



RECESSION INDICATORS: DEC 20, 2019 UPDATE



December 20, 2019

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❑ What's New Since Nov 18:

SUMMARY

Indicator changes were mixed over the past month, but overall the outlook has improved. Positive news: strong growth in NFP employment, a buoyant S&P 500, and exceptional housing activity. Mixed news: Industrial Production, up MoM but still negative YoY. Negative news: Continued weakness in manf, including the ISM PMI and the regional Philly and Richmond Fed indexes.

IMPROVED

- ❑ TOTAL CES EMPLOYMENT[^] YoY rose from 1.42% in OCT to 1.47% NOV; expectations beat.
- ❑ MANF NEW ORDERS FOR DURABLE GOODS^{*} YoY (Ch. 26) rose from -5.35% in SEP to -2.68% in OCT; expectations beat.
- ❑ S&P 500 INDEX^{*} YoY (Ch. 95) rose from 12.02% in NOV to 13.80% in DEC.
- ❑ HOUSING STARTS YoY (Ch. 28) rose from 112K in OCT to 163K NOV. HOUSING PERMITS^{*} YoY (Ch. 30) fell from 180K in OCT to 148K in NOV; still strong. Both expectations beats.
- ❑ U MICHIGAN CONSUMER EXPECTATIONS INDEX^{*} YoY (Ch. 83) rose from -0.8 in NOV to 1.9 in DEC; expectations beat.
- ❑ CONFERENCE BOARD CCI: EXPECTATIONS^{*} YoY (Ch. 81) rose from -20.6 in OCT to -14.4 in NOV.

* A Conference Board Leading Indicator + One of Our Favorite Indicators ^ A “Big Four” Indicator

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MIXED

- ❑ INDUSTRIAL PRODUCTION YoY (Ch. 14) rose from -1.30% in OCT to -0.75% in NOV; expectations beat, but 3rd consecutive negative month. INDUSTRIAL PRODUCTION: MANUFACTURING⁺ YoY (Ch. 15) rose from -1.61% in OCT to -0.67% in NOV; 5th consecutive negative month.

WORSENERD

- ❑ ISM MANF PMI^{*} (Ch. 40) fell from 48.3 in OCT to 48.1 in NOV; expectations fail. This is 4th consecutive month of manf contraction.
- ❑ PHILADELPHIA FED REGIONAL MANF INDEX (Ch. 47) fell from 10.4 in OCT to 0.3 in NOV; expectations fail.
- ❑ RICHMOND FED REGIONAL MANF INDEX (Ch. 48) fell from 8 in OCT to -1 in NOV; expectations fail.
- ❑ CHICAGO FED NATIONAL ACTIVITY INDEX (Ch. 19) dropped from -0.45 in SEPT to -0.71 in OCT; expectations fail.
- ❑ INITIAL UNEMPLOYMENT CLAIMS⁺ 4-week average (Ch. 55) rose from 218K in NOV to 225K in DEC. Up +6% since late SEP.

FAVORITE INDICATORS: STATUS CHANGE (Ch. 117):

- ❑ INDUSTRIAL PRODUCTION: MANUFACTURING⁺ YoY (Ch. 15): Medium-Term, change from “Close to Triggering” to “All Clear.”

A “CRASH” COURSE IN RECESSION INDICATORS

❑ What Is a Recession?

❑ Properties of Good Recession Indicators

❑ INDICATORS

1. *Production, Consumption, & Income*
2. *Housing, Autos, & Transportation*
3. *Real-Time Diffusion Indexes*
4. *Employment*
5. *Inflation & Wages*
6. *Sentiment*
7. *Financial & Other “Leading” Indicators*

❑ Lessons: What are the Best Indicators?

❑ Lessons: What is the Current Recession Outlook?

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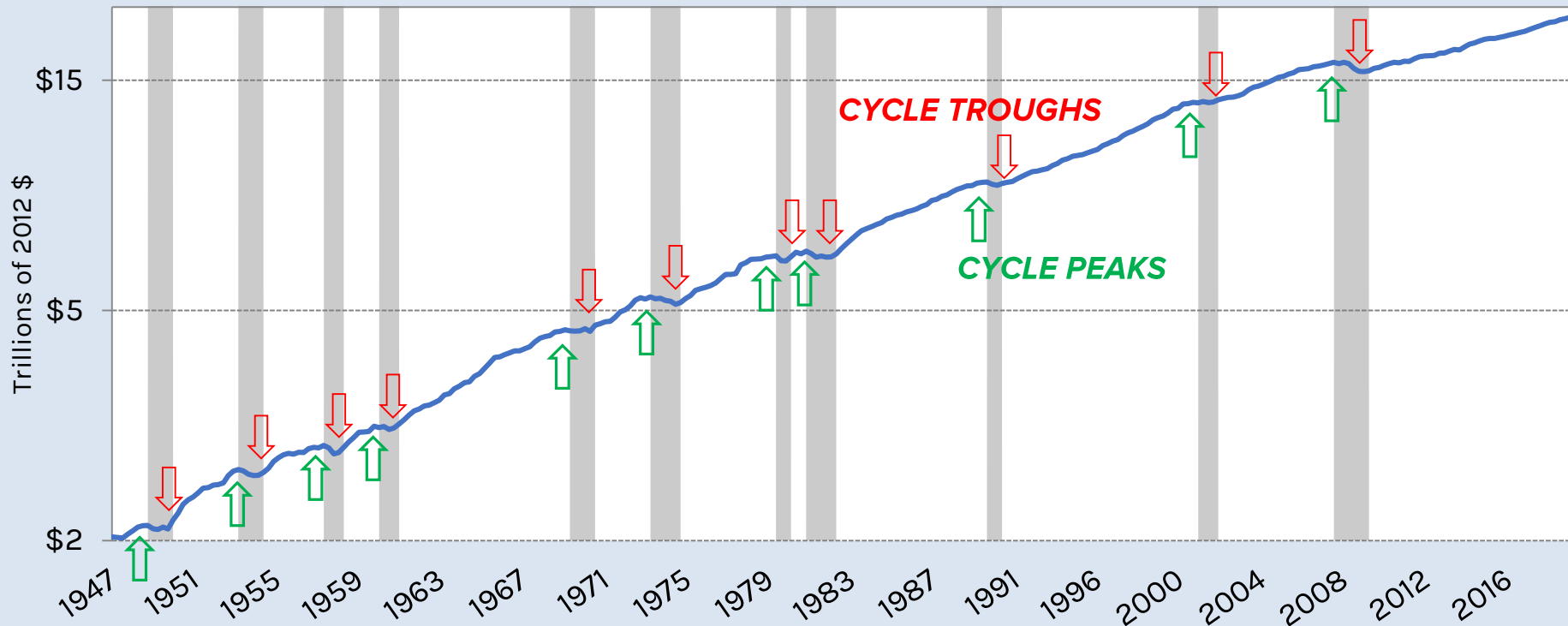
☐ Lessons: What is the Current Recession Outlook?

WHAT IS A RECESSION?

- ❑ The periodic occurrence of “recessions” in industrial economies (originally known as “crashes,” “panics,” or “depressions”) was first widely noticed in the early 1800s.
- ❑ Recessions were first defined and studied as a regular phase of the business cycle in the 1910s, 1920s, & 1930s, esp by Wesley Mitchell and other founders of the NBER.
- ❑ So what is it?
 - A recession is the peak-to-trough phase of the business cycle.
 - A recession is “a significant decline in economic activity spread across the market, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales.” (per the NBER)
- ❑ Thus, recessions are defined by a broad variety of (usually monthly) indicators that are all pointing to contraction. A recession does not require 2 consecutive quarters of negative GDP growth.
- ❑ Who decides when recessions occur? The NBER—and often long after the fact.

IT'S THE PEAK-TO-TROUGH PHASE OF THE BUSINESS CYCLE

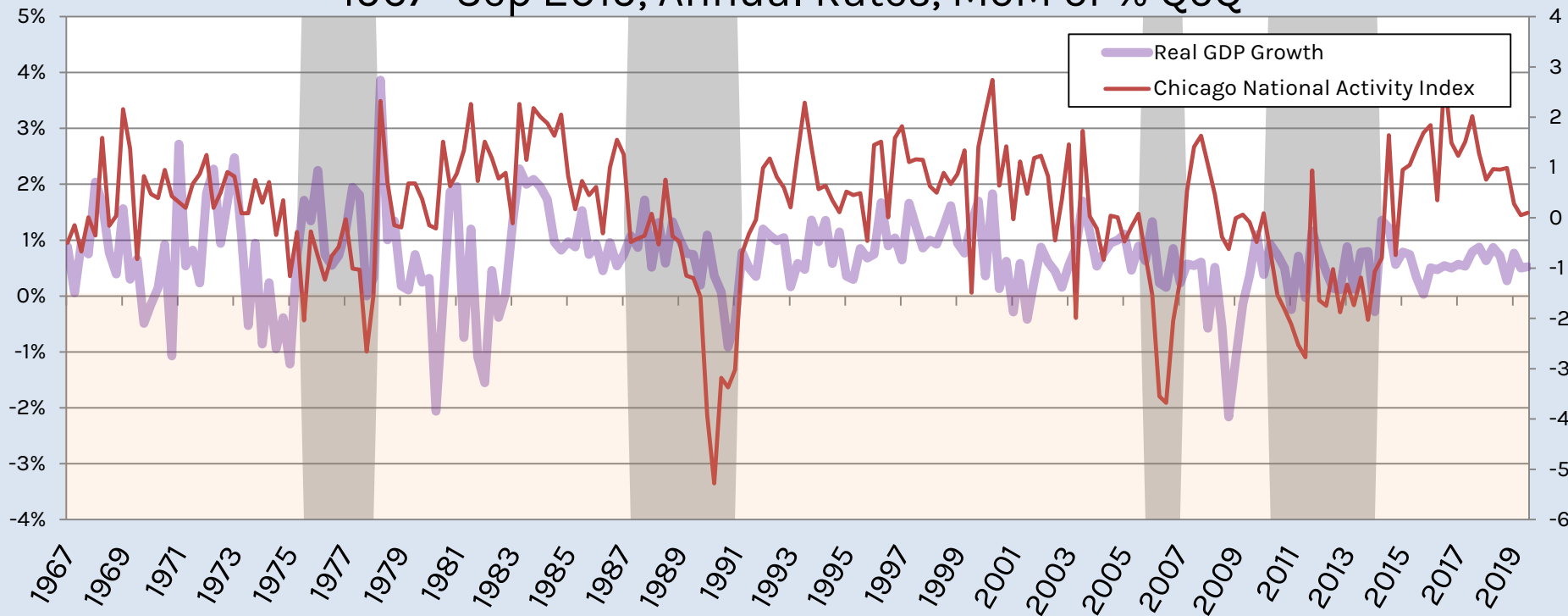
Real Gross Domestic Product
(2012 \$), SA, 1948-Q3 2019, Quarterly, Log Scale



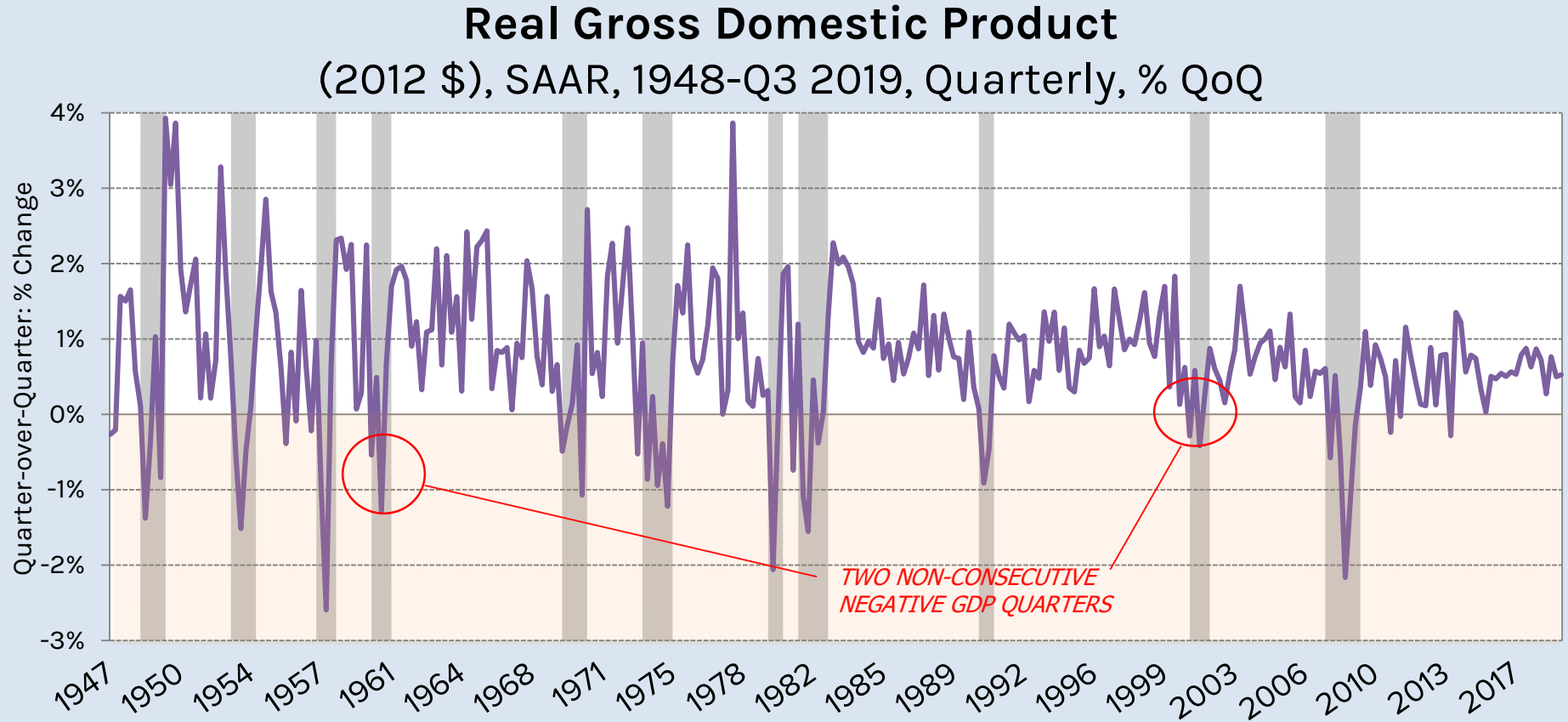
IT REFLECTS A MULTITUDE OF MONTHLY ACTIVITY SIGNALS

Growth in Real GDP & Chicago Fed National Activity Index

1967- Sep 2019, Annual Rates, MoM or % QoQ



NO, IT DOESN'T REQUIRE 2 CONSECUTIVE GDP QUARTERS

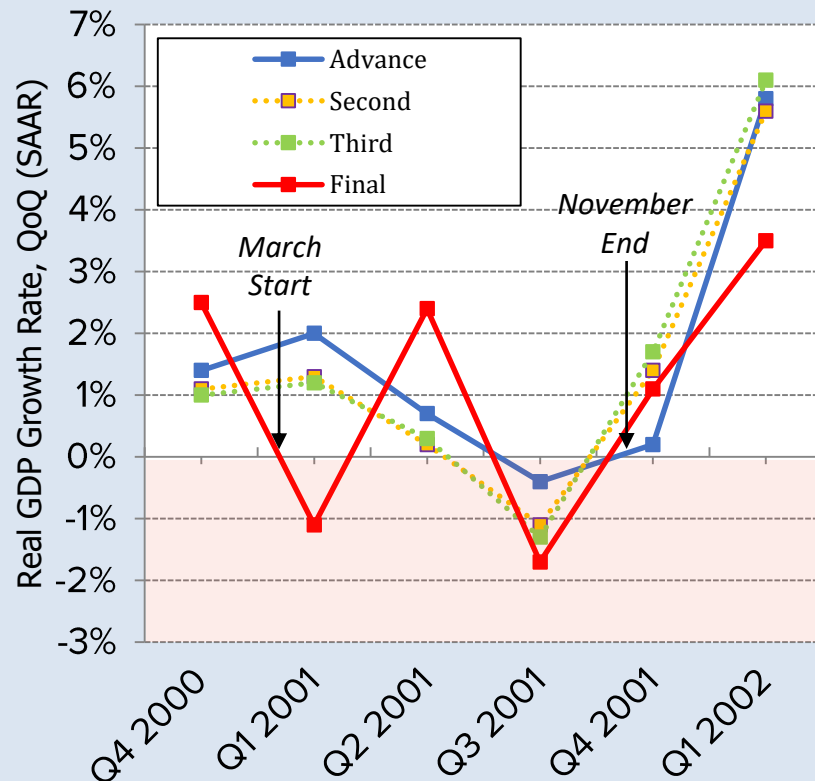


“FINAL GDP” IS THE VERY LAST THING WE KNOW

Schedule of GDP Release Dates*

| Date: | Advance Second | Time Elapsed Since Start of Quarter |
|-----------------|--|--|
| Start, Month 1 | Beginning of Quarter | -- |
| End, Month 3 | End of Quarter | 3 months |
| End, Month 4 | Advance Estimate | 4 months |
| End, Month 3 | Second Estimate | 5 months |
| End, Month 4 | Third Estimate | 6 months |
| End, Every July | Annual Revision (for all years) | indefinite |
| Every Few Years | Benchmark Revision (for all years) | indefinite |

Example: Recession of 2001



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PROPERTIES OF GOOD RECESSION INDICATORS

CERTAINTY: The indicator is a sufficient condition for a recession: When it happens, recession always follows. But it may not precede every recession. (No false positive or type one error.) *These are often coincident indicators of overall economic activity. E.g., national activity index, industrial production, employment, inflation.*

SENSITIVITY: The indicator is a necessary condition for a recession: Unless it happens, a recession cannot follow. But it a recession may not always follow it. (No false negative or type two error.) *These are often leading indicators of forward-looking sectors or activities. E.g., manf PMIs, new orders, initial unemployment claims, heavy truck sales*

HISTORY: The indicator has a good track record. It has a large n-size and has been demonstrated over many prior recessions. *Indicators with best history are either prices or quantities/indexes tracked by Depts of Commerce or Labor since WWII or before. E.g., CPI, PPI, interest rates, GDP, industrial production, employment.*

FORESIGHT: The indicator reliably signals the recession well before it happens. This means both quick date of release and long duration forward between release and recession. *Indicators with most foresight tend to be financial or structural (that is, offering "perspective"). E.g., term spreads, credit spreads, corporate earnings trends, GDP gaps.*

PERSPECTIVE: The indicator reliably signals where we are in the business cycle. It informs us on cycle longevity. *Indicators with great perspective tend to track "cumulative" processes that have a known trough-to-peak dynamic. E.g., potential GDP, inflation, labor-market tightness, sentiment (esp. expectations).*

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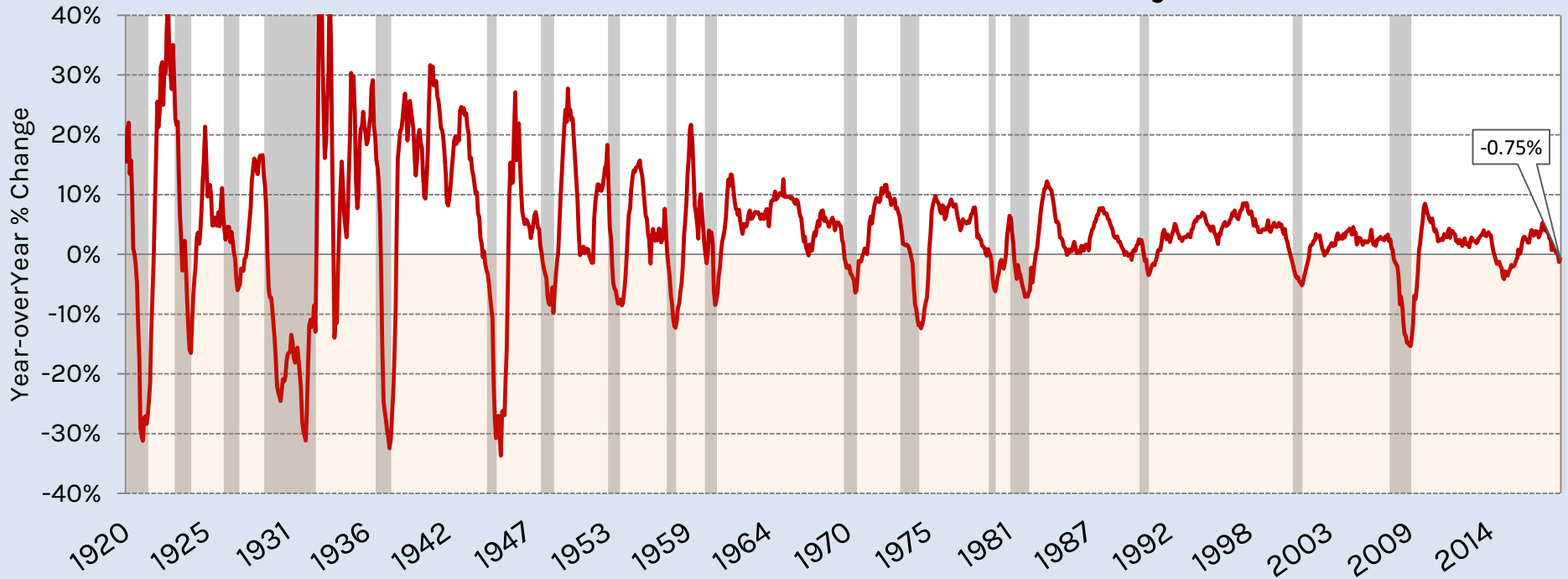
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INDUSTRIAL PRODUCTION: THE OLDEST INDICATOR

Industrial Production Index

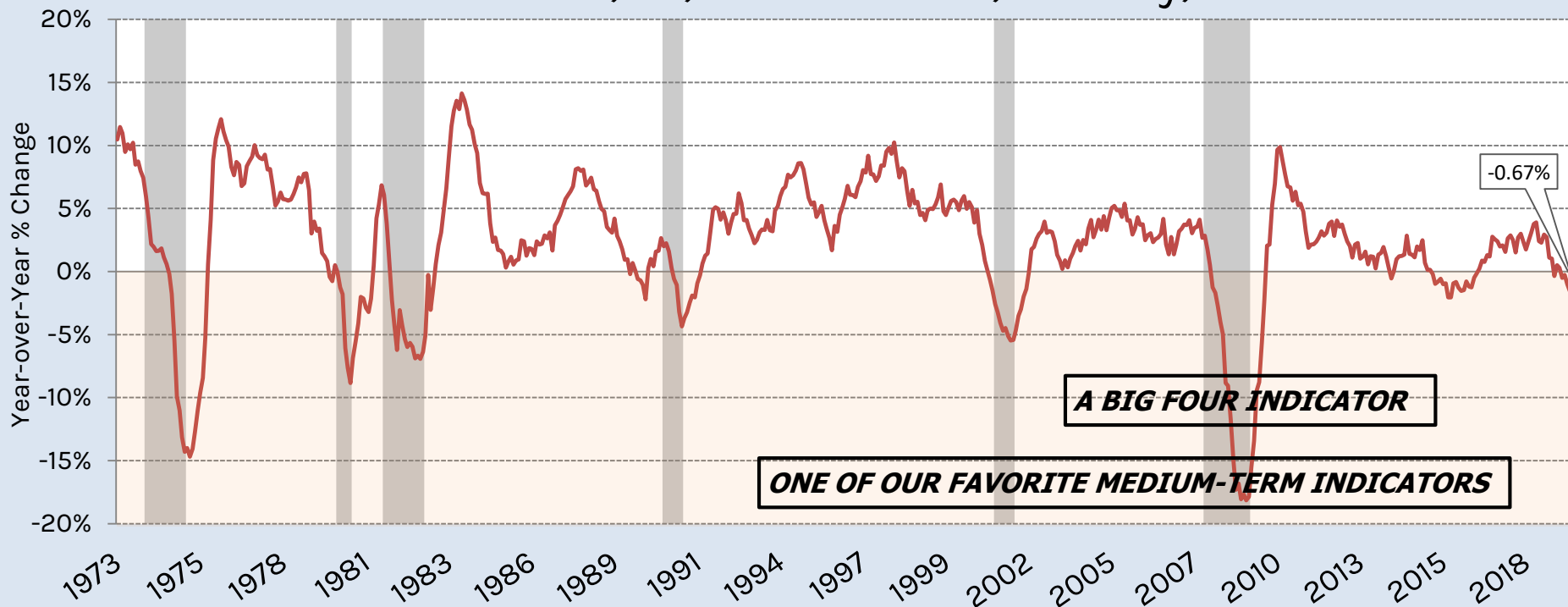
Index: 2012=100, SA, 1919-Nov 2019, Monthly, % YoY



NUMBER ONE OF “BIG FOUR” COINCIDENT SIGNALS

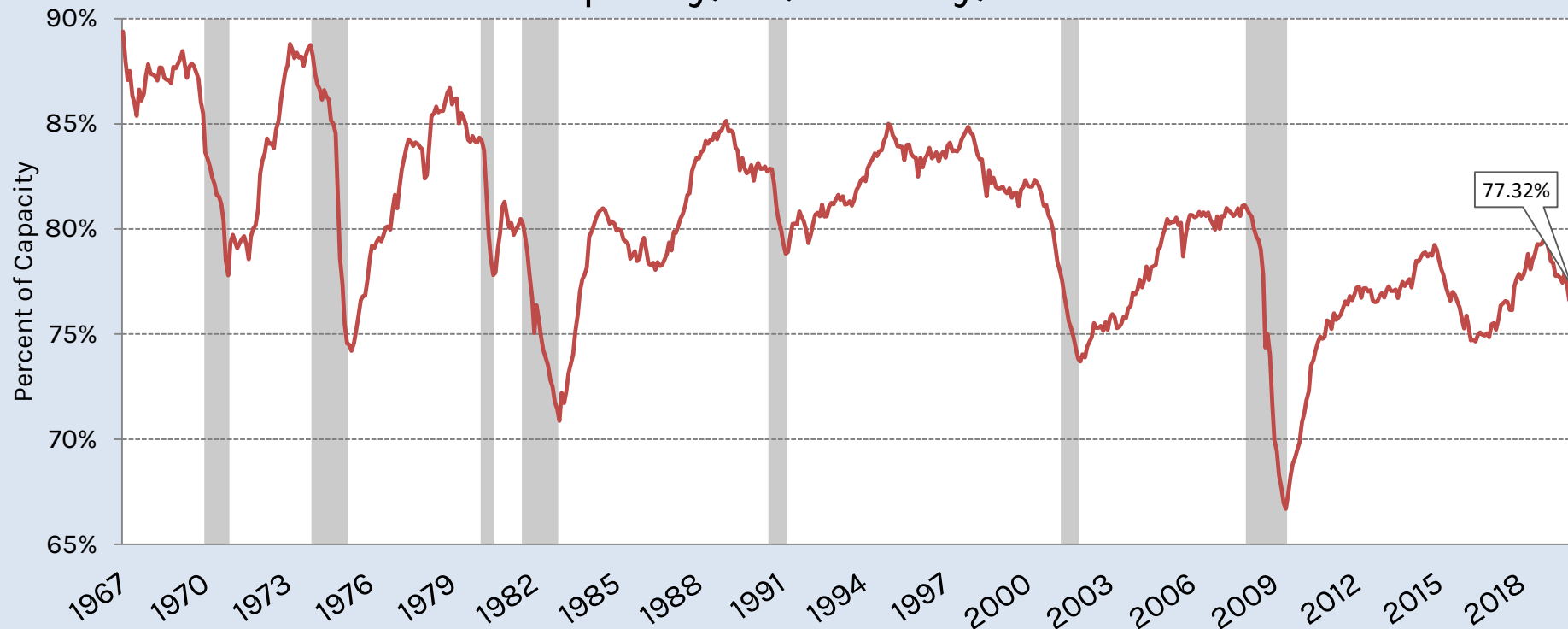
Industrial Production: Manufacturing

Index: 2012=100, SA, 1972-Nov 2019, Monthly, % YoY



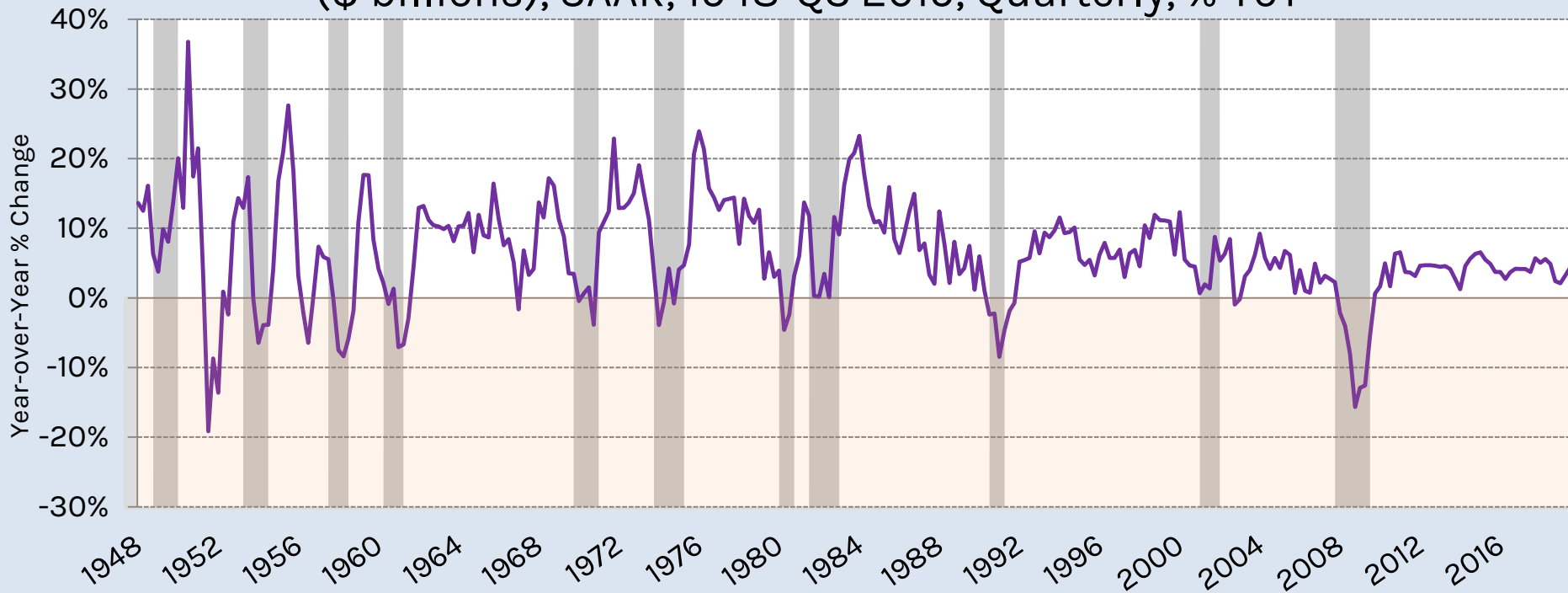
UTILIZATION OFFERS MORE PERSPECTIVE

Capacity Utilization: Total Industry Percent of Capacity, SA, Monthly, 1967-Nov 2019



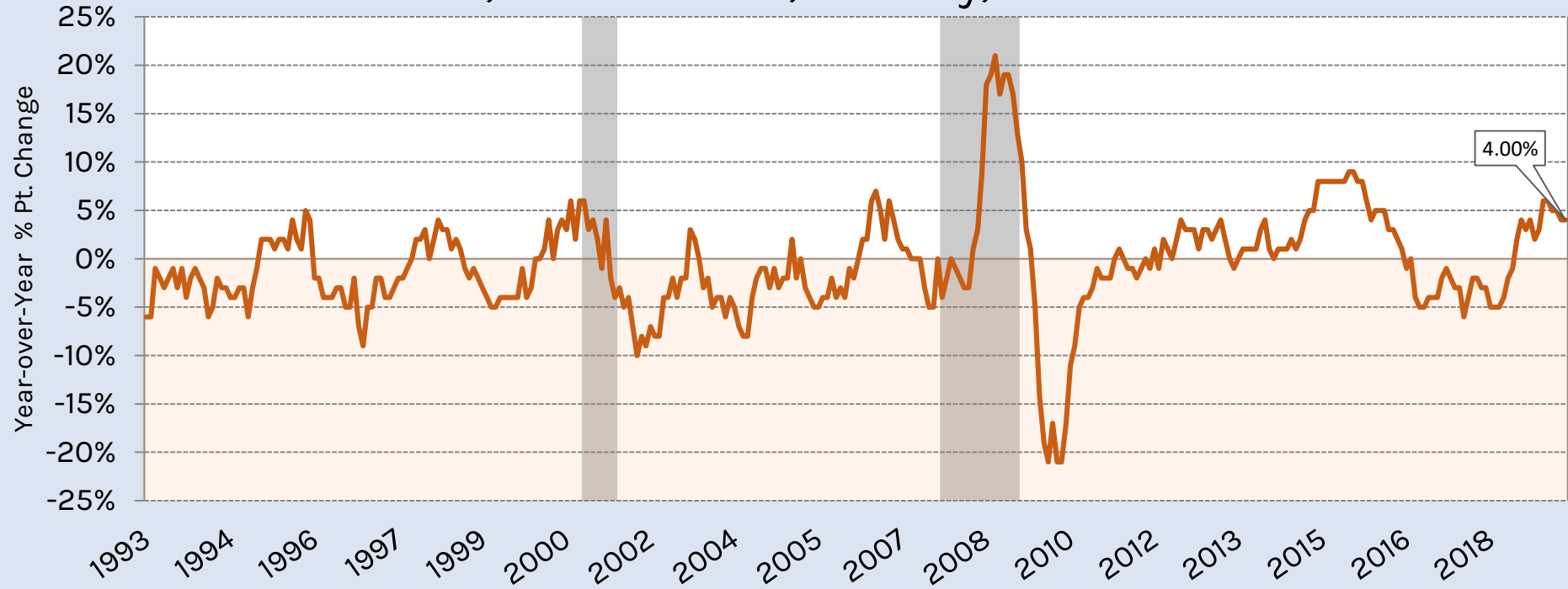
FORWARD-LOOKING PCE... BUT QTLY

Personal Consumption Expenditures (PCE): Durable Goods (\$ billions), SAAR, 1948-Q3 2019, Quarterly, % YoY



