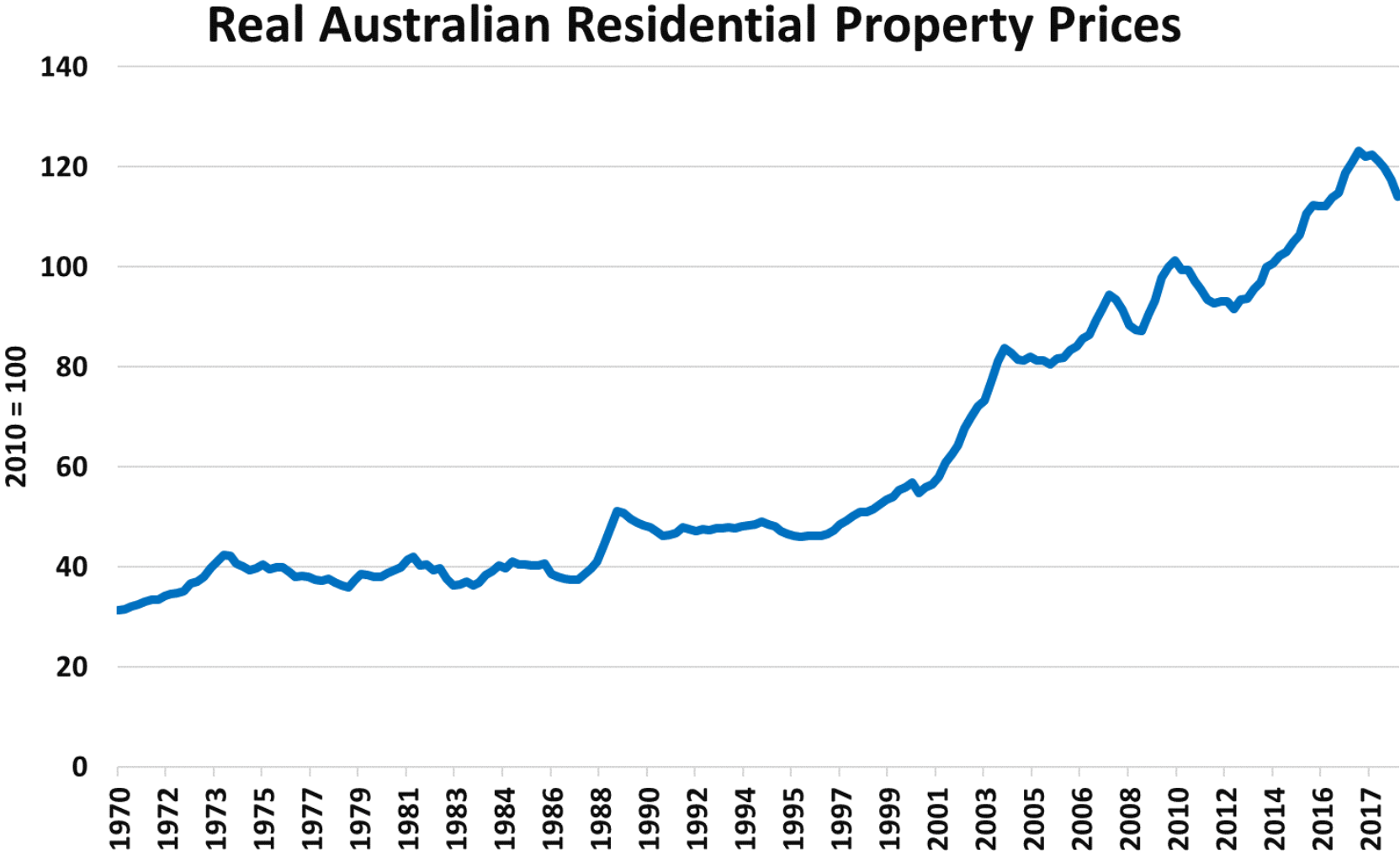
High Debt Necessitates Low Rates

RBA Cash Target and Total AUD Debt/GDP



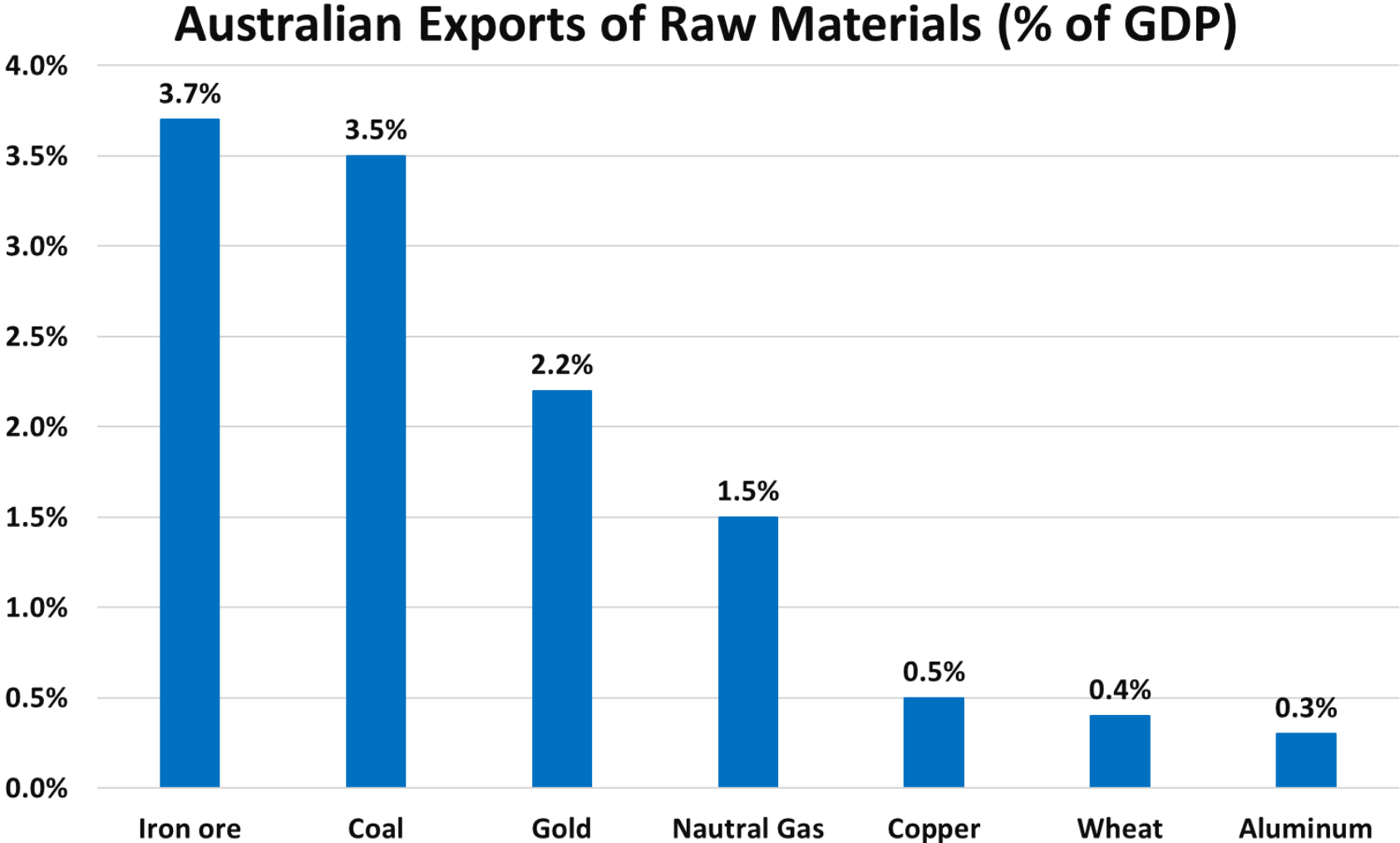
Source: [Bank for International Settlements, Total Credit to the Non-Financial Sector, Q4, 2018](#) & [Bloomberg Professional \(RBATCTR\)](#)

RBA cutting rates to sustain leverage levels & real estate prices



Source: Bank for International Settlements, Residential property prices: selected series (nominal and real), Q4 2018

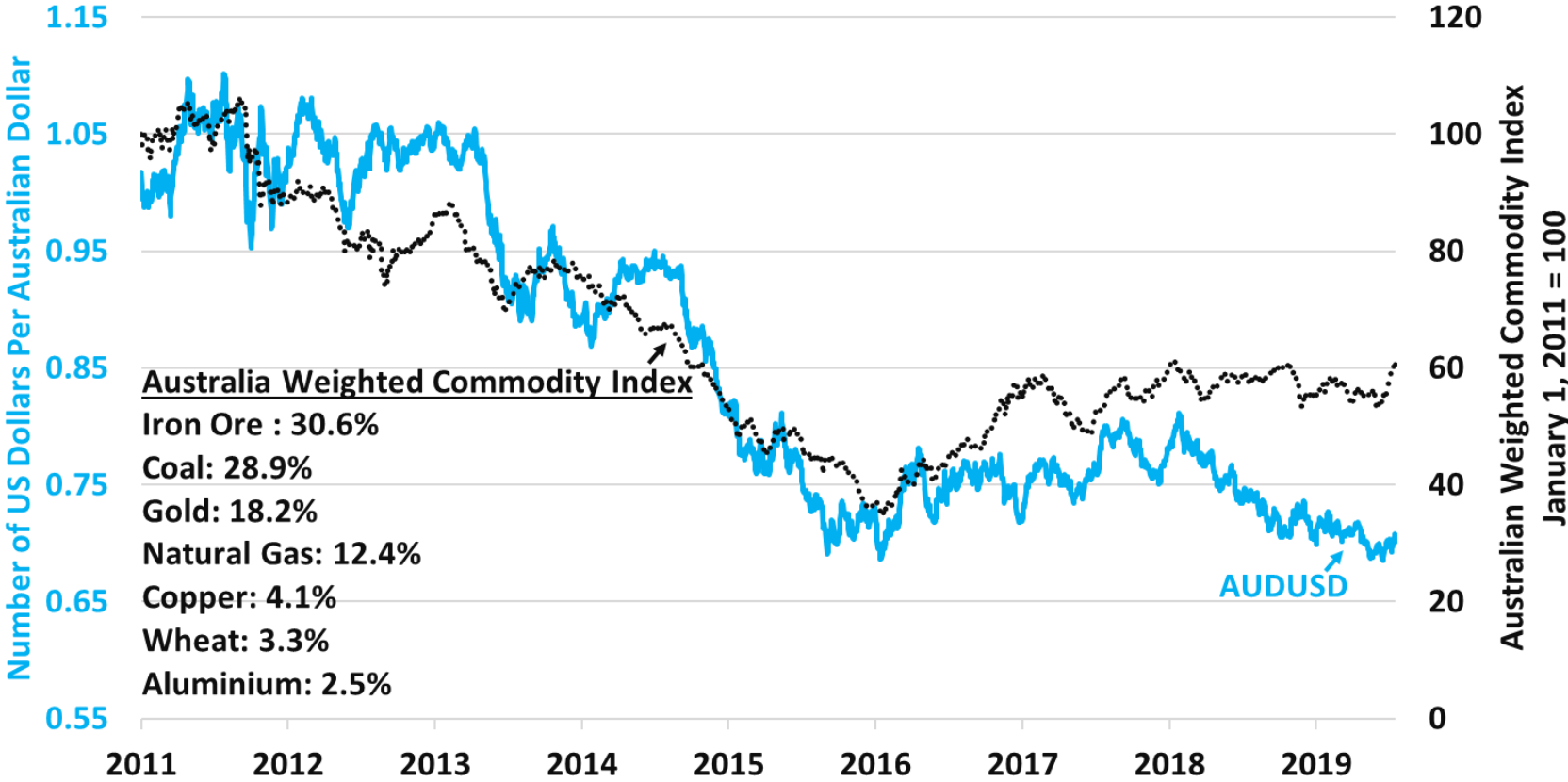
AUDUSD tracks a basket of seven commodity exports



Source: MIT, Organization for Economic Complexity (OEC Australia), World Bank 2017 GDPs

AUDUSD tracks a basket of seven commodity exports

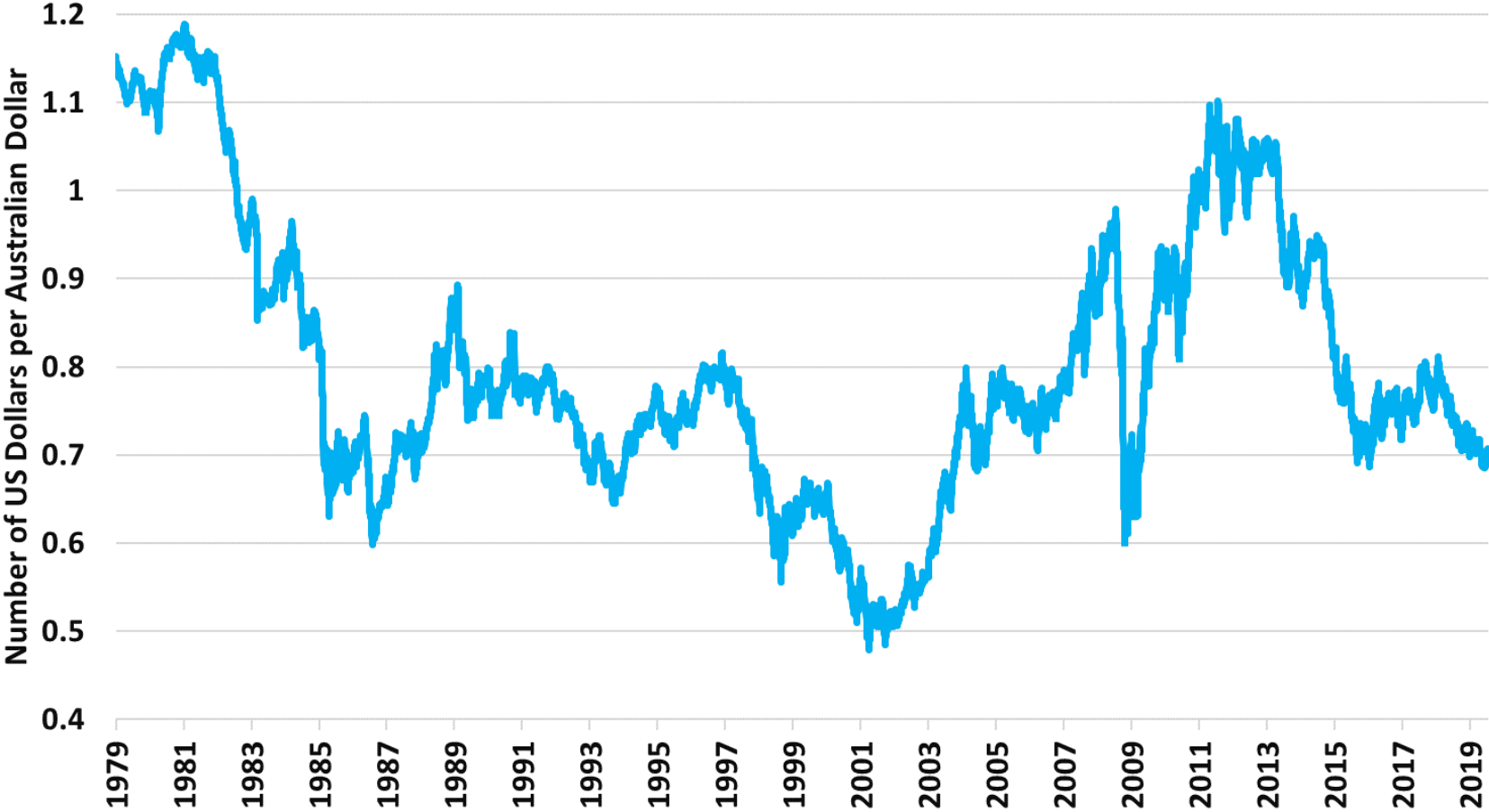
AUDUSD vs Australia Weighted Commodity Index



Source: Bloomberg Professional (AUDUSD, TIO1, MFE1, GC1, CO1, NG1, HG1, LA1)

AUDUSD is not at historical extremes

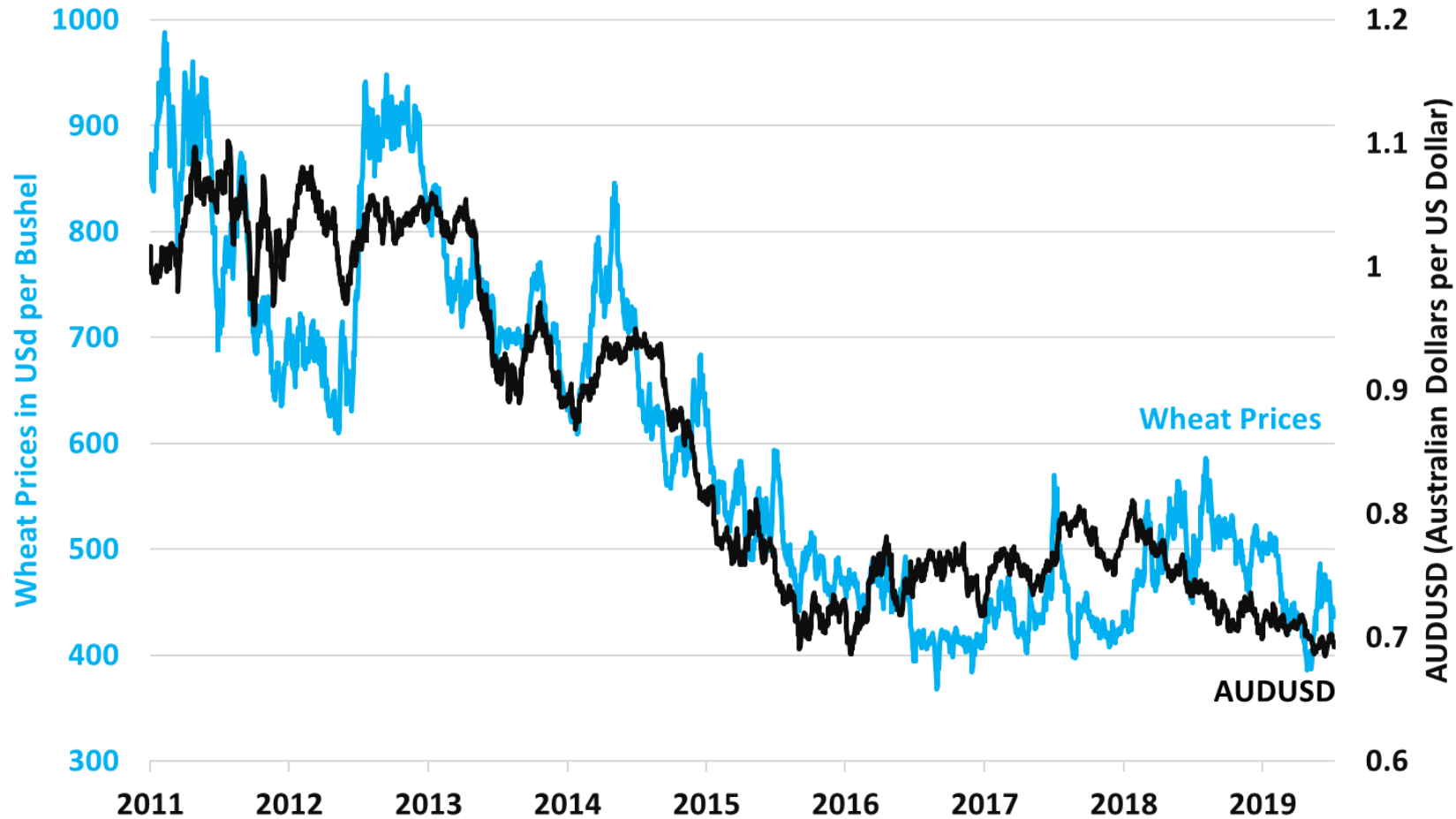
AUDUSD Exchange Rate



Source: Bloomberg Professional (AUDUSD)