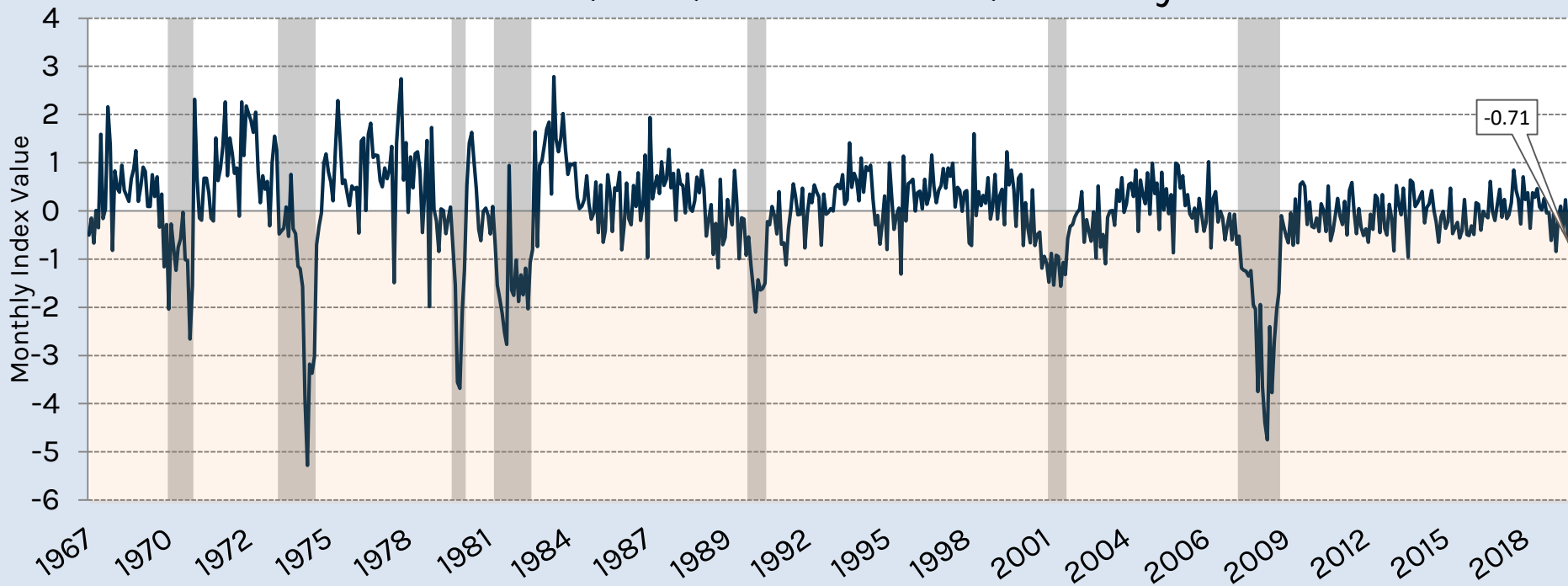
INVENTORY/SALES: AN “OLD ECONOMY” FAVORITE

Inventory to Sales Ratio: Total Business
SA, 1993-Oct 2019, monthly, % Pt. YoY



VERY DEFINITION OF COINCIDENT INDICATOR

Chicago Fed National Activity Index* Index**, NSA, 1967-Oct 2019, Monthly



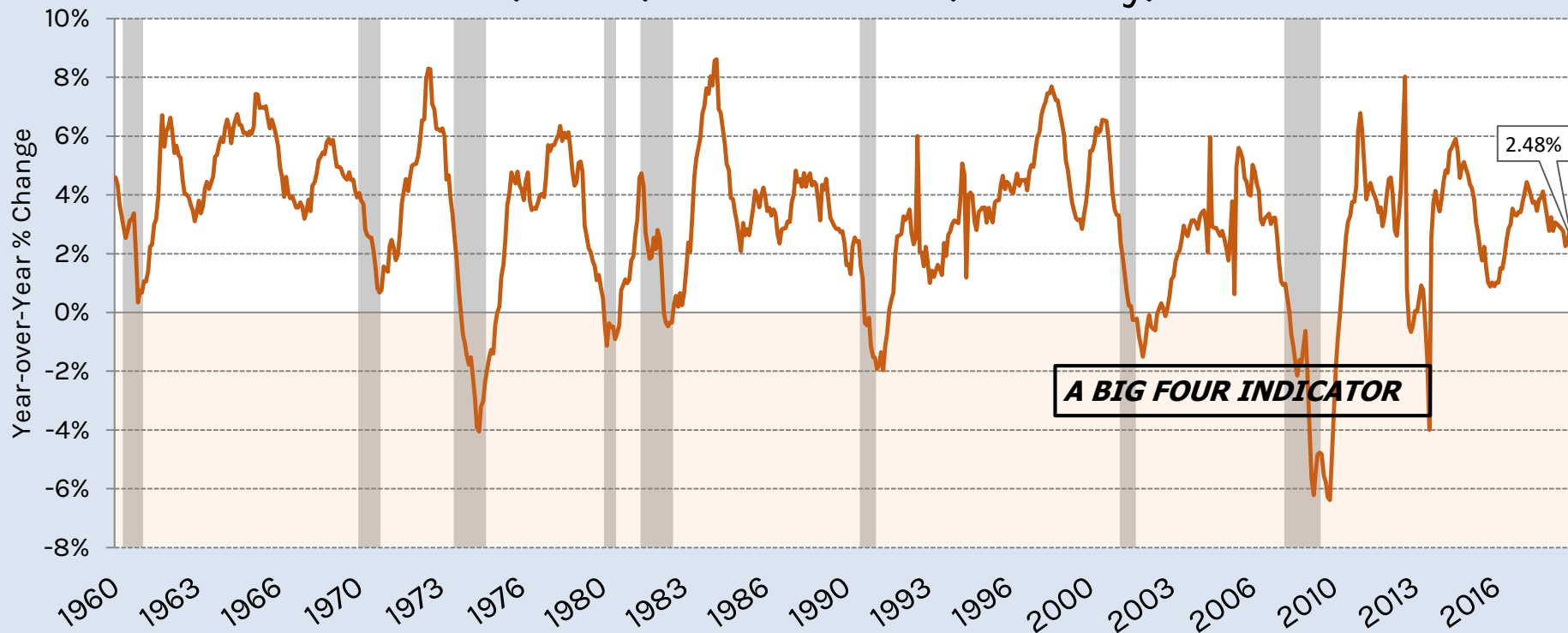
* Monthly change in a principal-component index of change in 85 monthly indicators of national economic activity.

** Index: 0.0 = economic growth at long-term historical trend.

NUMBER TWO OF THE “BIG FOUR”...

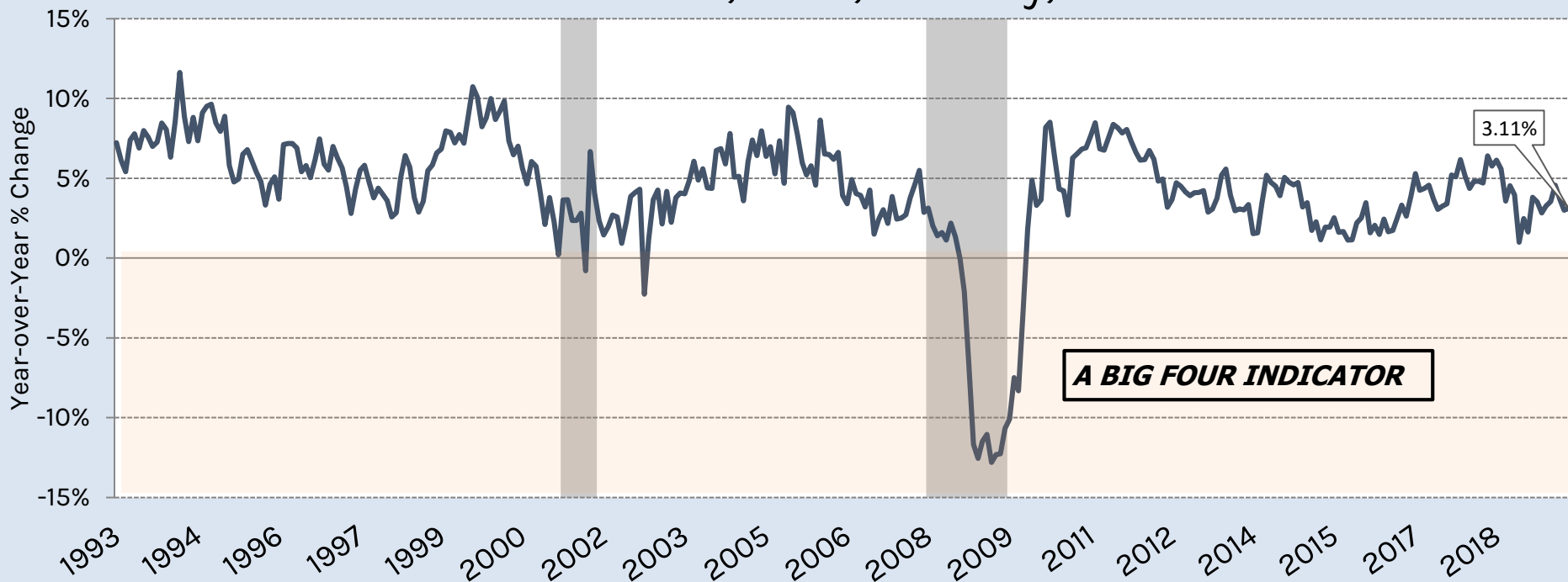
Real Personal Income Ex Current Transfer Receipts

1960-2019, SAAR, 1960-Oct 2019, monthly, % YoY



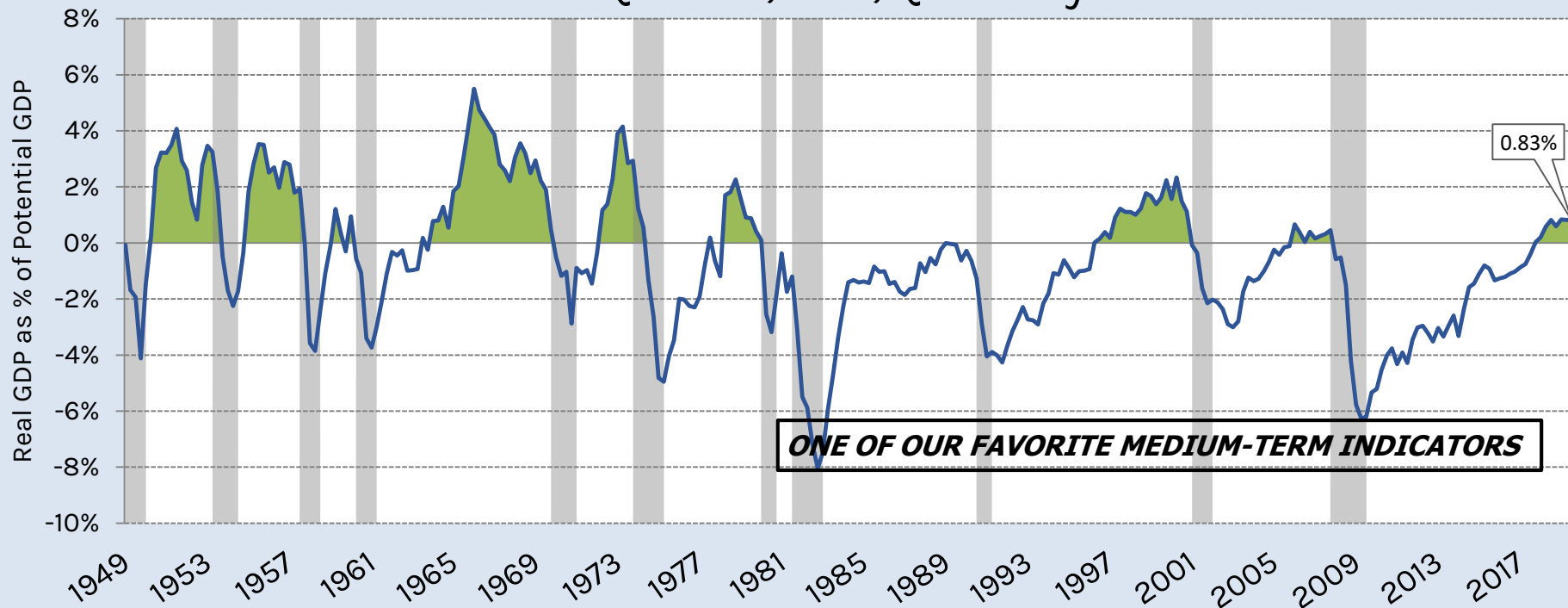
AND HERE'S NUMBER THREE

Advance Retail Sales Ex Food Services 1960-Nov 2019, SAAR, monthly, % YoY



CHECK OUT “GDP GAP” FOR PERSPECTIVE

Real GDP Gap* as % of Real Potential GDP** 1949-Q2 2019, NSA, Quarterly



ONE OF OUR FAVORITE MEDIUM-TERM INDICATORS

* Real GDP “Gap” = (Real GDP-Potential GDP)/Potential GDP

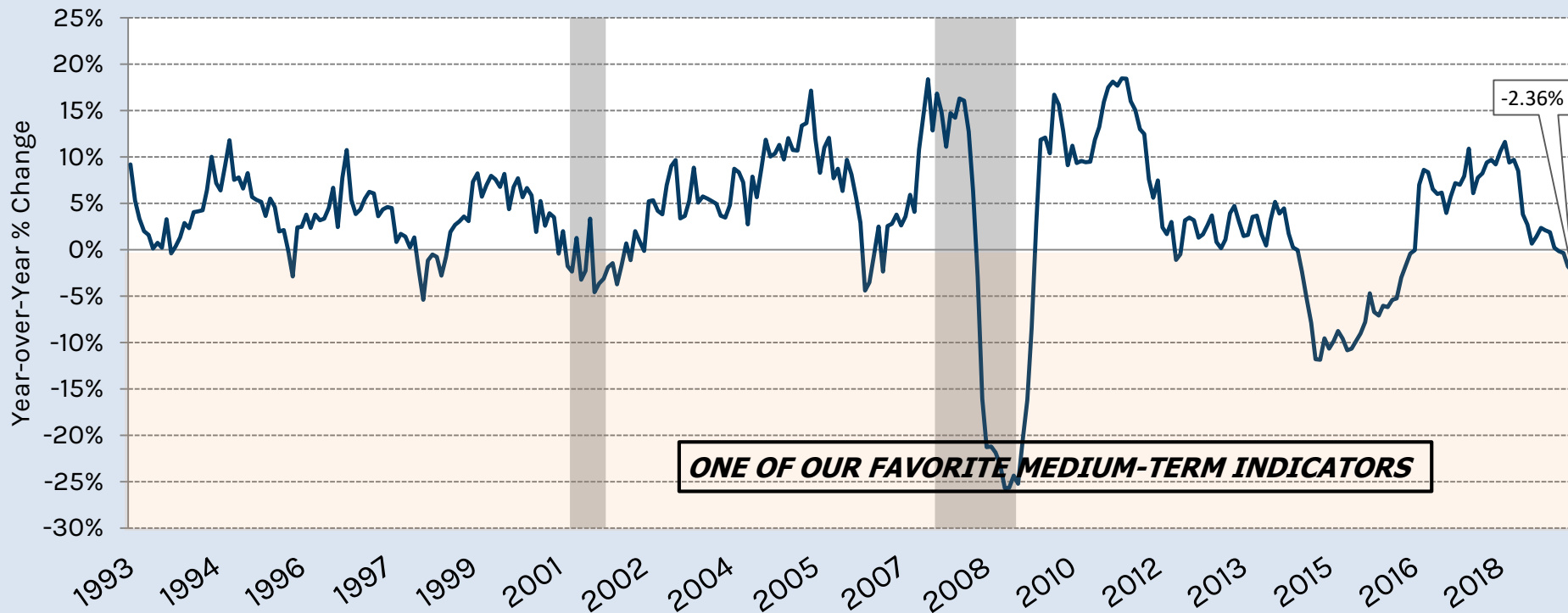
** Potential GDP is the CBO’s estimate of the output the economy would produce at the maximum sustainable use of its capital and labor resources.

SOURCE: BEA, Congressional Budget Office (2019)

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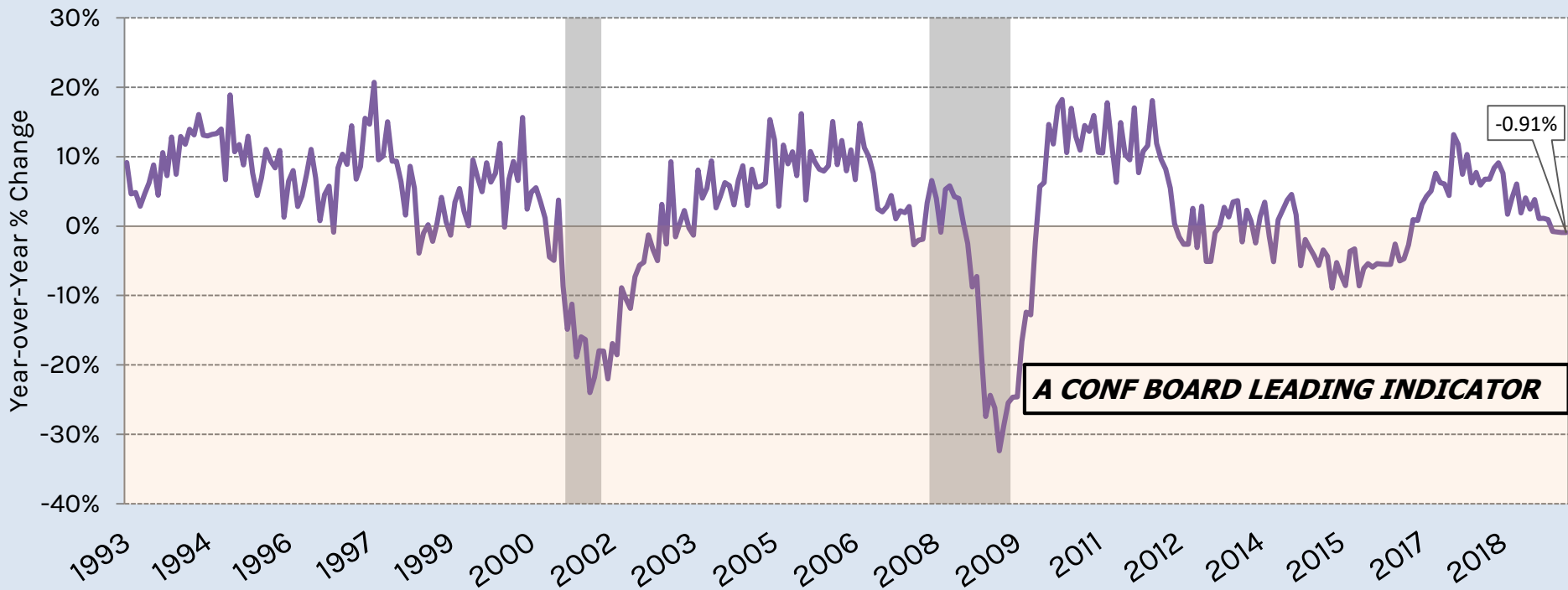
FACTORY ORDERS: A SIMPLE OLD CLASSIC

Manufacturers' New Orders for Consumer Goods (\$ mil.), 1992-Oct 2019, SA, Monthly, % YoY



FACTORY ORDERS: CONF BOARD FAVORITE #ONE

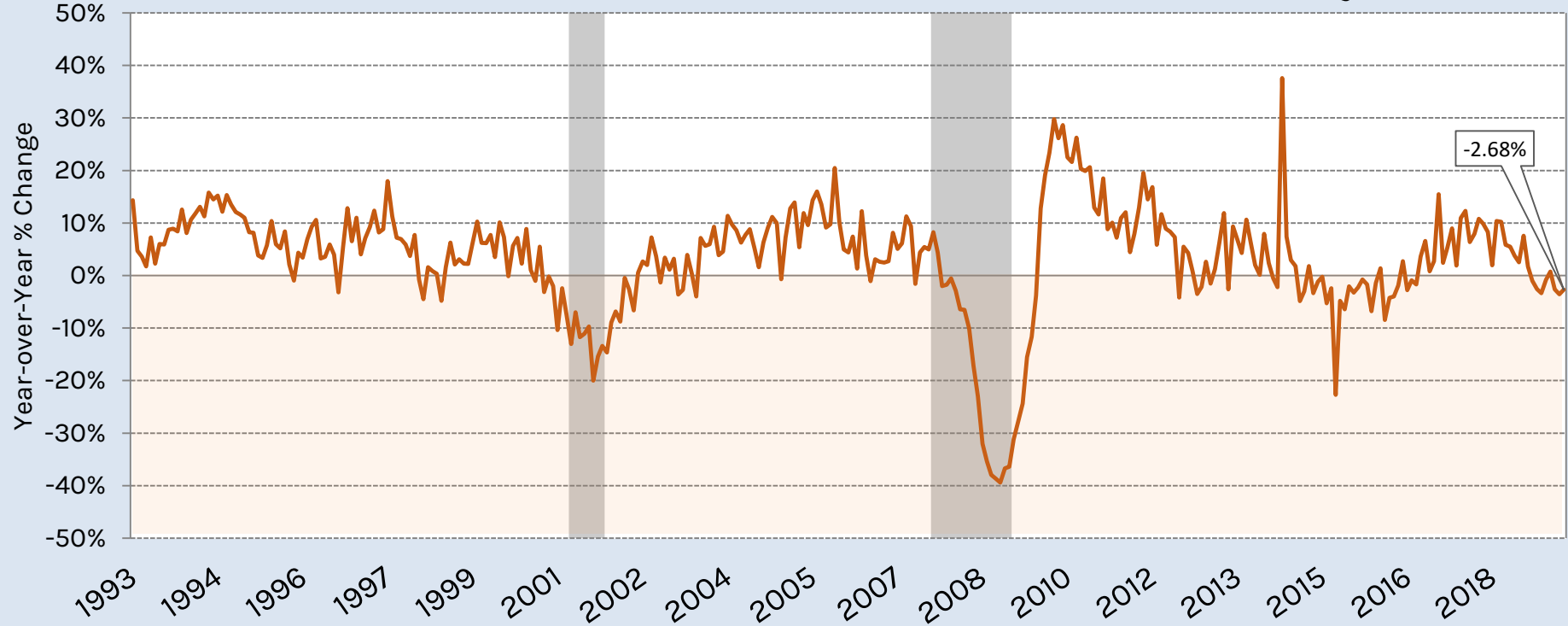
Manufacturers' New Orders: Nondefense Capital Goods Excluding Aircraft (\$ mil.), 1992-Oct 2019, SA, Monthly, % YoY



FACTORY ORDERS: CONF BOARD FAVORITE #2

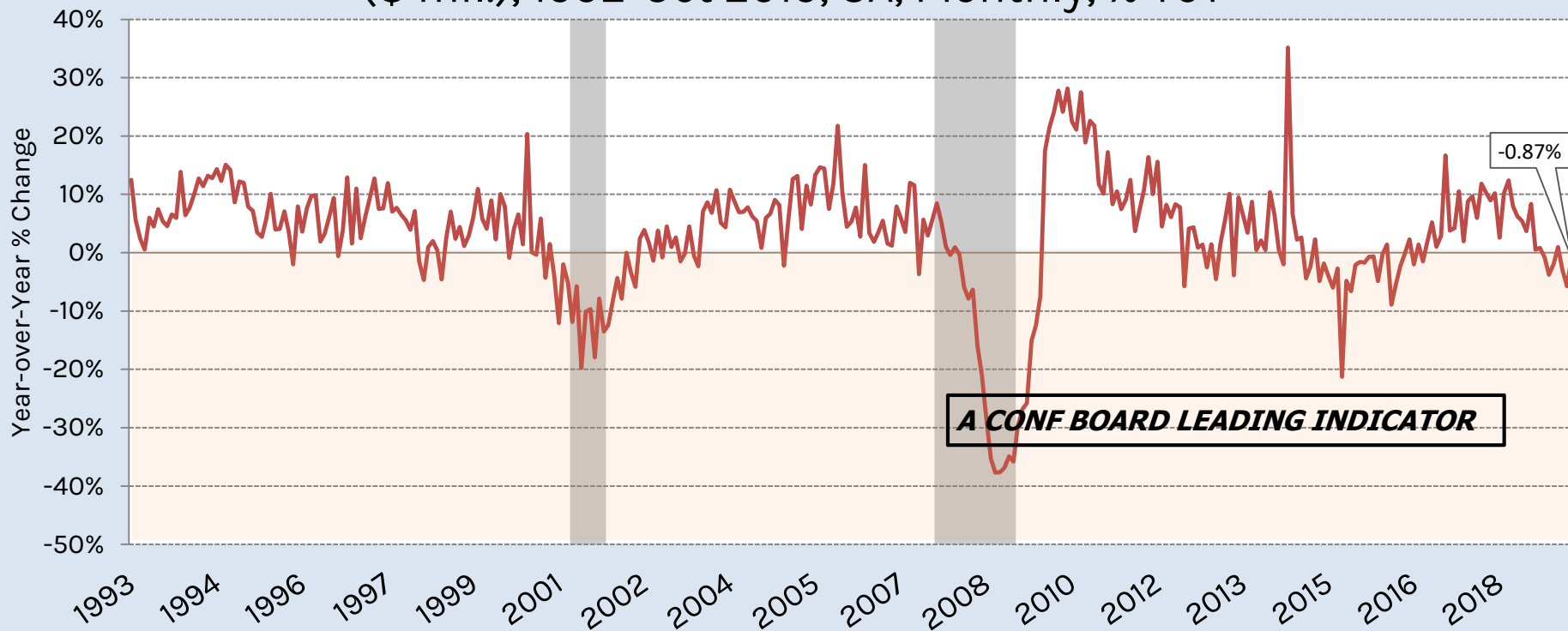
Manufacturers' New Orders for Durable Goods:

Durable Goods Ex. Defense (\$ mil.), 1992-Oct 2019, SA, Monthly, % YoY



FACTORY ORDERS: OUR OWN FAVORITE

Manufacturers' New Orders: Durable Goods (\$ mil.), 1992-Oct 2019, SA, Monthly, % YoY



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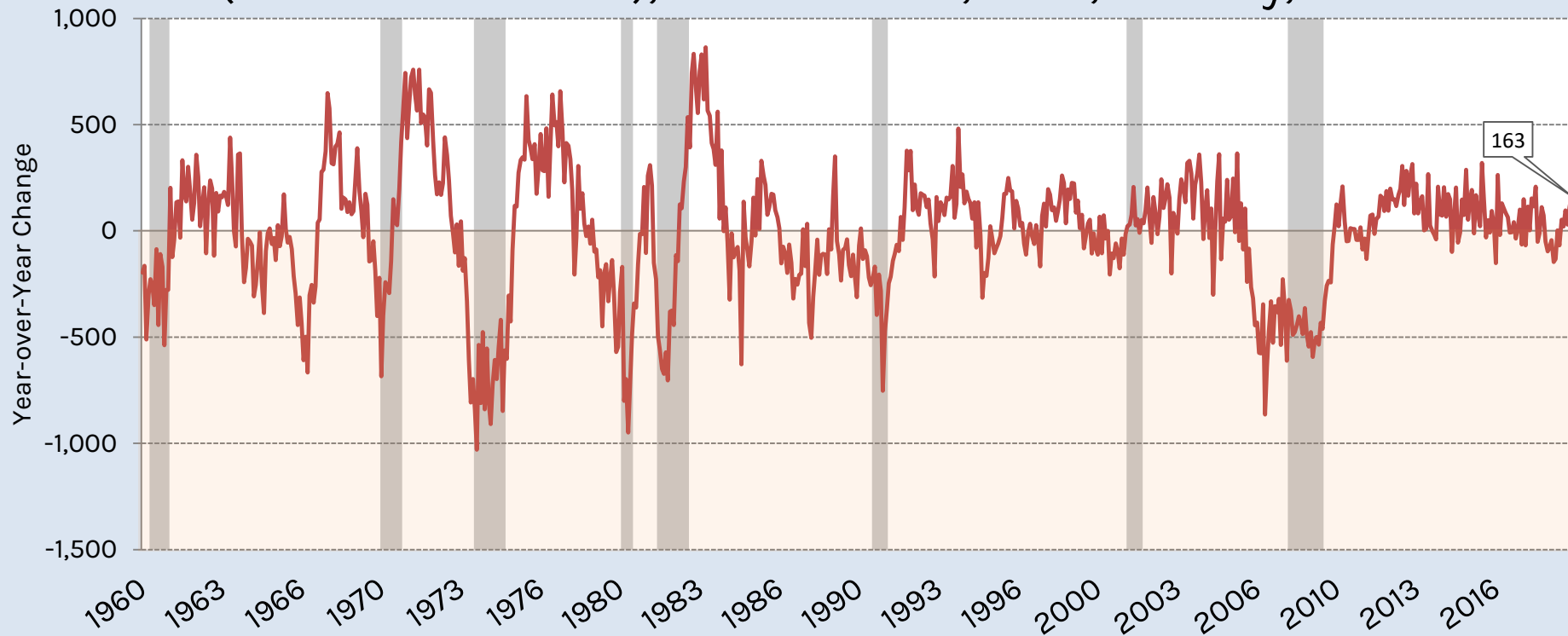
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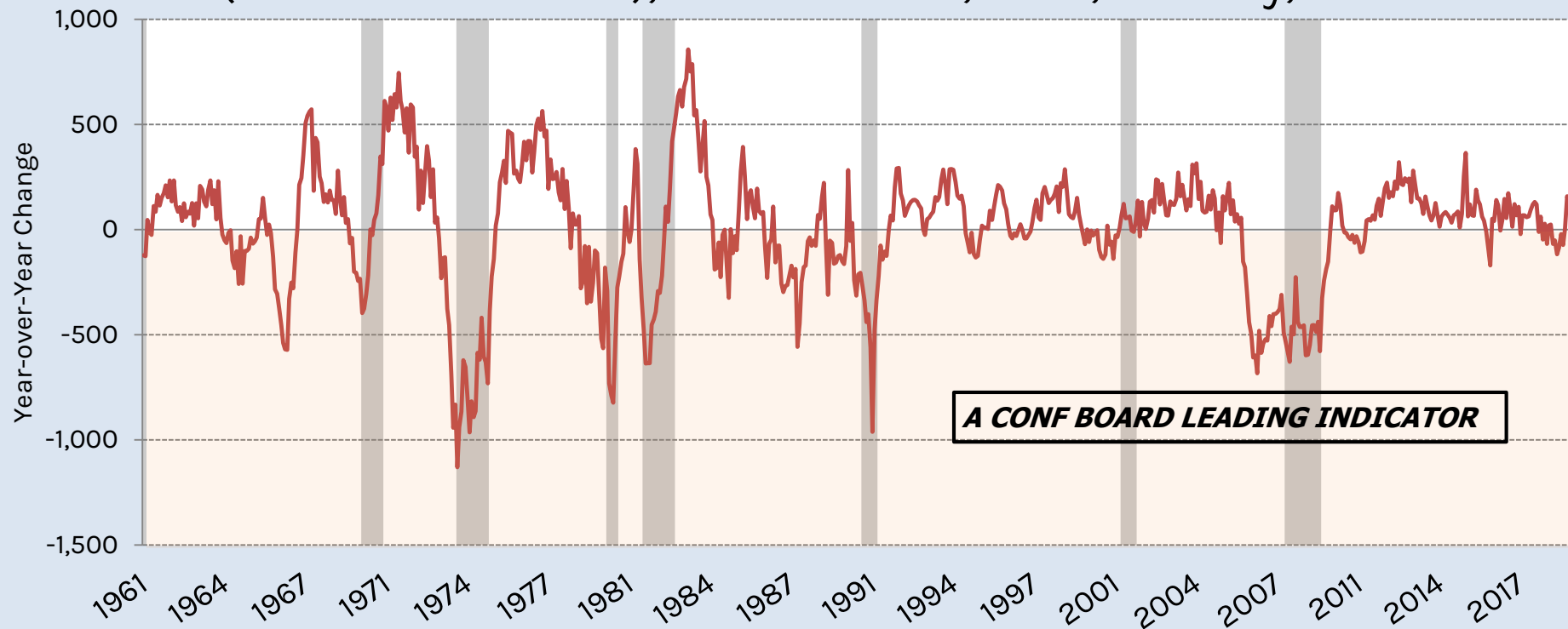
HOUSING STARTS: WEAK BUT STILL POSITIVE DELTA

Housing Starts, New Private Units
(thousands of units), 1959-Nov 2019, SAAR, monthly, YoY



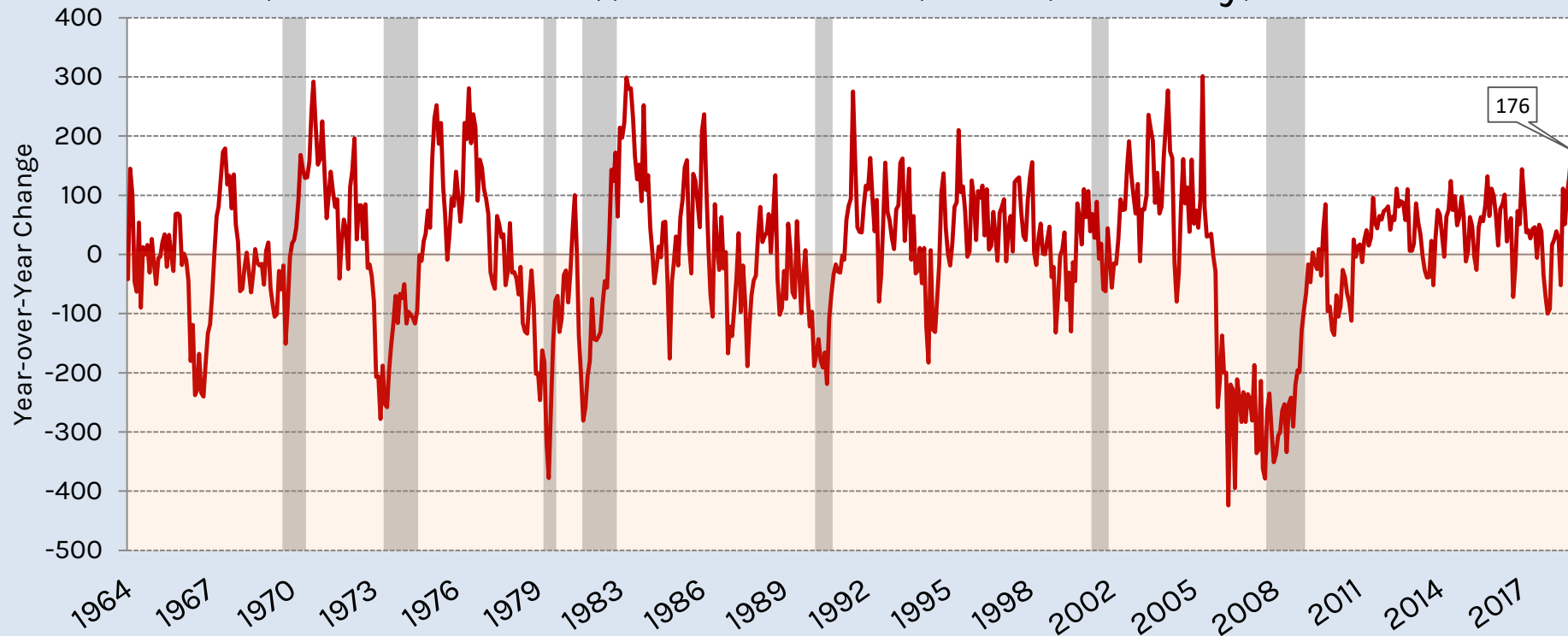
HOUSING PERMITS: RECENT SURGE

Housing Permits, New Authorized
(thousands of units), 1960-Nov 2019, SAAR, monthly, YoY



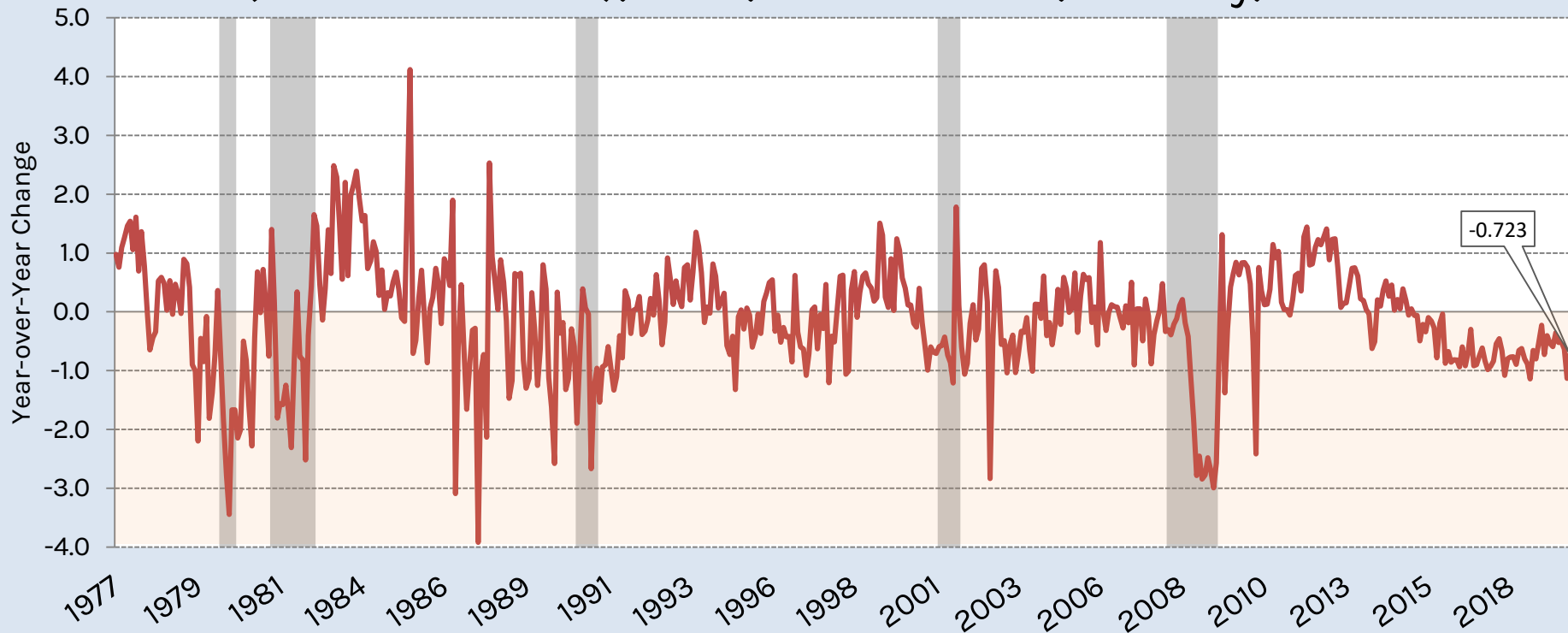
HOUSING SALES: RECENT SURGE

New One Family Houses Sold
(thousand units), 1963-Oct 2019, SAAR, monthly, YoY



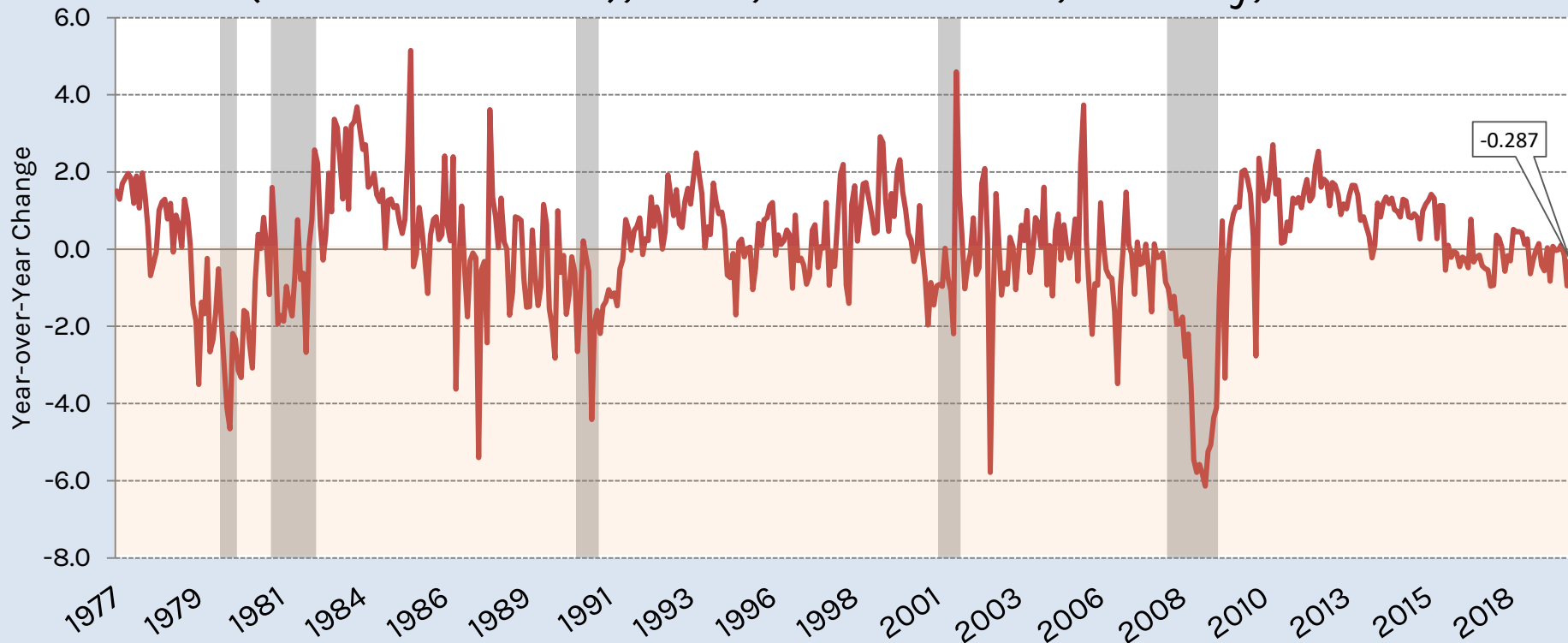
AUTOS: CONTINUOUS NEGATIVE DELTAS...

Motor Vehicle Retail Sales: Domestic and Foreign Autos (millions of units), SAAR, 1976-Nov 2019, monthly, YoY



EVEN INCLUDING PICKUPS

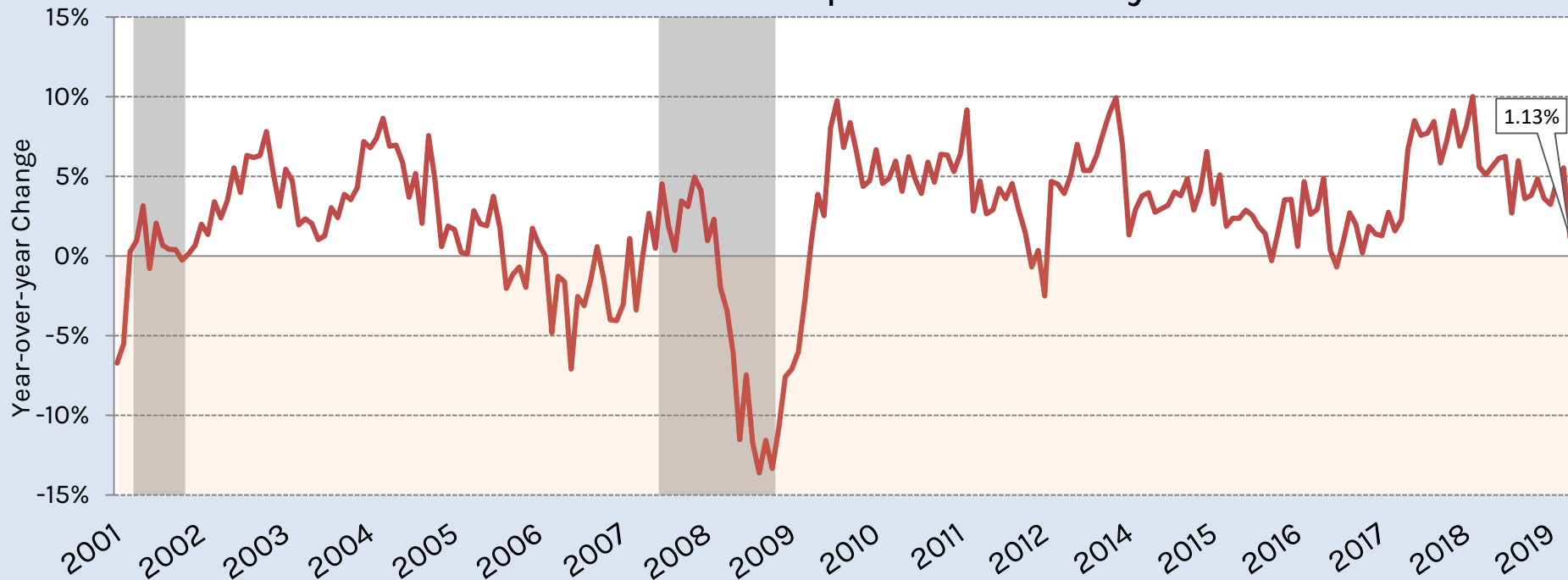
Light-Weight Vehicle Sales: Autos and Light Trucks (millions of units), SAAR, 1977-Nov 2019, monthly, YoY



TRANSPORT: TRUCK TRAFFIC NOW FALLING

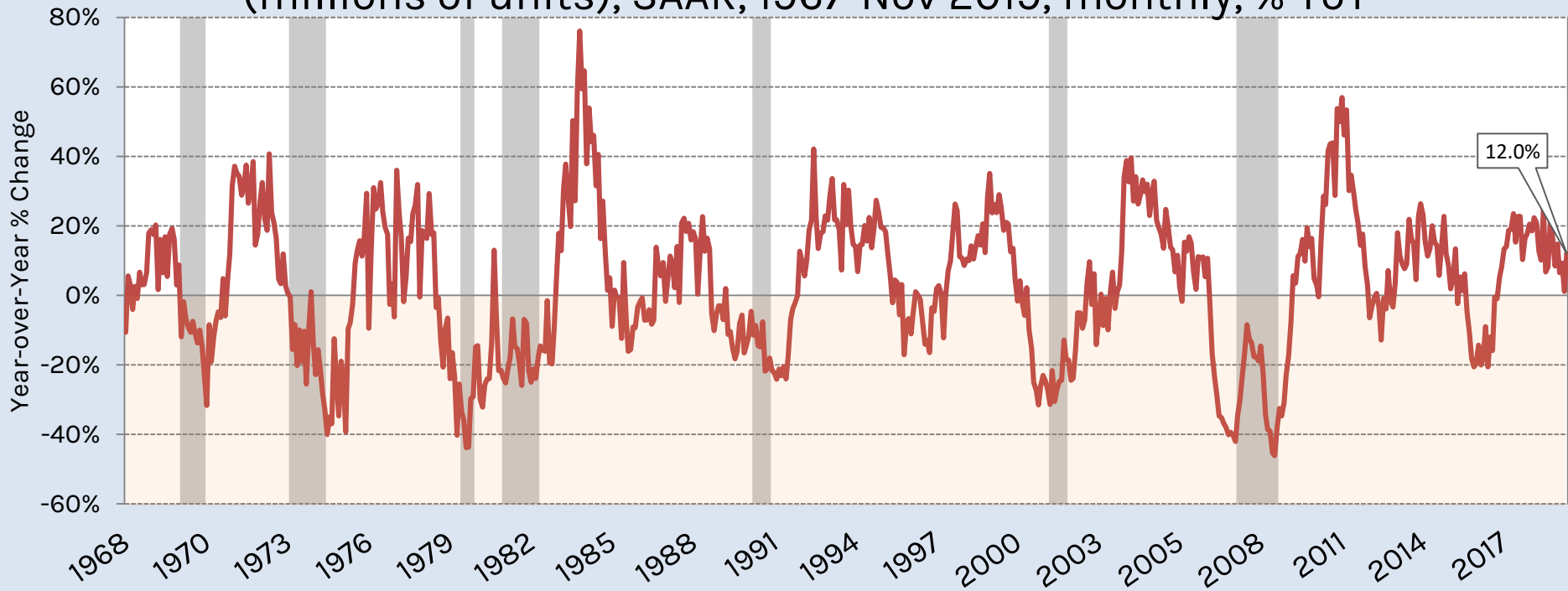
Truck Tonnage Index

2015=100, SAAR, 2000-Sep 2019, monthly, % YoY

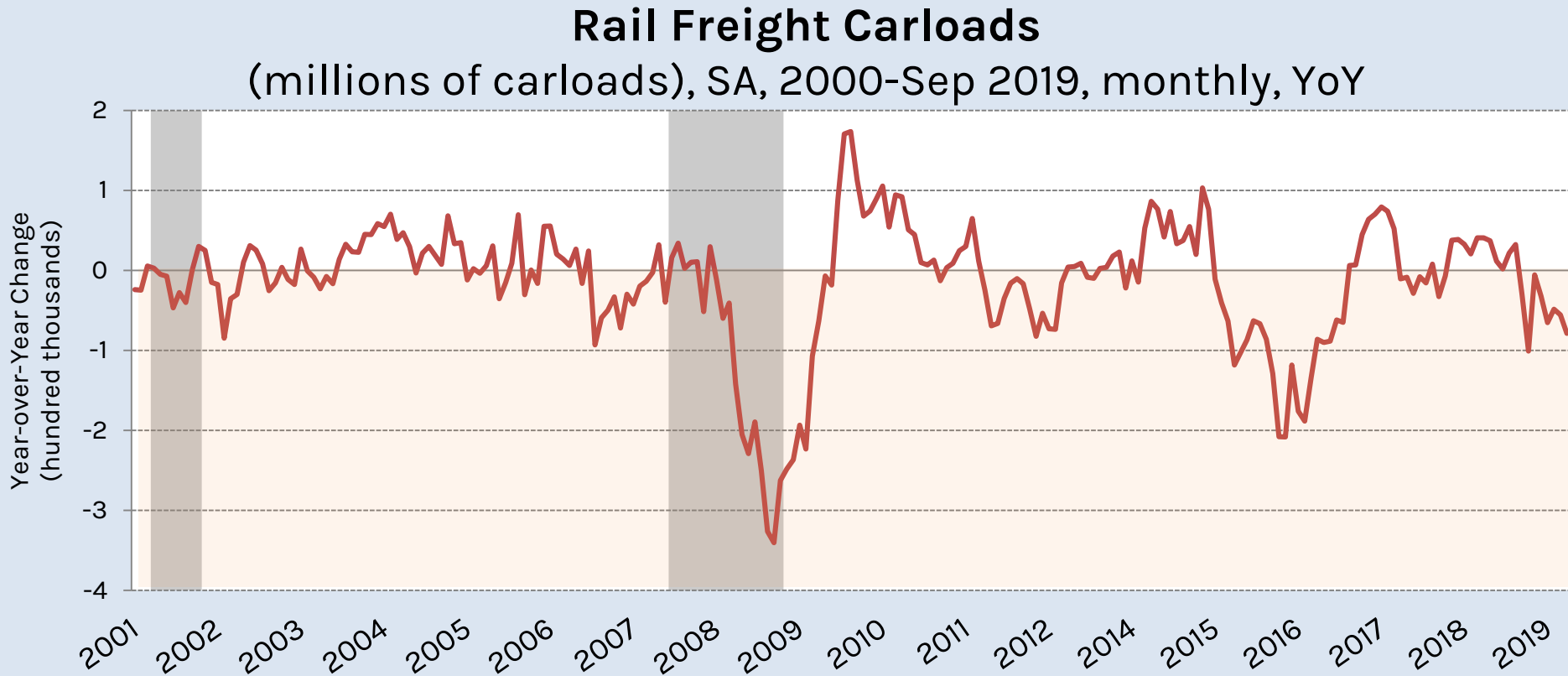


TRANSPORT: BIG TRUCK SALES FALLING BACK DOWN

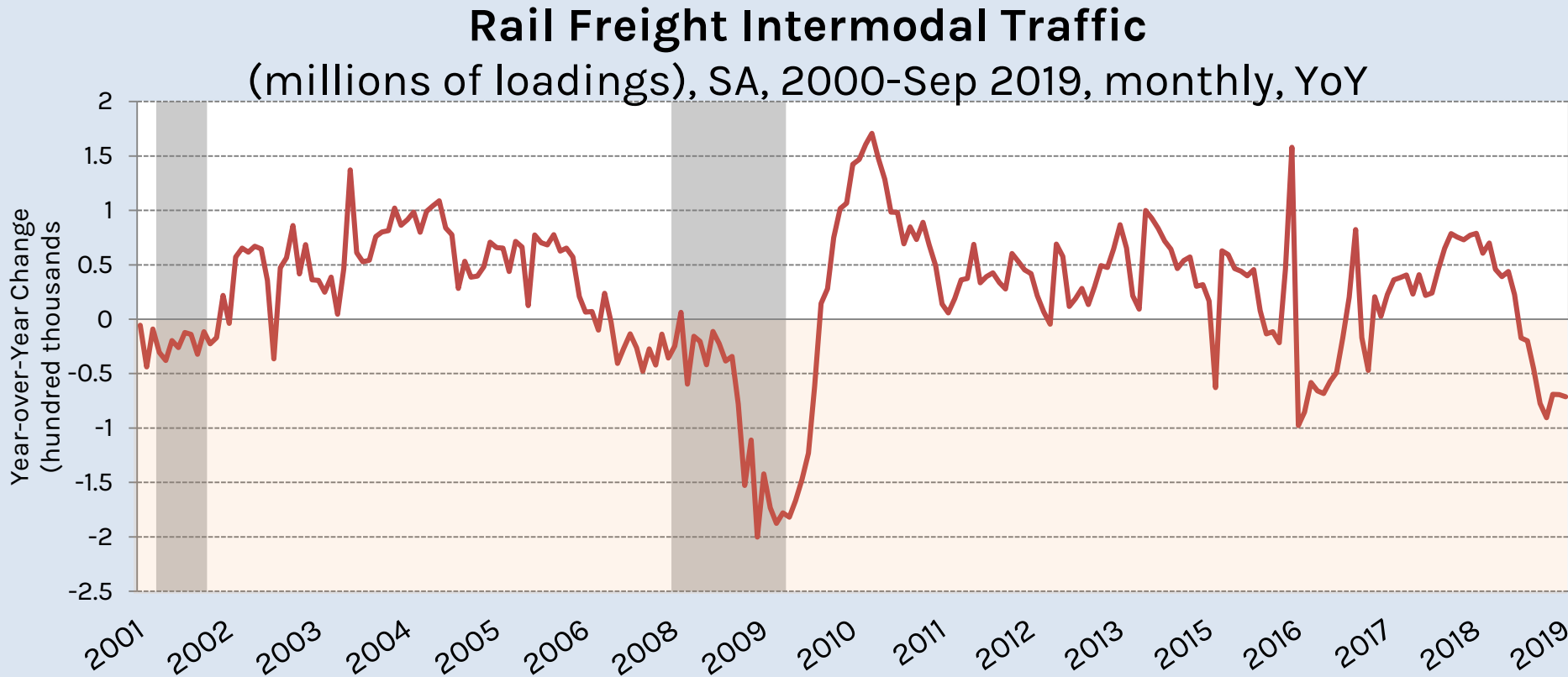
Motor Vehicle Retail Sales: Heavy Weight Trucks (millions of units), SAAR, 1967-Nov 2019, monthly, % YoY



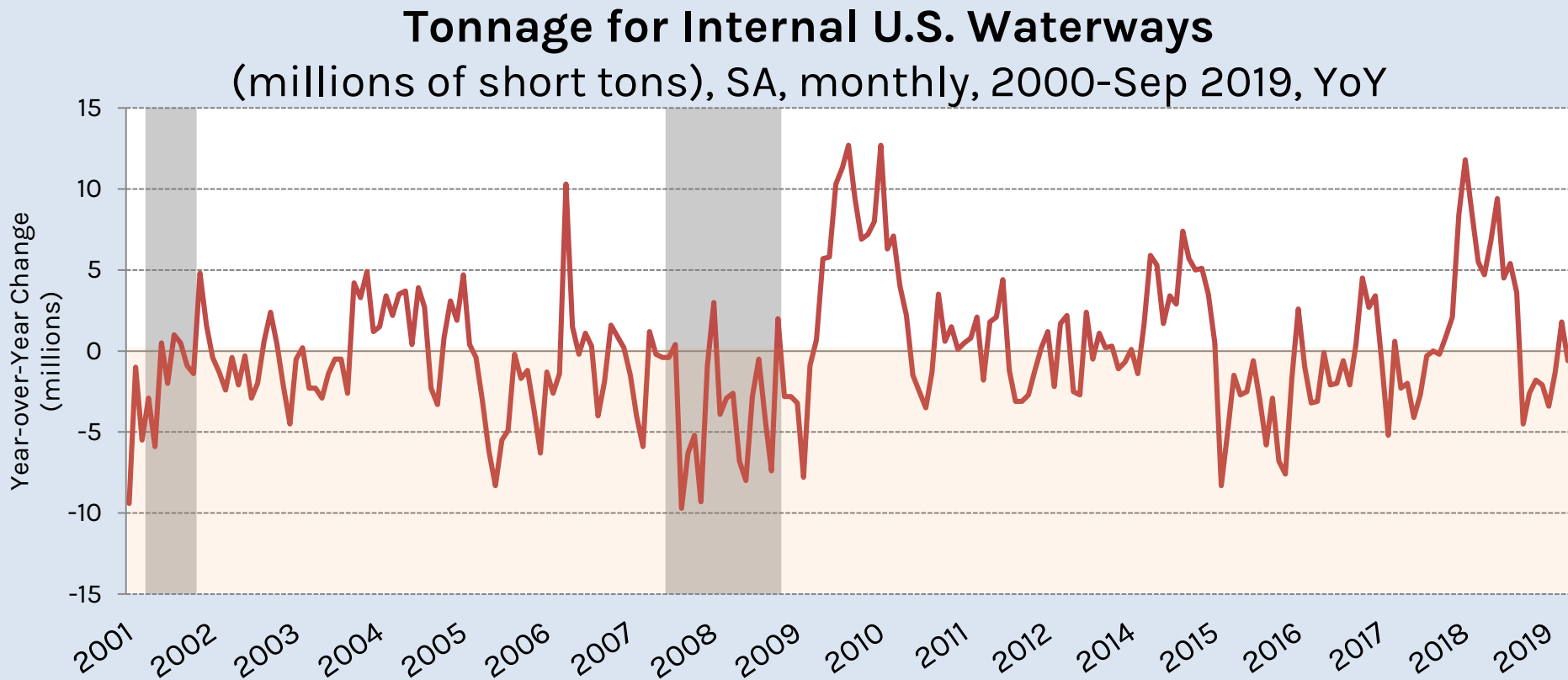
TRANSPORT: RAIL NOW DECLINING...



... INTERMODAL “PARTS” DELIVERY, ESPECIALLY



TRANSPORT: BARGES, SAME STORY (DOWN AFTER 2018)



A “CRASH” COURSE IN RECESSION INDICATORS

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❑ Properties of Good Recession Indicators

❑ INDICATORS

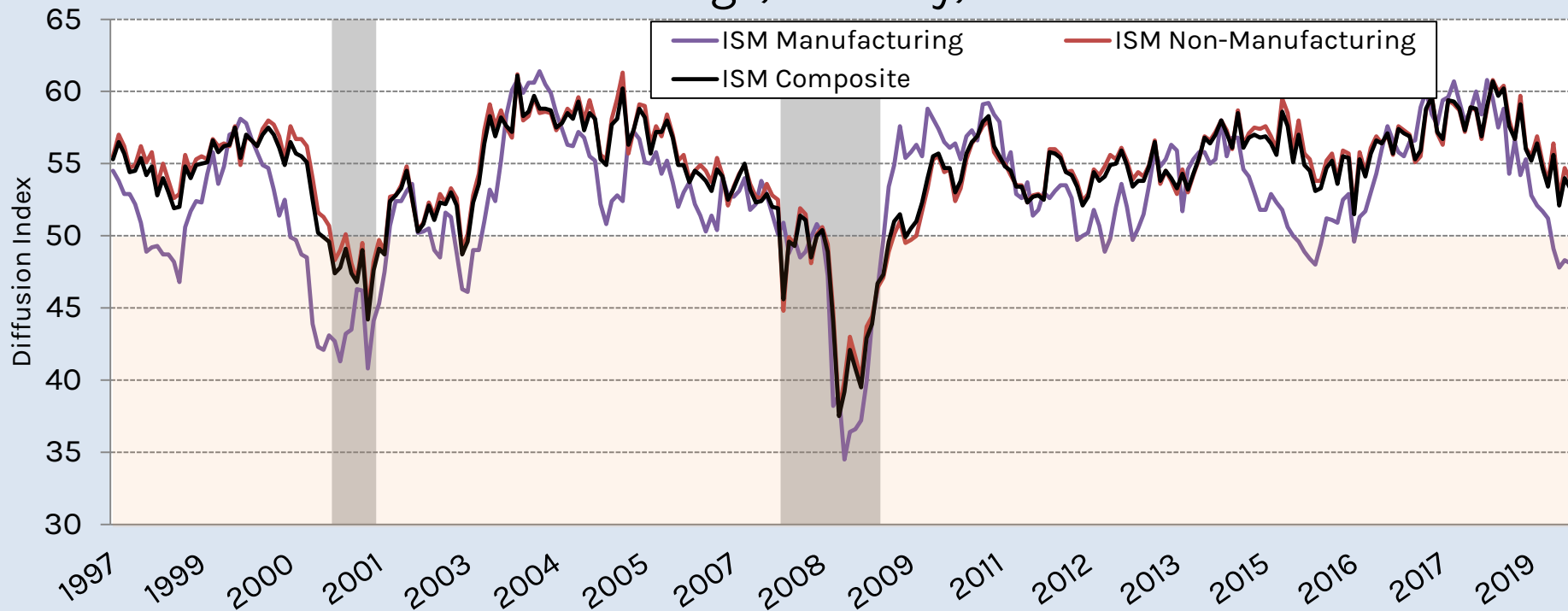
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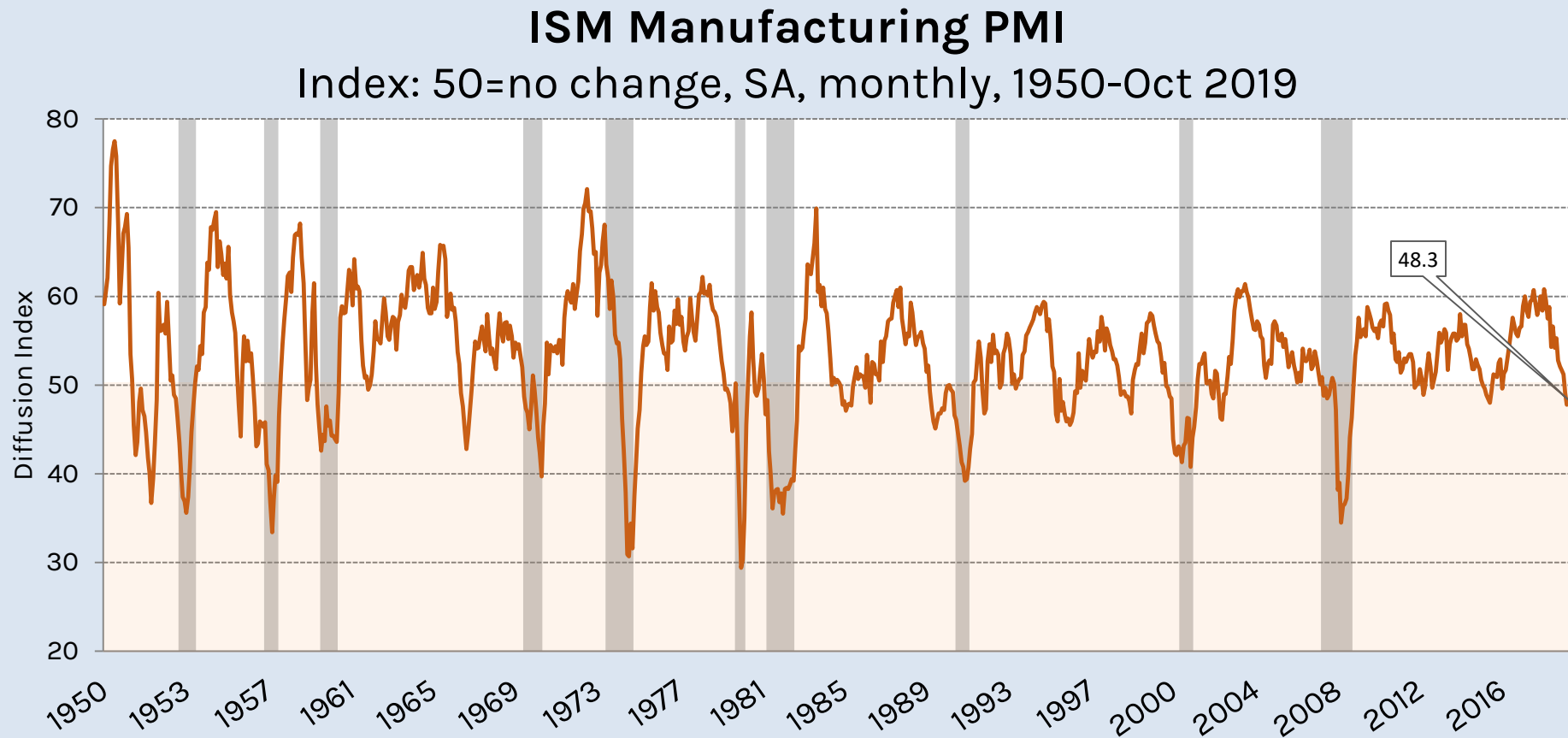
ISM NOW DOES “COMPOSITE” INDEX

ISM PMIs*: Composite, Manf, & Non-Manf Index: 50=no change, monthly, 1997-Nov 2019



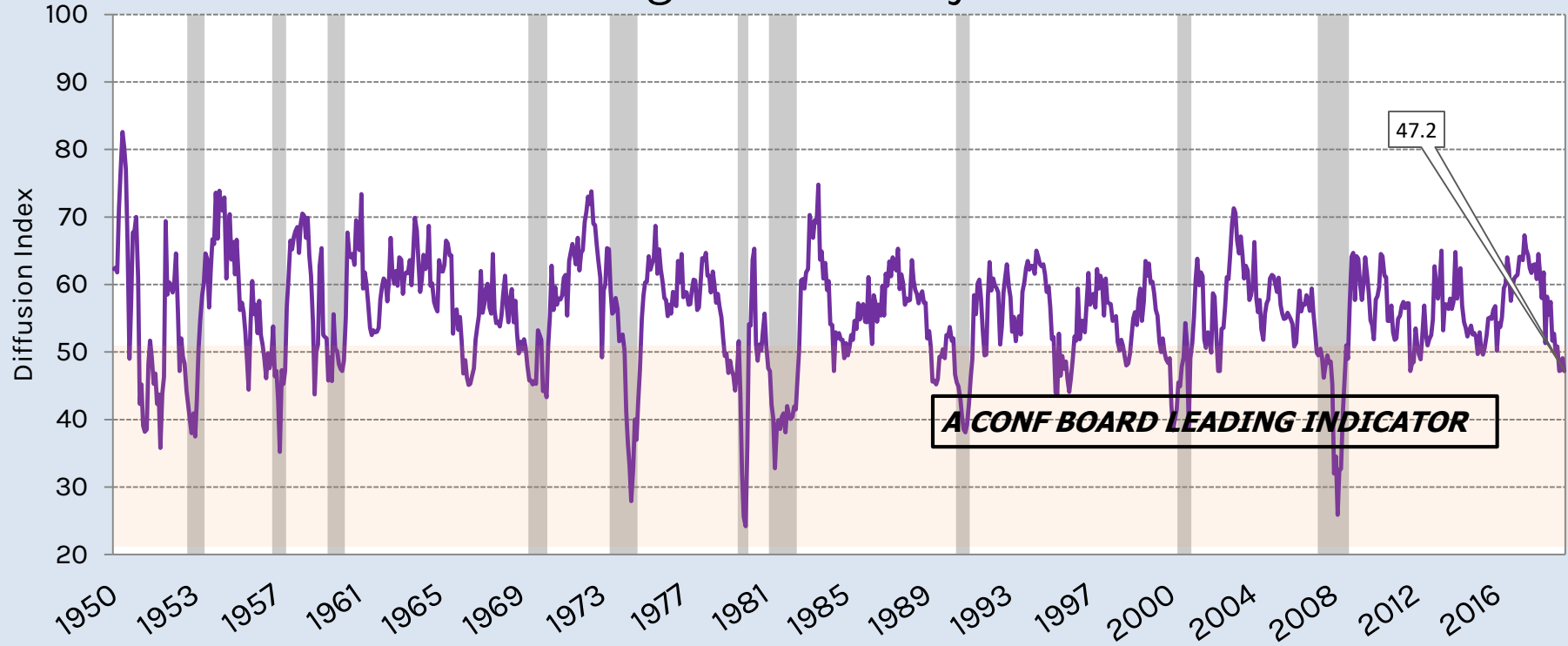
* PMI = Purchasing Managers Index. Manf PMI is SA. Non-Manf PMI is NSA.