AUD insulates Australian farmers from some of wheat's volatility

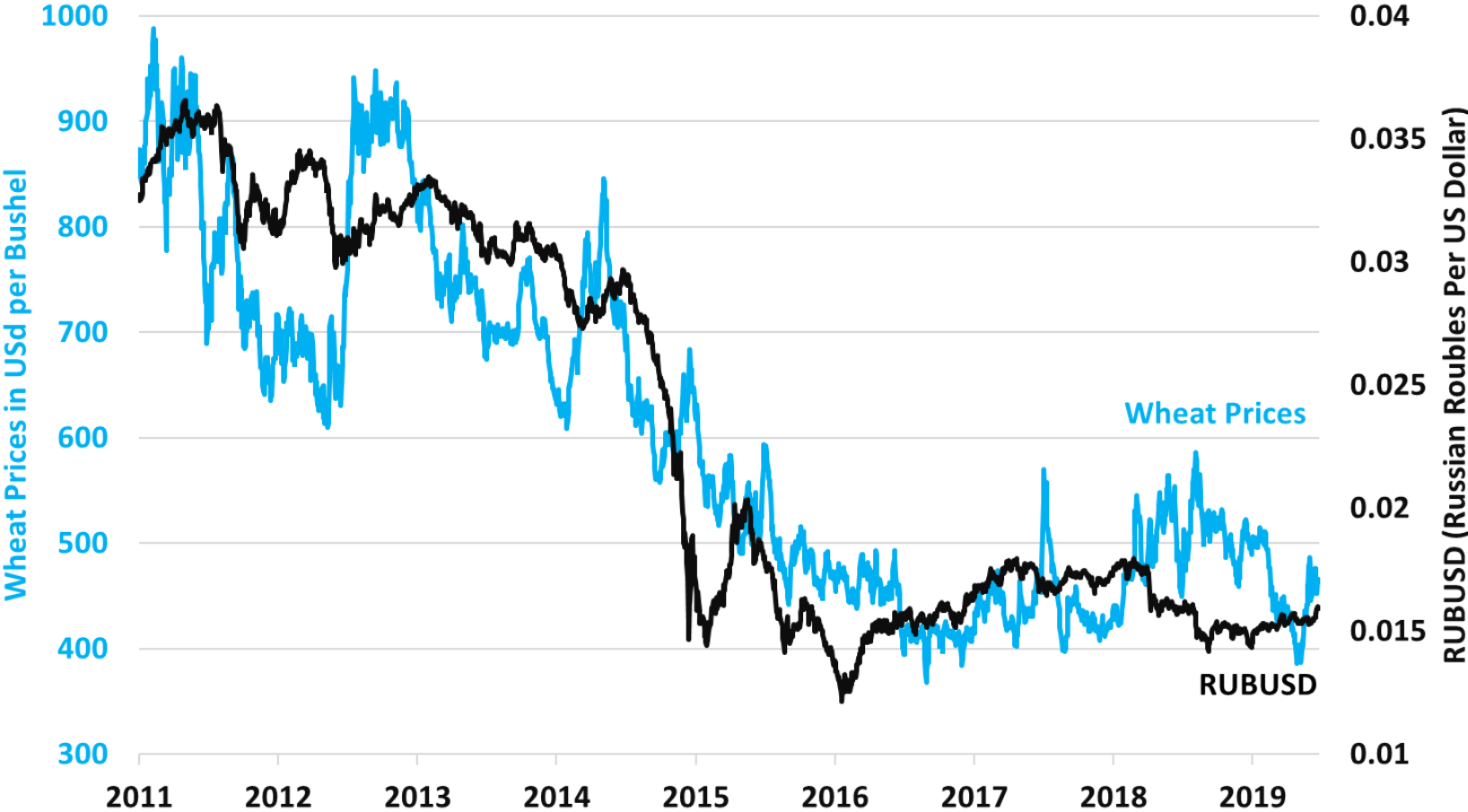
HRW Wheat & Australian Dollar (AUDUSD)



Source: Bloomberg Professional (KW1 and AUDUSD)

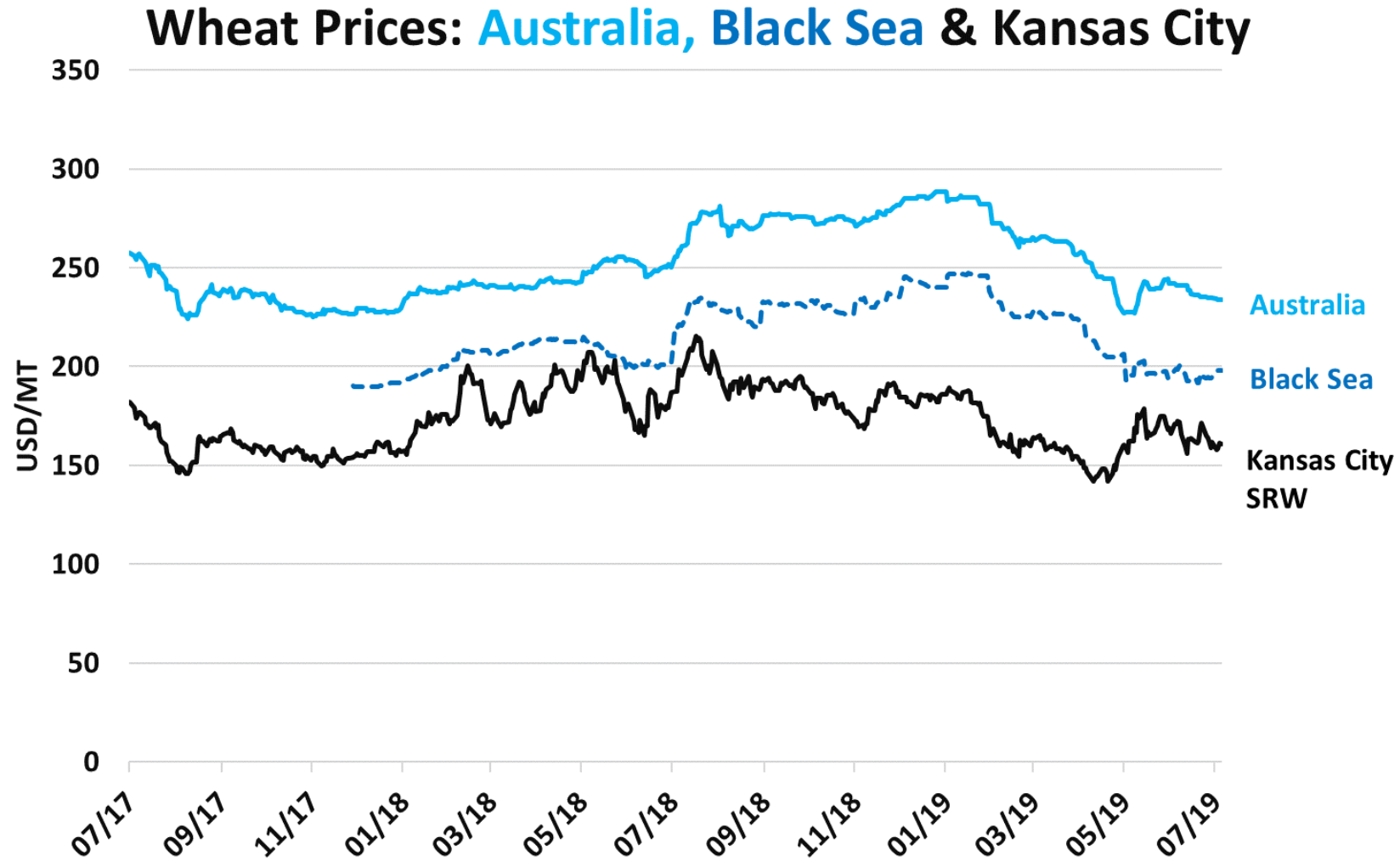
EMFX influences agricultural production costs

HRW Wheat & Russian Rouble RUBUSD



Source: Bloomberg Professional (KW1 and RUBUSD)

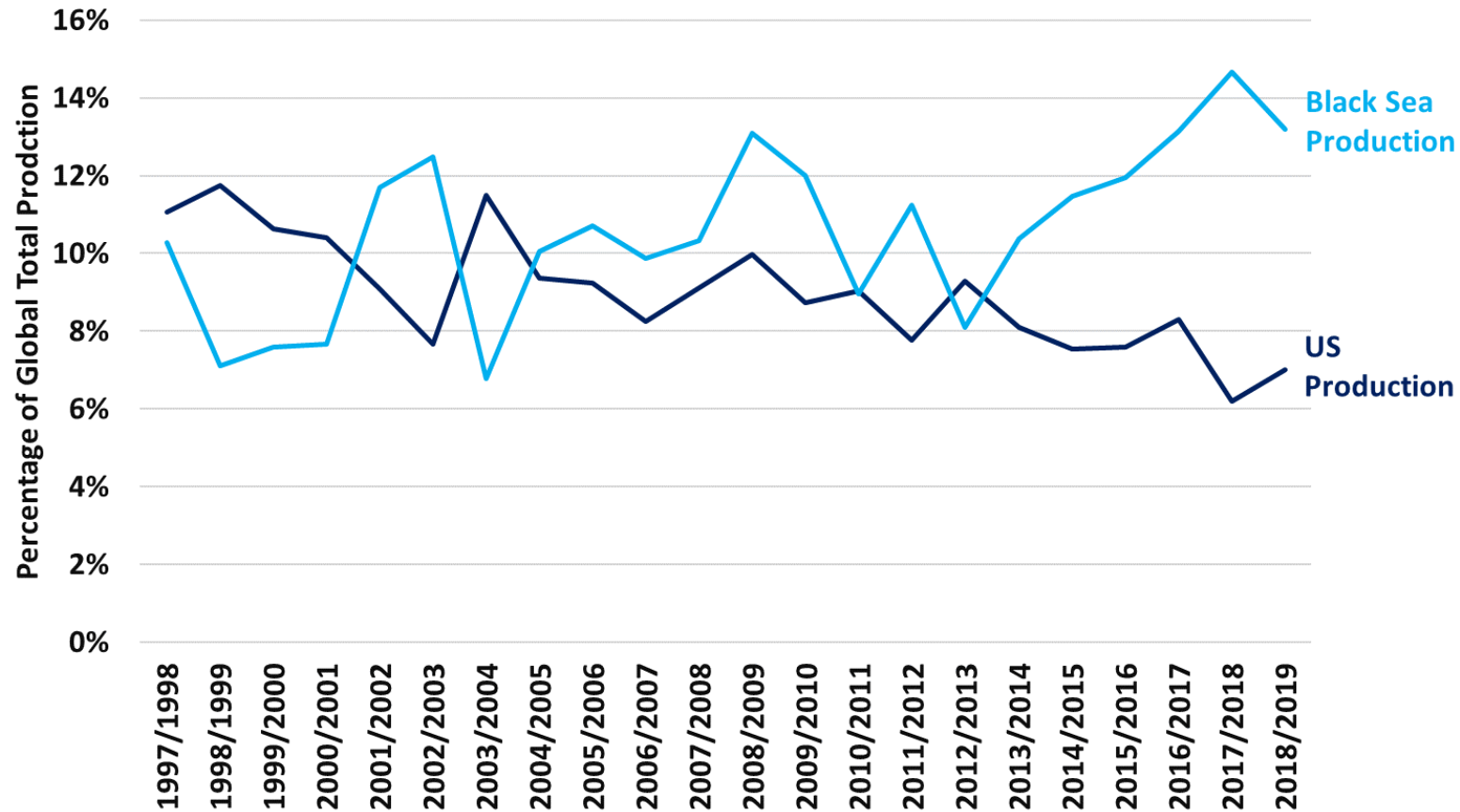
Global Wheat Benchmarks



Source: Bloomberg Professional (KW1, WFO1, BSW1)

The US is losing dominance in agricultural production and in exports

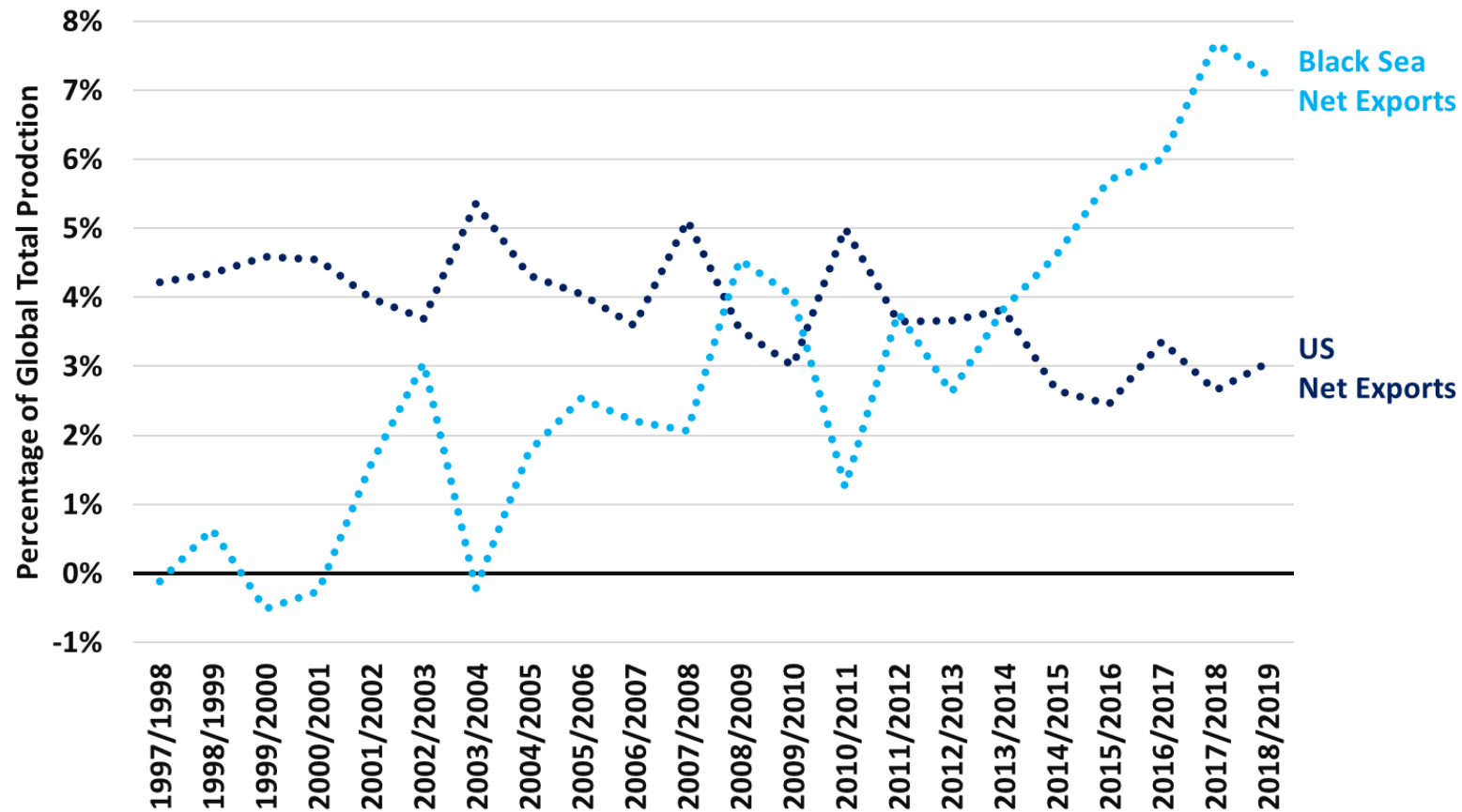
Wheat: US & Black Sea Production & Net Exports