BUT ISM'S GOLDEN-OLDIE IS ITS MANF PMI



ISM PMI, FORWARD-LOOKING SUBINDEXES: NEW ORDERS...

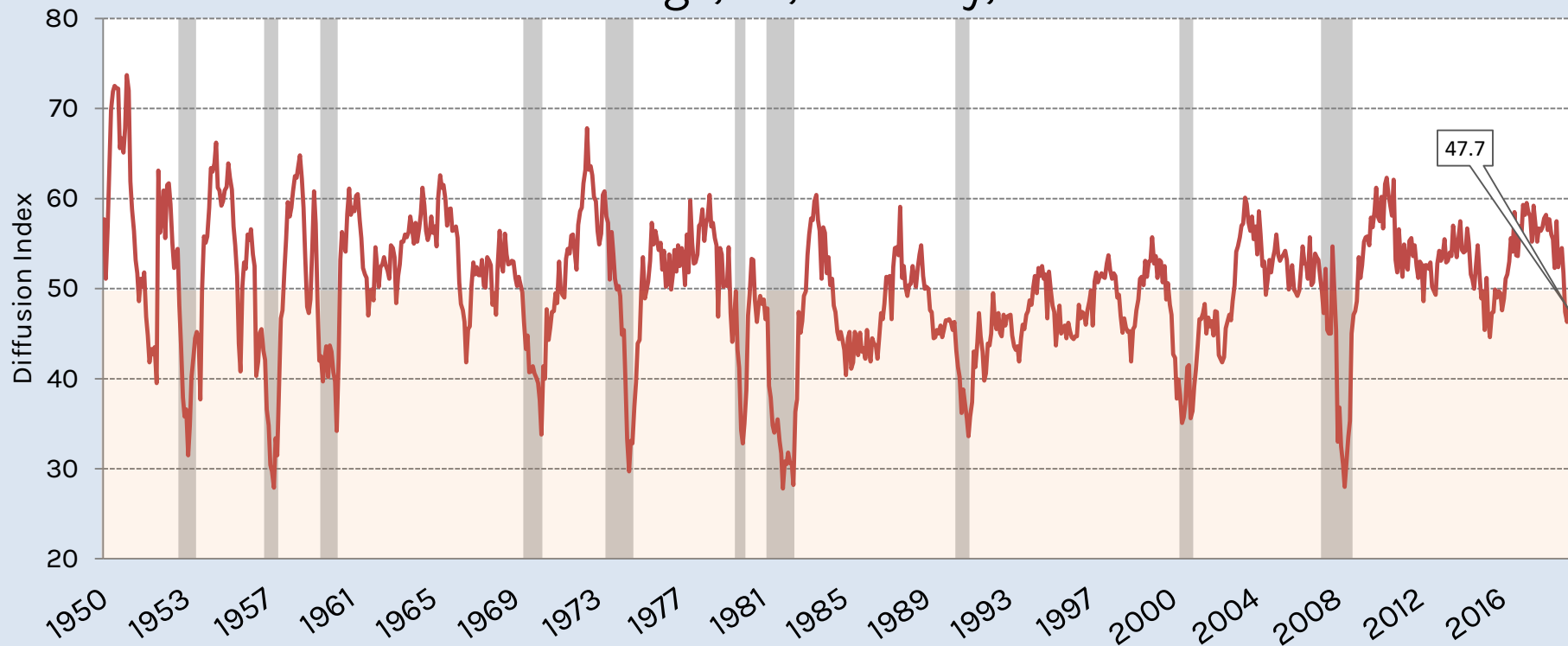
ISM Manufacturing PMI: Subindex, New Orders Index: 50=no change, SA, monthly, 1950-Nov 2019



& EMPLOYMENT...

ISM Manufacturing PMI: Subindex, Employment

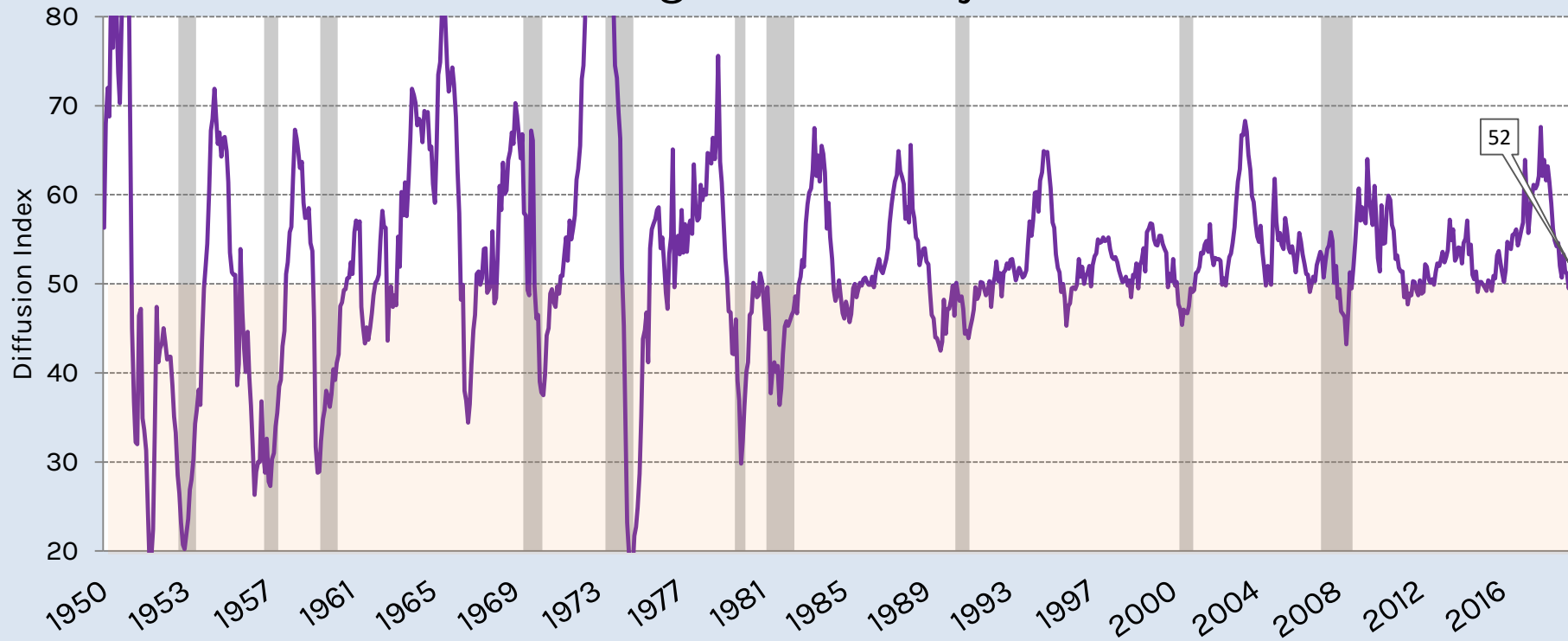
Index: 50=no change, SA, monthly, 1950-Oct 2019



& DELIVERY TIME (SLOW IN POSITIVE!)

ISM Manufacturing PMI: Subindex, Delivery Time

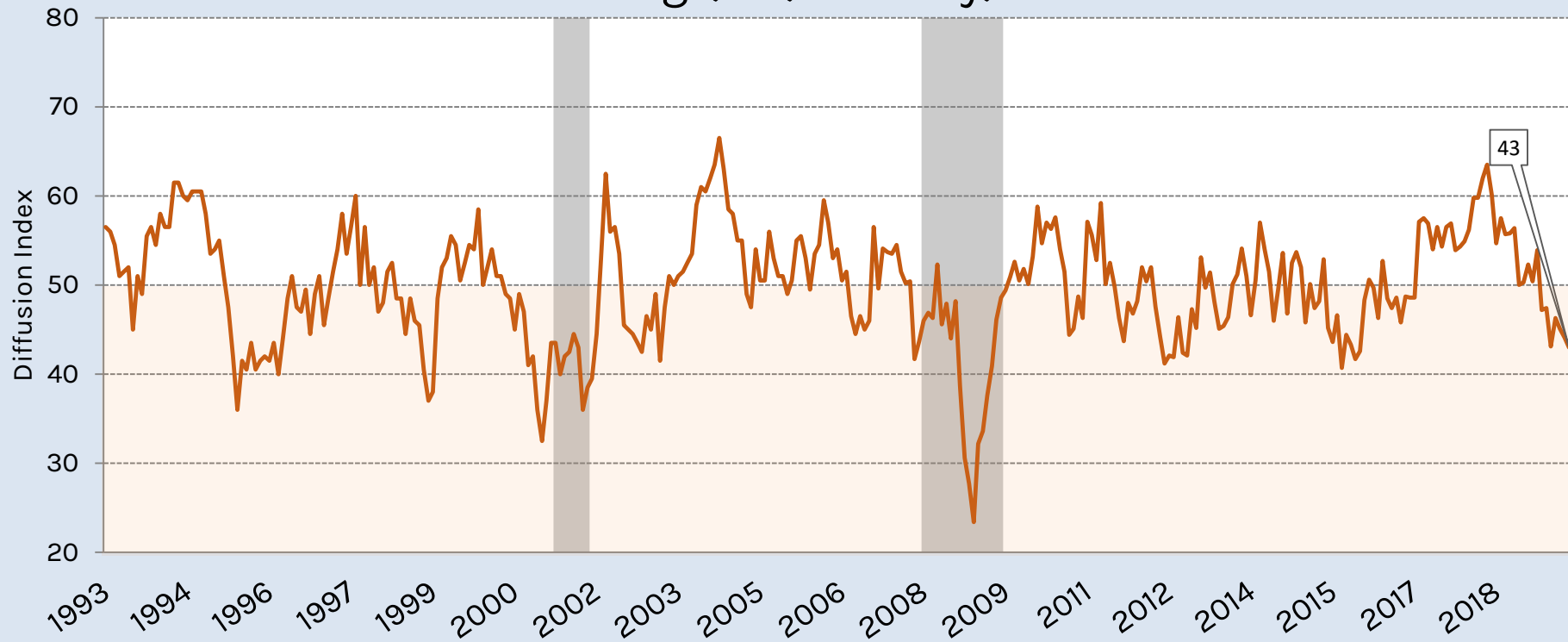
Index: 50=no change, SA, monthly, 1950-Nov 2019



& ORDER BACKLOG (BIG IS GOOD!)...

ISM Manufacturing PMI: Subindex, Order Backlog

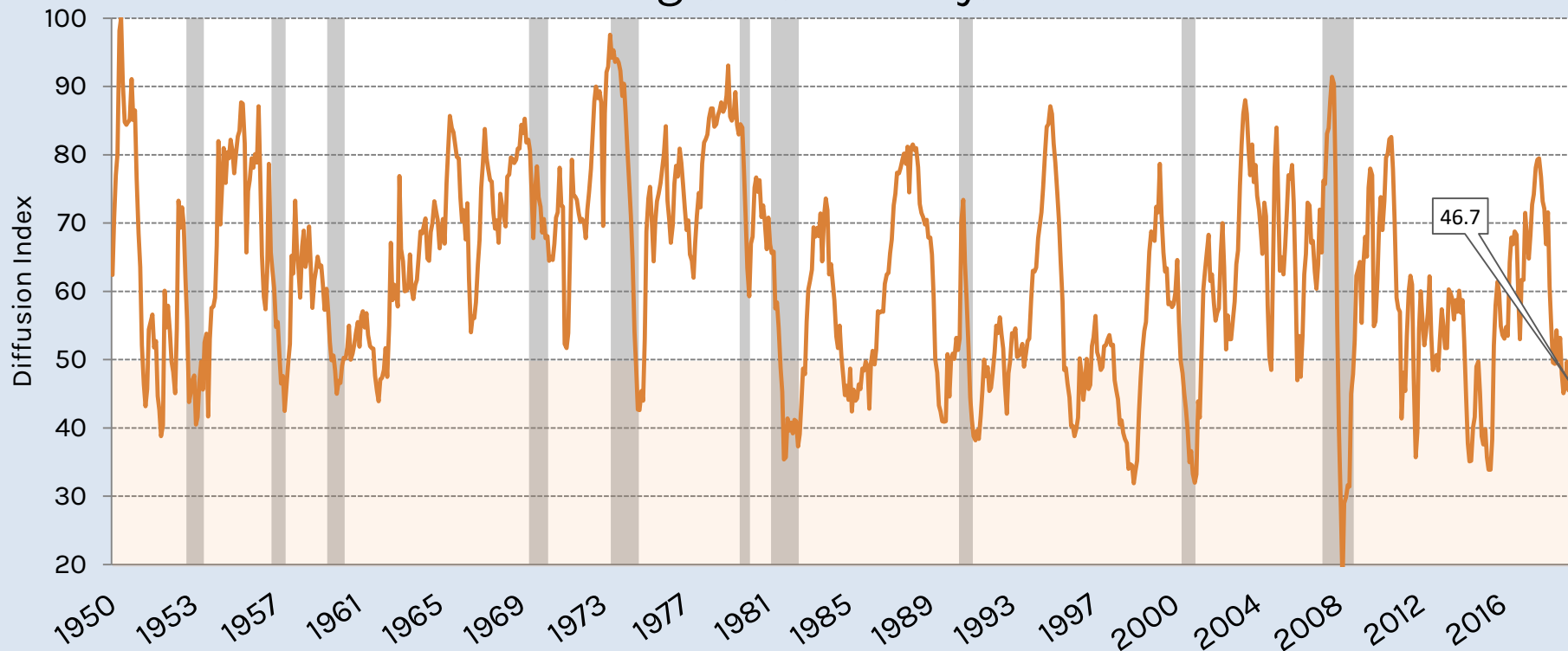
Index: 50=no change, SA, monthly, 1950-Nov 2019



& PRICES

ISM Manufacturing PMI: Subindex, Prices

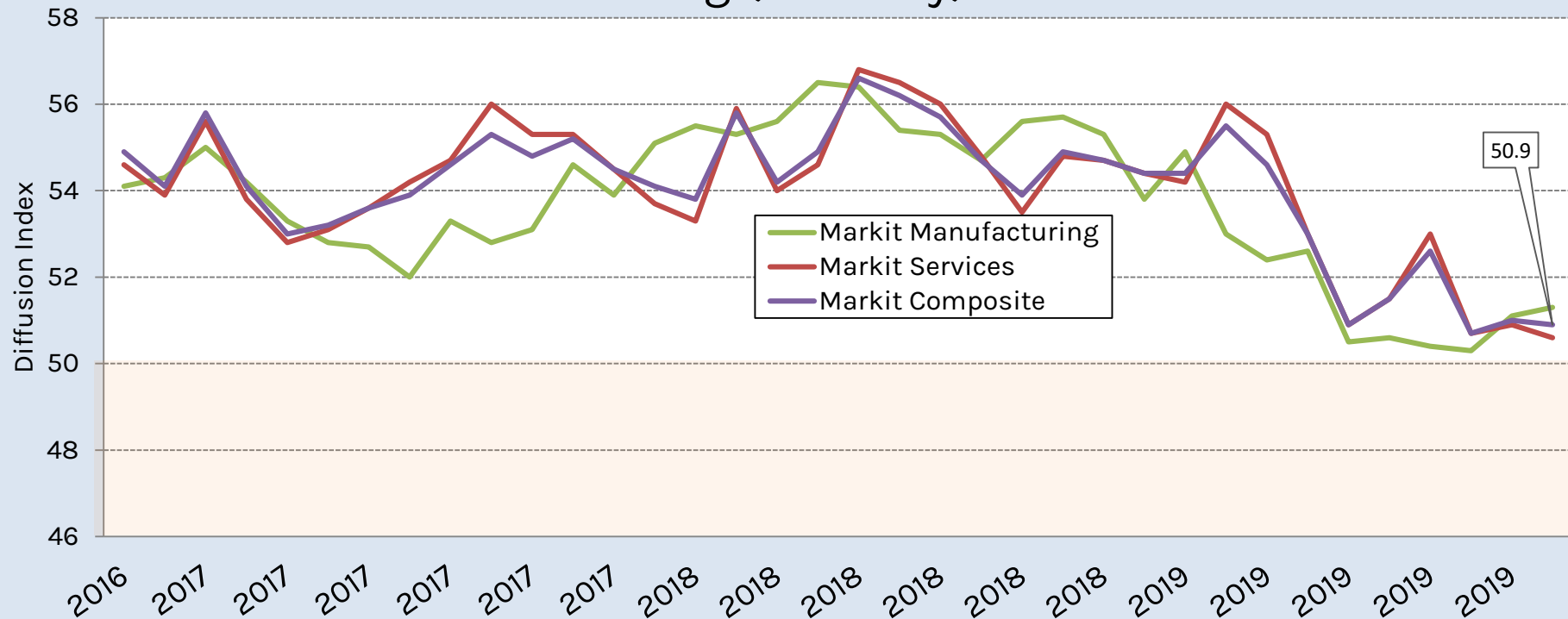
Index: 50=no change, SA, monthly, 1950-Nov 2019



MARKIT ALSO NOW HAS A U.S. PMI

Markit PMIs: Composite, Manf, & Services

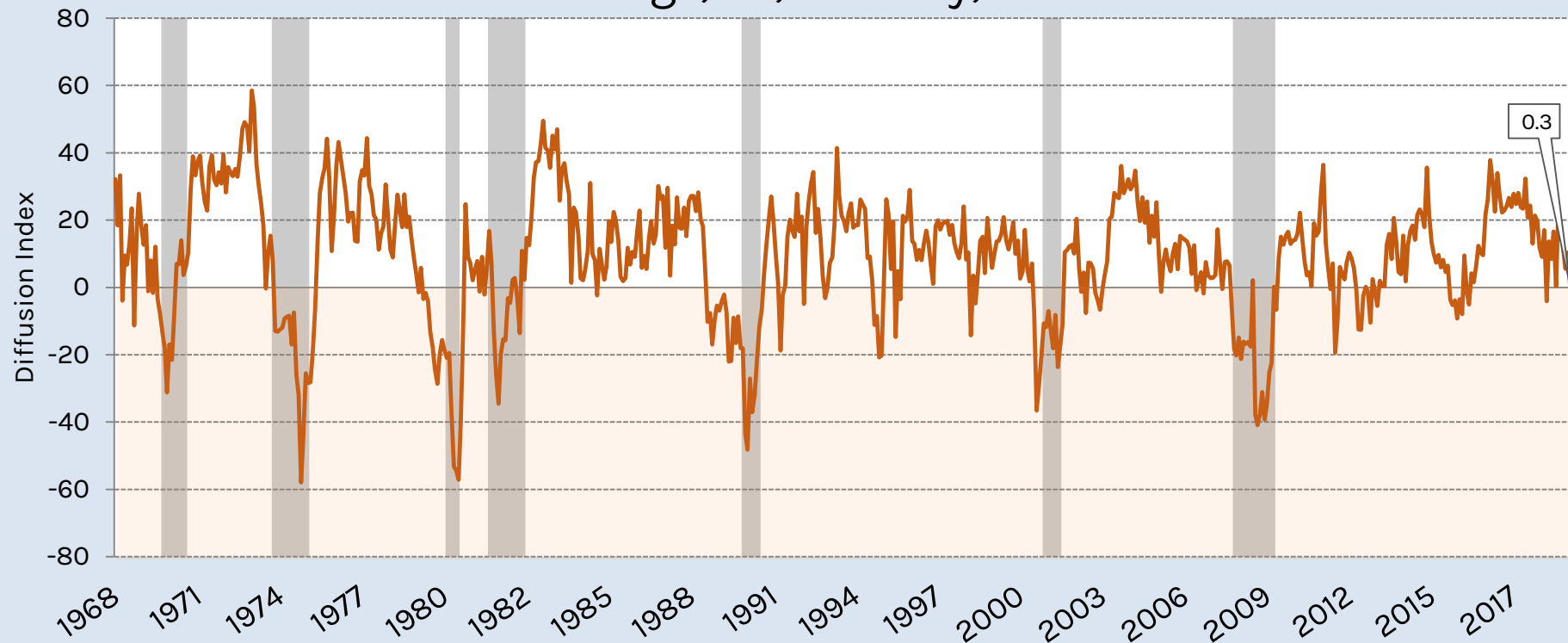
Index: 50=no change, monthly, 2016-Oct 2019



FIVE REGIONAL FED MANF DIFFUSION INDEXES: PHILLY...

Philadelphia Fed Regional Manf General Activity

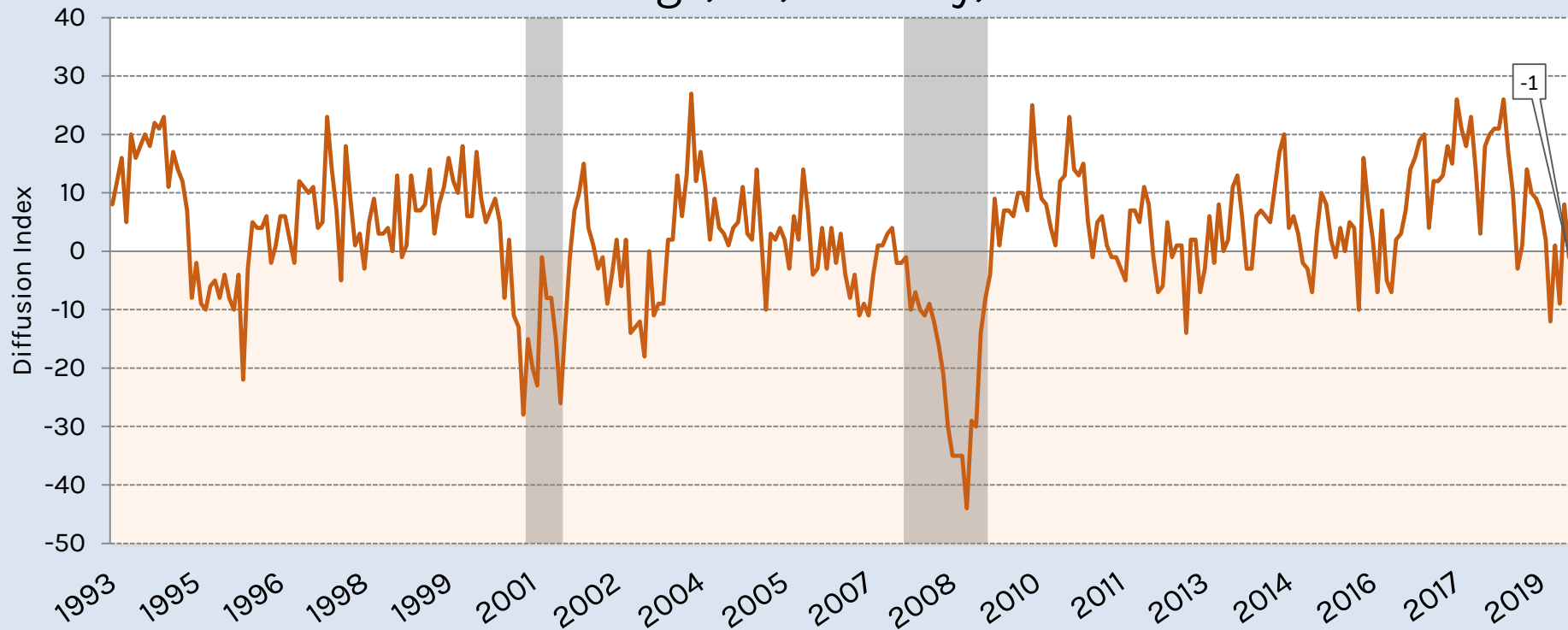
Index: 0=no change, SA, monthly, 1968-Dec 2019



& RICHMOND...

Richmond Fed Regional Manf General Conditions

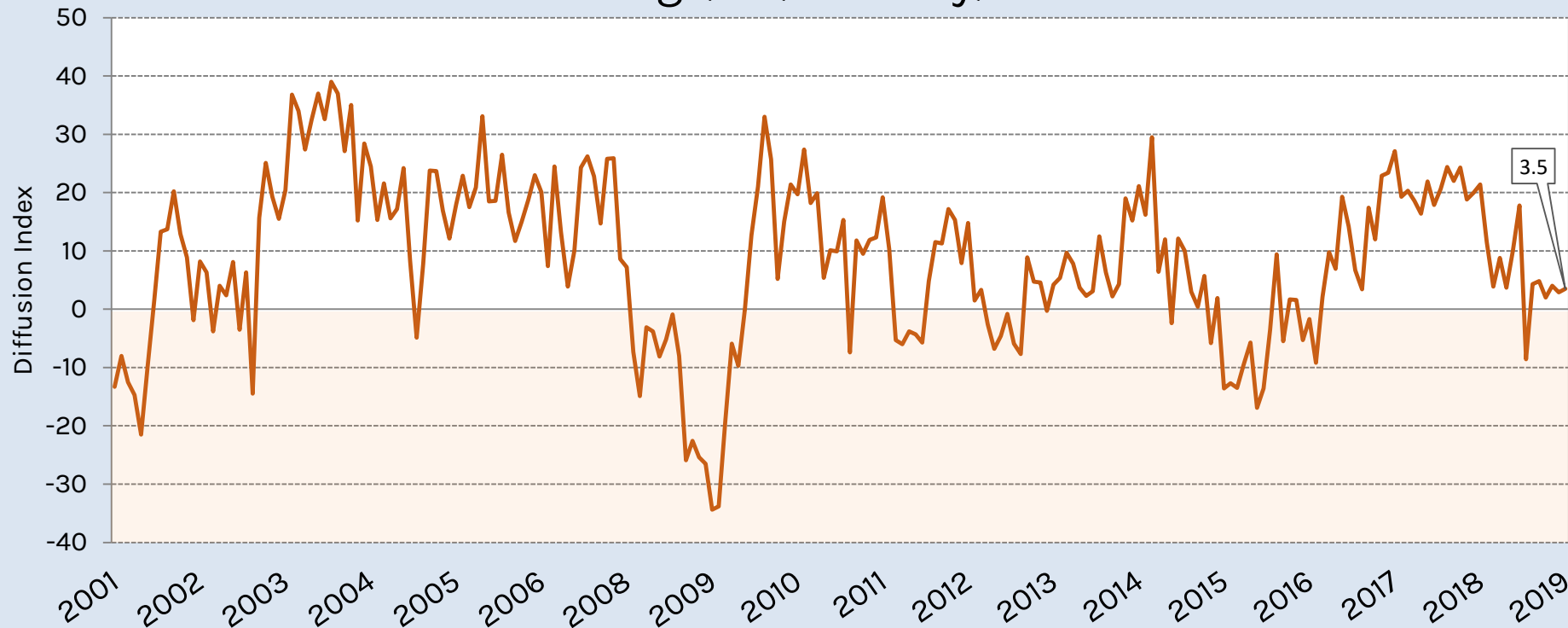
Index: 0=no change, SA, monthly, 1950-Nov 2019



& NEW YORK (“EMPIRE STATE”)...

New York Fed Regional Manf General Conditions

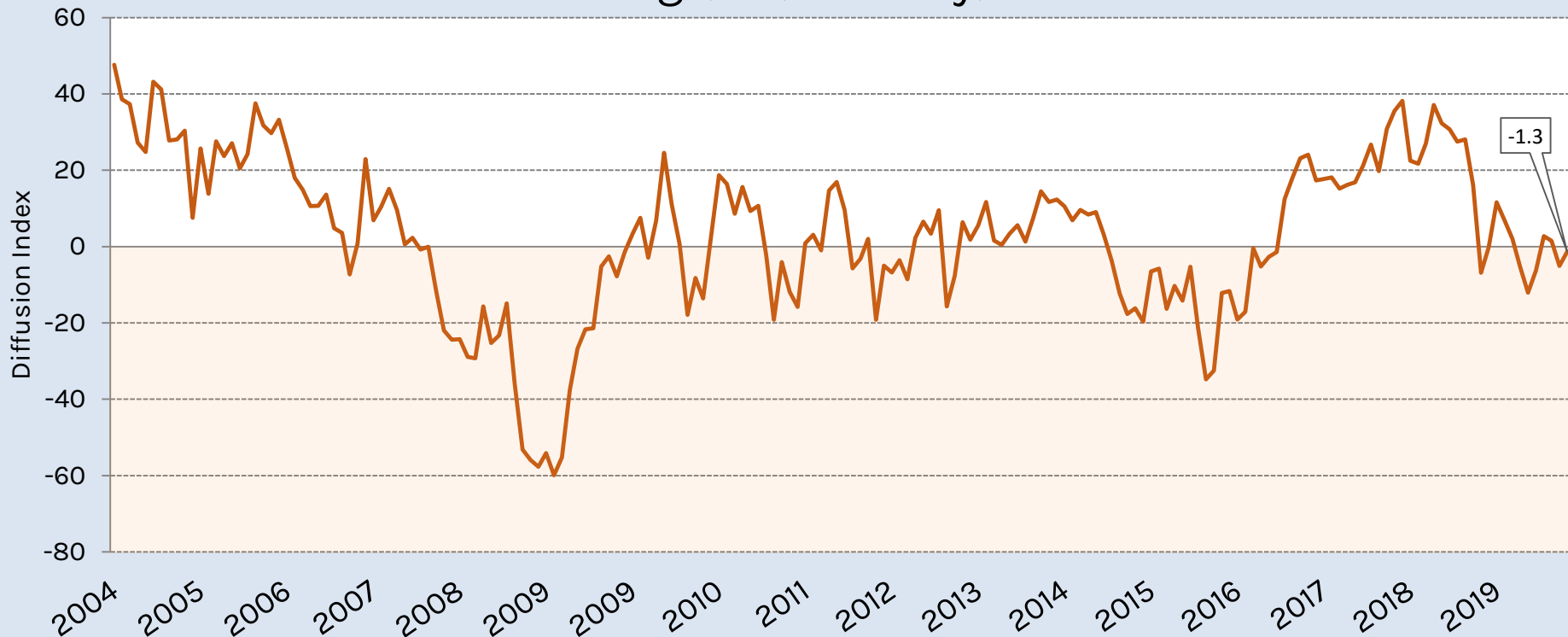
Index: 0=no change, SA, monthly, 1950-Dec 2019



& DALLAS...

Dallas Fed Regional Manf General Conditions

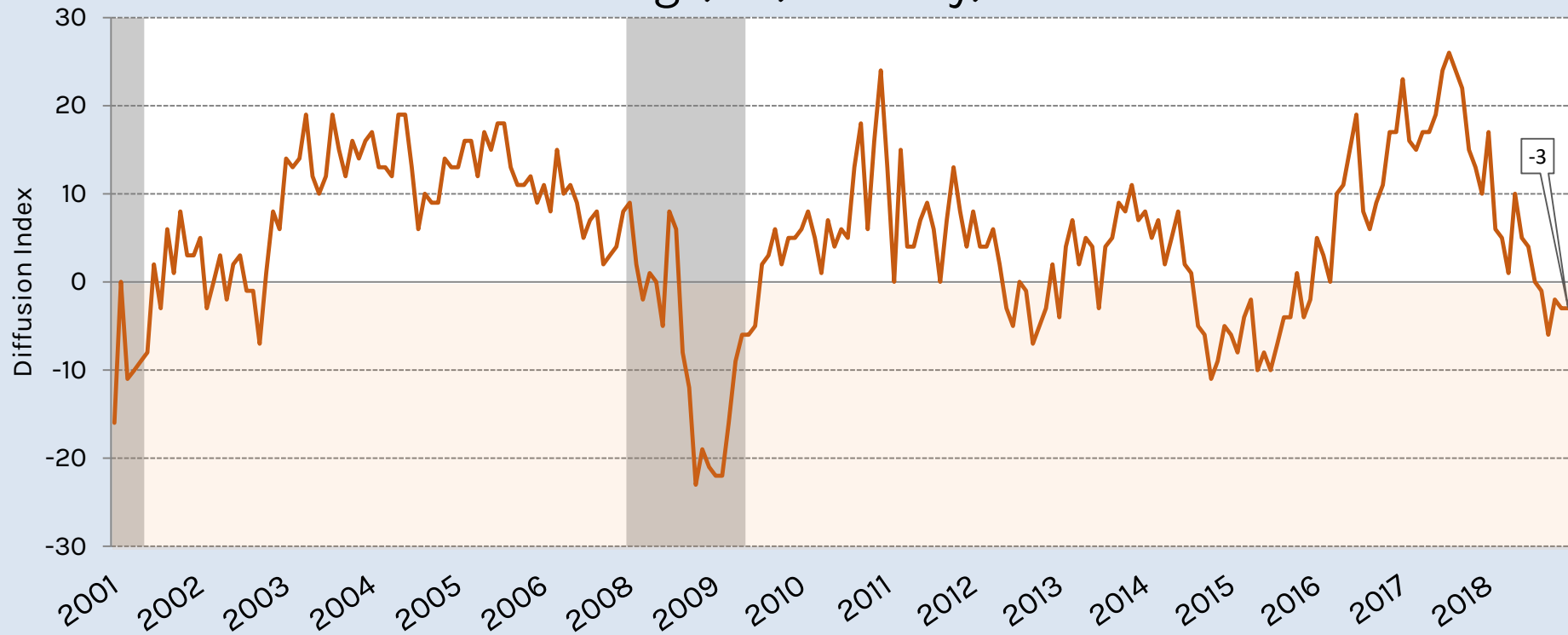
Index: 0=no change, SA, monthly, 1950-Nov 2019



& KANSAS CITY

Kansas City Fed Regional Manf General Conditions

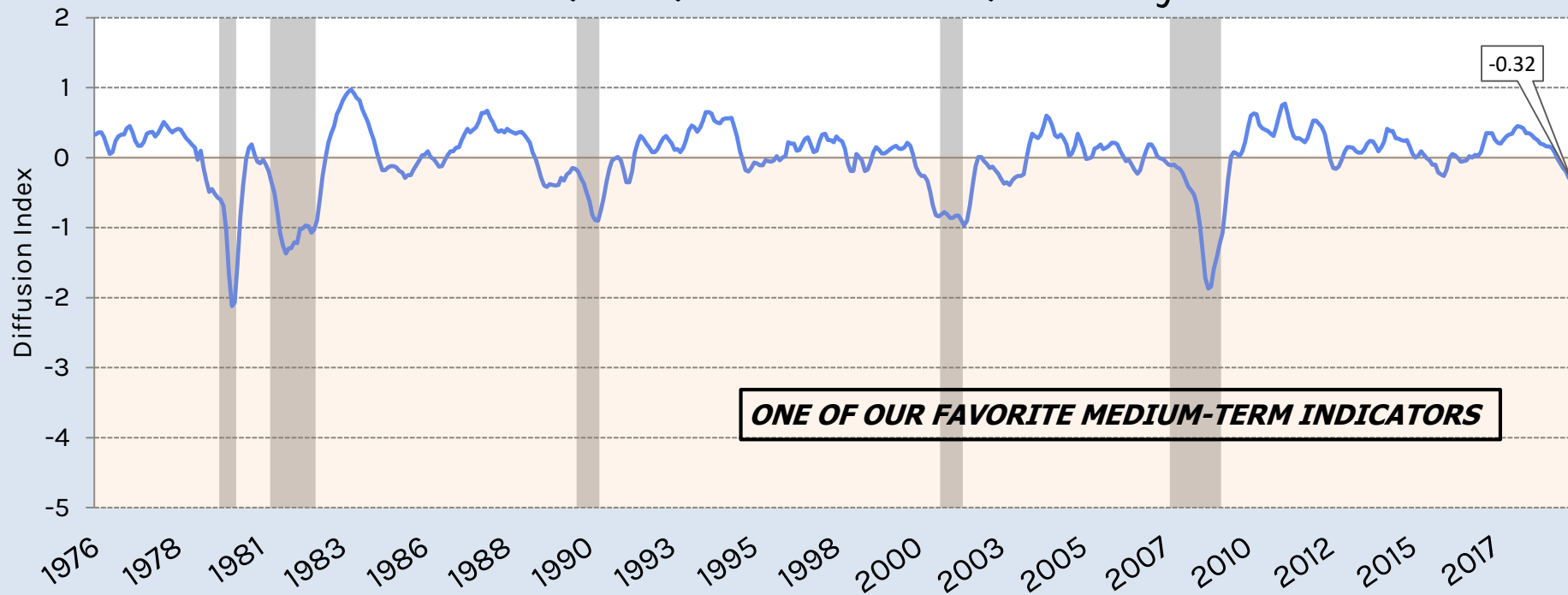
Index: 0=no change, SA, monthly, 1950- Nov 2019



CHICAGO FED HAS A BROADER REGIONAL INDEX

Chicago Fed Midwest Economy Index*

Index**, NSA, 1976- Oct 2019, Monthly



ONE OF OUR FAVORITE MEDIUM-TERM INDICATORS

* Monthly change in a principal-component index of change in 129 state and regional indicators of nonfarm economic activity in the five 7th District states.

** Index: 0.0 = economic growth at long-term historical trend.

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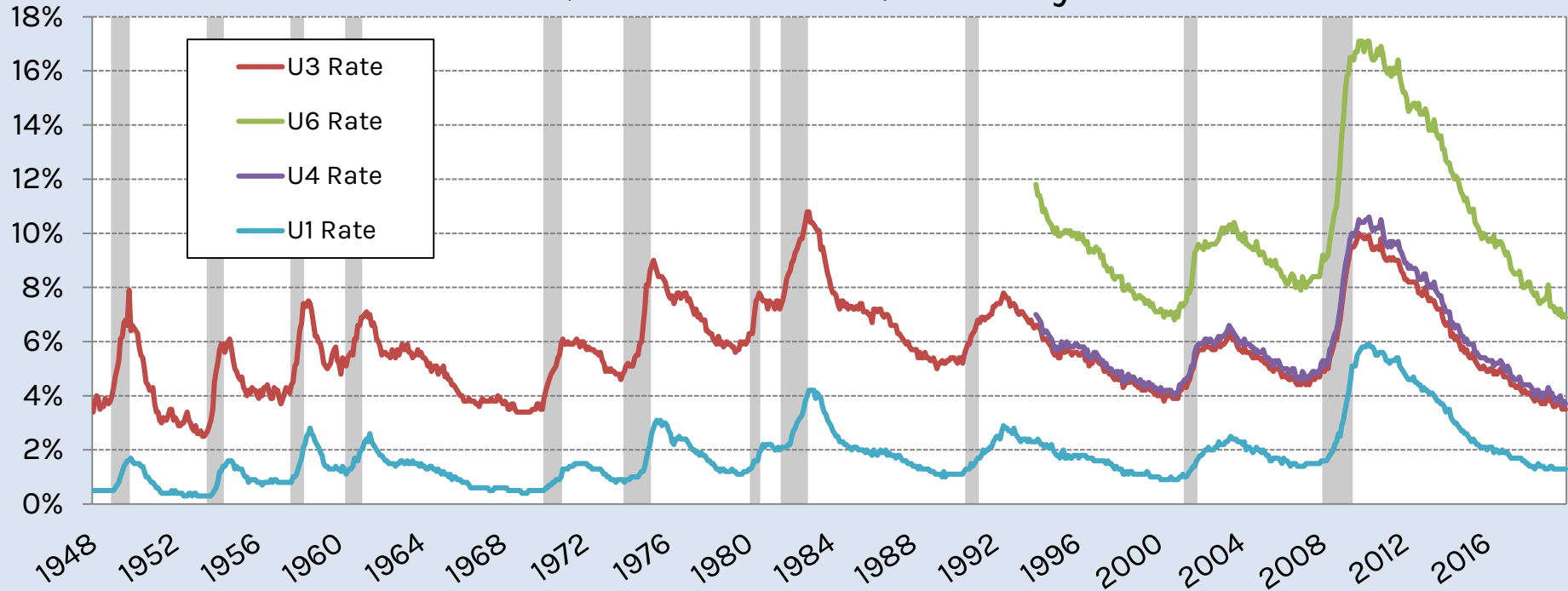
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UNEMPLOYMENT: LAGGING, BUT GREAT PERSPECTIVE

Unemployment Rate (Various Measures*)

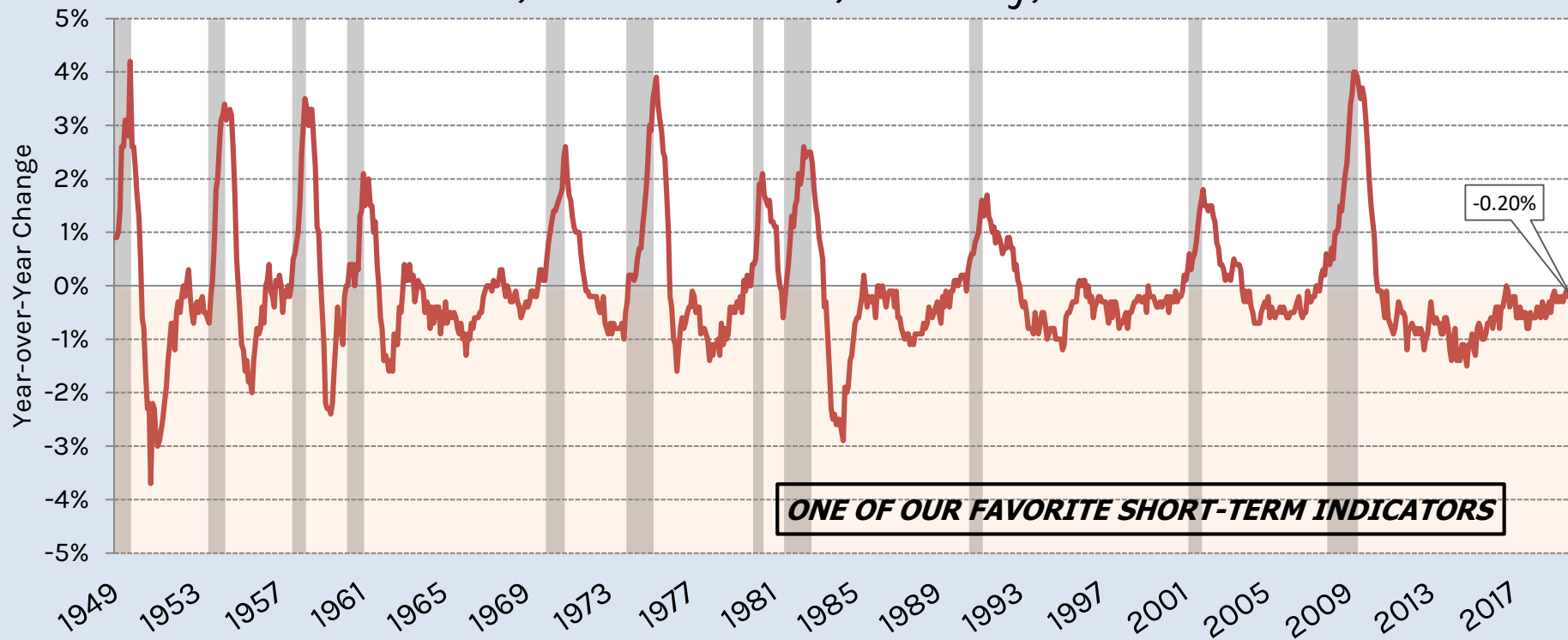
SA, 1948-Nov 2019, monthly



* U3 = Conventional UR. U1 = U3 minus unemployed < 15 weeks. U4 = U3 + marginally attached workers. U6 = U4 + discouraged workers + employed part-time for economic reasons.

UNEMP DELTA OFFERS BOTH PERSPECTIVE & FORESIGHT

Unemployment Rate (U3)
SA, 1948-Nov 2019, monthly, YoY



UNEMP CLAIMS: POPULAR RECESSION TRIPWIRE

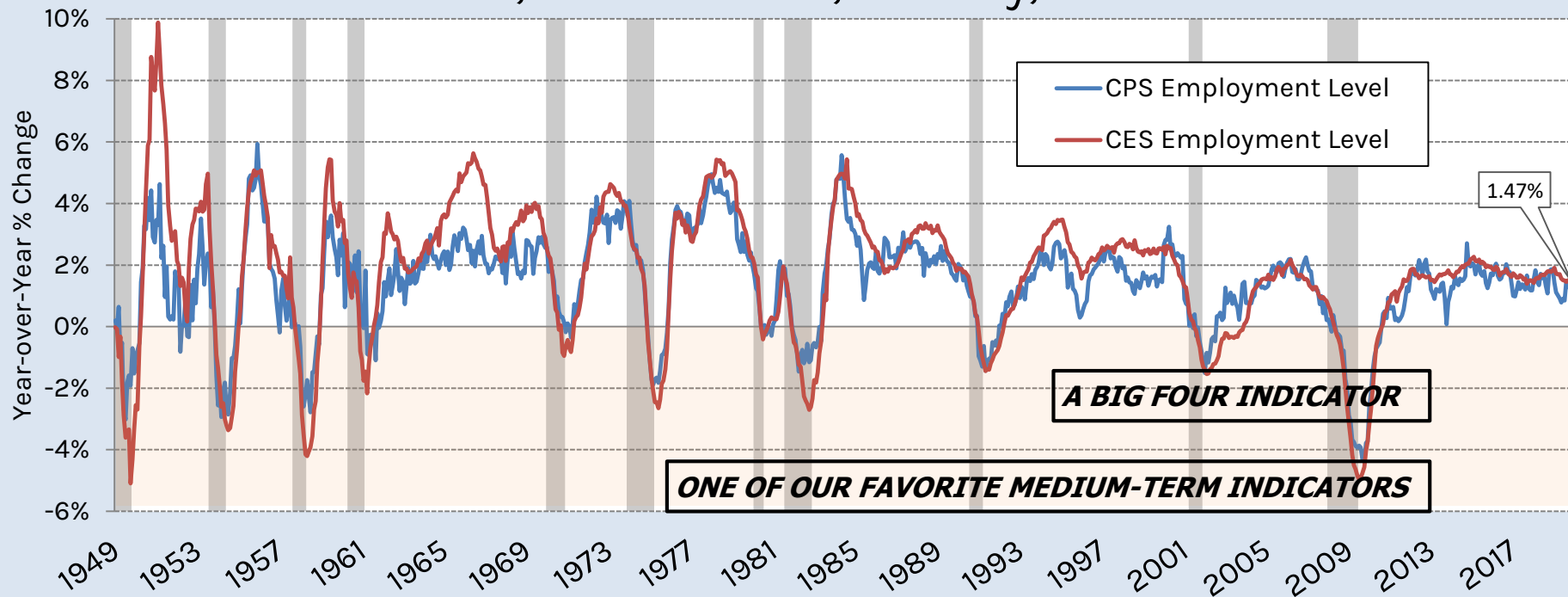
Initial Unemployment Claims, 4-Week Moving Average (in thousands), SA, 1967-Dec 7, 2019, weekly



YOY EMP GROWTH: WHAT HAPPENS WHEN IT FALLS < 1.5%?

Total Employment, CPS* and CES**

SA, 1949-Nov 2019, monthly, YoY



*CES = Current Employment Statistics; refers to total nonfarm payroll in BLS establishment survey.

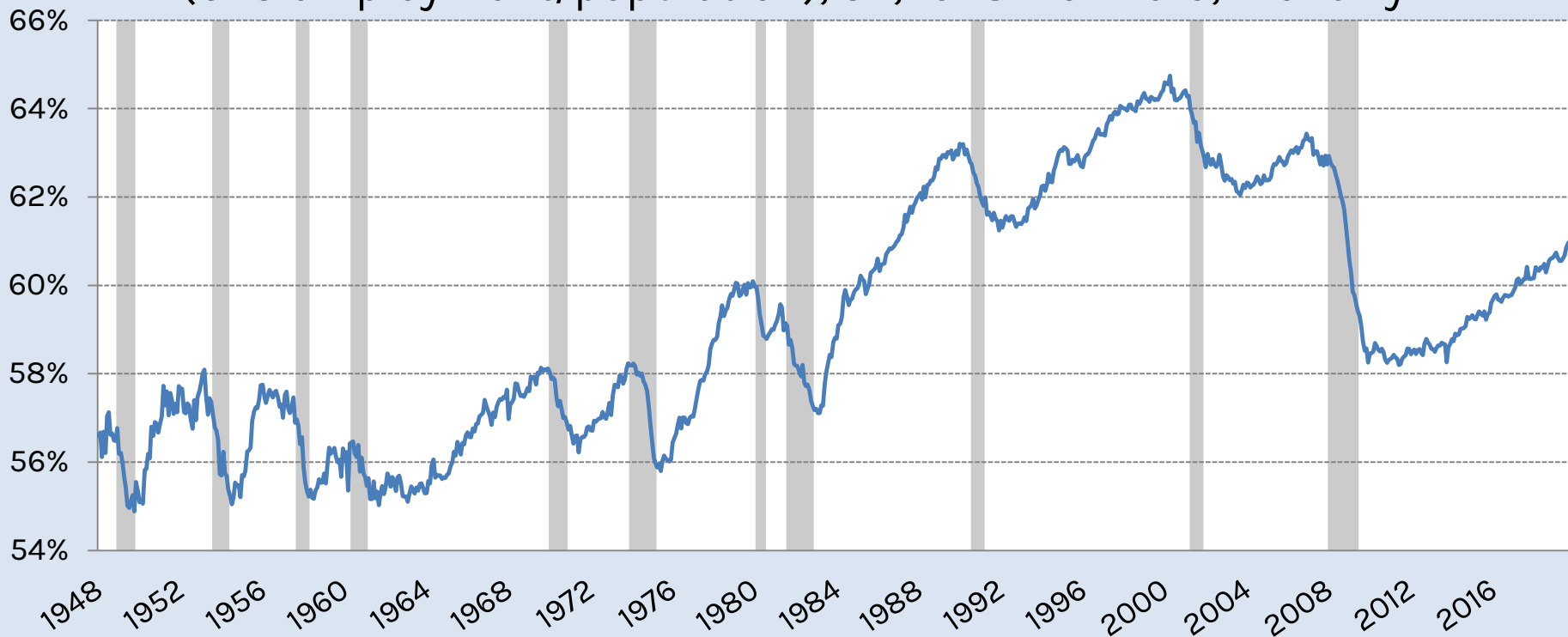
** CPS = Current Population Survey; refers to Census household survey.

SOURCE: Bureau of Labor Statistics (2019), US Census Bureau (2019)

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A MEASURE OF HOW LONG EMP CAN KEEP RISING...

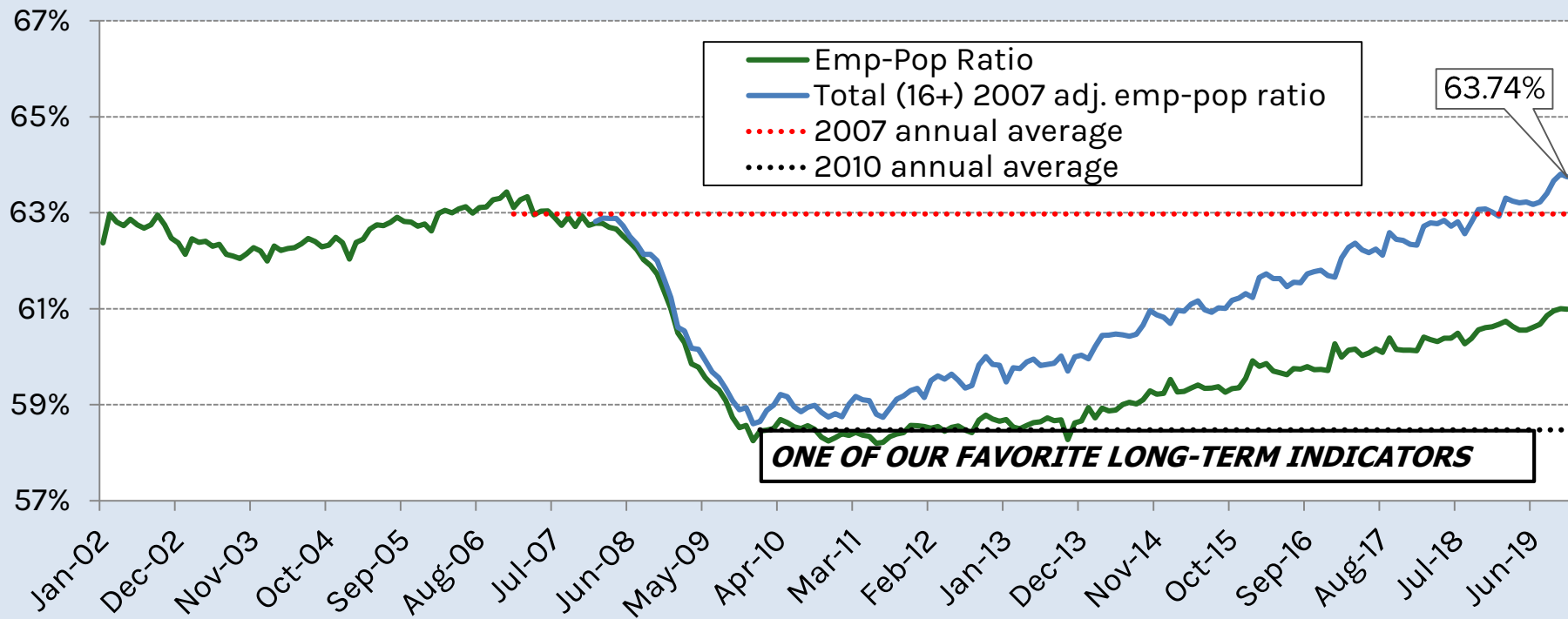
Employment to Population Ratio
(CPS employment/population), SA, 1948-Nov 2019, monthly



THOUGH IT NEEDS TO BE AGE-ADJUSTED

Age-Adjusted Employment to Population Ratio*

(CPS employment/population w/ 2007 base year), SA, 1948-Nov 2019, monthly

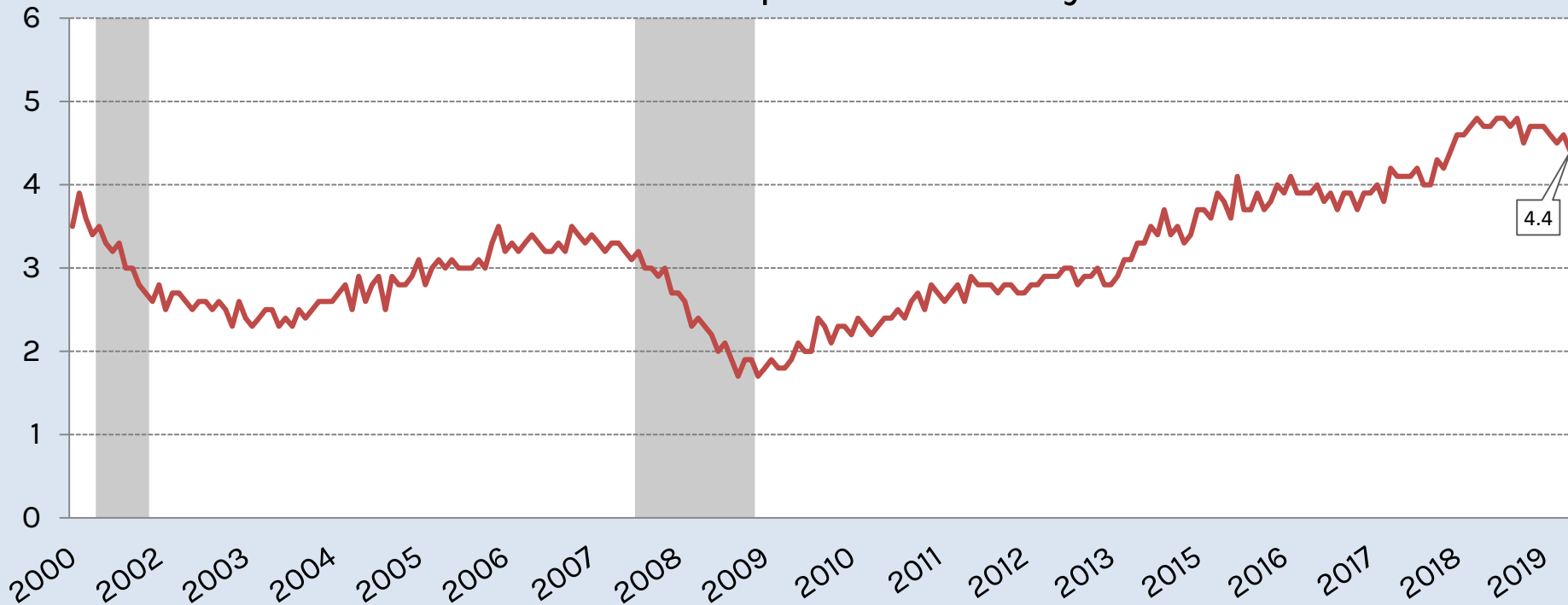


ONE OF OUR FAVORITE LONG-TERM INDICATORS

* Ratio adjusted by averaging ratios of age brackets holding the population weight of each bracket at its 2007 value.

RECENT JOLTS SERIES: JOB OPENINGS RATE...

Job Openings Rate*
SA, 2000-Sep 2019, monthly



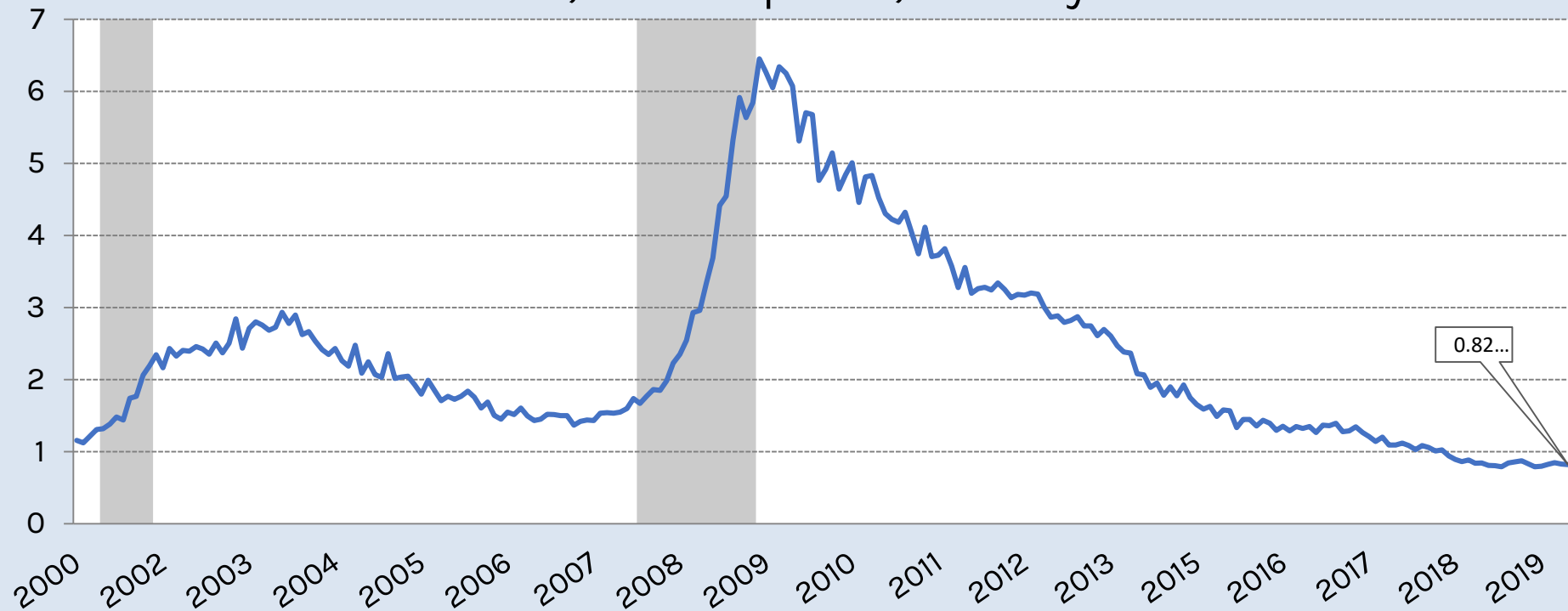
*JOLTS data. Job Openings Rate = Job Openings / Total Nonfarm Employment

SOURCE: U.S. Bureau of Labor Statistics (2019), JOLTS (2019)

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& UNEMPLOYED PERSONS PER JOB OPENING...