Source: WASDE Wheat Balance Sheet

The US is losing dominance in agricultural production and in exports

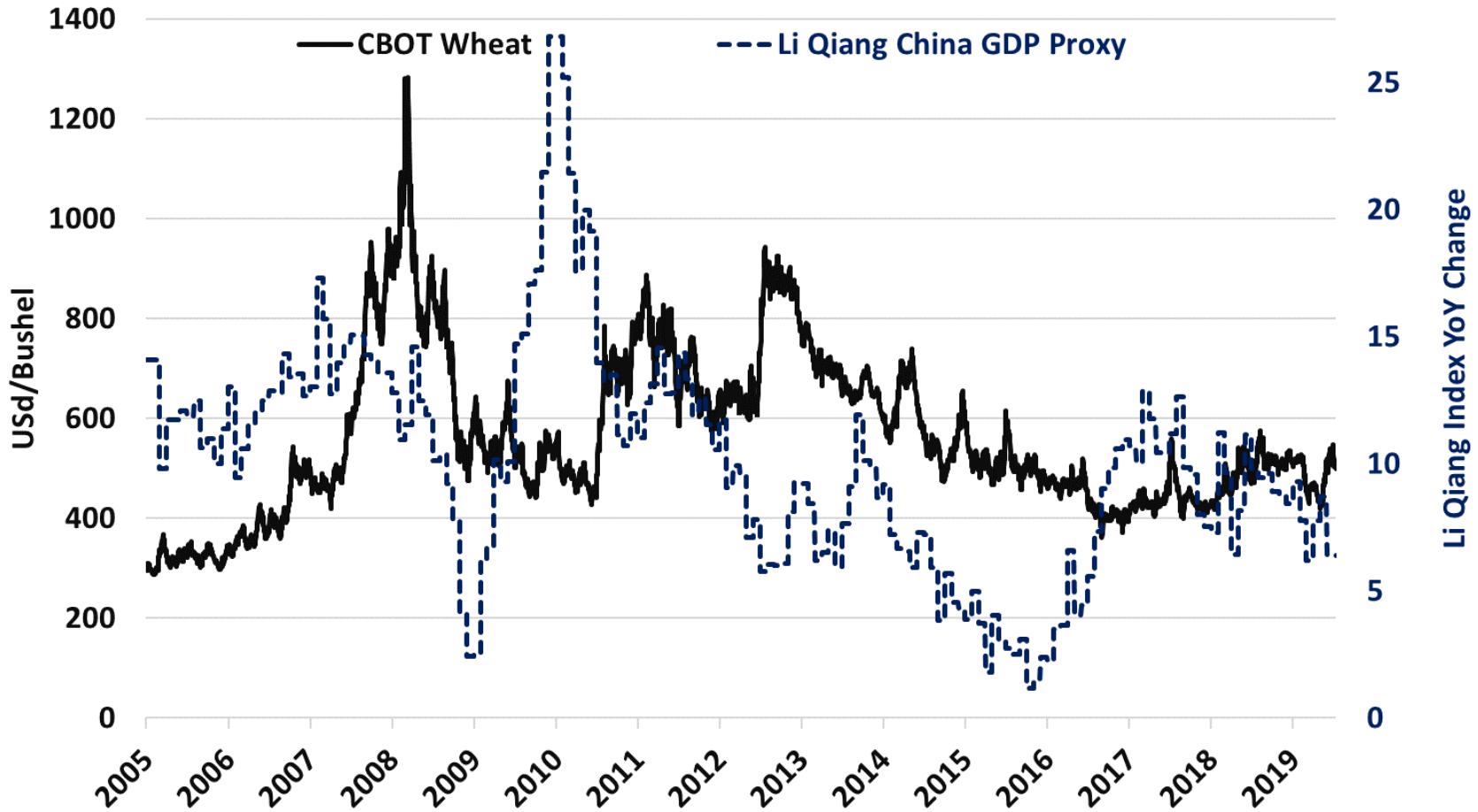
Wheat: US & Black Sea Production & Net Exports



Source: WASDE Wheat Balance Sheet

China exerts a strong but indirect influence on the price of wheat

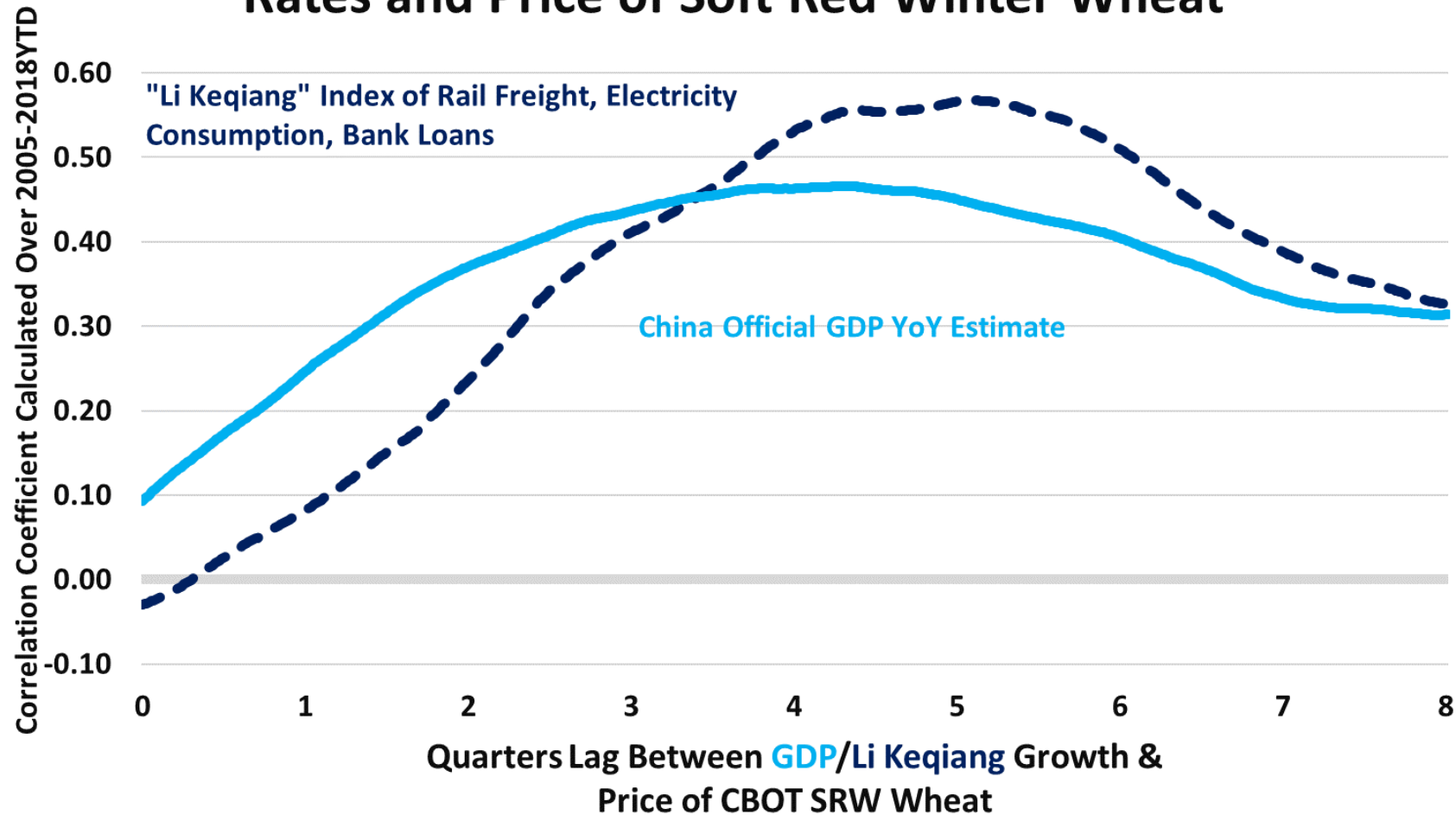
CBOT Wheat and YoY Change in Li Qiang Index



Source: Bloomberg Professional (W 1 and CLKQINDX)

China exerts a strong but indirect influence on the price of wheat

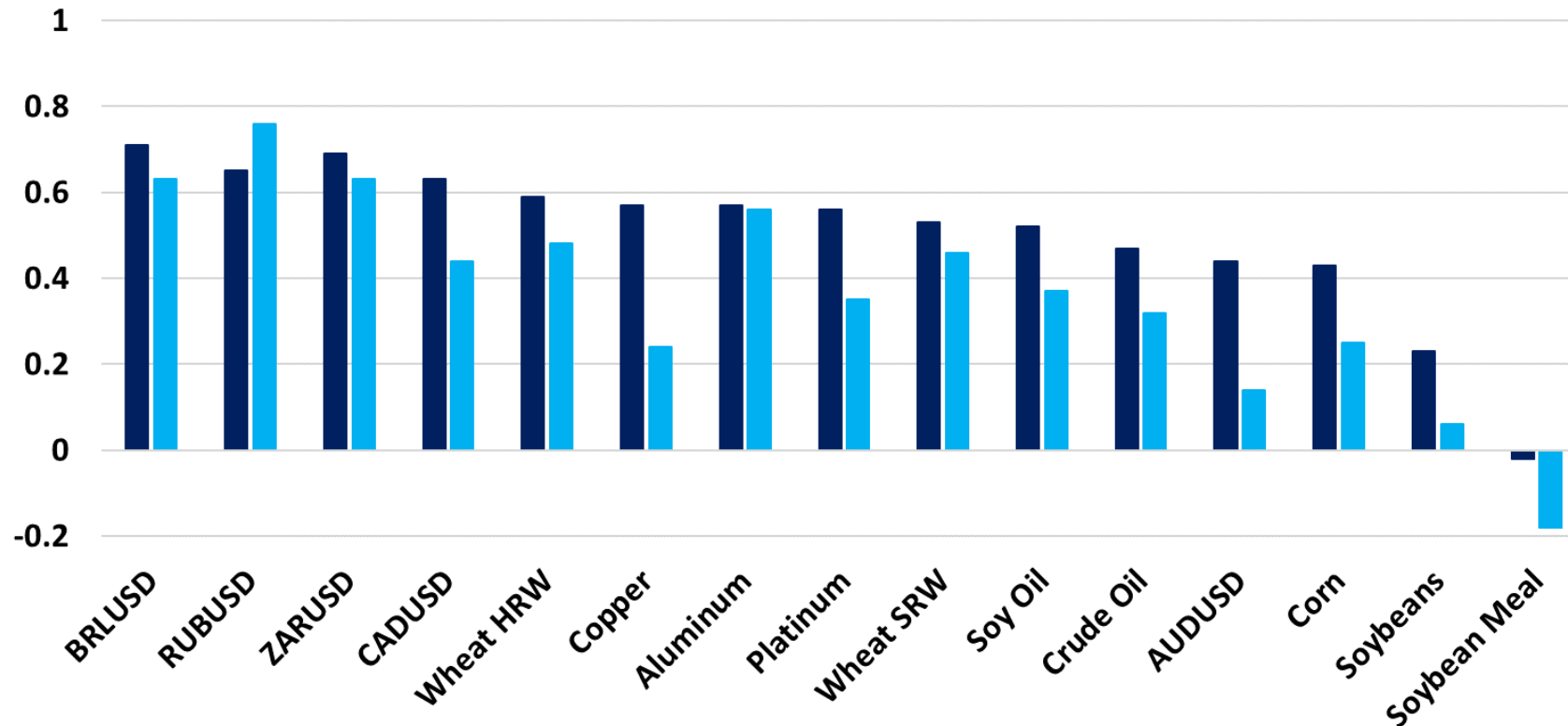
Correlation between GDP & "Li Keqiang" Growth Rates and Price of Soft Red Winter Wheat



Source: Bloomberg Professional (W 1, [CNGDPYOY](#) and [CLKQINDX](#)), CME Economic Research Calculations

Commodities and EMFX depend on China...

Correlation: Li Keqiang Index and Official Chinese GDP Growth Rates and Emerging Market Exchange Rates/Commodity Prices One Year Forward: 2005-2019



Source: Bloomberg Professional (CLKQINDX, CNGDPYOY, BRL, RUB, ZAR, CAD, KC1, HG1, PL1, W 1, BO1, CL1, AUD, S 1), CME Economic Research Calculations

How China Impacts Agriculture: Path of Influence

China's Economy Accelerates/Decelerates

Prices of Energy and Metals Rise/Fall

Commodity Currencies (RUB, BRL, AUD, CAD etc.) Rise/ Fall

Agricultural production costs rise/fall from USD perspective

Impacts from the US-China Trade War Escalation

Back of the Envelope Tariff Impact Calculator

On \$200 billion worth of goods

Tariff	US CPI (Maximum Impact)	US CPI (Probable Impact)	US Corporate Profits (Probable Impact)	Federal Revenues (Best Estimate)	Marginal Impact on China GDP (Best Estimate)
10%	0.10%	0.05%	-0.6%	0.09%	-0.15%
15%	0.15%	0.08%	-0.9%	0.13%	-0.22%
20%	0.20%	0.10%	-1.2%	0.17%	-0.28%
25%	0.25%	0.13%	-1.5%	0.20%	-0.33%

Marginal impact of tariffs on \$300 billion additional goods on top of the \$200 billion above

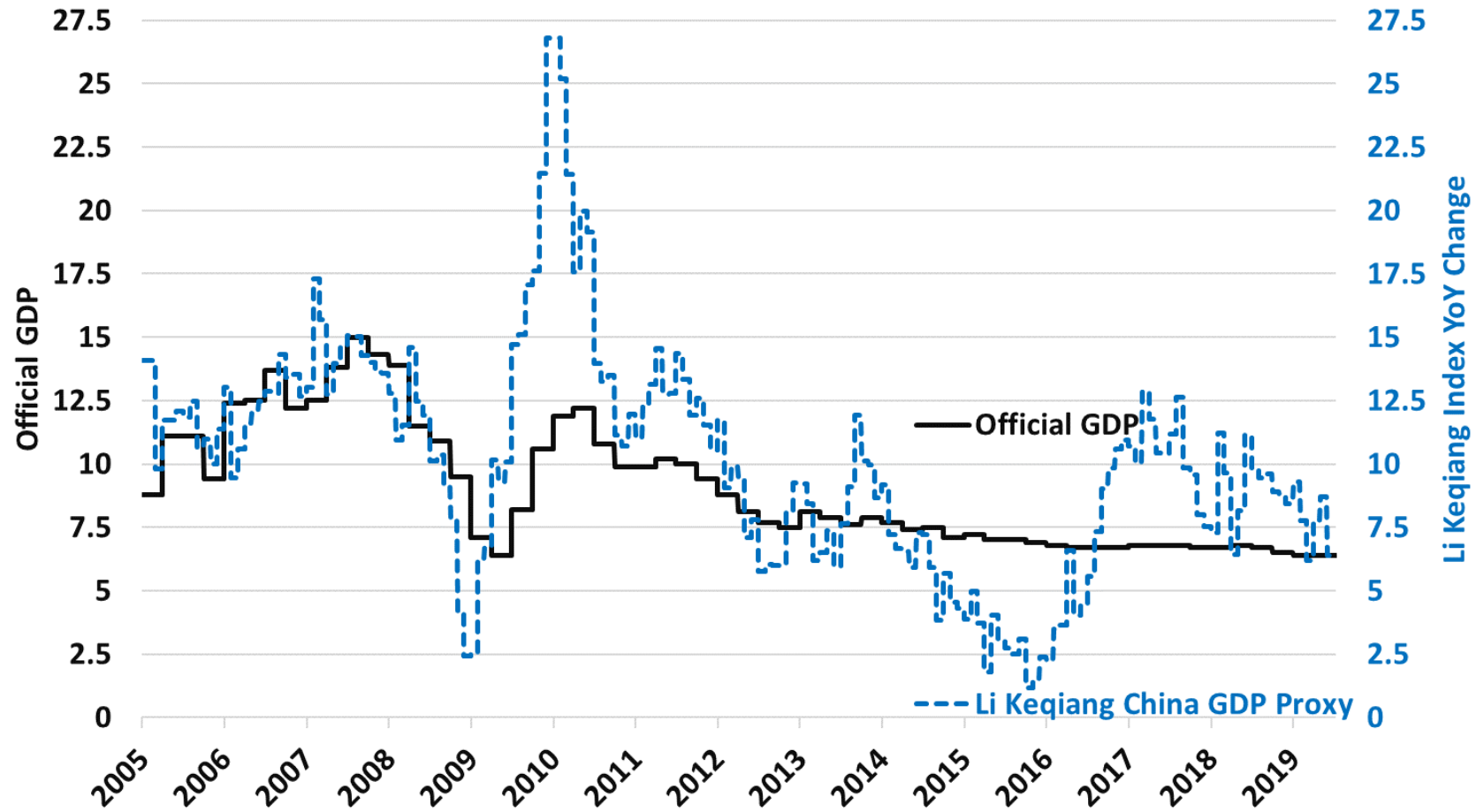
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15%	0.23%	0.11%	-1.3%	0.20%	-0.33%
20%	0.30%	0.15%	-1.8%	0.25%	-0.42%
25%	0.38%	0.19%	-2.2%	0.30%	-0.50%

All figures based upon the assumption that monetary & fiscal policy and exchange rates don't change as a result of the trade dispute.

Source: GDP Estimates from CIA World Fact Book 2018, Calculations from CME Economic Research

How best to measure Chinese growth?