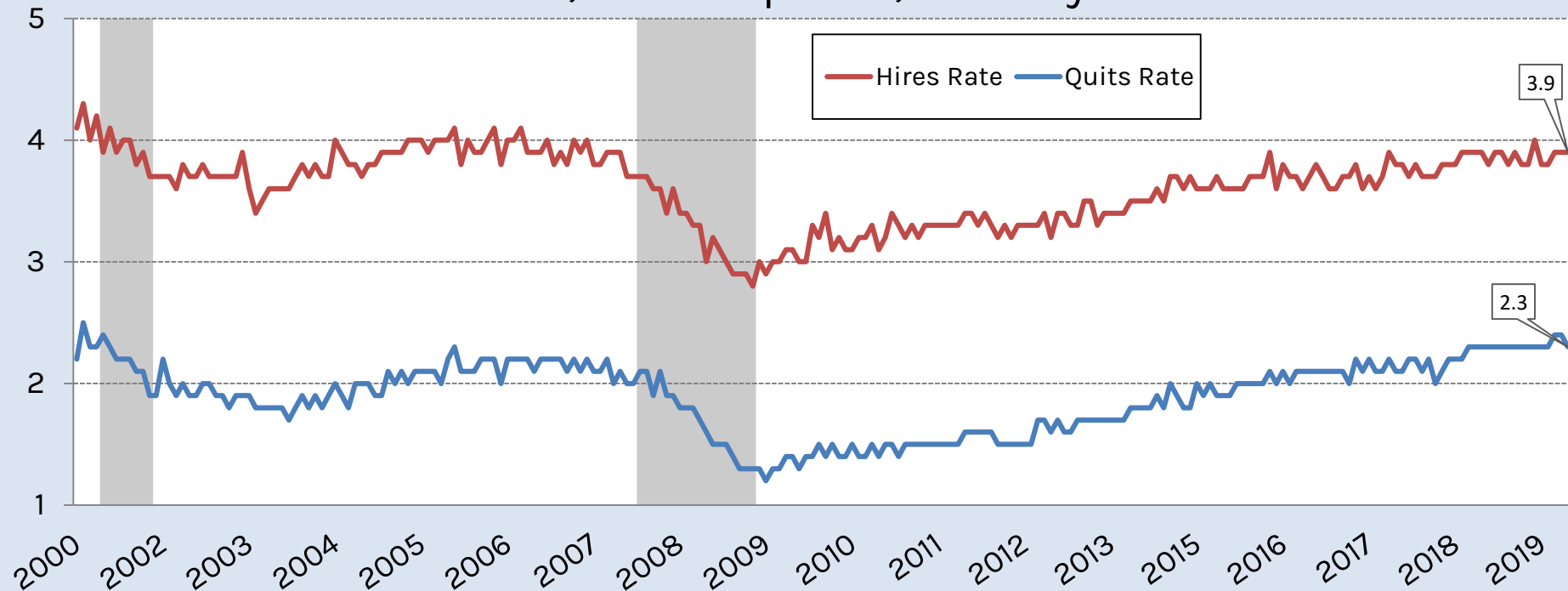
Unemployed Persons per Job Opening SA, 2000-Sep 2019, monthly



*JOLTS data. Unemployed Persons / Job Opening

& HIRES AND QUILTS RATES

Hires Rate* and Quits Rate**
SA, 2000-Sep 2019, monthly

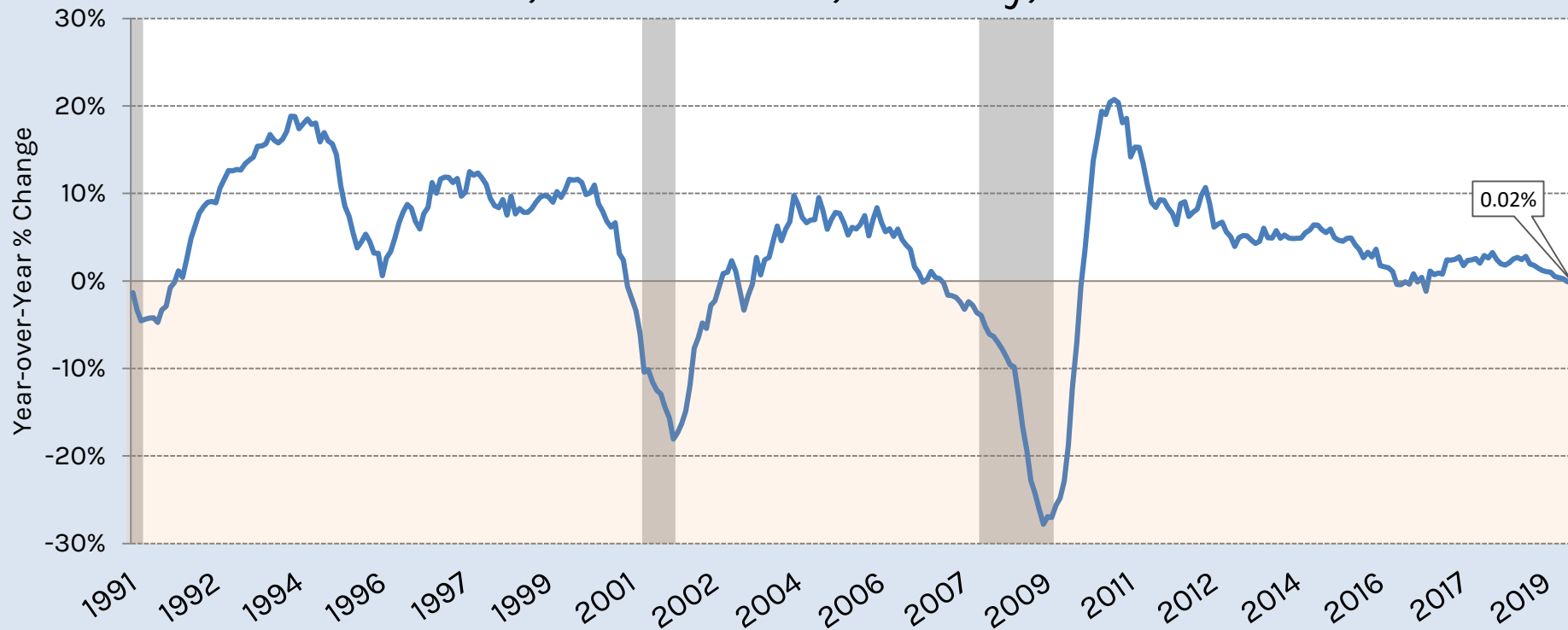


*JOLTS data. Hires / Total Nonfarm Employment

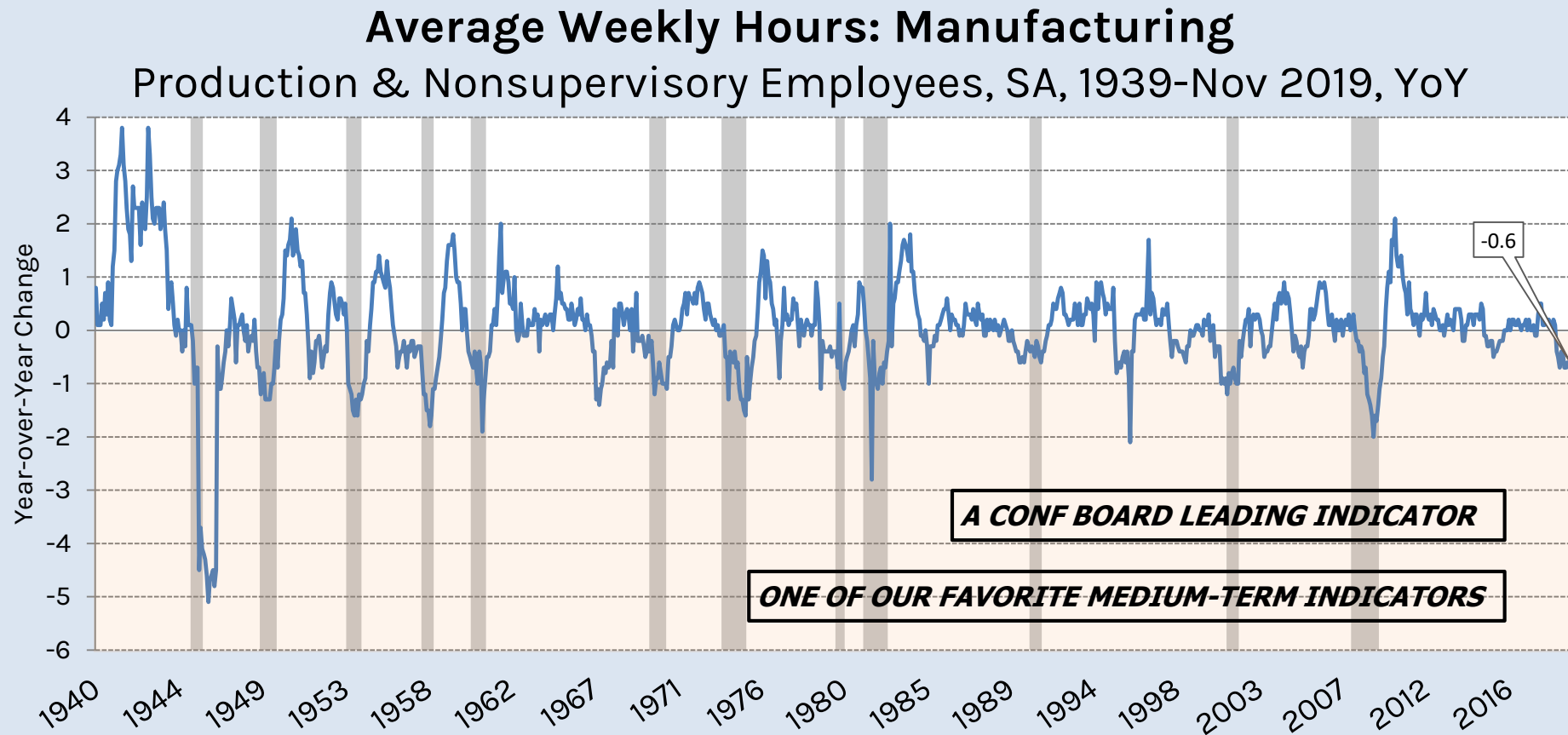
** JOLTS data. Quits / Total Nonfarm Employment

“TEMP” WORKERS: LAST HIRED & FIRST FIRED

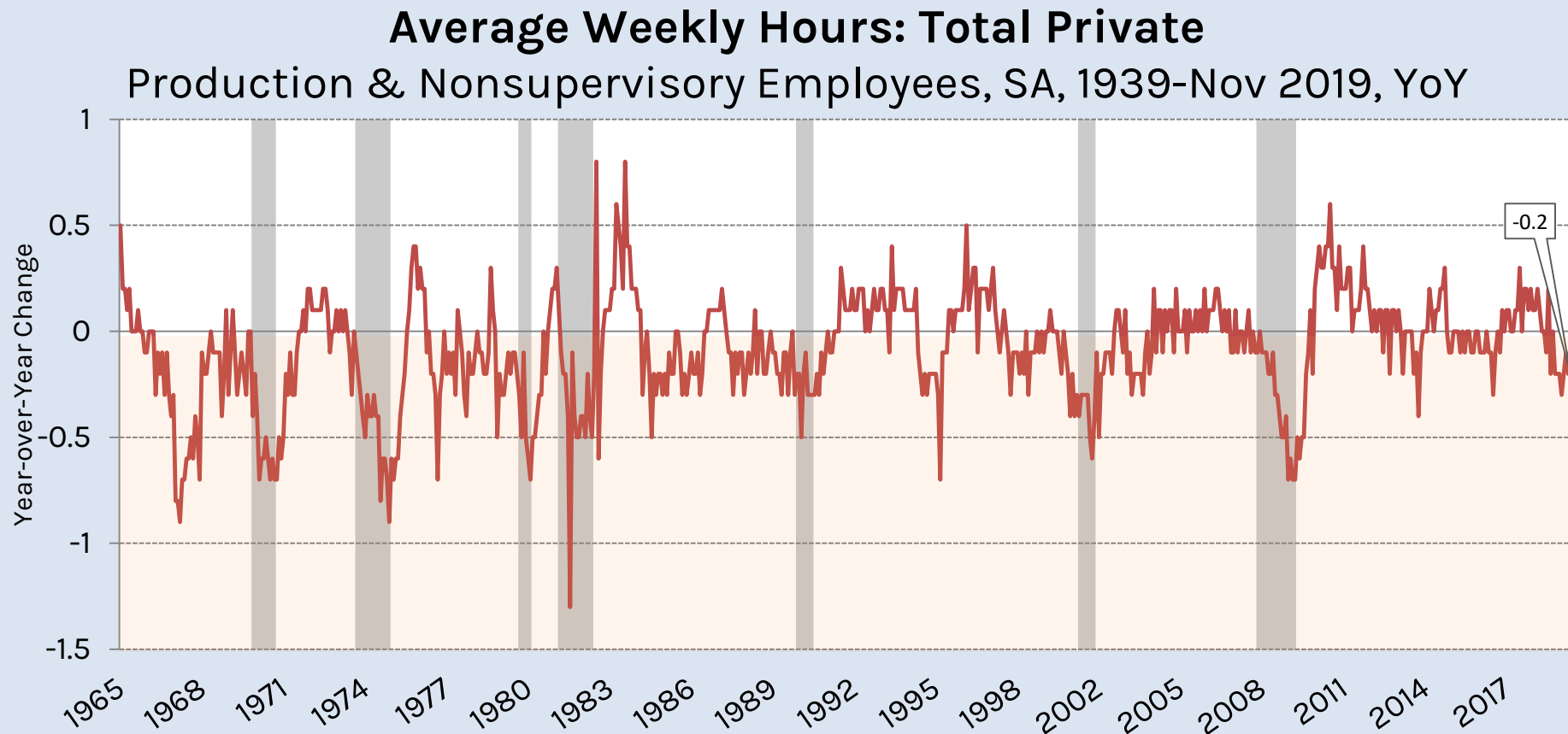
Temp Help Services Employees SA, 1991-Nov 2019, monthly, YoY



AVG WEEKLY HOURS: “SENSITIVE” INDICATOR: IN MANF...



& IN TOTAL PRIVATE



A “CRASH” COURSE IN RECESSION INDICATORS

❑ What Is a Recession?

❑ Properties of Good Recession Indicators

❑ INDICATORS

1. *Production, Consumption, & Income*
2. *Housing, Autos, & Transportation*
3. *Real-Time Diffusion Indexes*
4. *Employment*
5. *Inflation & Wages*
6. *Sentiment*
7. *Financial & Other “Leading” Indicators*

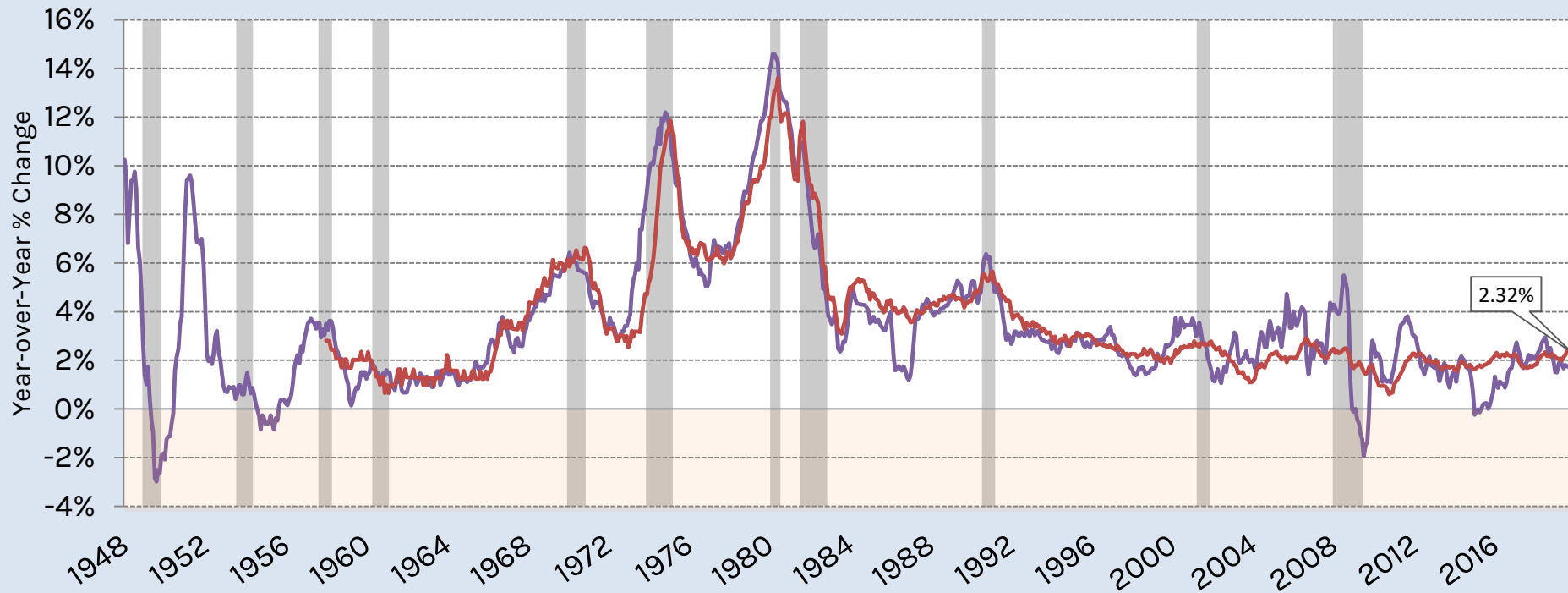
❑ Lessons: What are the Best Indicators?

❑ Lessons: What is the Current Recession Outlook?

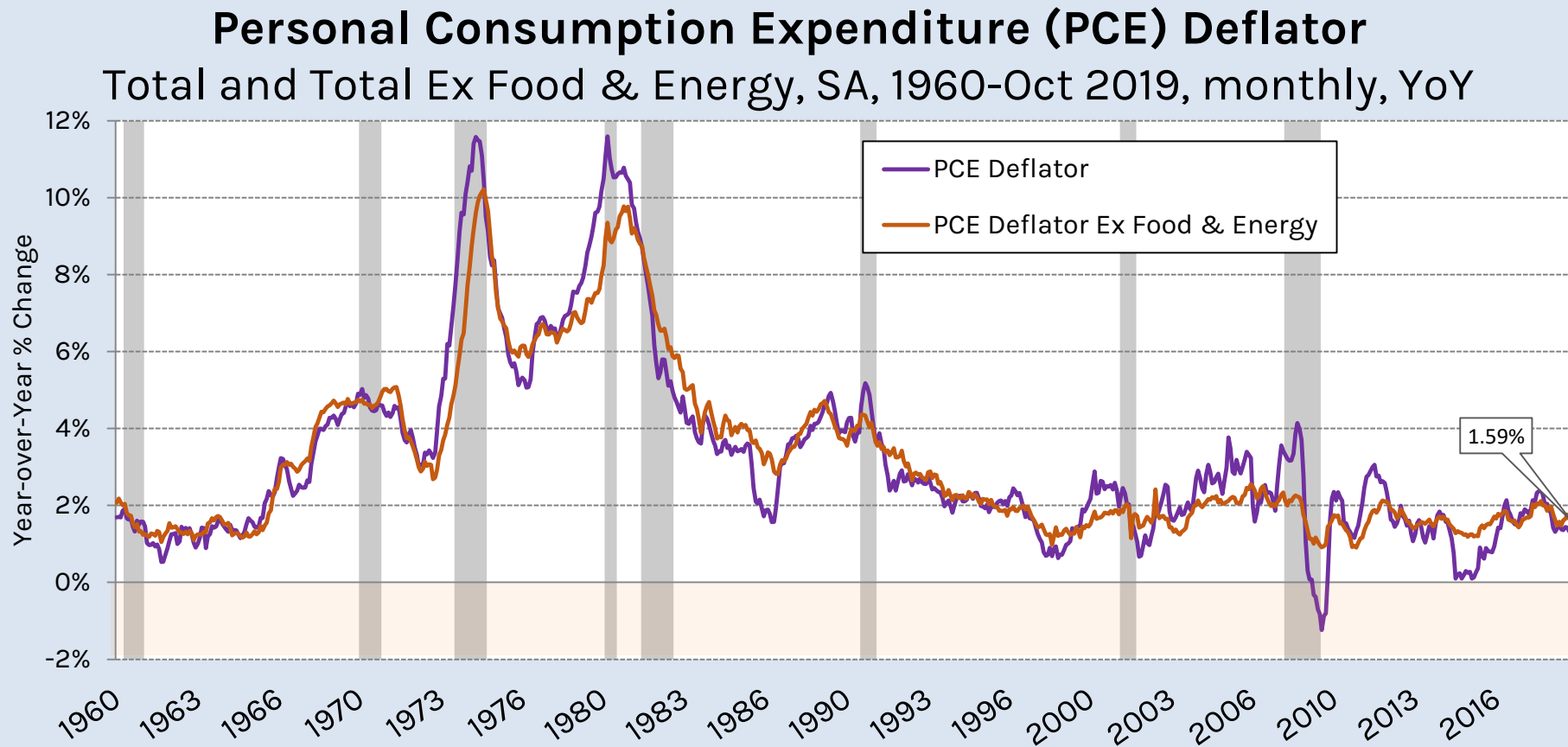
3 WAYS TO VIEW INFLATION CYCLE: CPI...

Consumer Price Index (CPI)

Total and Total Ex Food & Energy, SA, 1948-Nov 2019, monthly, % YoY

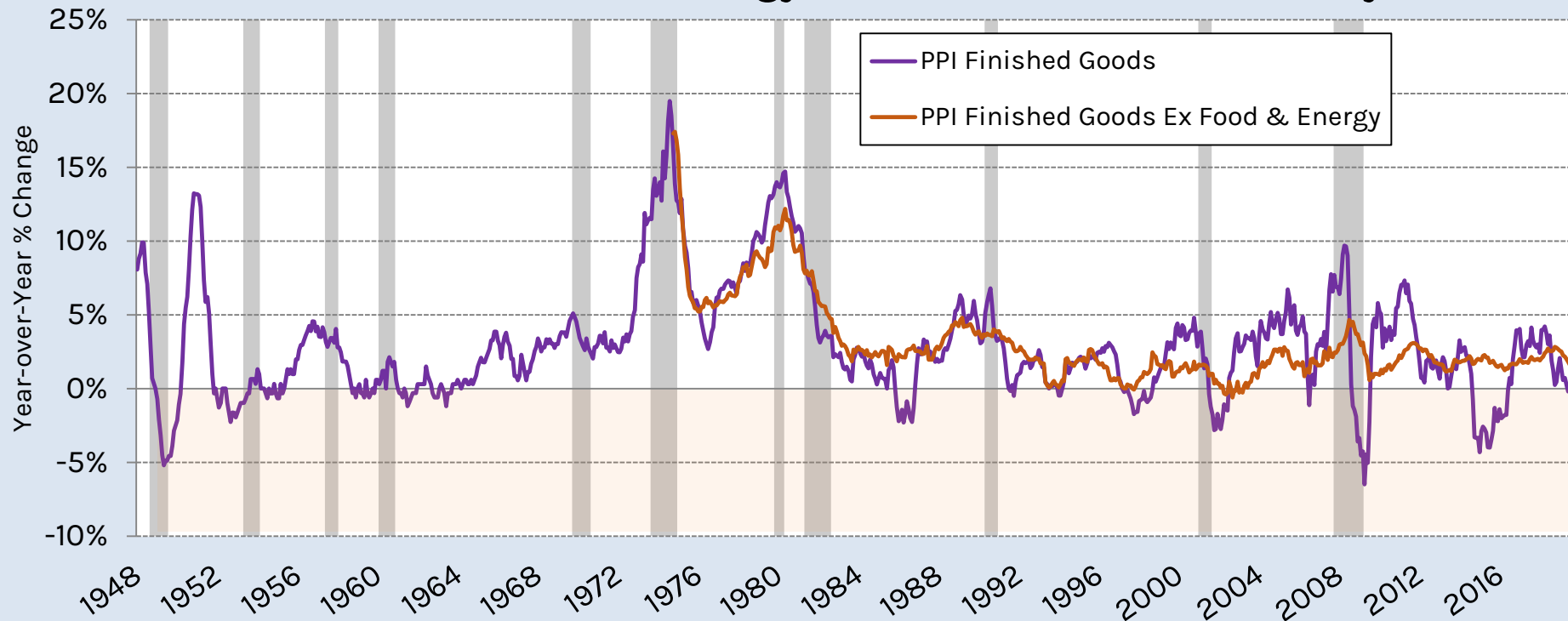


& PCE DEFLATOR...



Producer Price Index (PPI): Finished Goods

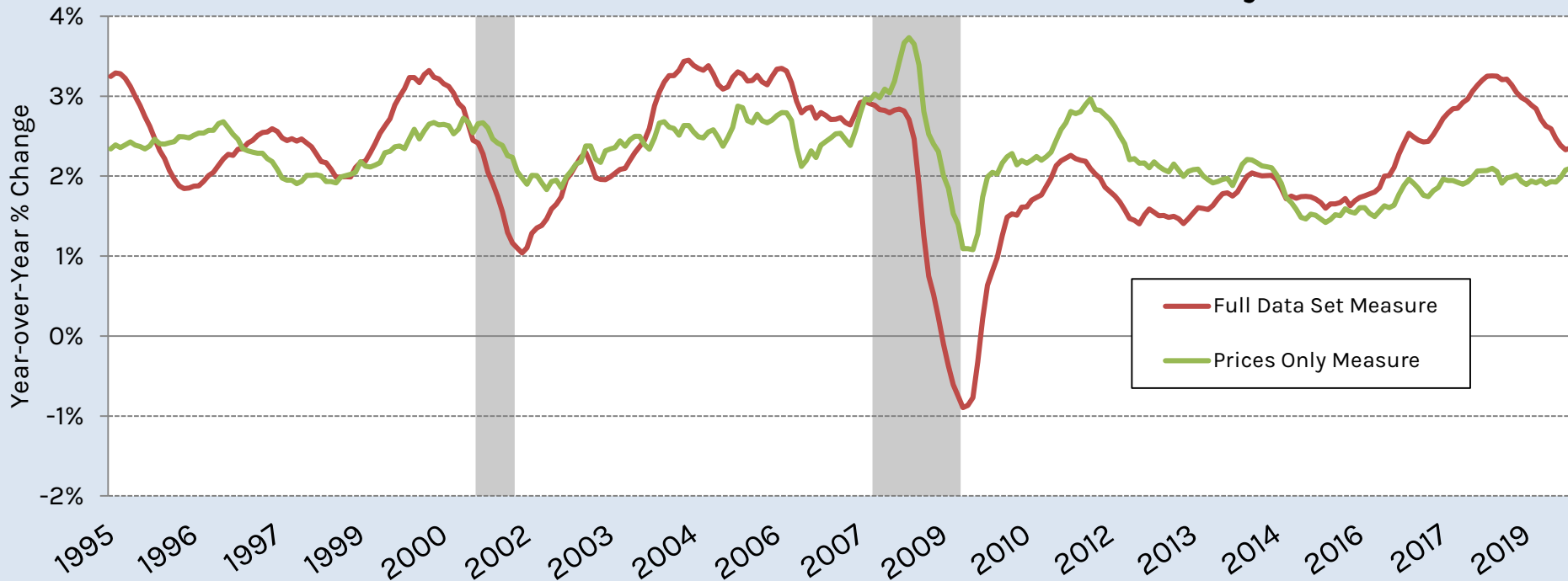
Total and Total Ex Food & Energy, SA, 1960-Nov 2019, monthly, YoY



UIG: BUILT ON AN INFLATION FORECASTING MODEL

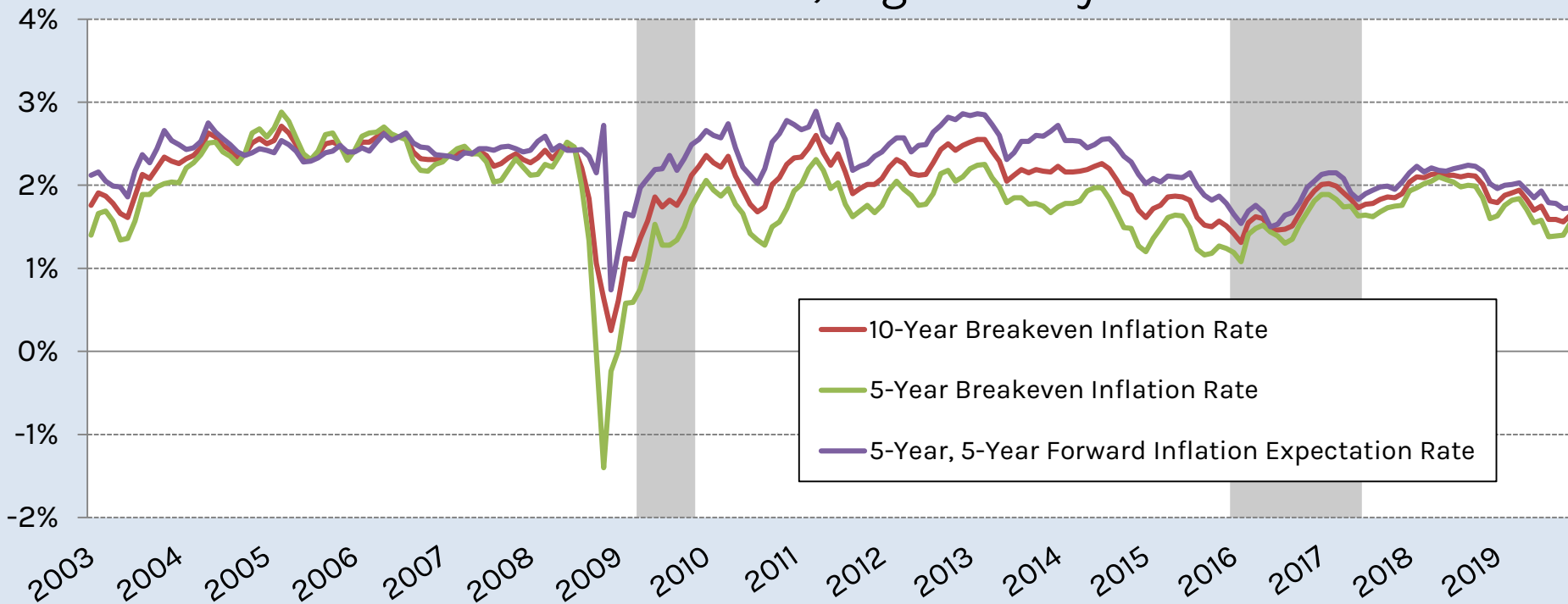
New York Fed Underlying Inflation Gauge (UIG)

Index: YoY Growth %, 1995-Nov 2019, monthly



INFLATION FORECASTS FOR THOSE WHO TRUST MARKETS

Breakeven Inflation Rate Expectations* 2003-Nov 2019, avg. monthly

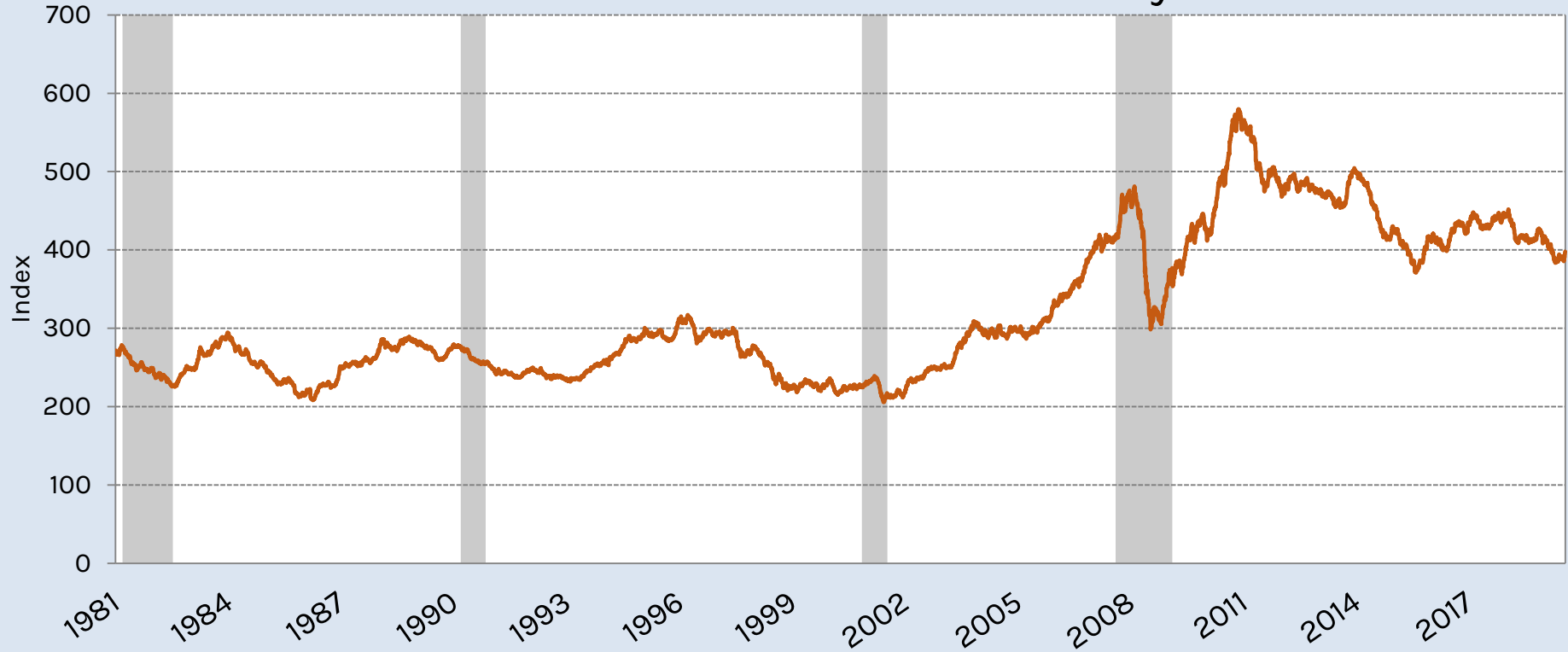


*Break-even inflation rate expectations are derived by comparing constant-maturity nominal and inflation-adjusted Treasury yields.

COMMODITY PRICES, ANYONE?

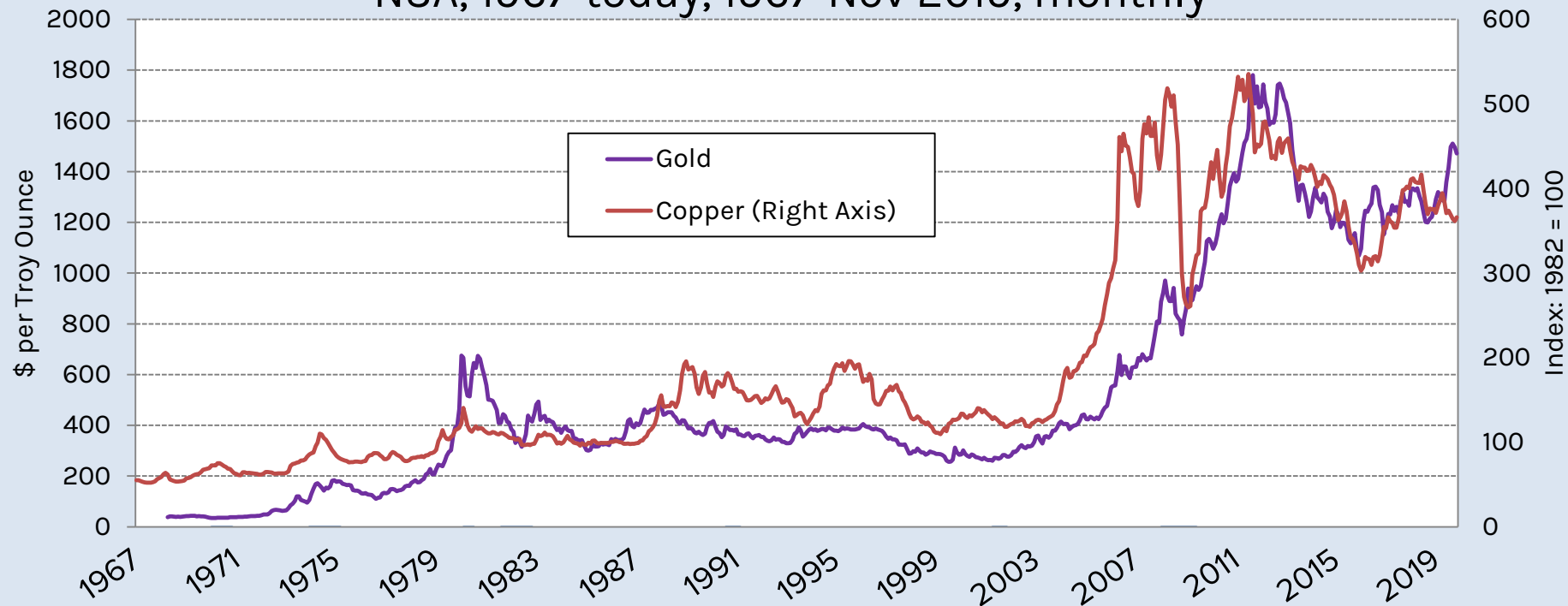
Commodity Research Bureau All Commodities Price Index

Index: 1967=100, NSA, 1981-2019, Daily



OR WHAT ABOUT DR. COPPER OR MR. SAFE HAVEN?

Price of Gold* and Copper** NSA, 1967-today, 1967-Nov 2019, monthly

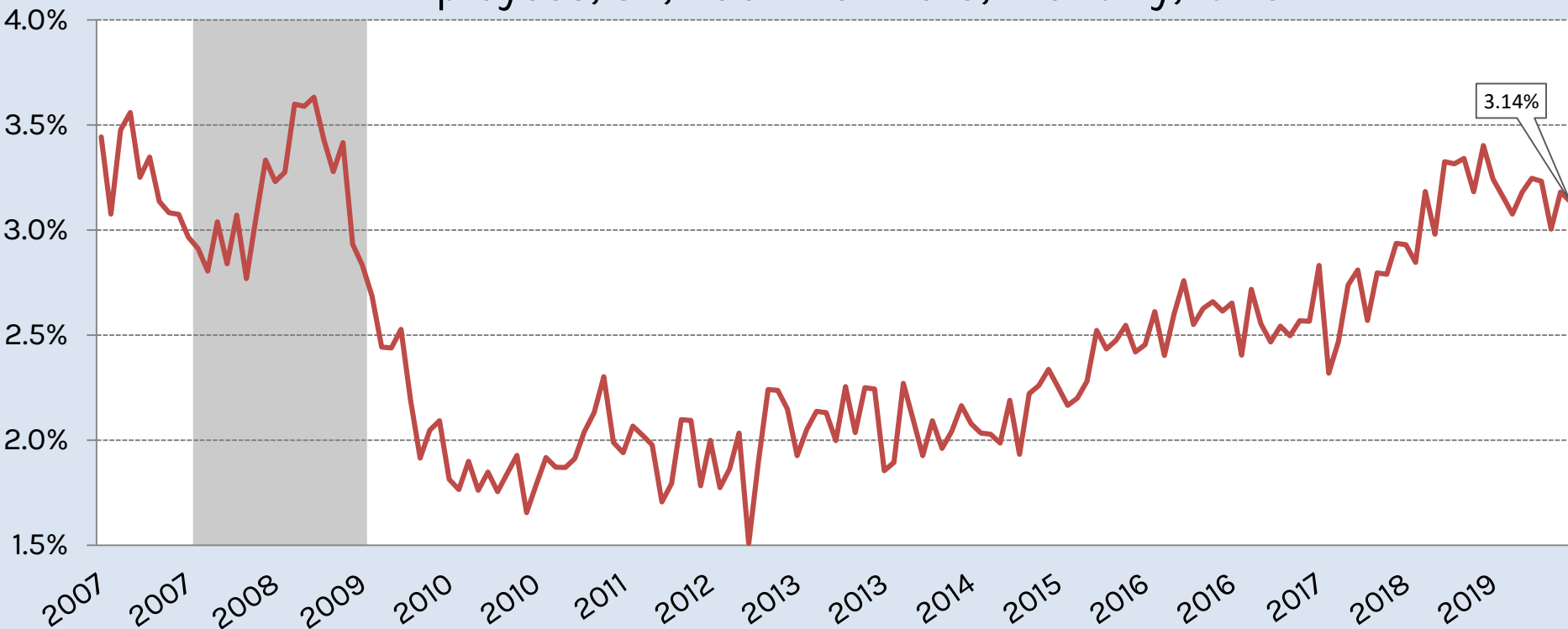


* London Bullion Market, \$ per troy ounce, NSA

** Producer Price Index by Commodity for Special Indexes: Copper and Copper Based Products, 1982=100, NSA

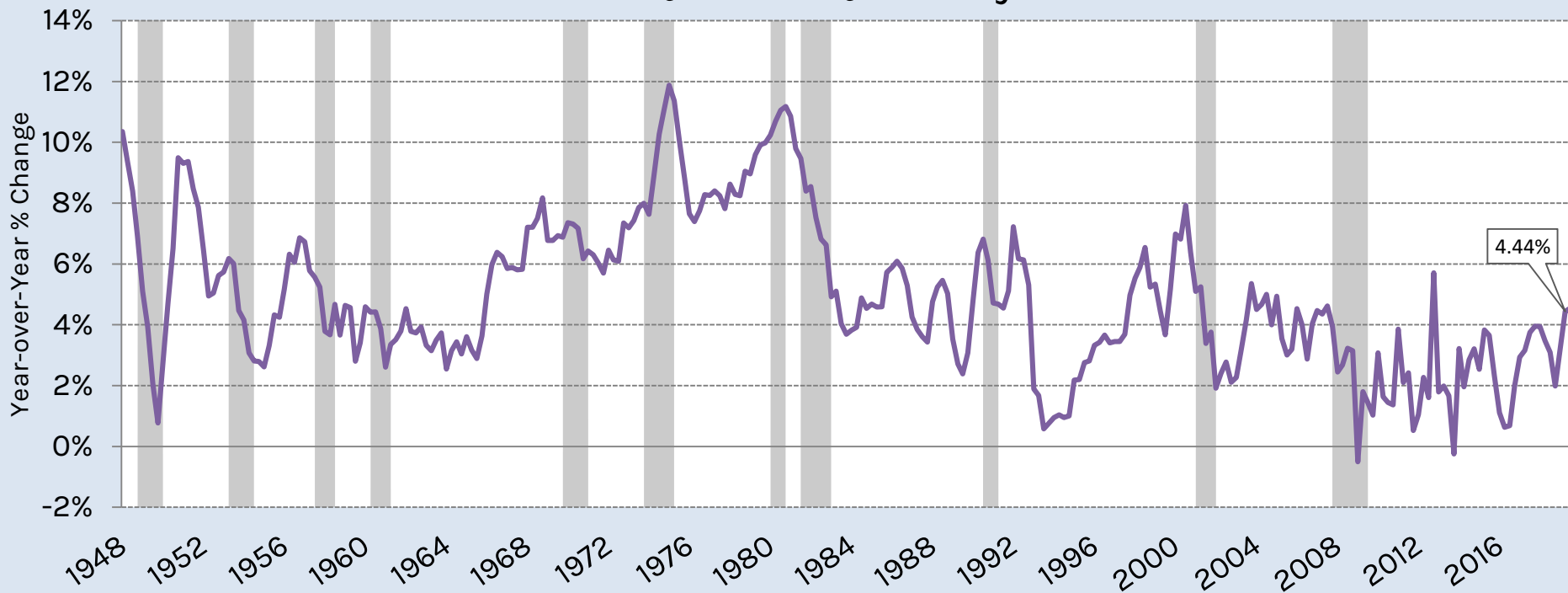
WAGE INFLATION: NOT IN TOTAL PRIVATE EARNINGS...

Average Hourly Earnings: Total Private
All Employees, SA, 2007-Nov 2019, monthly, % YoY



BUT MAYBE IN TOTAL COMPENSATION...

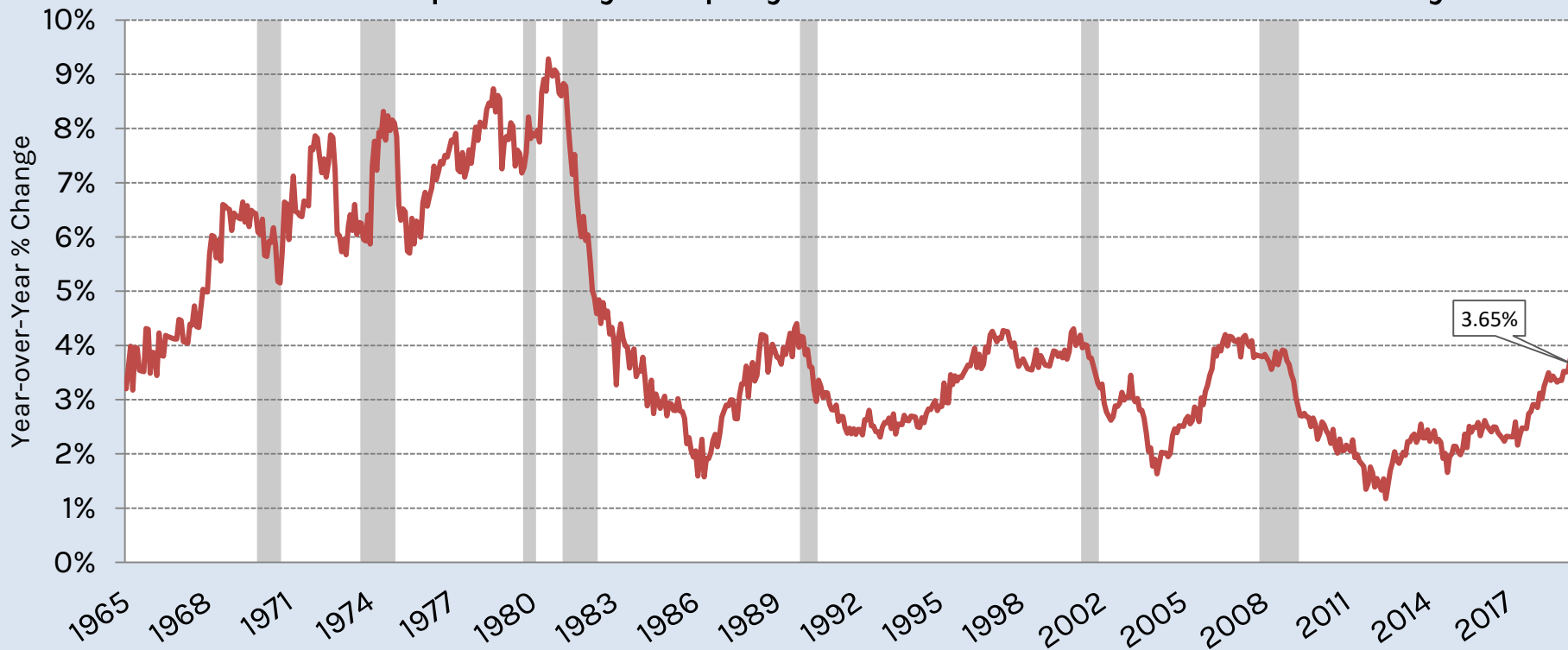
Compensation Per Hour*, Nonfarm Business SA, 1948-Q3 2019, Quarterly, % YoY



*Compensation includes accrued wages & salaries, supplements, employer contributions to benefit plans, and taxes.

OR IN LOWER SKILL/PAY JOBS.

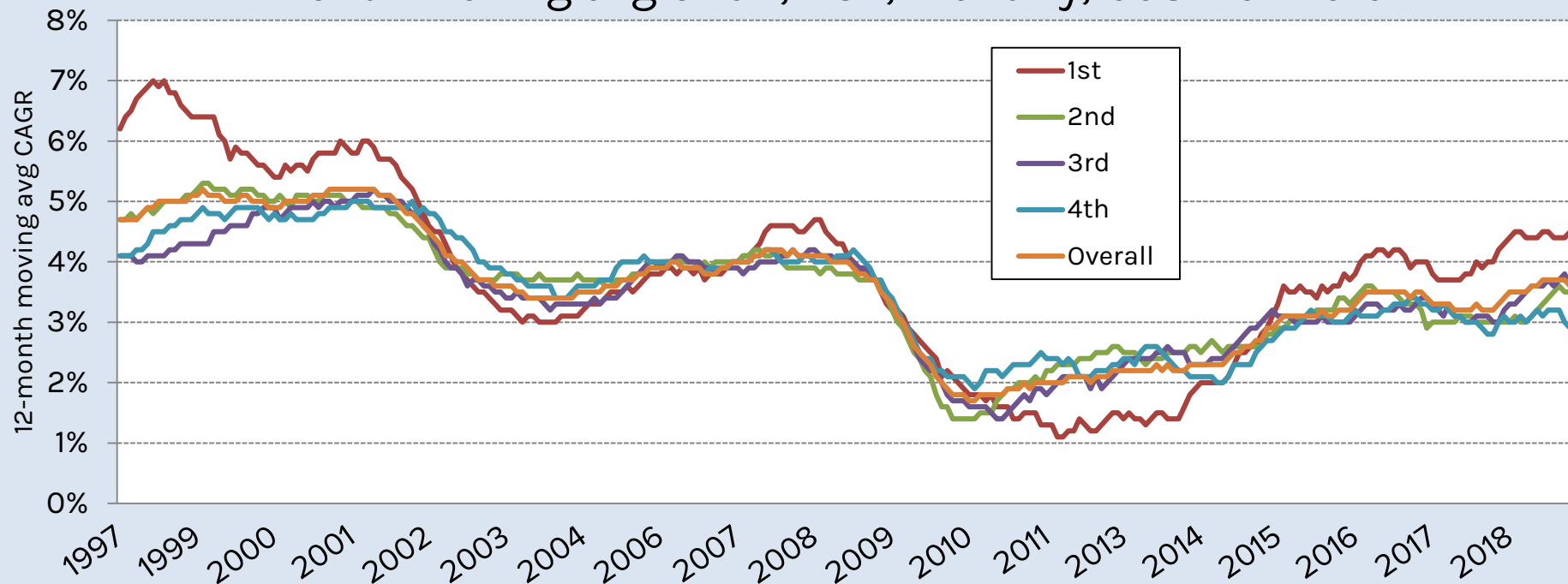
Average Hourly Earnings: Total Private Production & Nonsupervisory Employees, SA, 1965-Nov 2019, monthly, %YoY



LOWER-PAID **WORKER** ARE GAINING ON HIGHER-PAID...

Wage Growth by Income Quartile*

12-month moving avg CAGR, NSA, monthly, 1998-Nov 2019

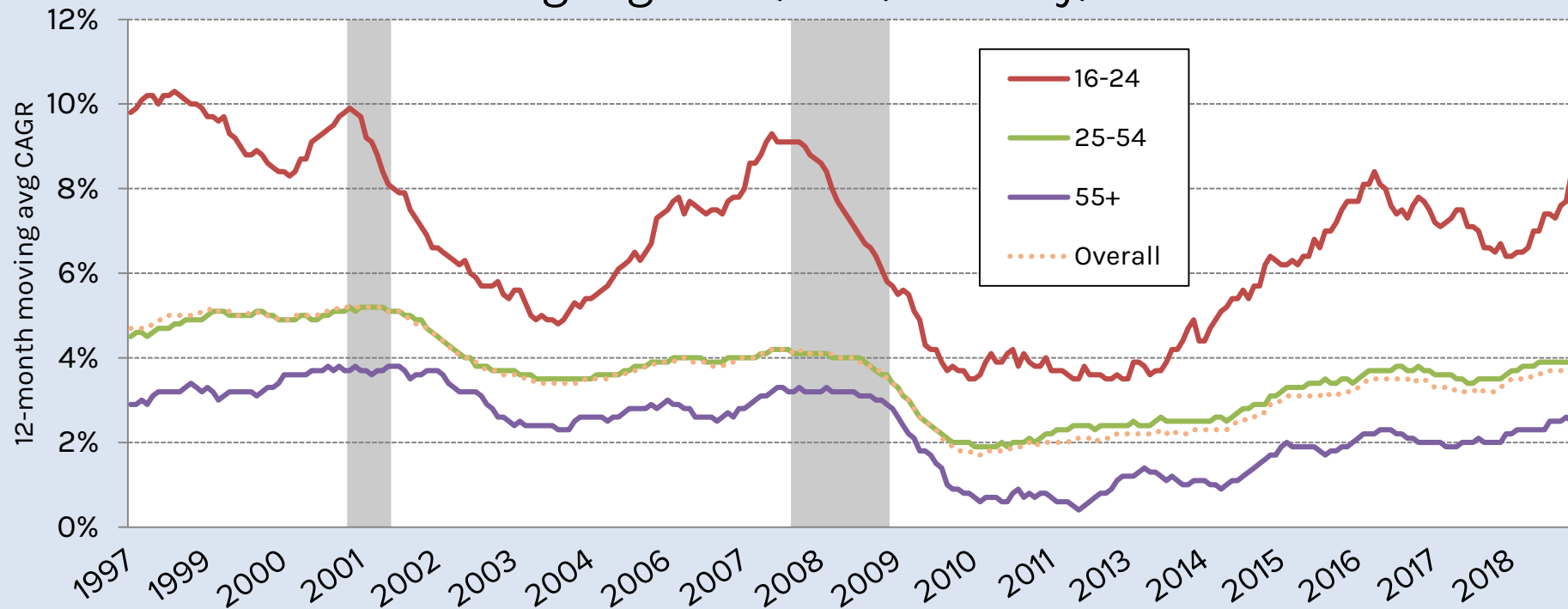


* From Atlanta Fed's Wage Growth Tracker. Ranking based on the distribution of average hourly wages in month t and month t-12. Those in the lowest 25 percent of average wages are in the 1st quartile; those in the highest 25 percent of average wages are in the 4th quartile.

& THE YOUNG ARE GAINING ON THE OLD

Wage Growth by Age Bracket*

12-month moving avg CAGR, NSA, monthly, 1998-Nov 2019



* From Atlanta Fed's Wage Growth Tracker.

A “CRASH” COURSE IN RECESSION INDICATORS

❑ What Is a Recession?

❑ Properties of Good Recession Indicators

❑ INDICATORS

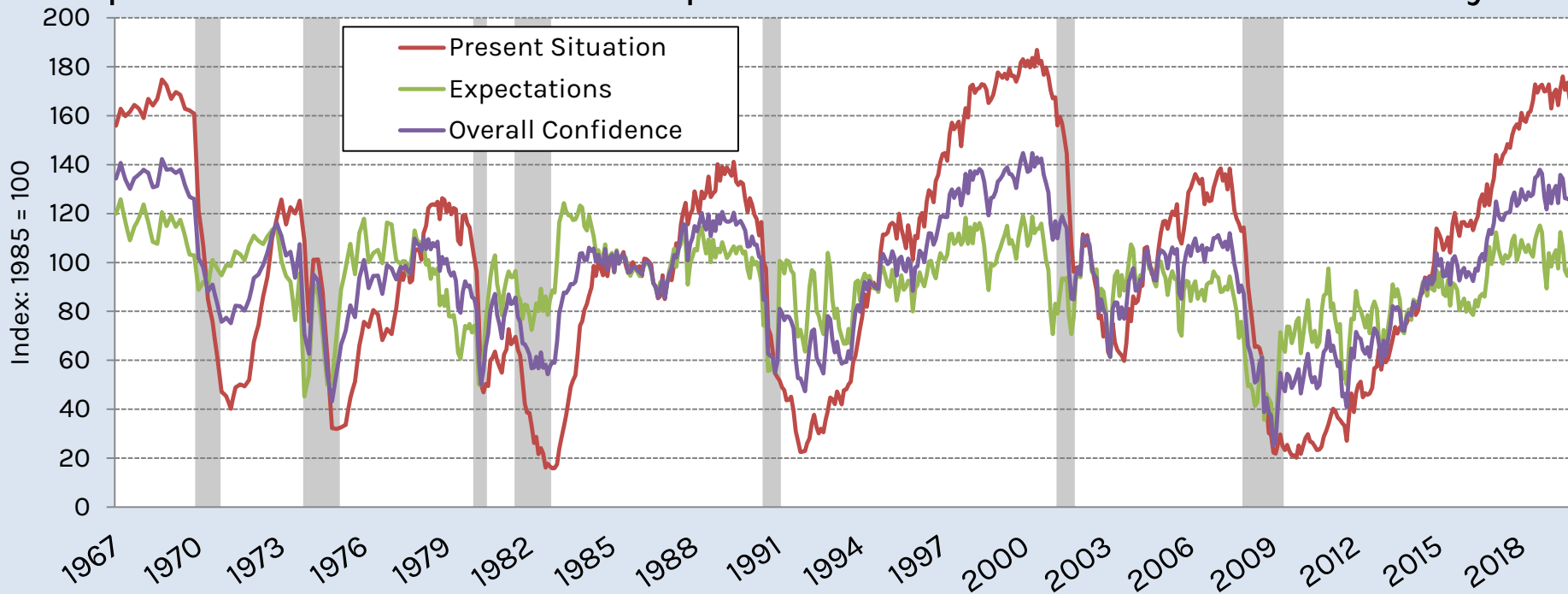
1. *Production, Consumption, & Income*
2. *Housing, Autos, & Transportation*
3. *Real-Time Diffusion Indexes*
4. *Employment*
5. *Inflation & Wages*
6. *Sentiment*
7. *Financial & Other “Leading” Indicators*

❑ Lessons: What are the Best Indicators?

❑ Lessons: What is the Current Recession Outlook?

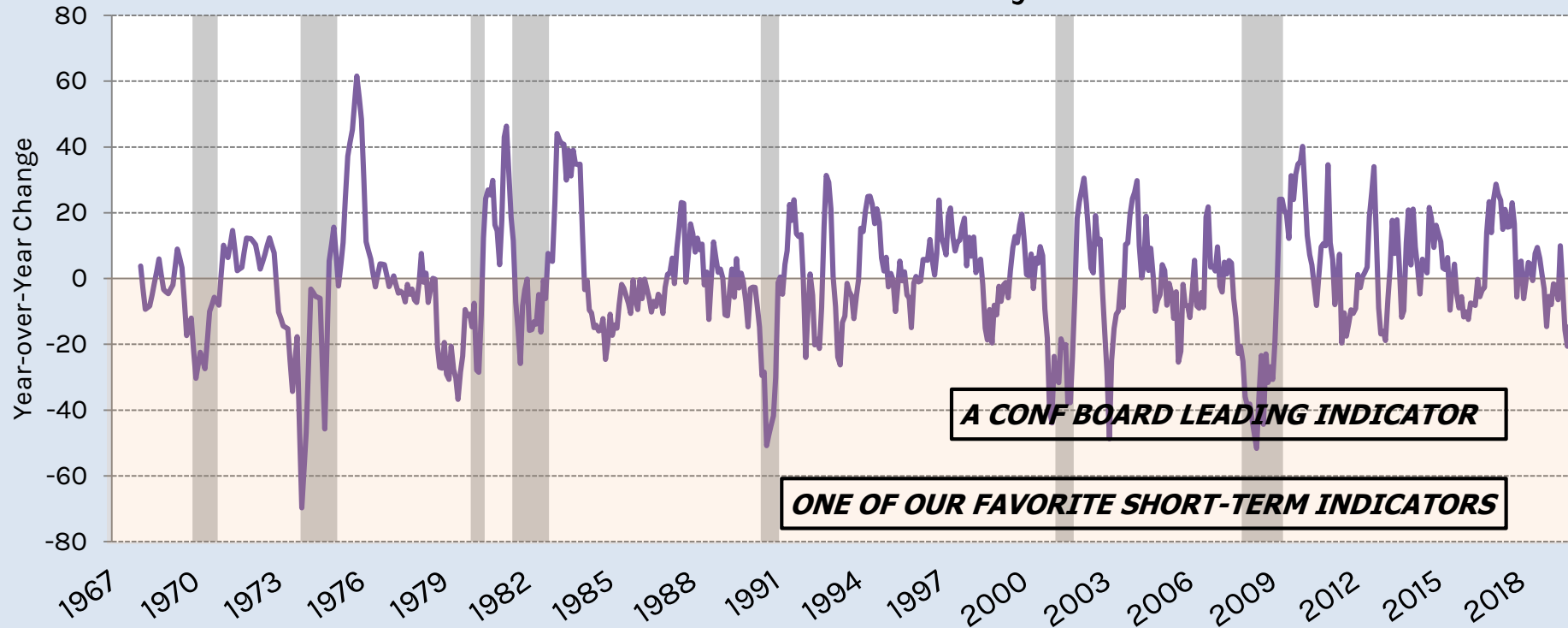
CONF BOARD CCI: NOTE PRESENT-TO-FUTURE “SPREAD”

Conference Board Consumer Confidence Index*: Overall
plus Present Situation & Expectations; SA, 1967-Nov 2019, monthly



CONF BOARD CCI: YOY EXPECTATIONS IS “SENSITIVE”

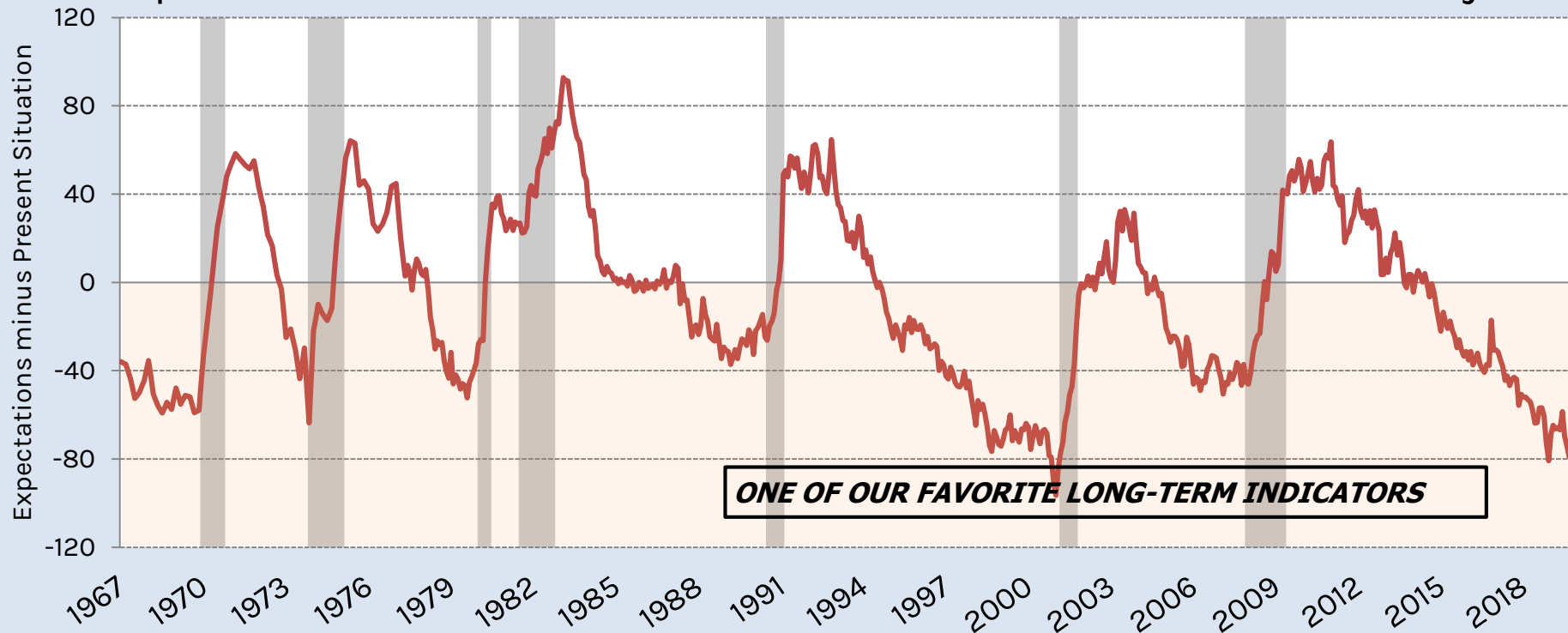
Conference Board Consumer Confidence Index: Expectations SA, 1968-Nov 2019, monthly, YoY



CONF BOARD CCI: “SPREAD” SHOWS PERSPECTIVE

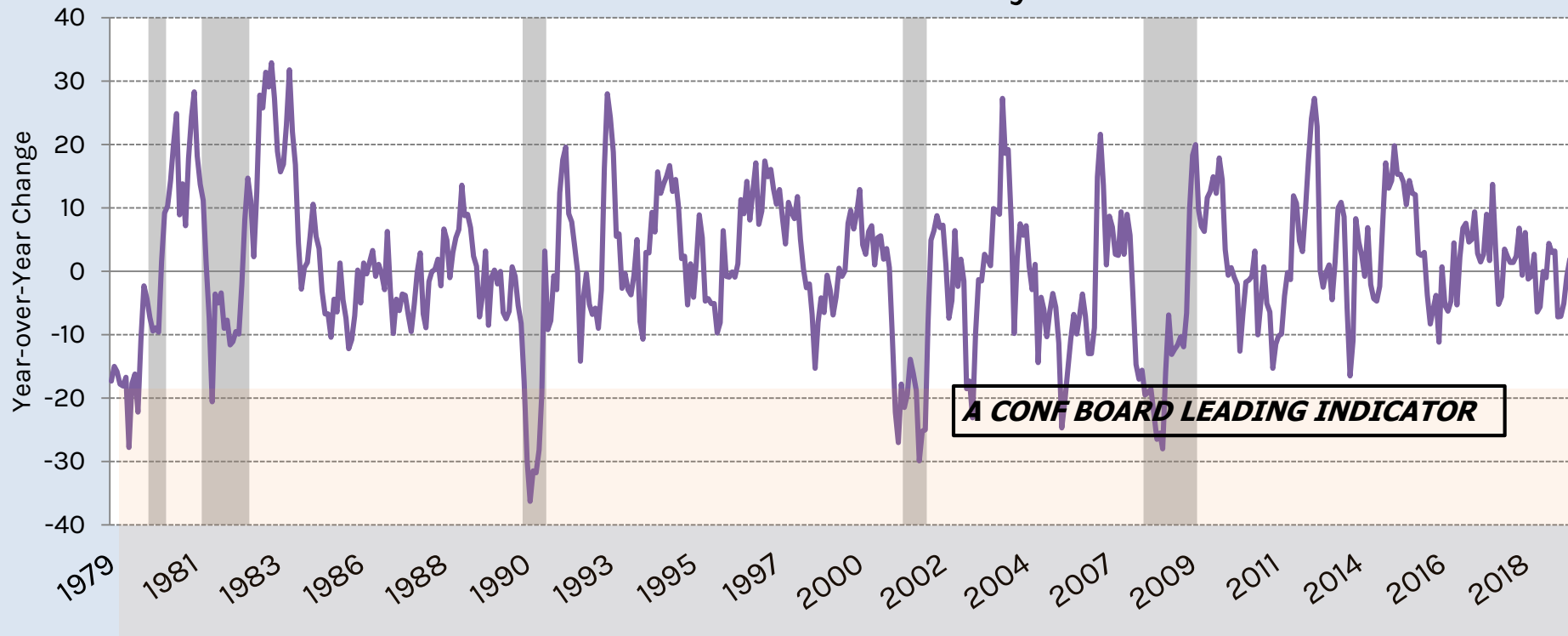
Conference Board Consumer Confidence Index*: Overall

Expectations minus Present Situation; SA, 1967-Nov 2019, monthly



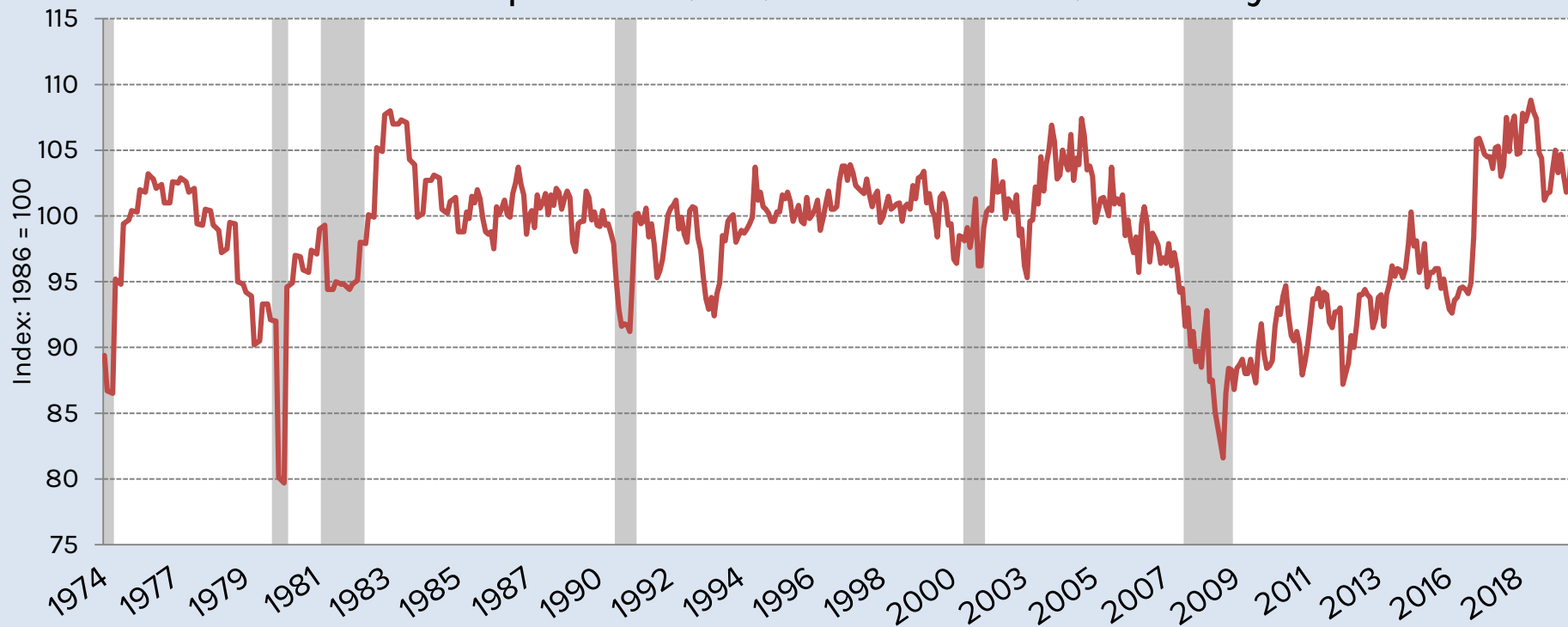
U MICH CEI: DELTA GENERALLY TRACKS SAME WAY

University of Michigan Consumer Expectations Index: SA, 1979-Nov 2019, monthly, YoY



DON'T FORGET SMALL BUSINESS: OVERALL OPTIMISM...