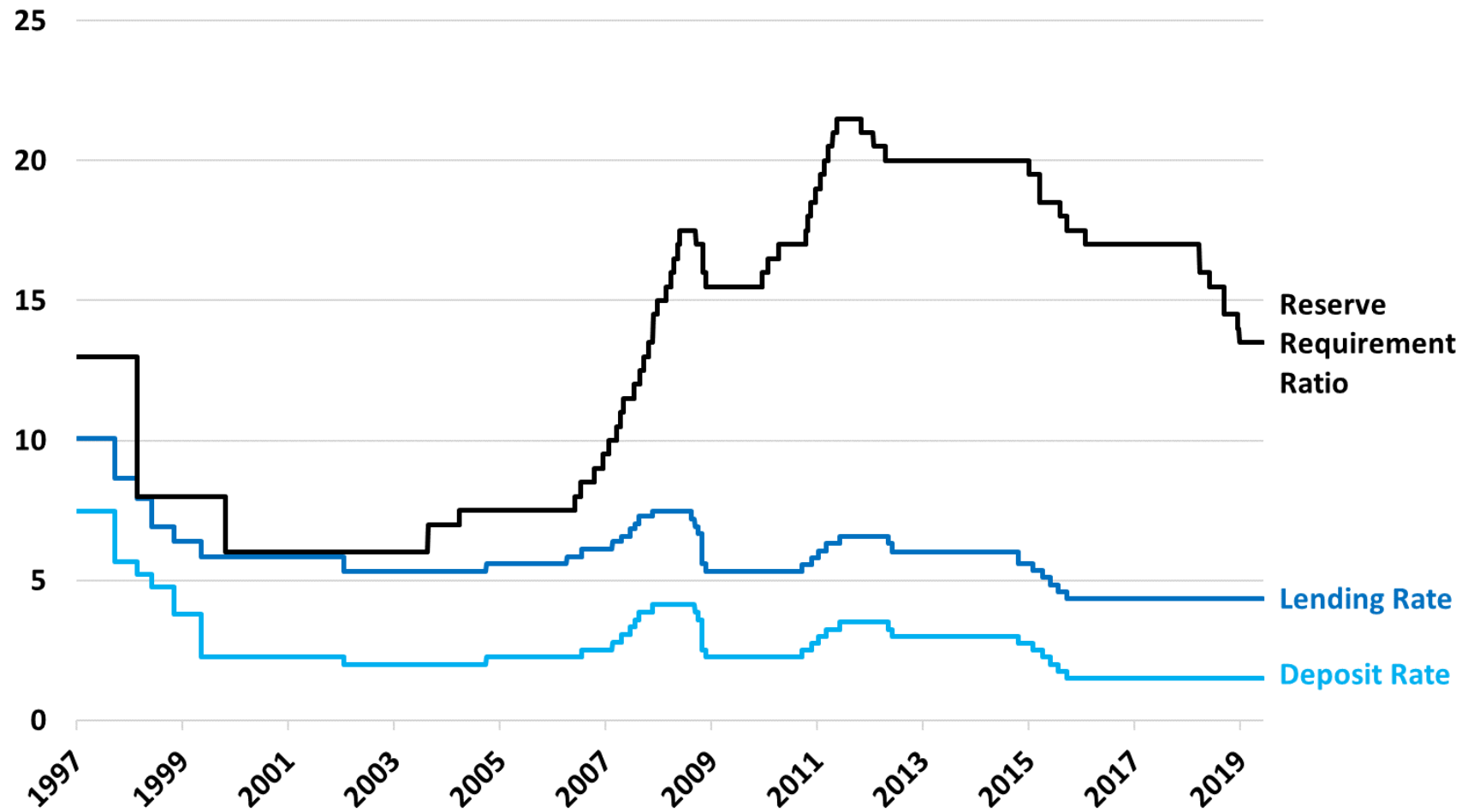
China's Official GDP and The Li Keqiang Index



Source: Bloomberg Professional (CNGDPYOY and CLKQINDX)

China will solve its debt problem with more debt

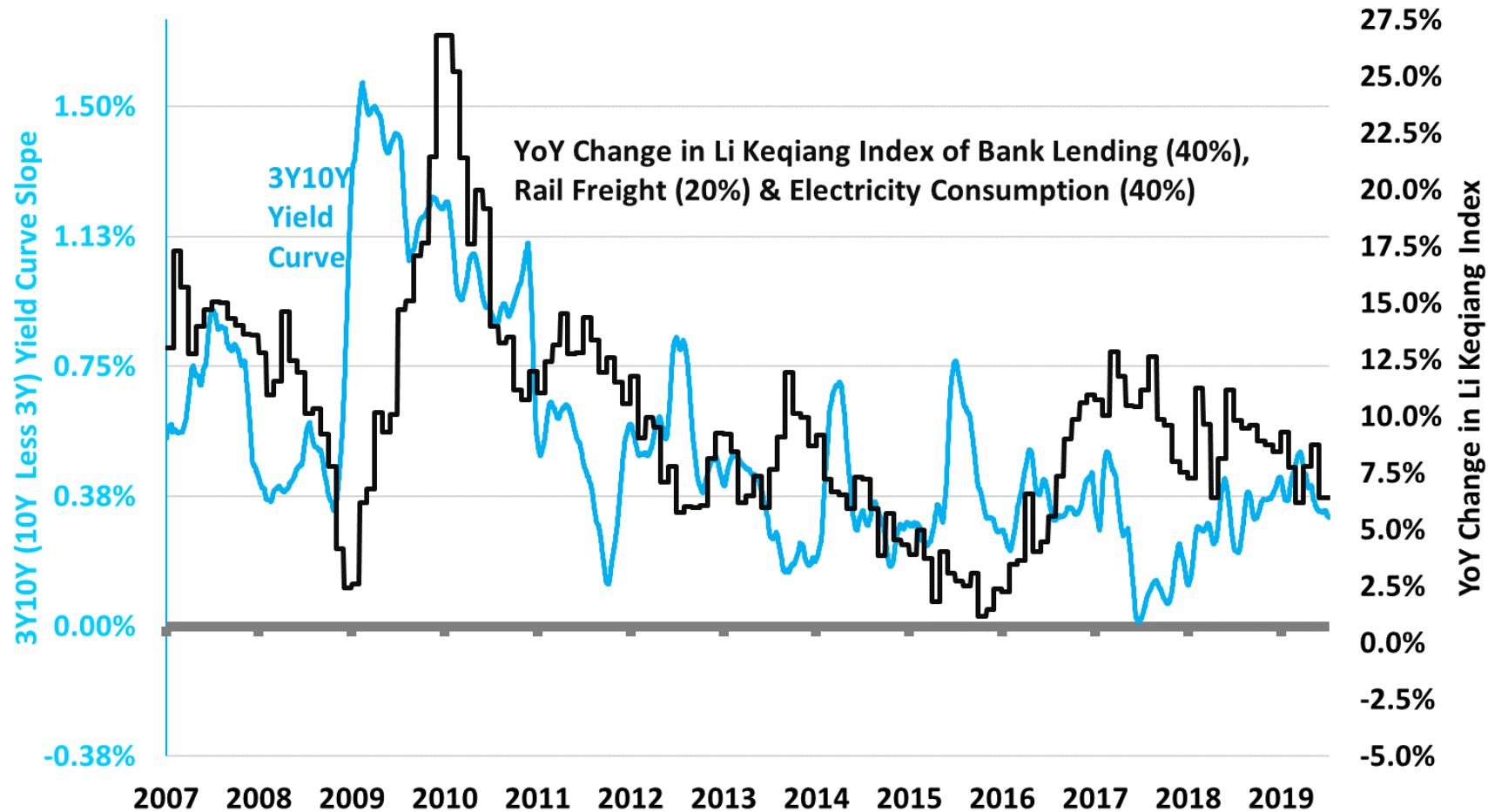
PBOC Monetary Policy Tools



Source: Bloomberg Professional: CNDR1Y, CHLR12M and CHRRDEP

China will solve its debt problem with more debt

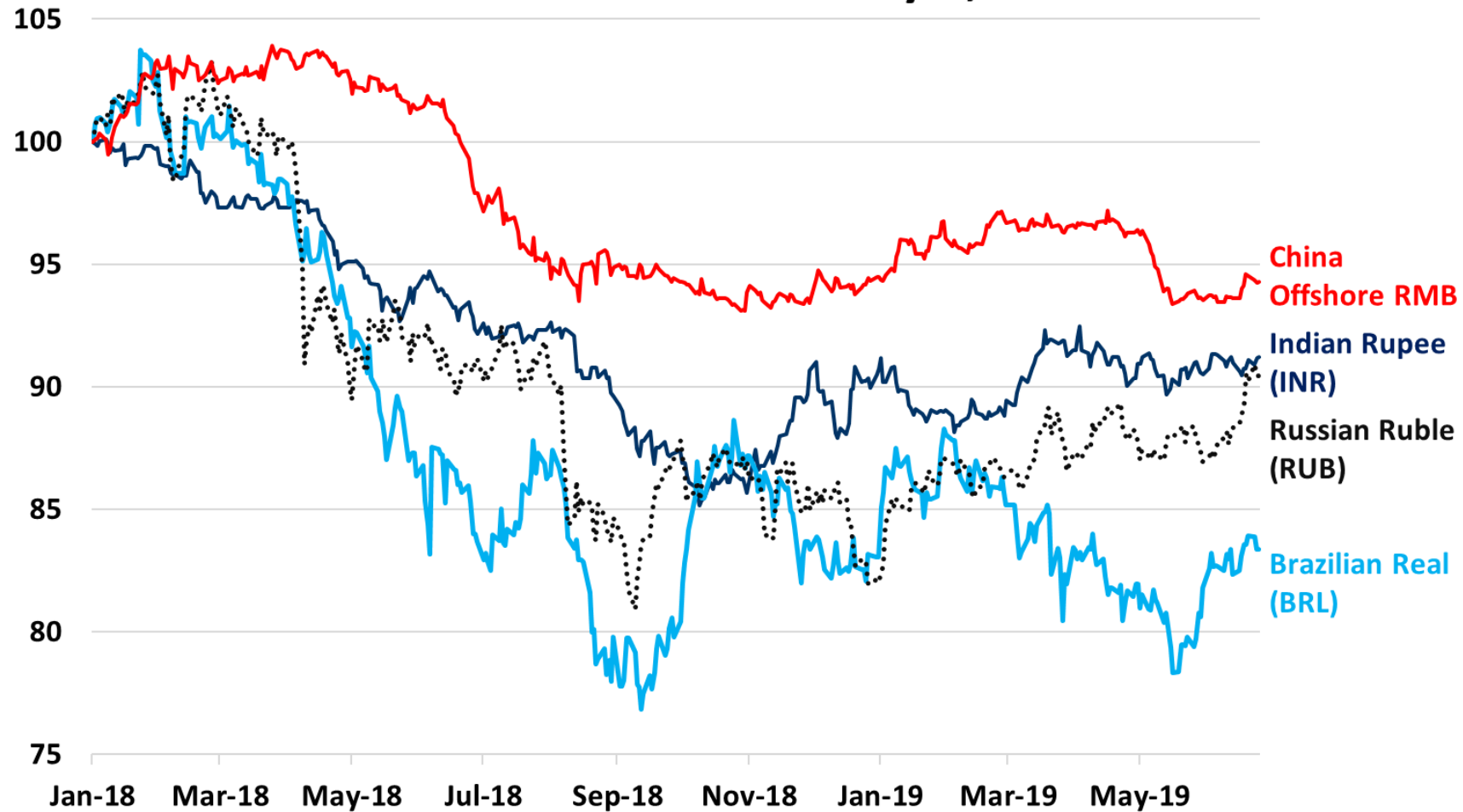
China: 3Y10Y Yield Curve & Li Keqiang Index YoY



Source: Bloomberg Professional: [GTCNY3Y](#), [GTCNY10Y](#) and [CLKQINDX](#)

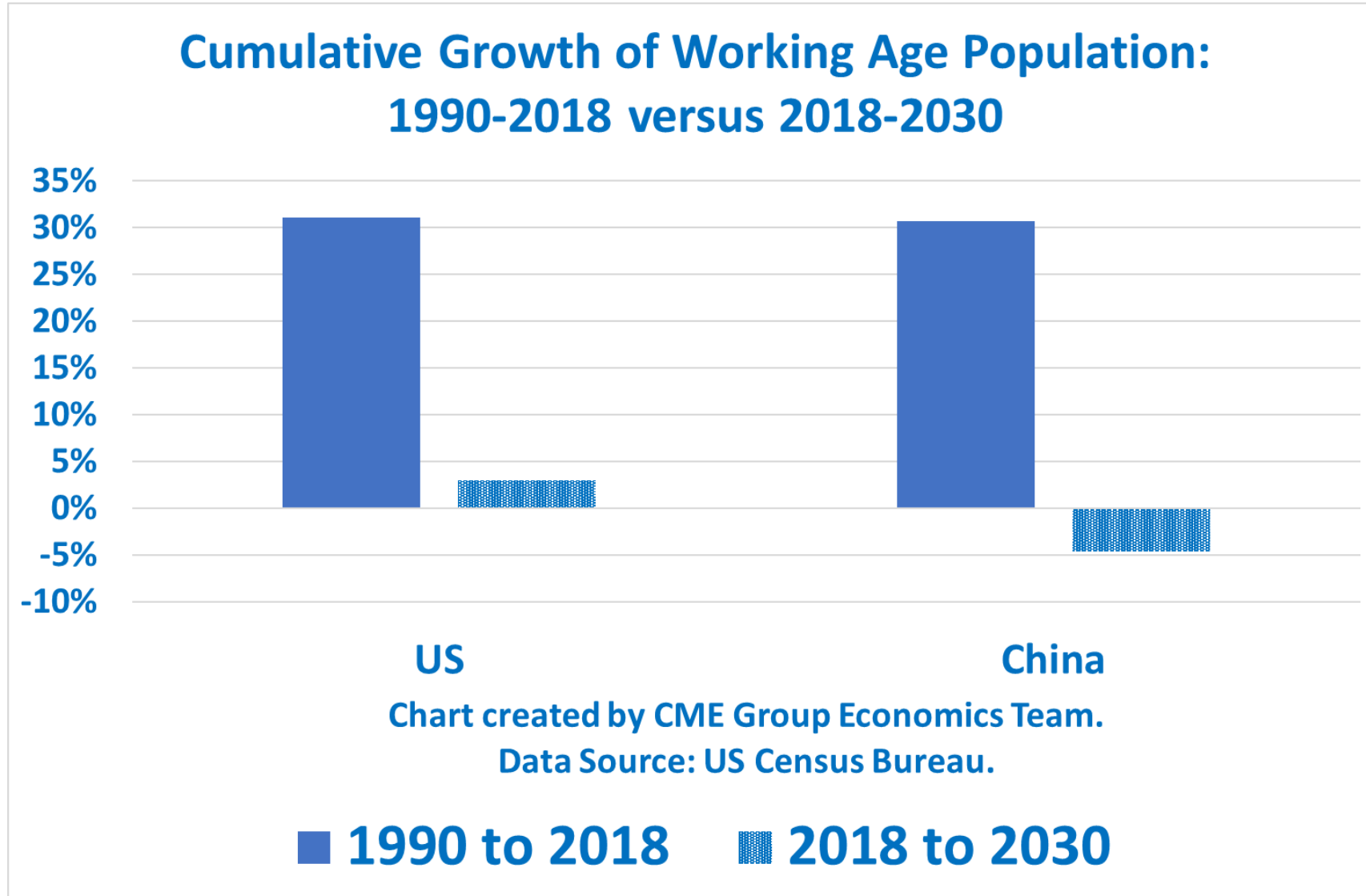
China can counteract tariffs with a weaker RMB

Performance vs. USD: January 1, 2018 = 100



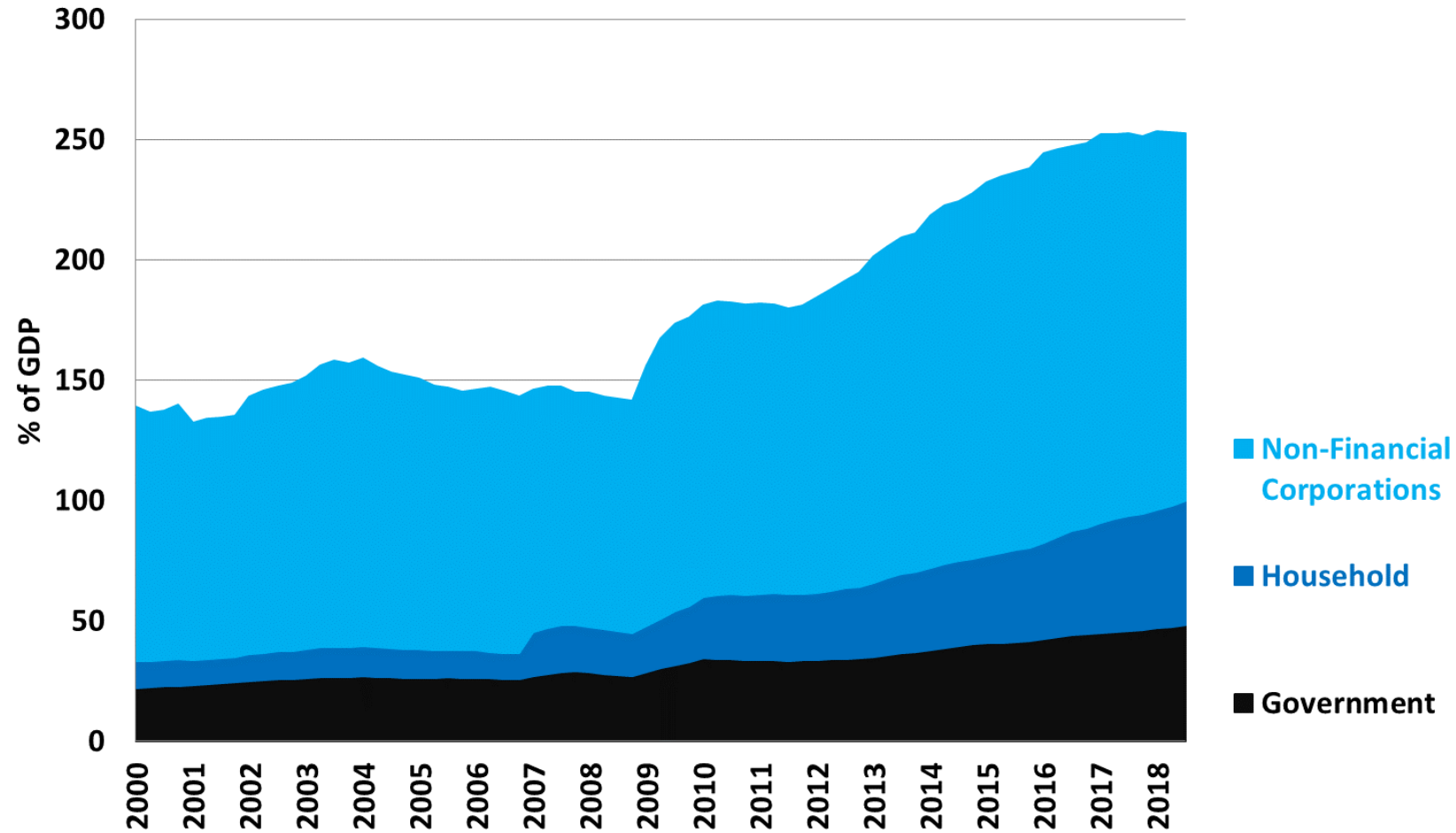
Bloomberg Professional (INR, BRL, CNH, RUB and TRY)

China looks like it's in trouble in the 2020s



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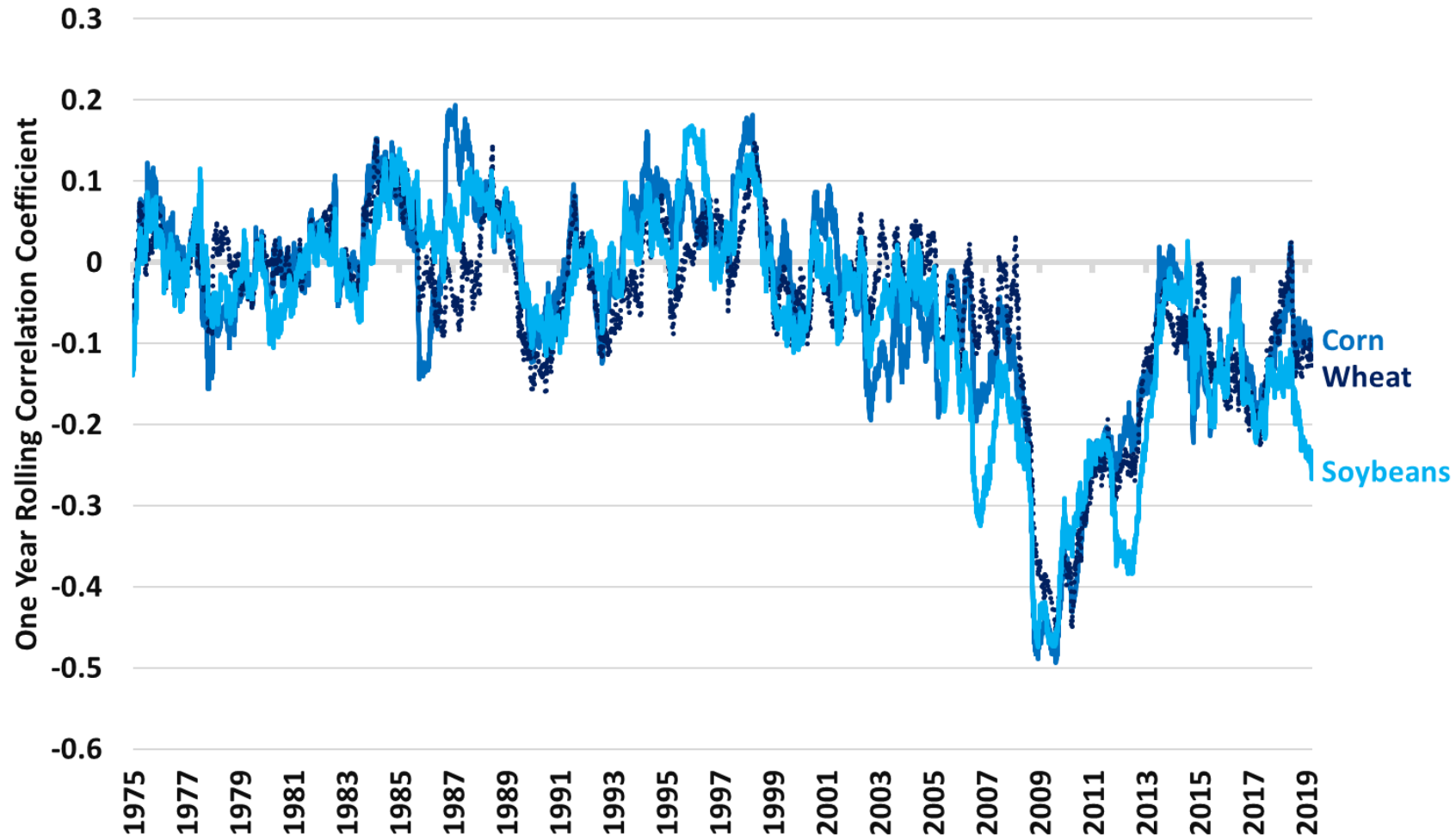
Chinese Debt



Source: Bank for International Settlements (BIS), <http://www.bis.org/statistics/totcredit.htm>

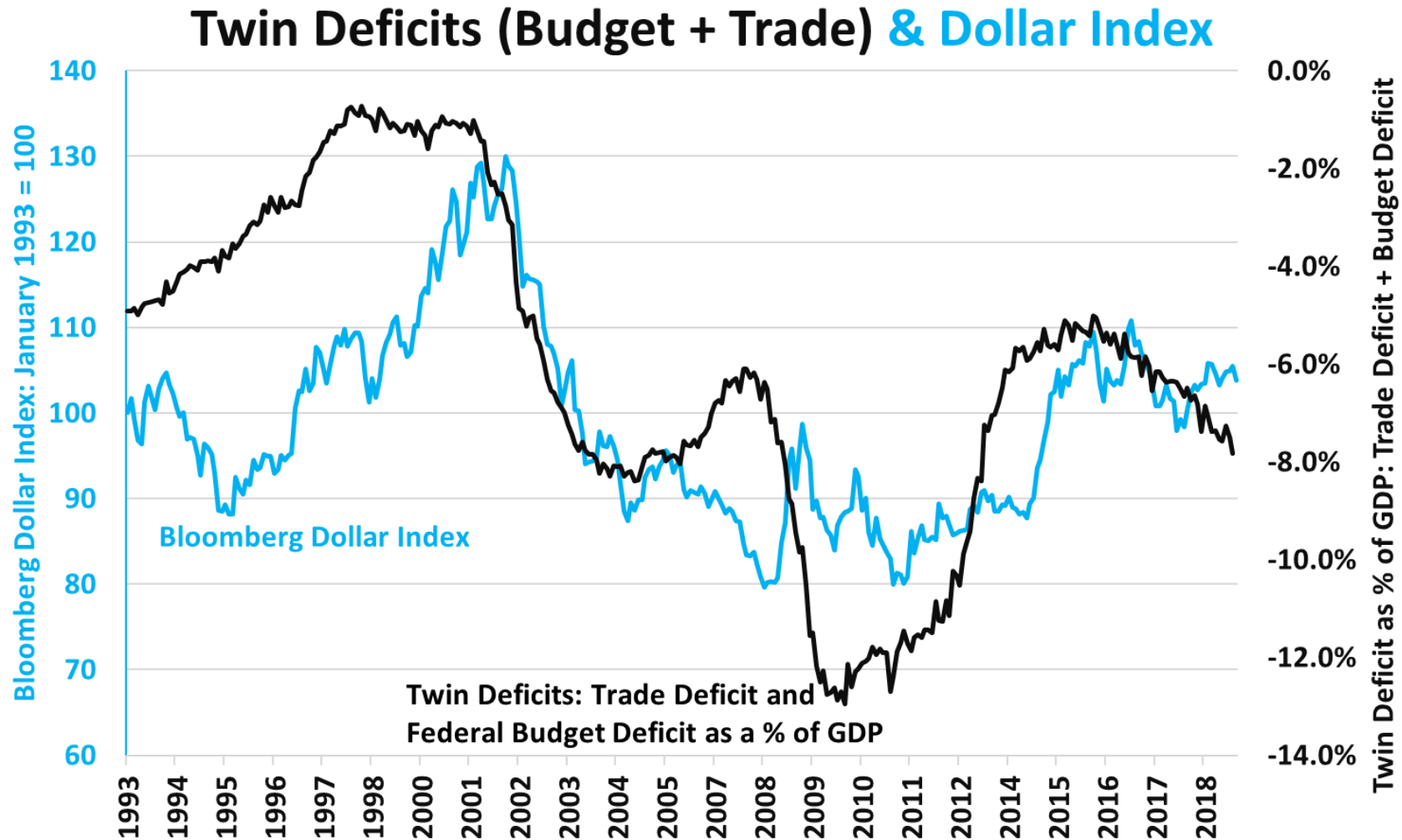
USD Strength/Weakness increasingly important

Correlation with US Dollar Index



Source: Bloomberg Professional (C 1, S 1, W 1, BBDXY since 2005, DXY before 2005), CME Economic Research Calculations

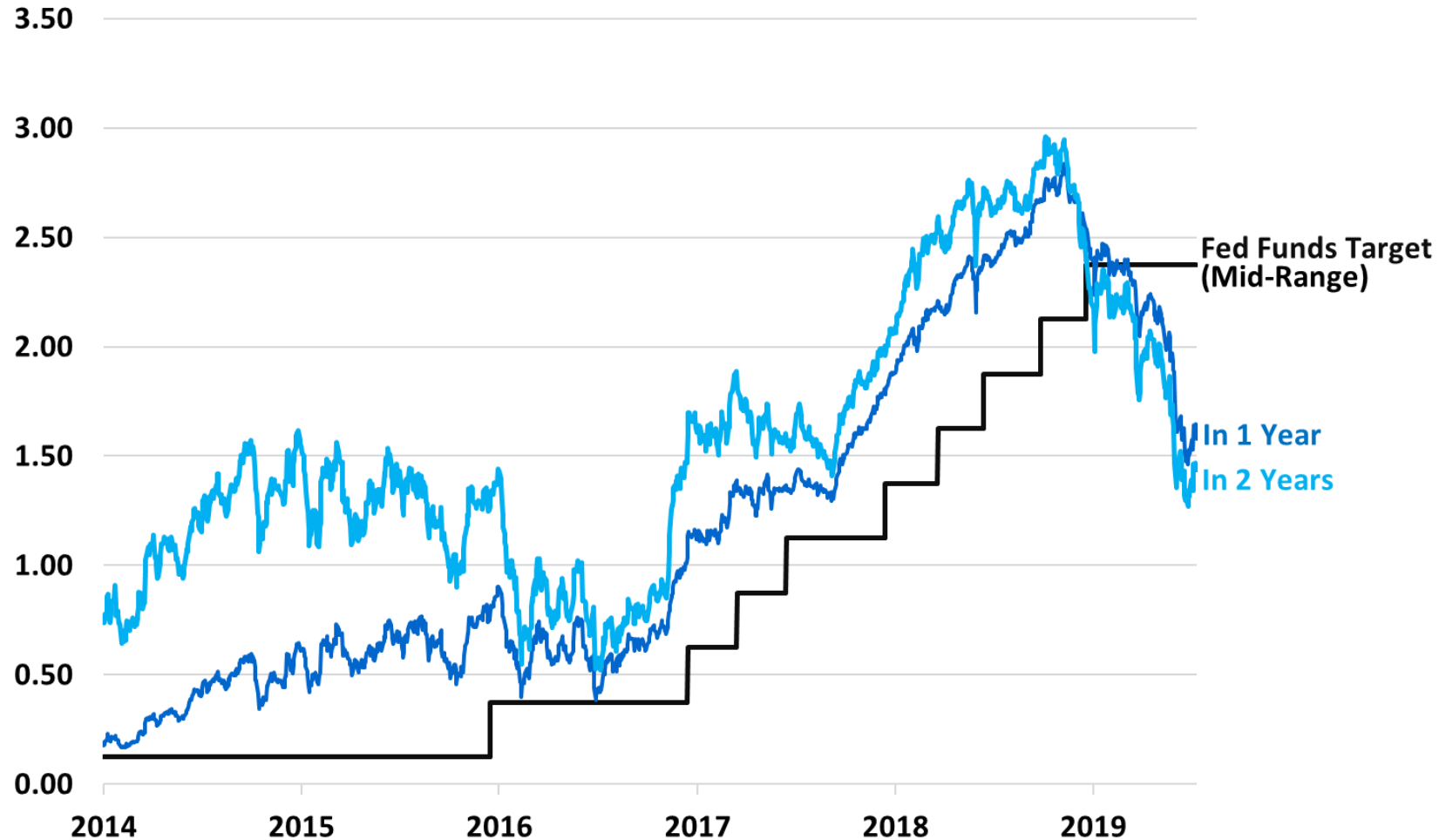
Widening trade & budget deficits could hurt USD



Source: Bloomberg Professional (USTBTOT, FDDSSD, GDP CUR\$, BBDXY and, before 2005, DXY)

Will the Fed cut rates fast enough?

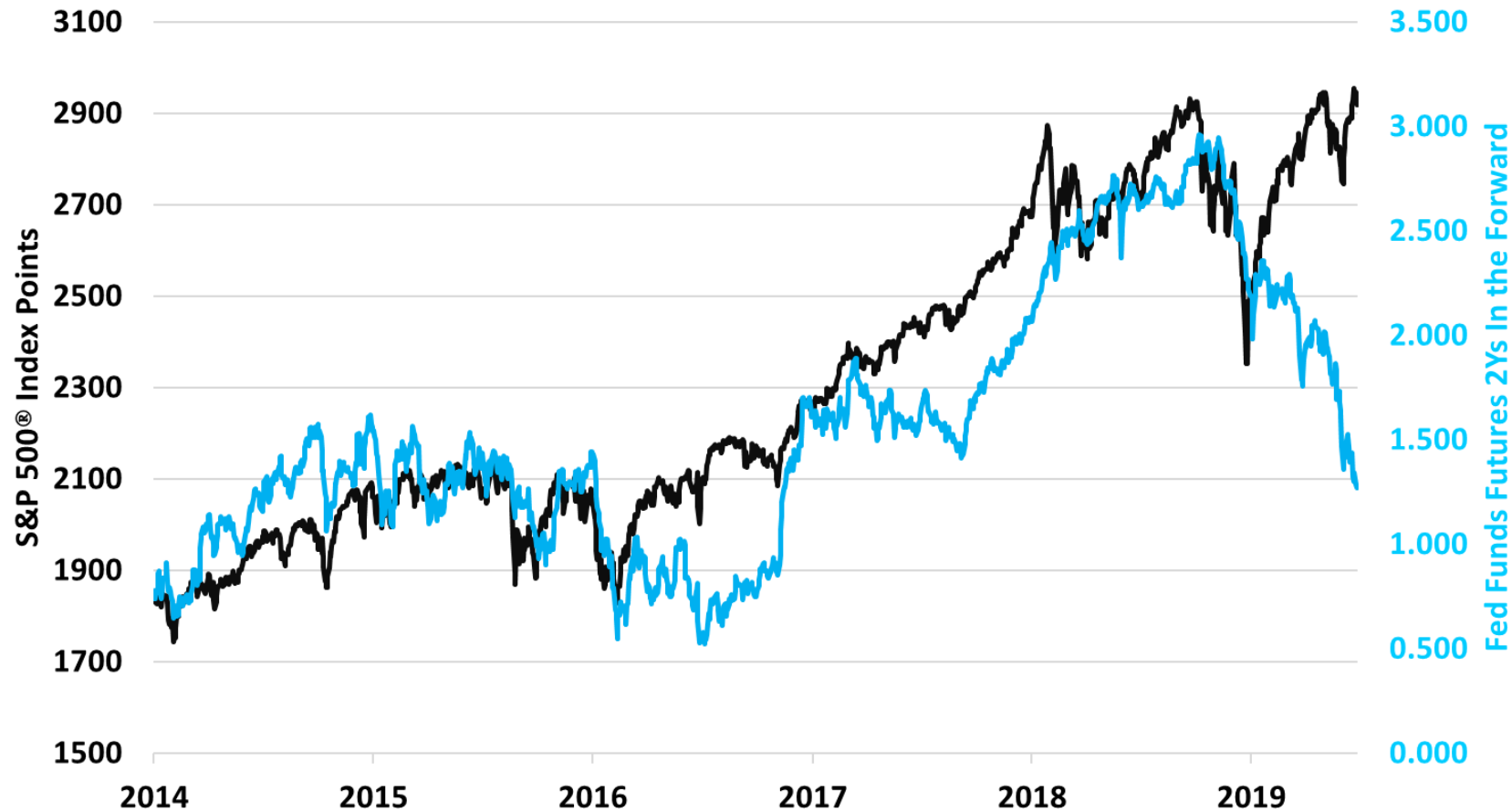
Continuous Fed Funds Futures 1Y and 2Ys Out



Source: Bloomberg Professional (FDTRMID, FFZ15, FFZ16, FFZ17, FFZ18, FFZ9, FFZ0, FFZ1), CME Economic Research Calculations

Will the Fed cut rates fast enough?

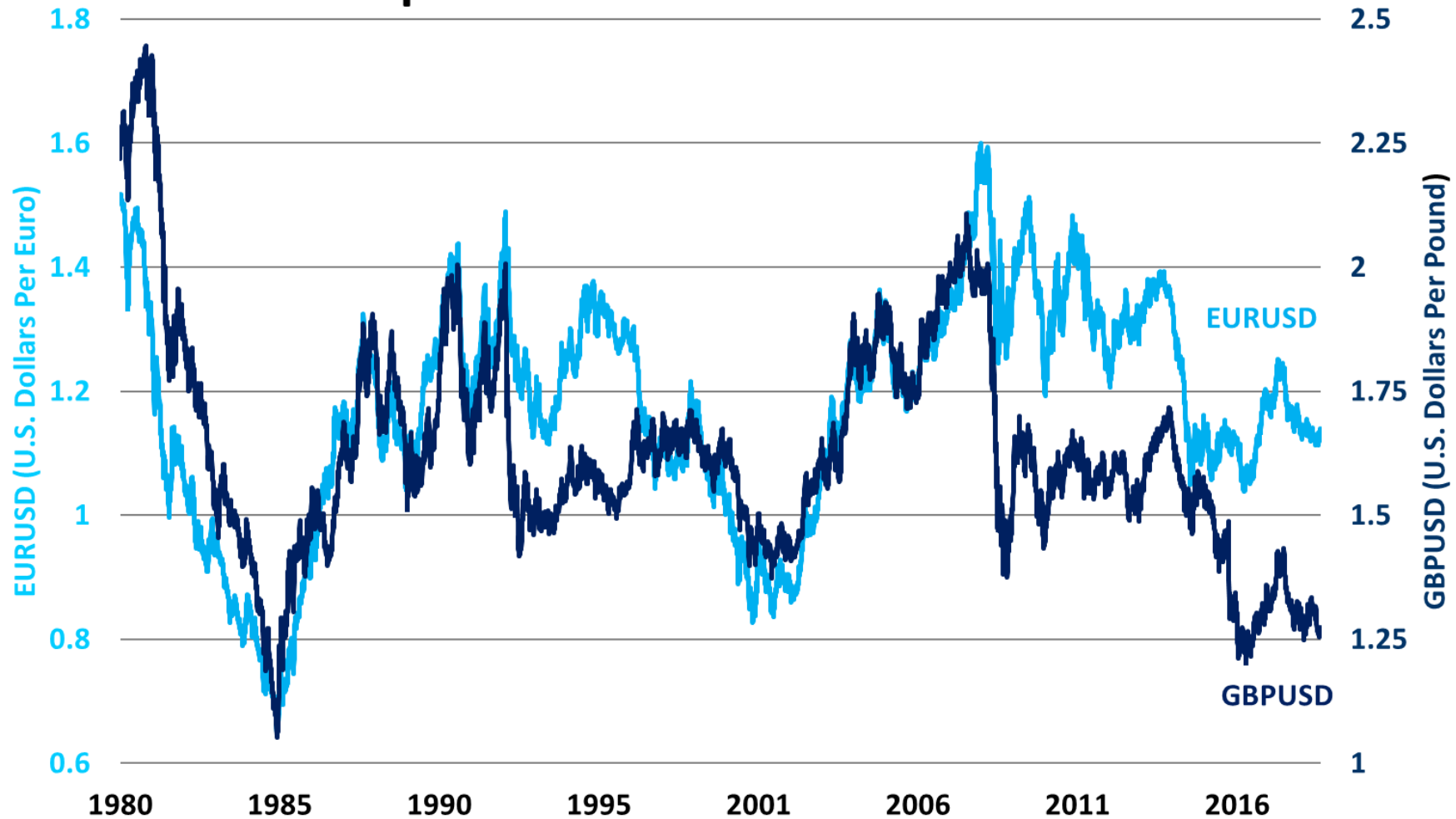
S&P 500[®] and Continuous Fed Funds 2Y Out



Bloomberg Professional (SPX & FFZ15, FFZ16, FFZ17, FFZ18, FFZ19, FFZ20, FFZ21), CME Economic Research Calculations

Pound still looks undervalued

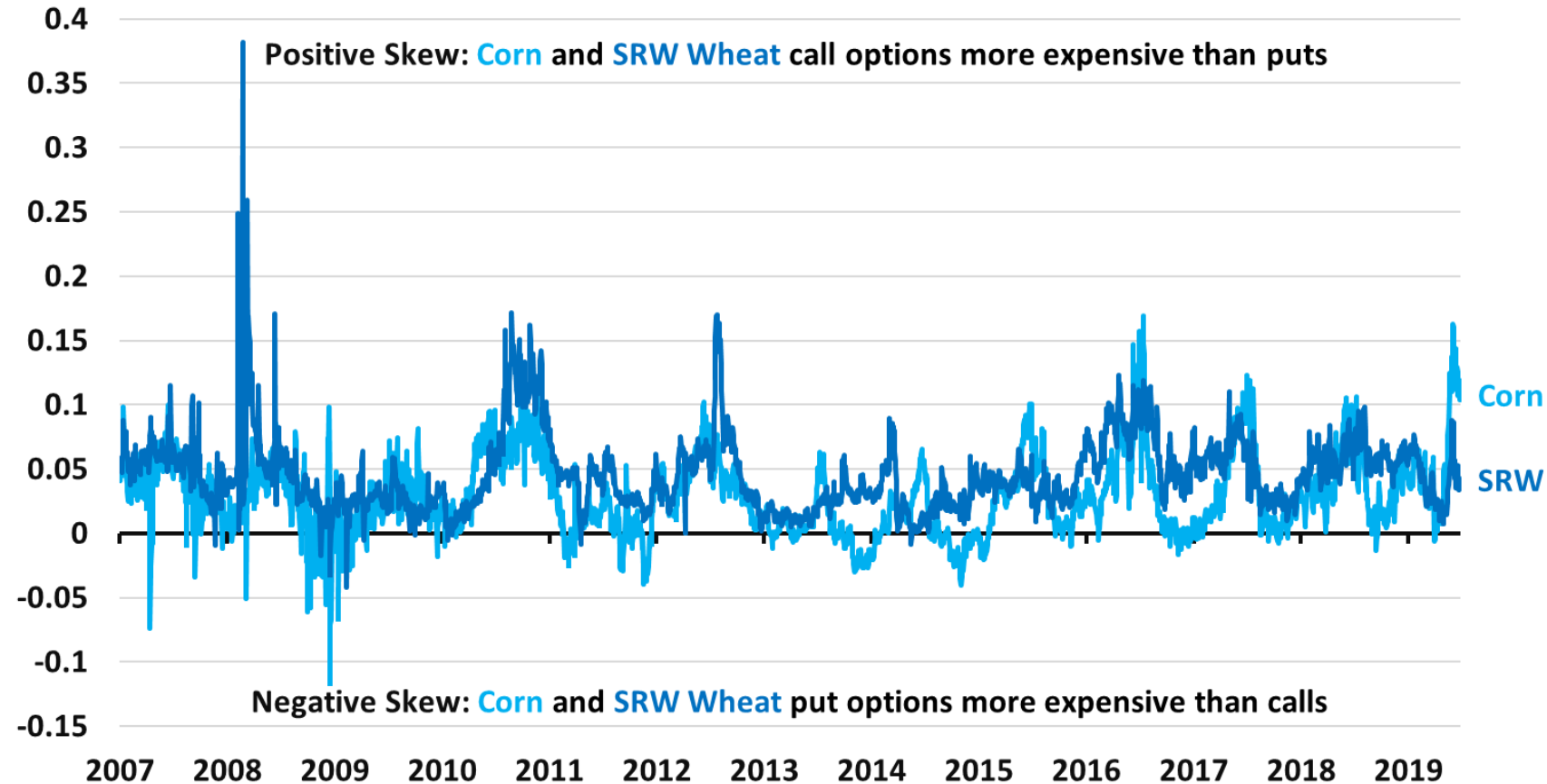
FX Spot Rates: EURUSD and GBPUSD



Source: Bloomberg (EUR and GBP), Pre-1999 Bloomberg uses the European Currency Unit

Agriculture options nearly always skew positive

Corn and SRW Wheat 30 Day Risk Reversal: 15Δ Call - Put



Source: Quikstrike (**OZC_30** and **OZW_30** Risk Reversal Skew (C-P))

The Positive Skew is Structural and Does Not Exist Because of Realized Upward Skew

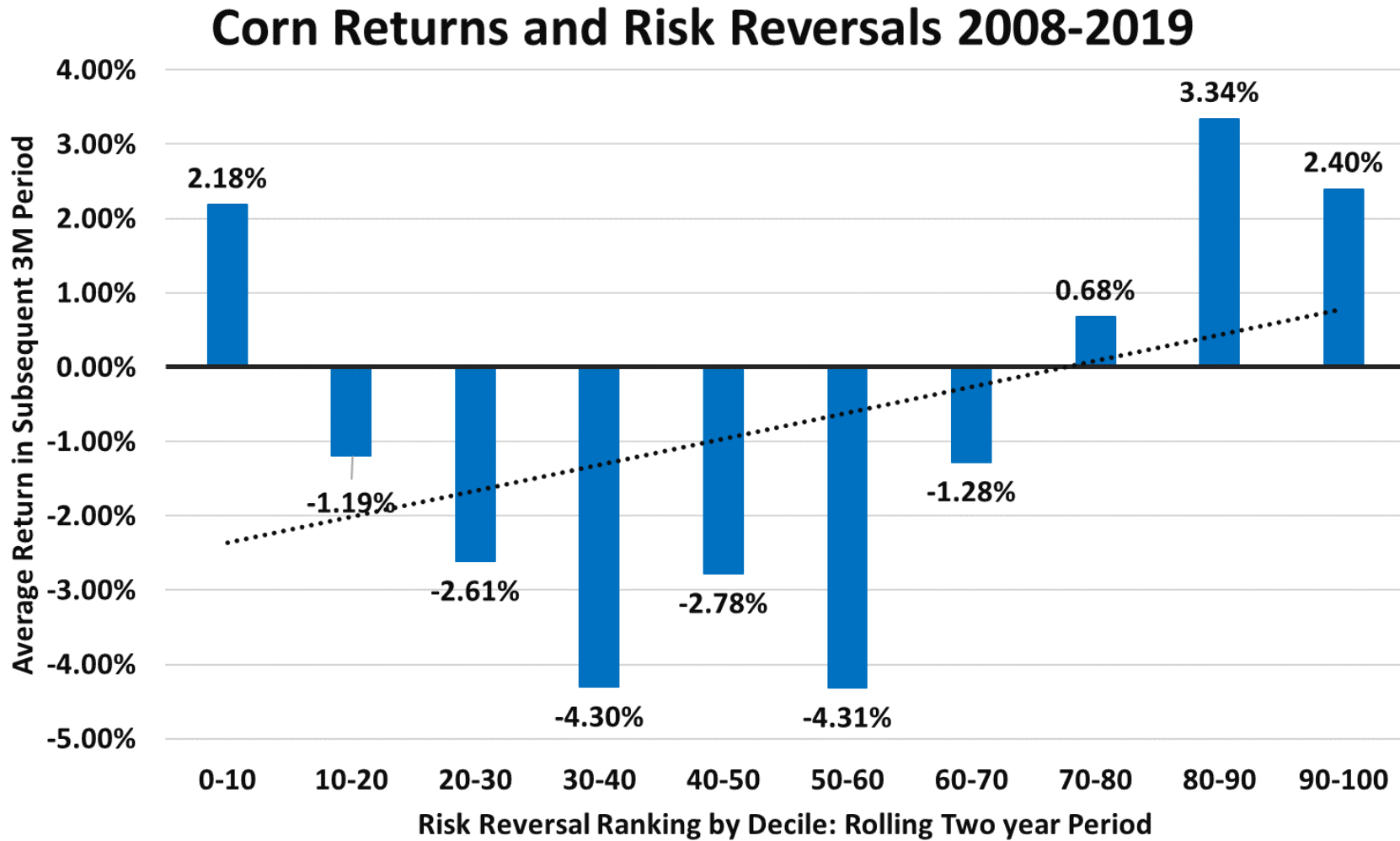
Test for Skewness:

	<u>Corn</u>	<u>Wheat</u>	<u>Soybeans</u>	<u>Soy Meal</u>	<u>Soybean Oil</u>
1970s	0.15	0.03	-0.32	-0.11	0.14
1980s	-0.16	0.17	-0.19	-0.04	0.10
1990s	-0.05	-0.13	-0.11	0.15	0.25
2000s	0.00	0.04	-0.30	-0.28	0.12
2010s	-0.07	0.15	-0.14	0.16	0.17

Source: Bloomberg Professional (C 1, W 1, S 1, SM1, BO1)

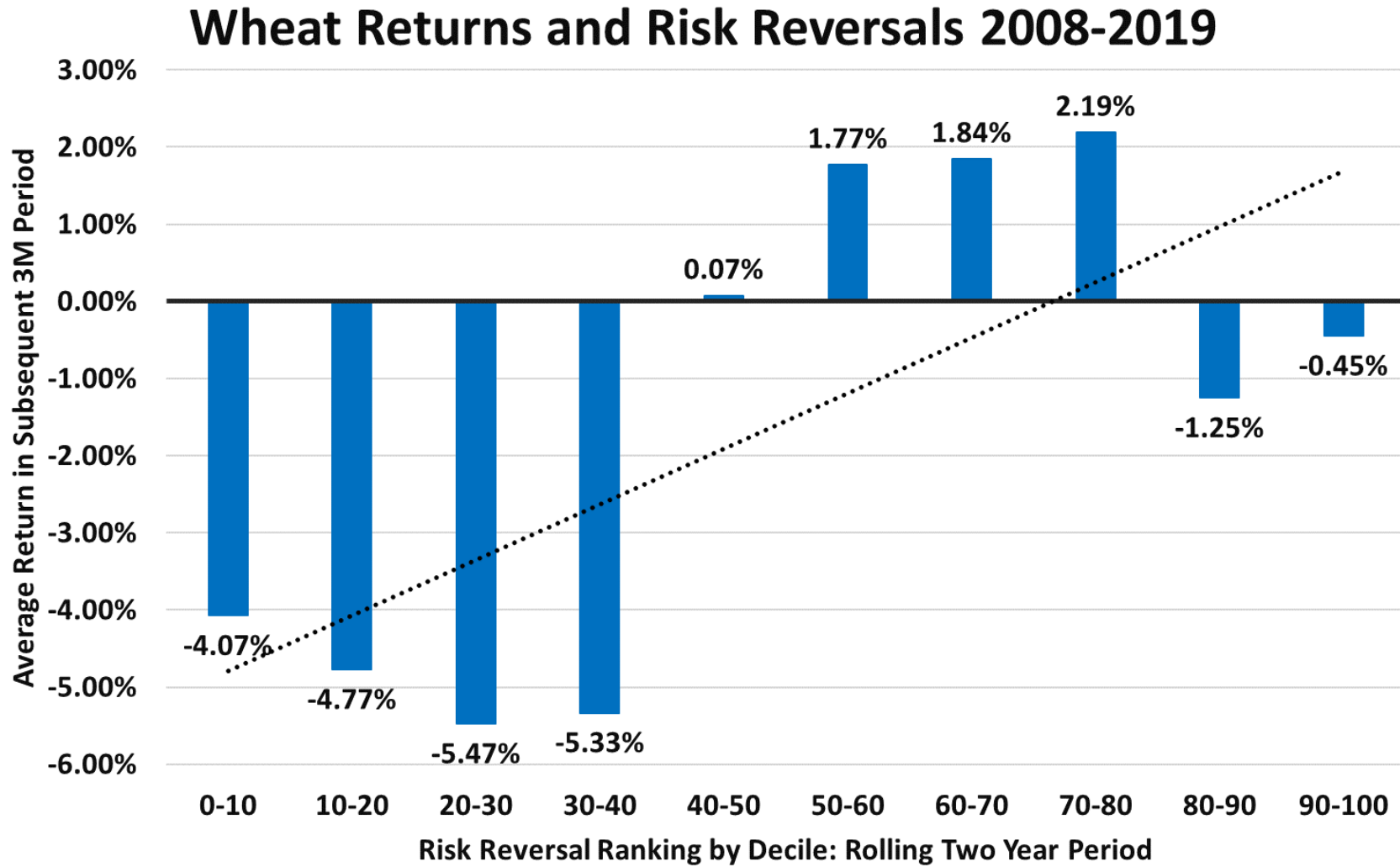
CME Economic Research Calculations

But what do the variations in skewness imply?



Source: Quikstrike (OZC_30 Risk Reversal Skew) & Bloomberg Professional (C 1, Rolled 10D before expiry ratio method), CME Economic Research Calculations

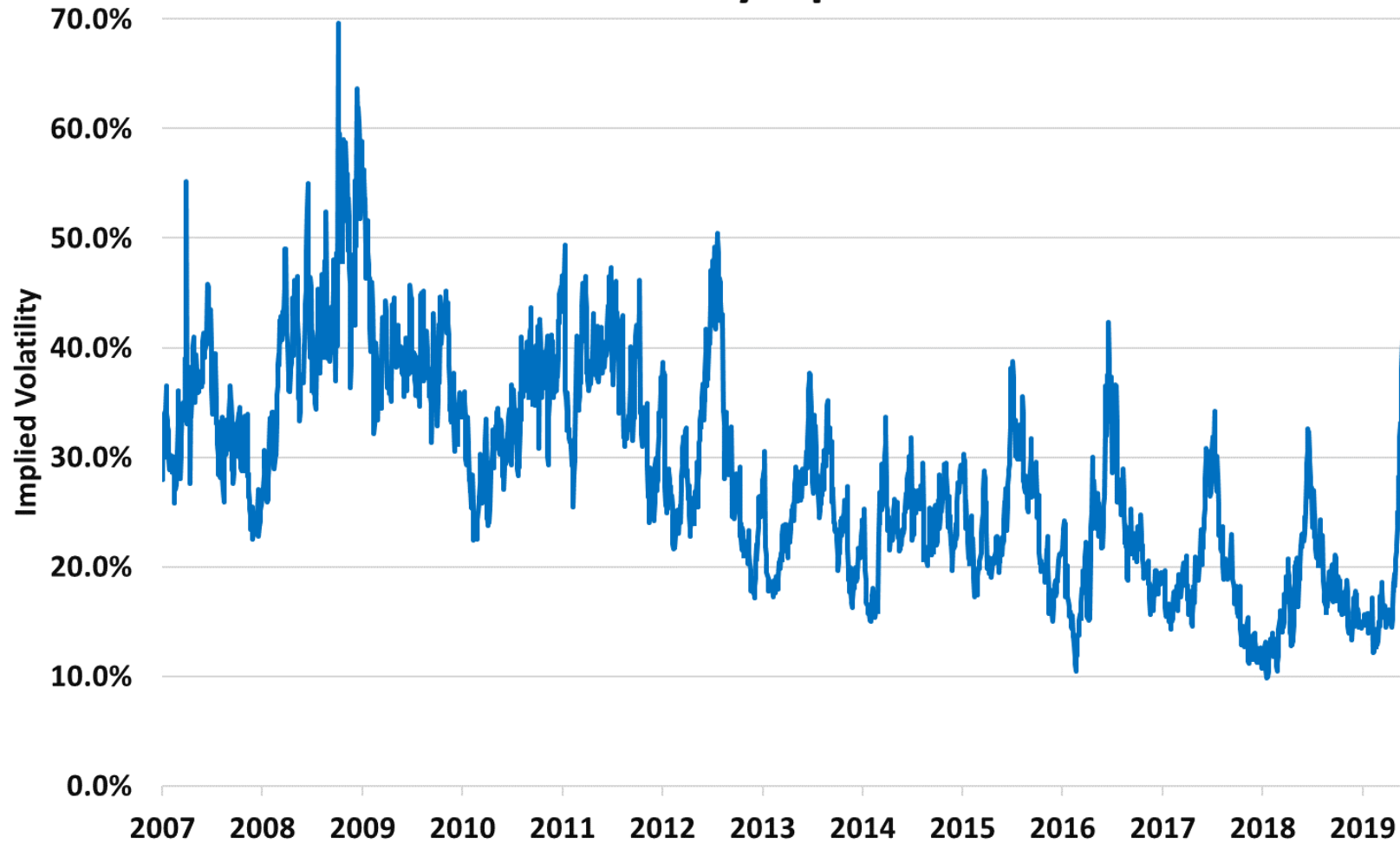
But what do the variations in skewness imply?



Source: Quikstrike (OZW_30 Risk Reversal Skew) & Bloomberg Professional (W 1, Rolled 10D before expiry ratio method)

Implied vol. is near record lows across the board

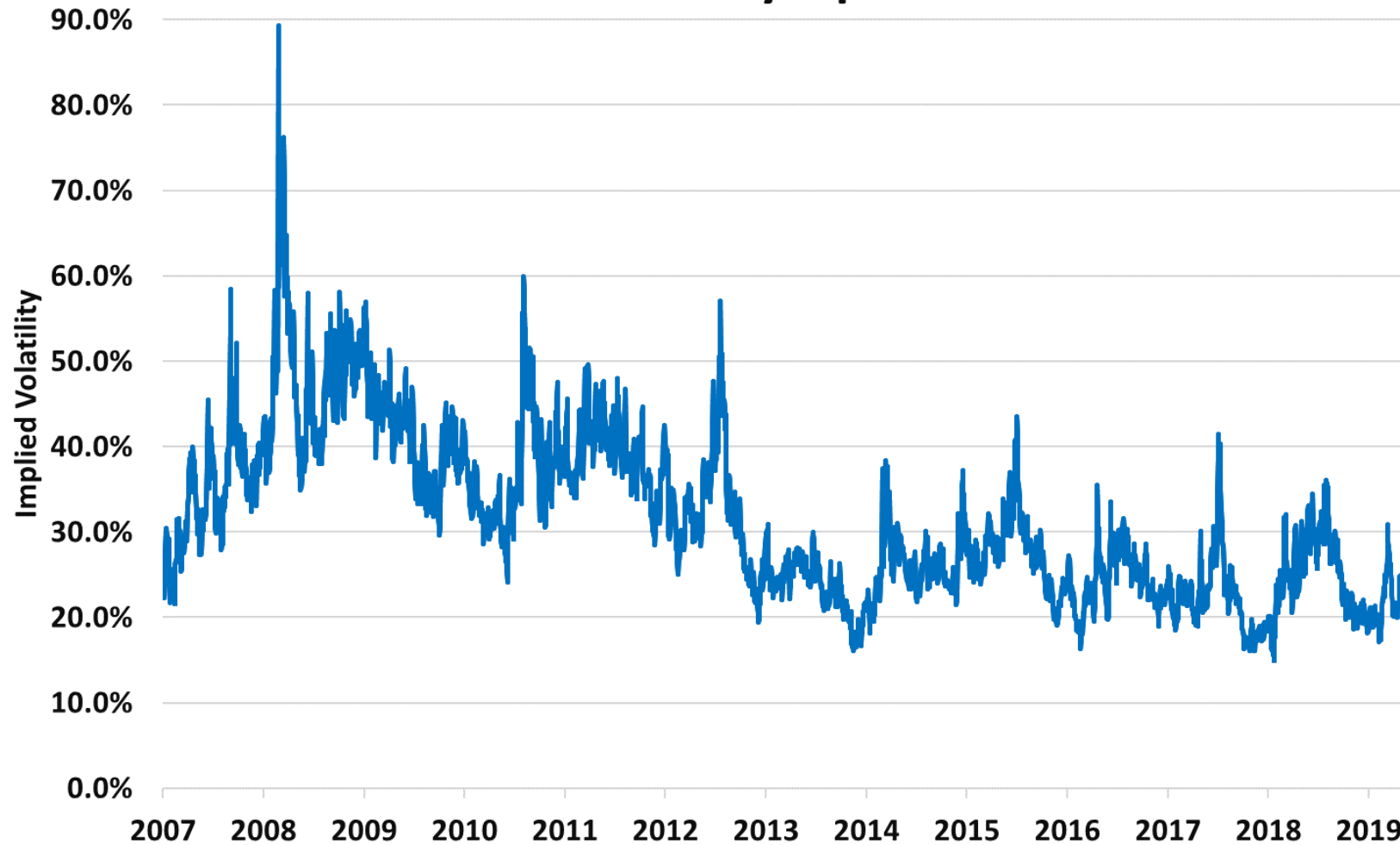
Corn 30 Day Options



Source: QuikStrike (OZC_30 ATM)

Implied vol. is near record lows across the board

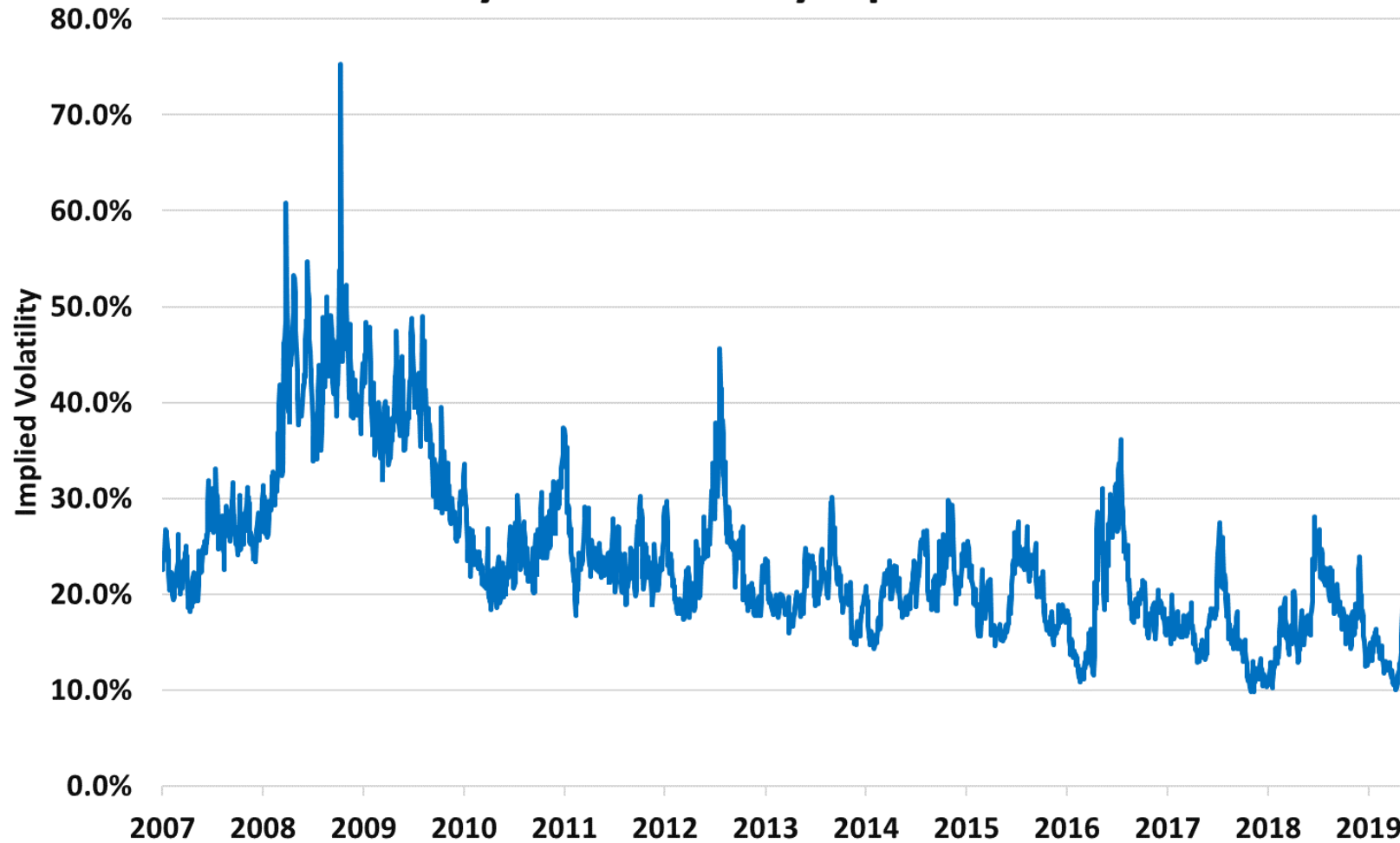
Wheat 30 Day Options



Source: QuikStrike (OZW_30 ATM)

Implied vol. is near record lows across the board

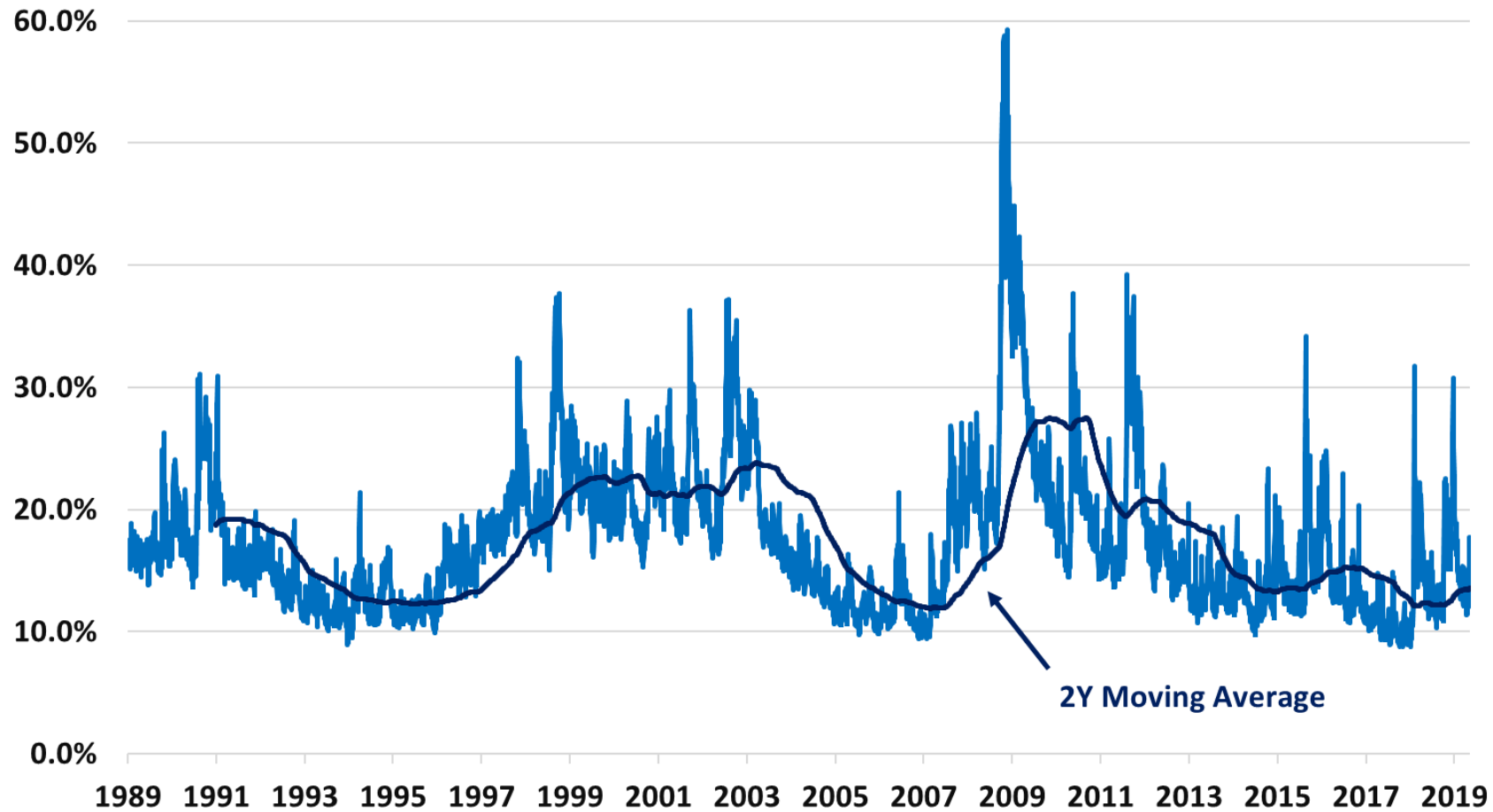
Soybeans 30 Day Options



Source: QuikStrike (OZS_30 ATM)

When will the low vol. regime come to an end?

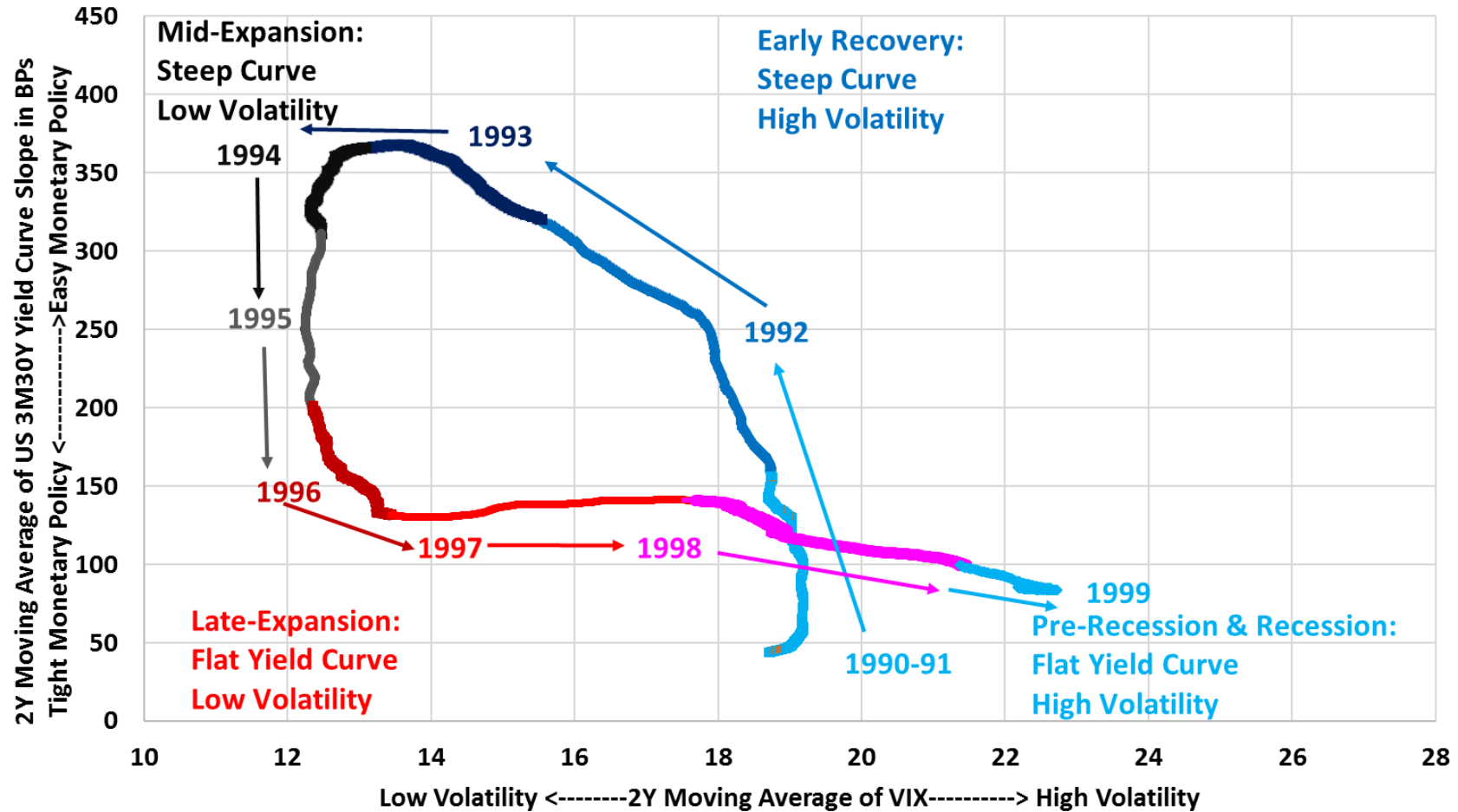
S&P 500[®] Option Volatility: VIX Index



Source: Bloomberg Professional (VIX)

The volatility cycle

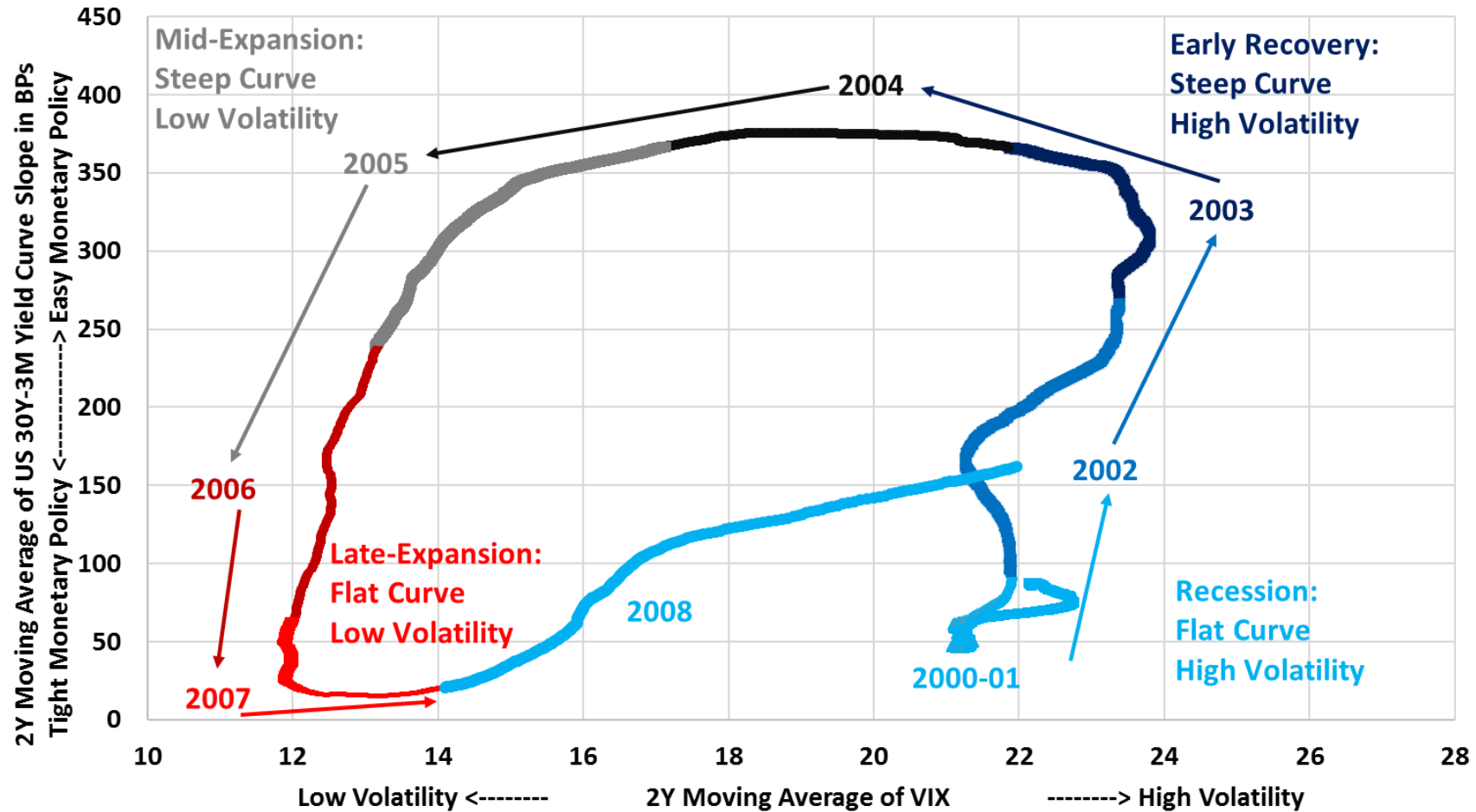
S&P 500® Options Volatility-Yield Curve Cycle



Source: Bloomberg Professional (GB3, USGG30YR and VIX), CME Economic Research Calculations

The volatility cycle

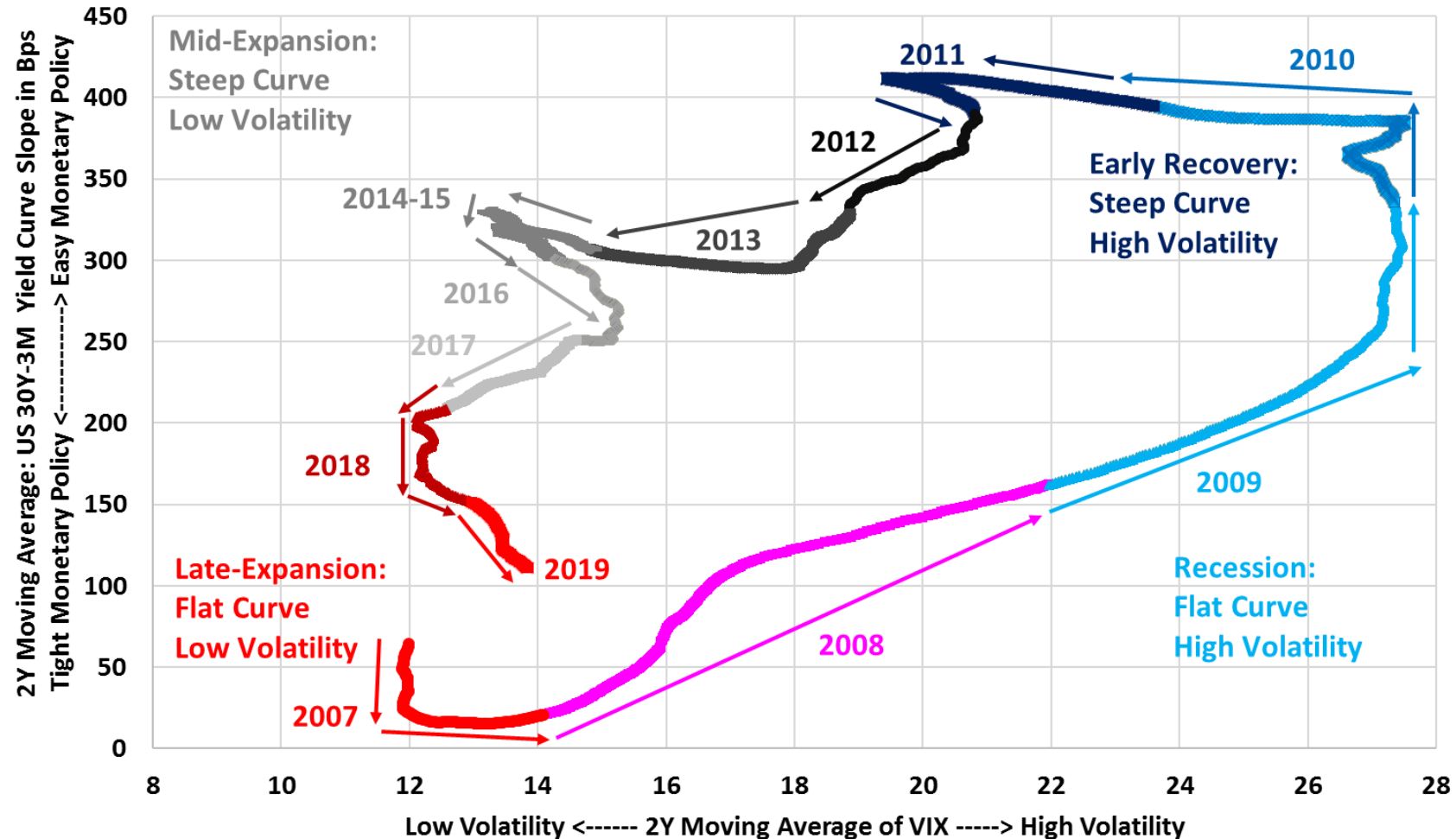
S&P 500® Option Volatility-Yield Curve Cycle



Source: Bloomberg Professional (GB3, USGG30YR and VIX), CME Economic Research Calculations

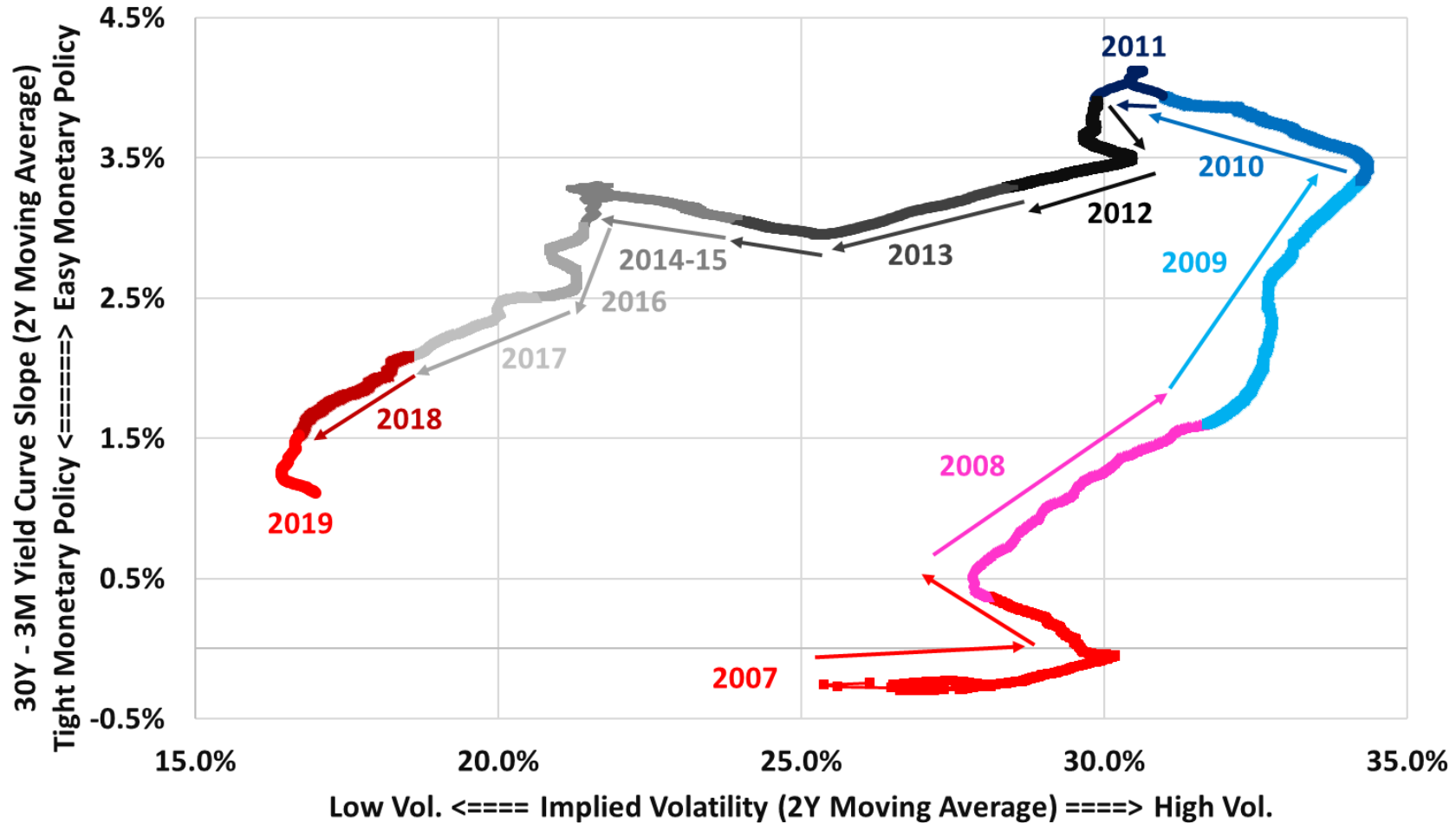
The volatility cycle

S&P 500® Option-Yield Curve Cycle



The volatility cycle

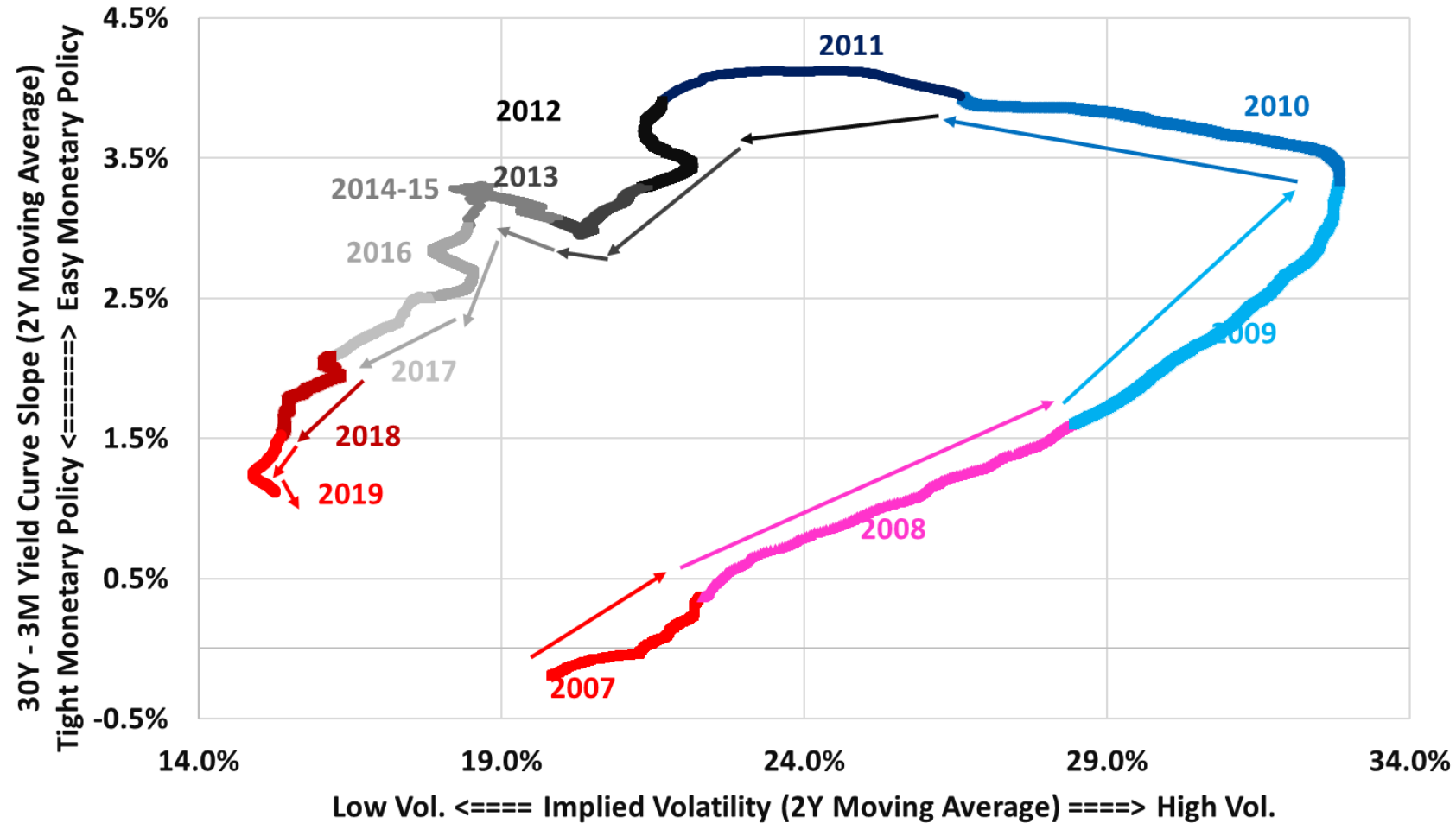
Corn Option Volatility Cycle



Source: Quikstrike (OZC_30), Bloomberg Professional (GB3 and USGG30Y), CME Economic Research Calculations

The volatility cycle

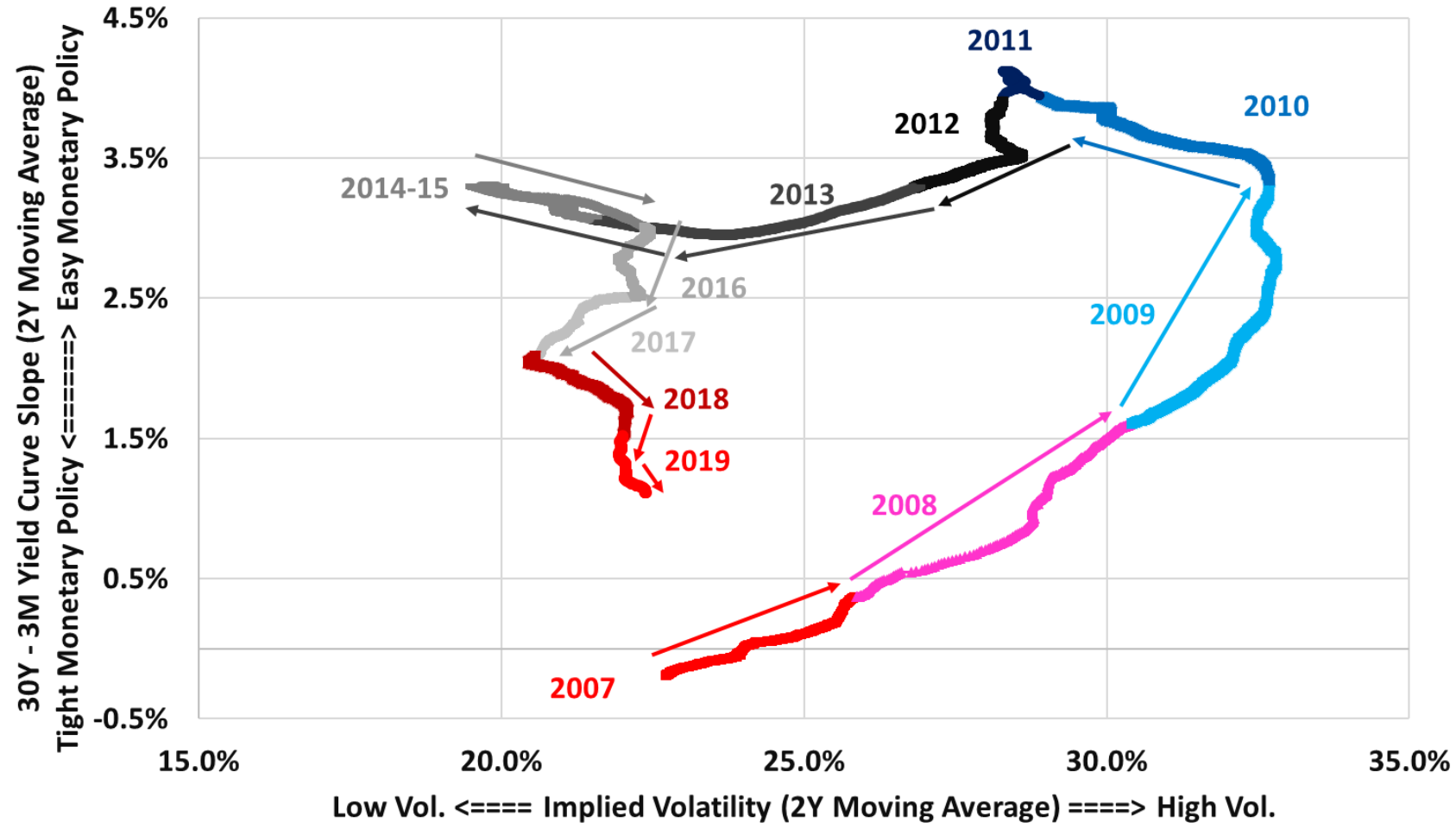
Soybean Option Volatility Cycle



Source: Quikstrike (OZS_30), Bloomberg Professional (GB3 and USGG30Y), CME Economic Research Calculations

The volatility cycle

HRW Wheat Option Volatility Cycle



Source: Quikstrike (OZW_30), Bloomberg Professional (GB3 and USGG30Y), CME Economic Research Calculations

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Thank you