NFIB Small Business Optimism Index* Overall Optimism, SA, 1975-Nov 2019, monthly

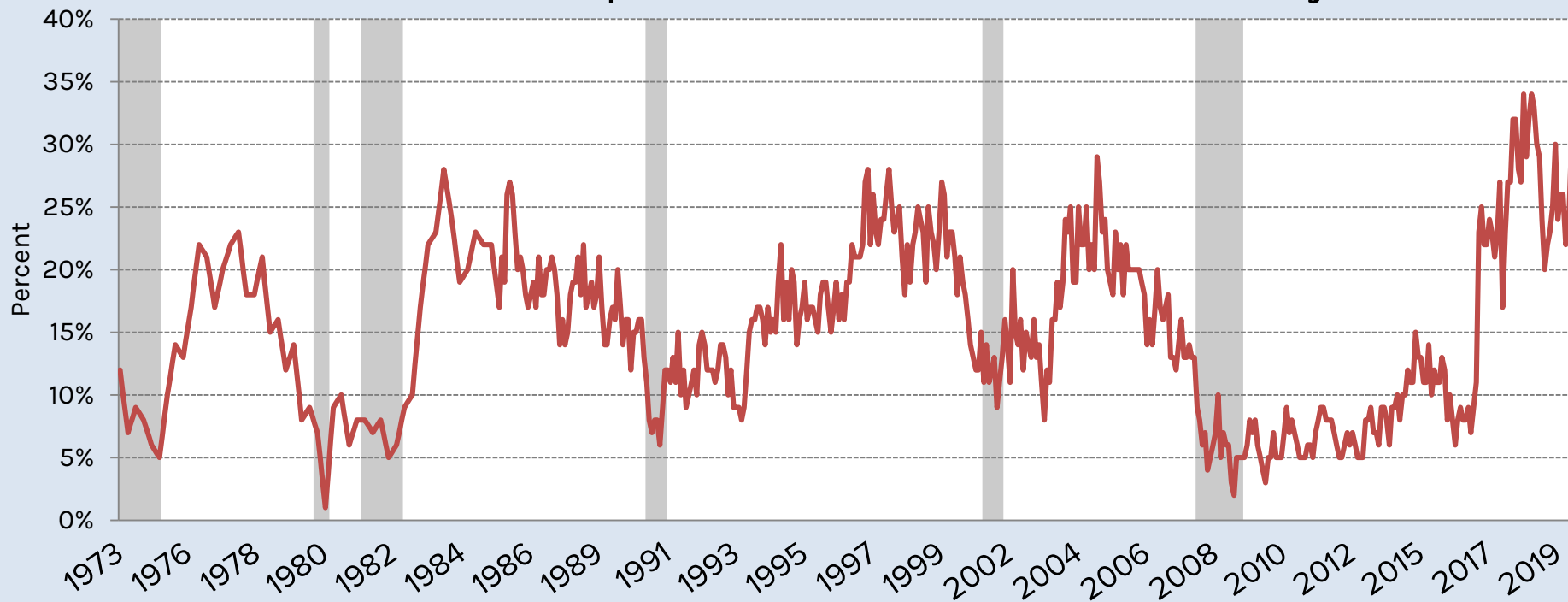


* Index: 1986 = 100.

& INCLINATION TO EXPAND...

NFIB Small Business Optimism Index

“Good Time to Expand,”* SA, 1975-Nov 2019, monthly

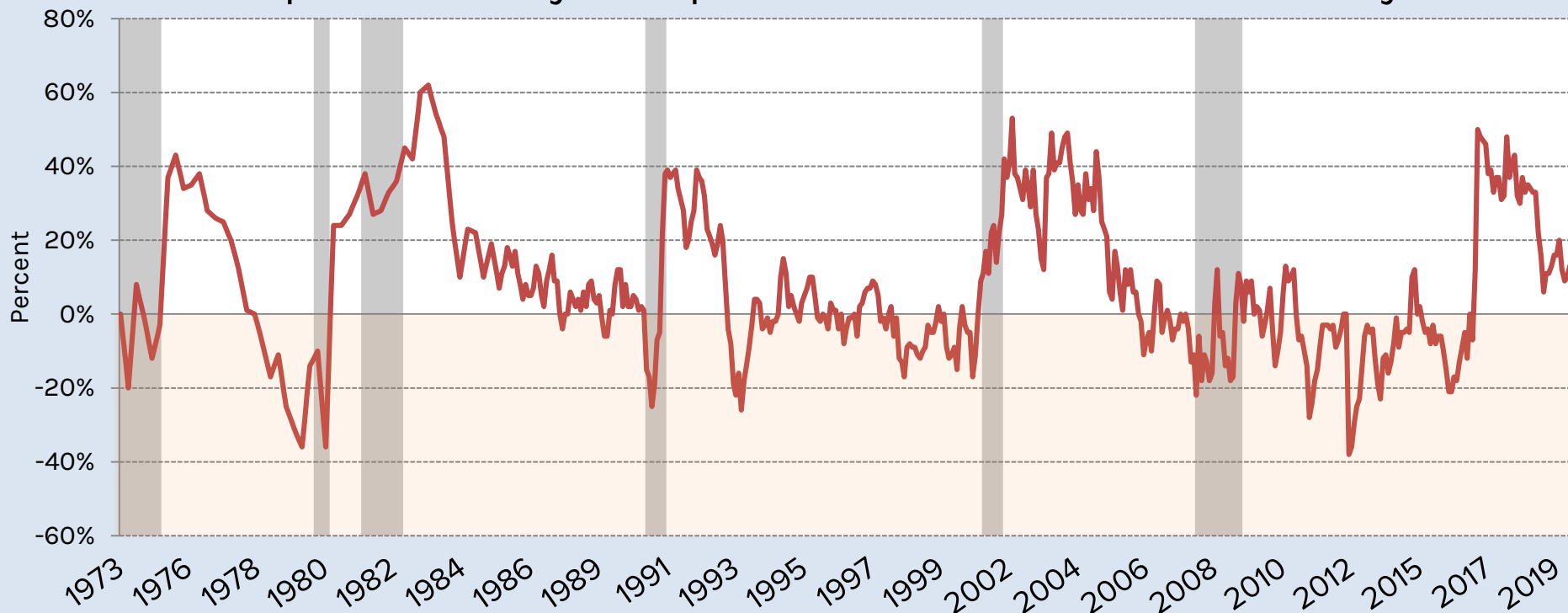


* Percent of NFIB members who say the next 3 months are a “good time to expand.”

& POSITIVE EXPECTATIONS ABOUT FUTURE

NFIB Small Business Optimism Index*

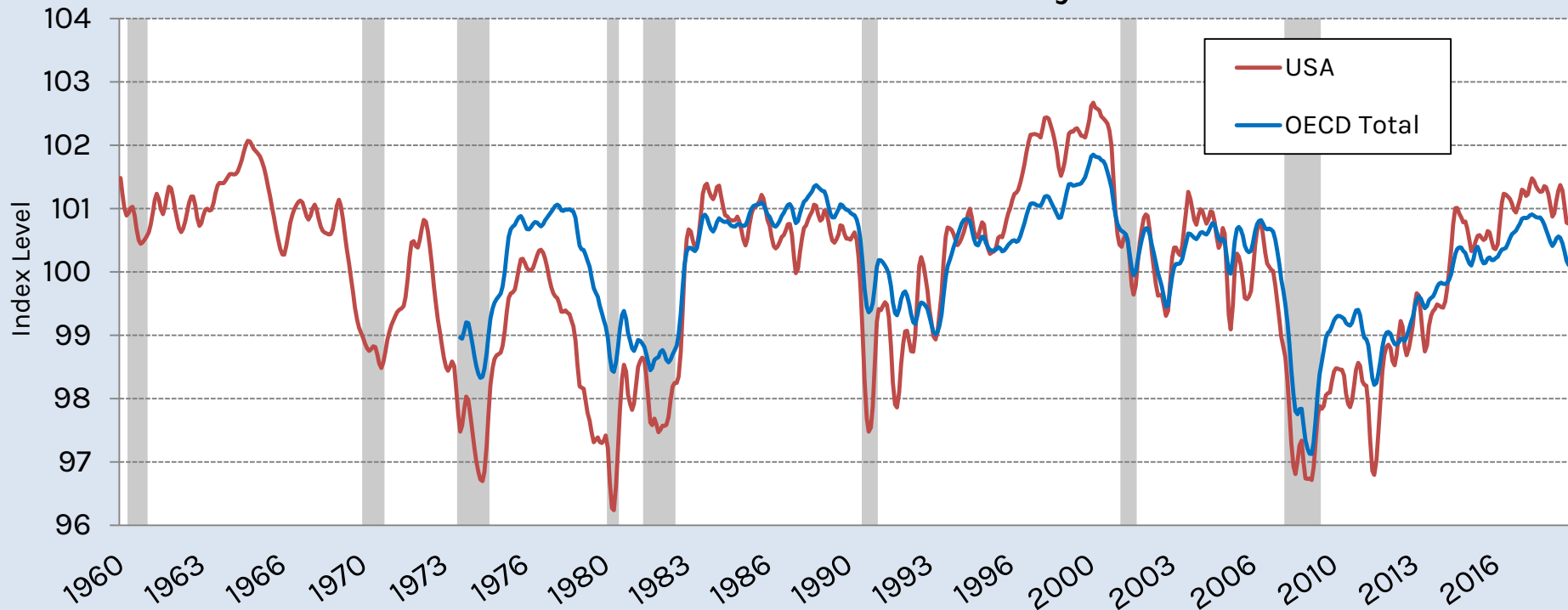
“Expect Economy to Improve,”* SA, 1975-Oct 2019, monthly



* Net percent of NFIB members who say they expect better business conditions in the next 6 months—minus those who say they expect worse.

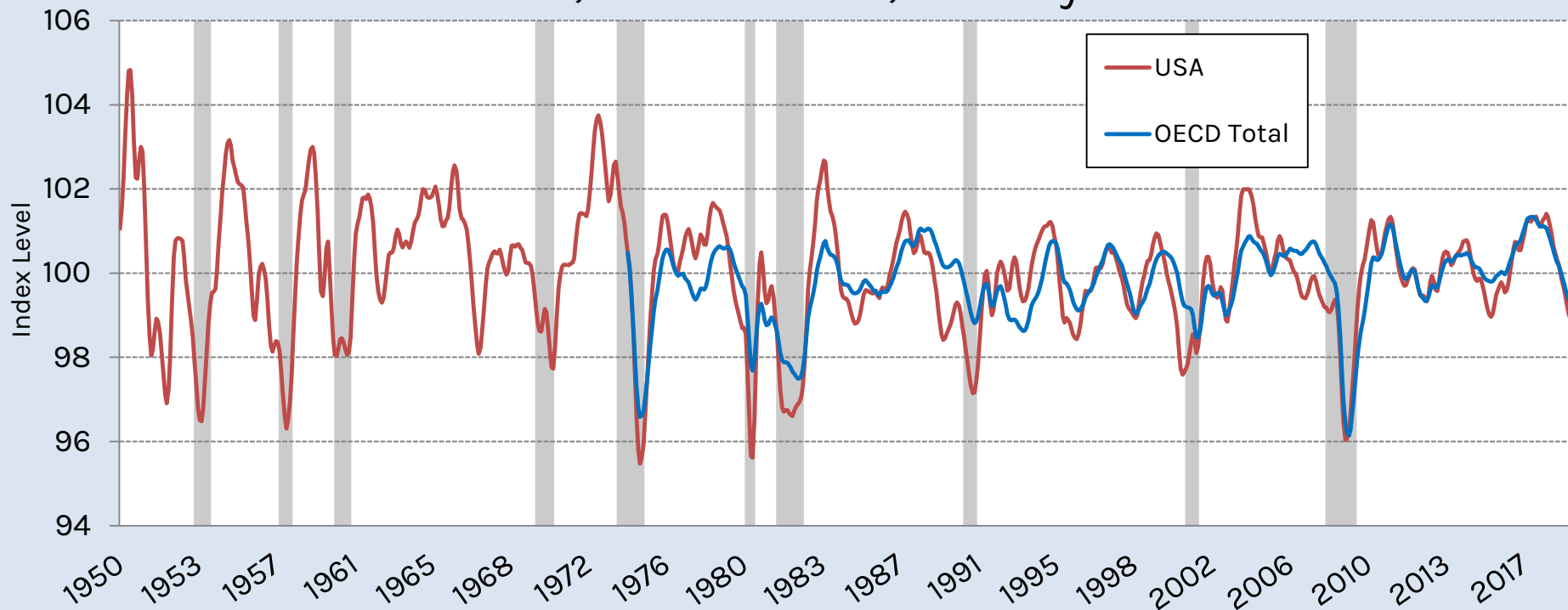
IN 35 NATIONS, OECD TRACKS CONSUMER CONFIDENCE...

OECD Consumer Confidence Index: U.S. & All OECD SA, 1950-Oct 2019, monthly



& BUSINESS CONFIDENCE

OECD Business Confidence Index: U.S. & All OECD SA, 1950-Nov 2019, monthly



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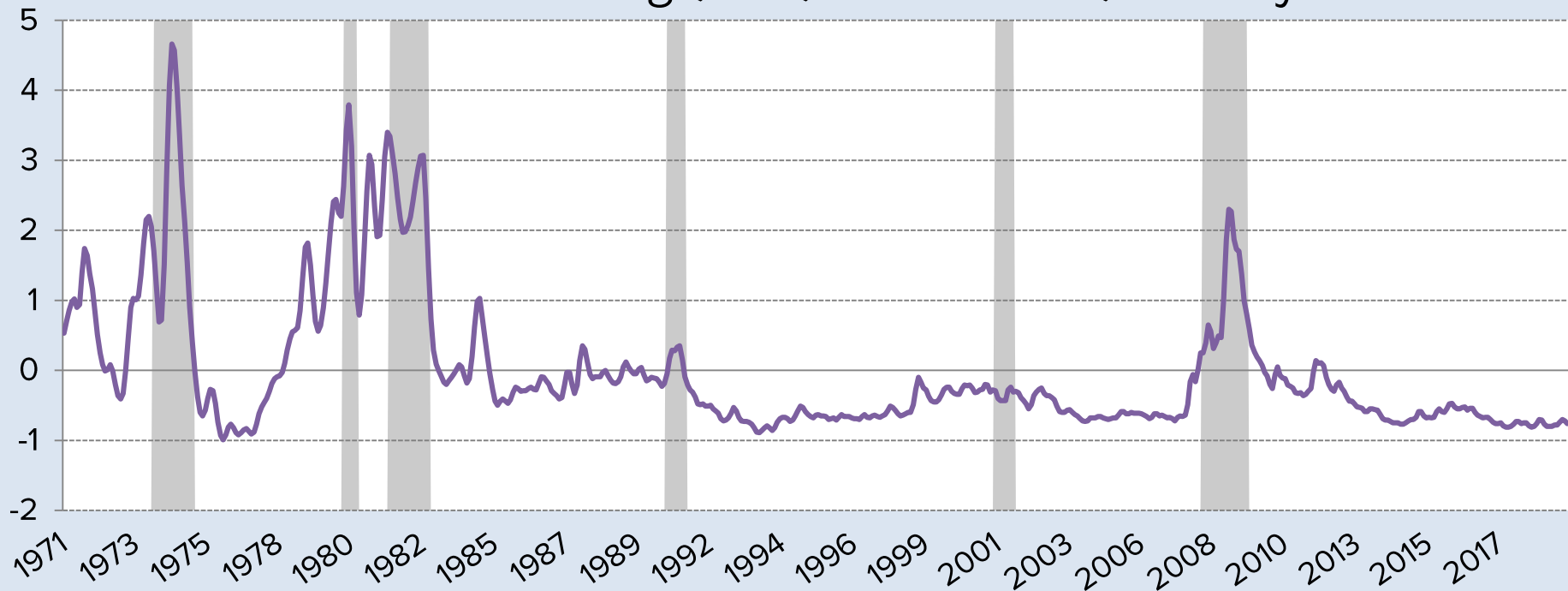
❑ Lessons: What are the Best Indicators?

❑ Lessons: What is the Current Recession Outlook?

THE FED'S LONGEST-RUNNING FINANCIAL “STRESS” INDEX

Chicago Fed National Financial Conditions Index*

Index: 0=no change, NSA, 1971-Nov 2019, monthly



* Chicago Fed NFCI combines 105 financial market indicators, which belong to three basic groups: risk, credit, and leverage. Positive is more risk; zero is neutral. Scale is calibrated by std. dev. sigma.

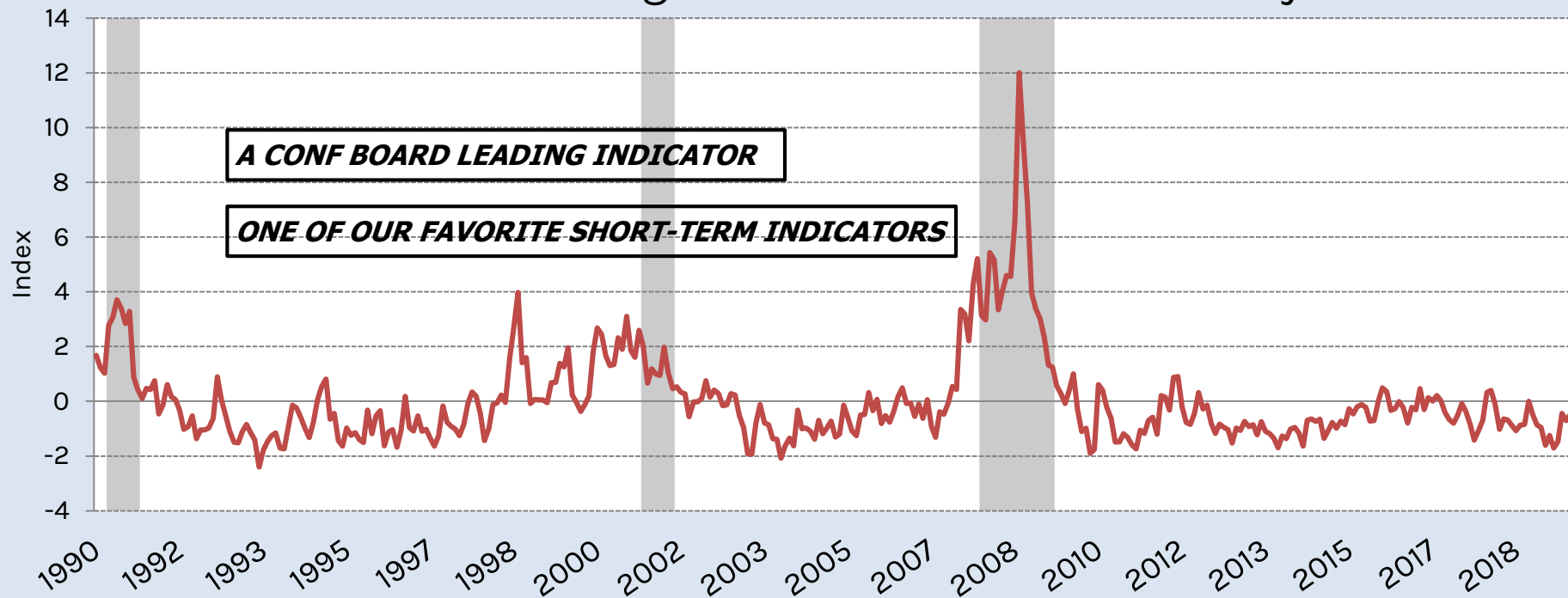
SOURCE: Federal Reserve Bank of Chicago

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CONF BOARD HAS ITS OWN “LCI”

Conference Board Leading Credit Index

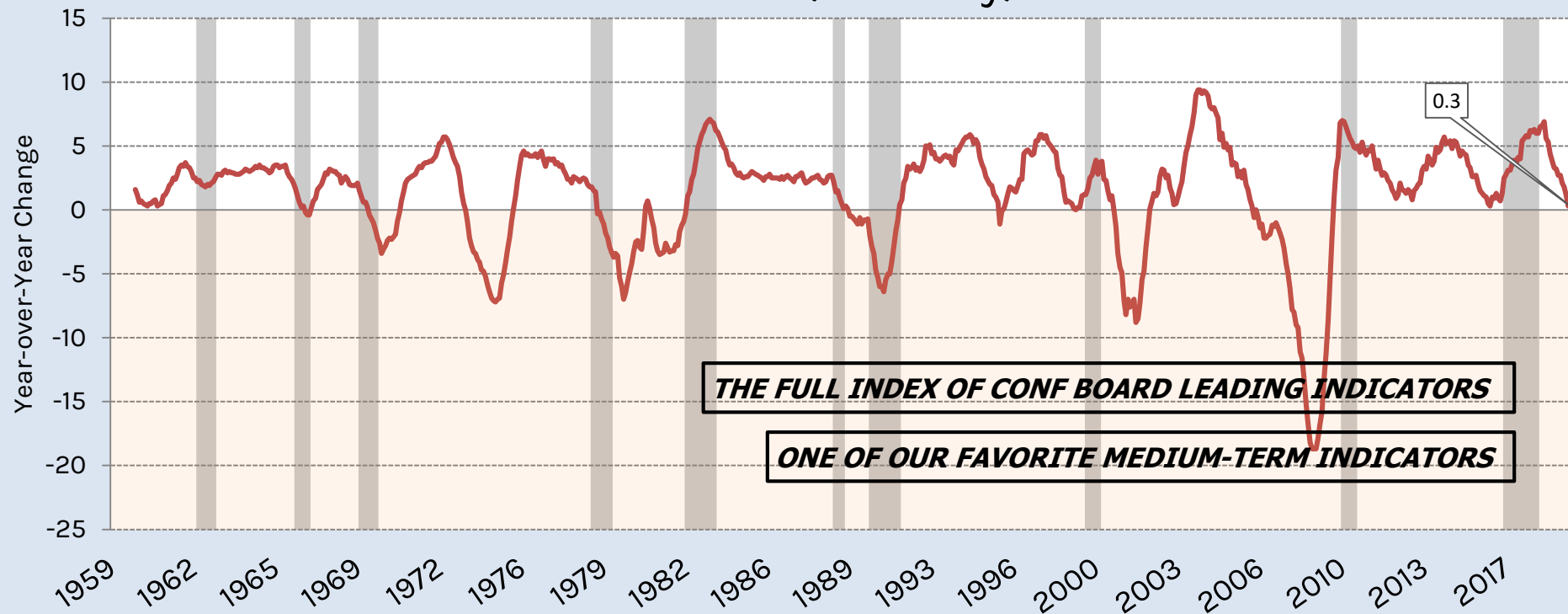
Index: 0=no change, NSA, 1990-Oct 2019, monthly



* LCI combines 6 indicators: TED spread; 2-year interest-rate swap; broker margin accounts; AAI bullishness; credit tightness surveys; and Fed repo activity. Positive is more risk; zero is neutral. Scale is calibrated by std. dev. sigma.

CONF BOARD TOTAL LEI: A RESPECTABLE TRACK RECORD

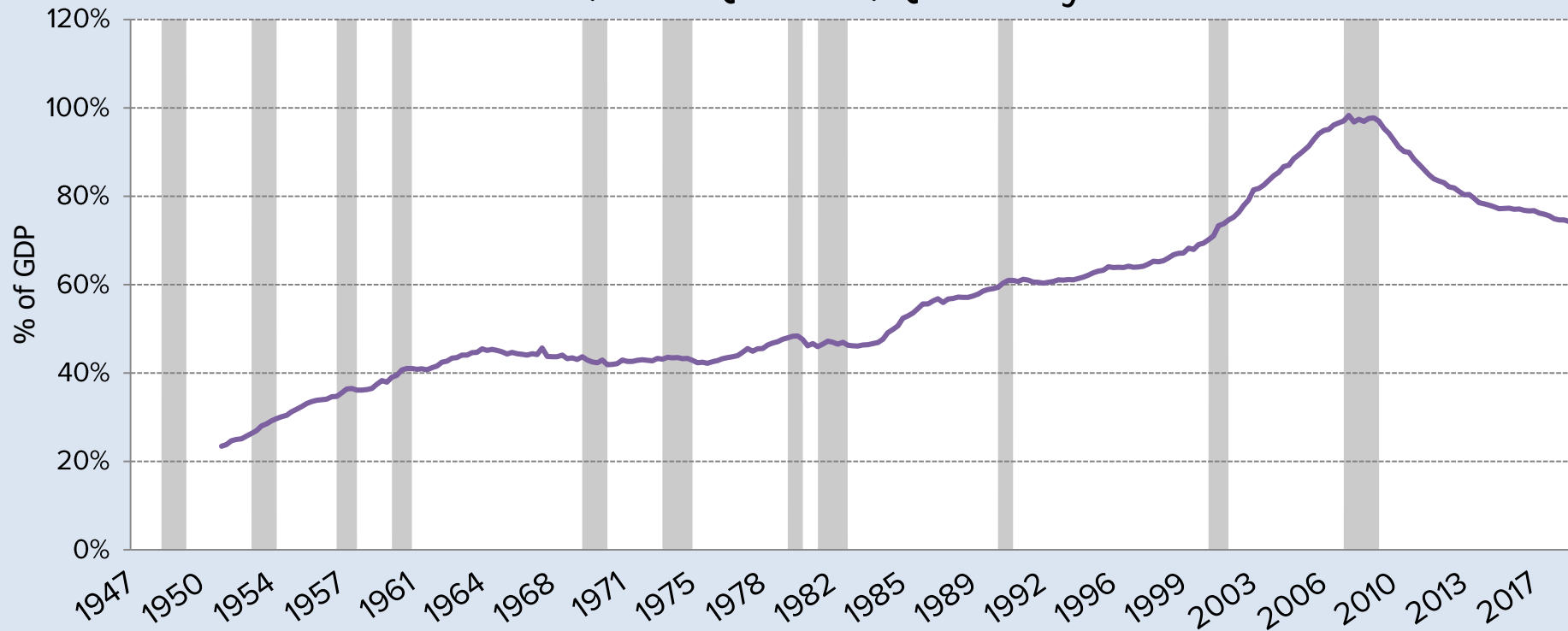
Conference Board US Leading Economic Indicators Index 1960-Oct 2019, monthly, YoY



BALANCE SHEET TRIGGERS: HOUSEHOLDS LOOK GOOD...

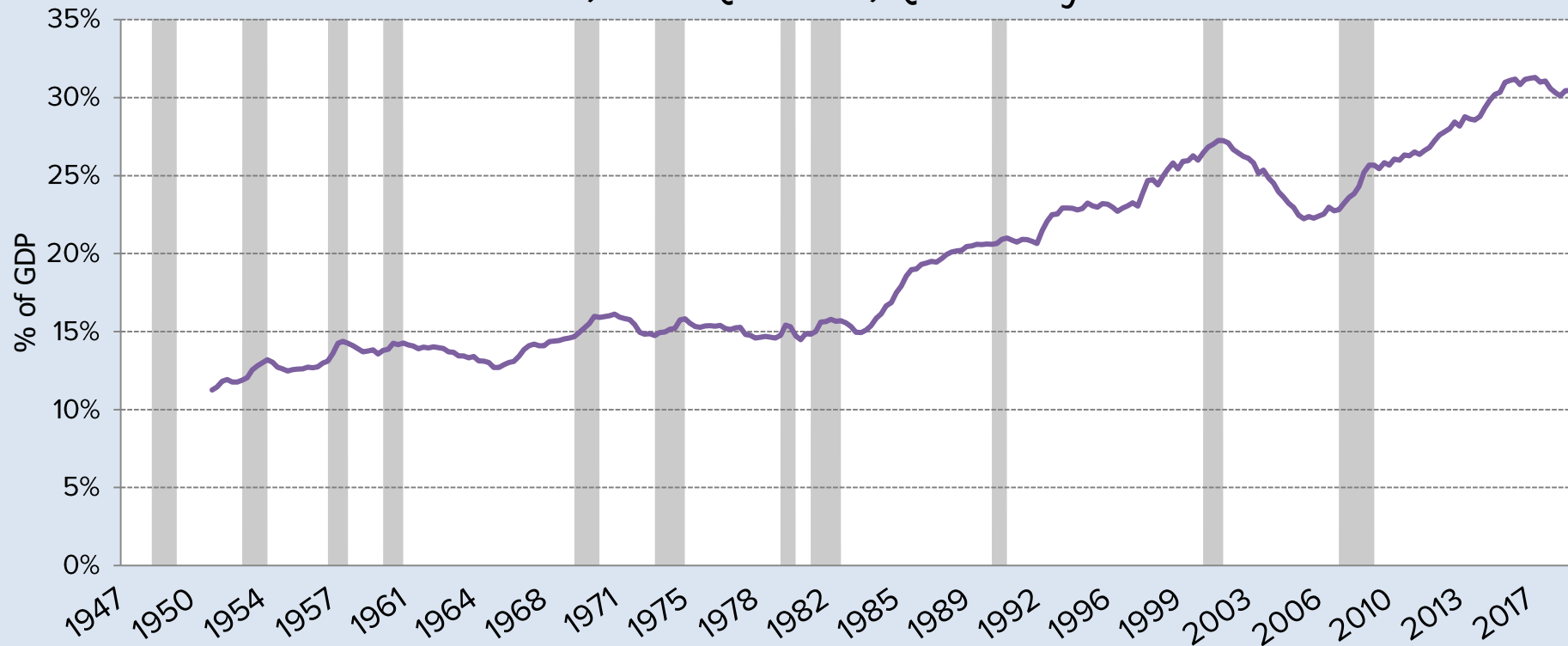
Household & Nonprofit Debt as a % of GDP

NSA, 1951-Q2 2019, Quarterly

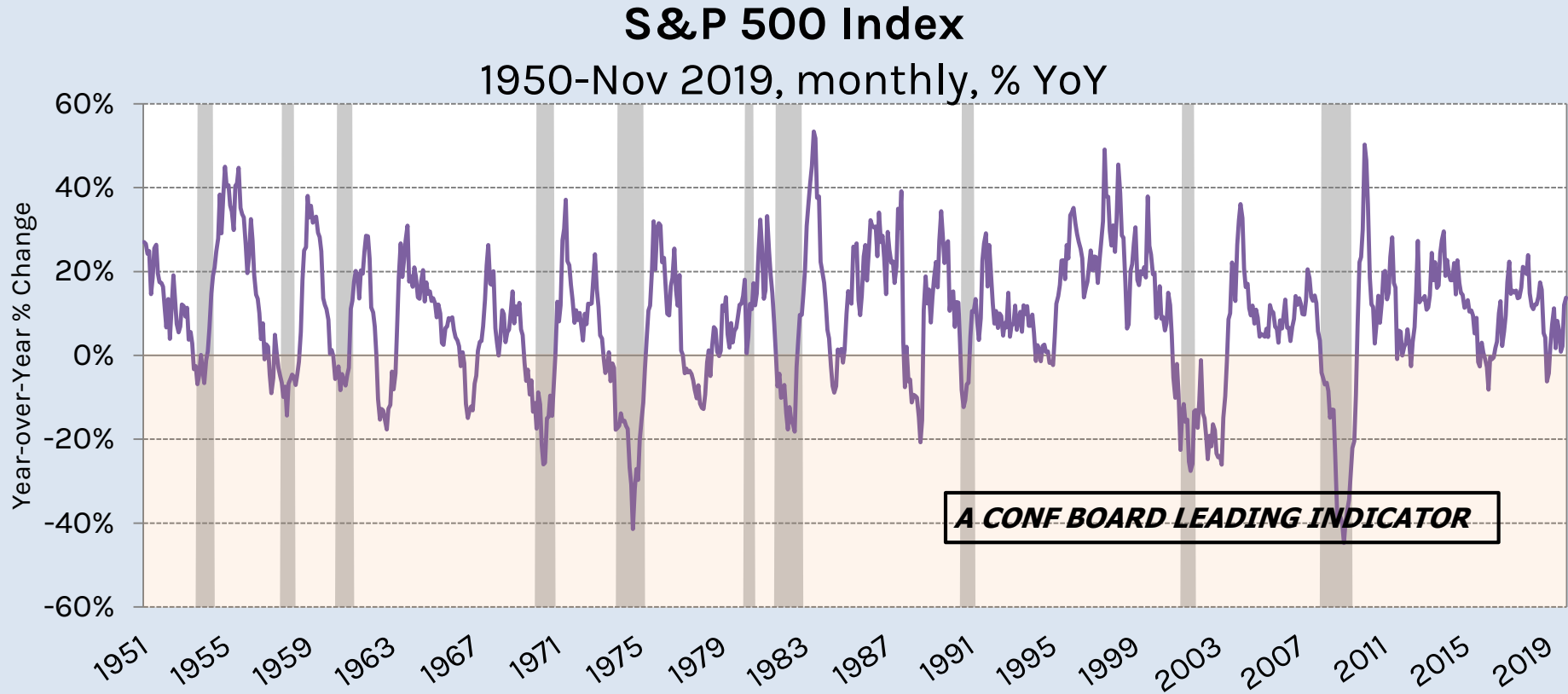


BUT CORPORATE SECTOR COULD BE AT RISK

Nonfinancial Corporate Debt as a % of GDP NSA, 1951-Q2 2019, Quarterly

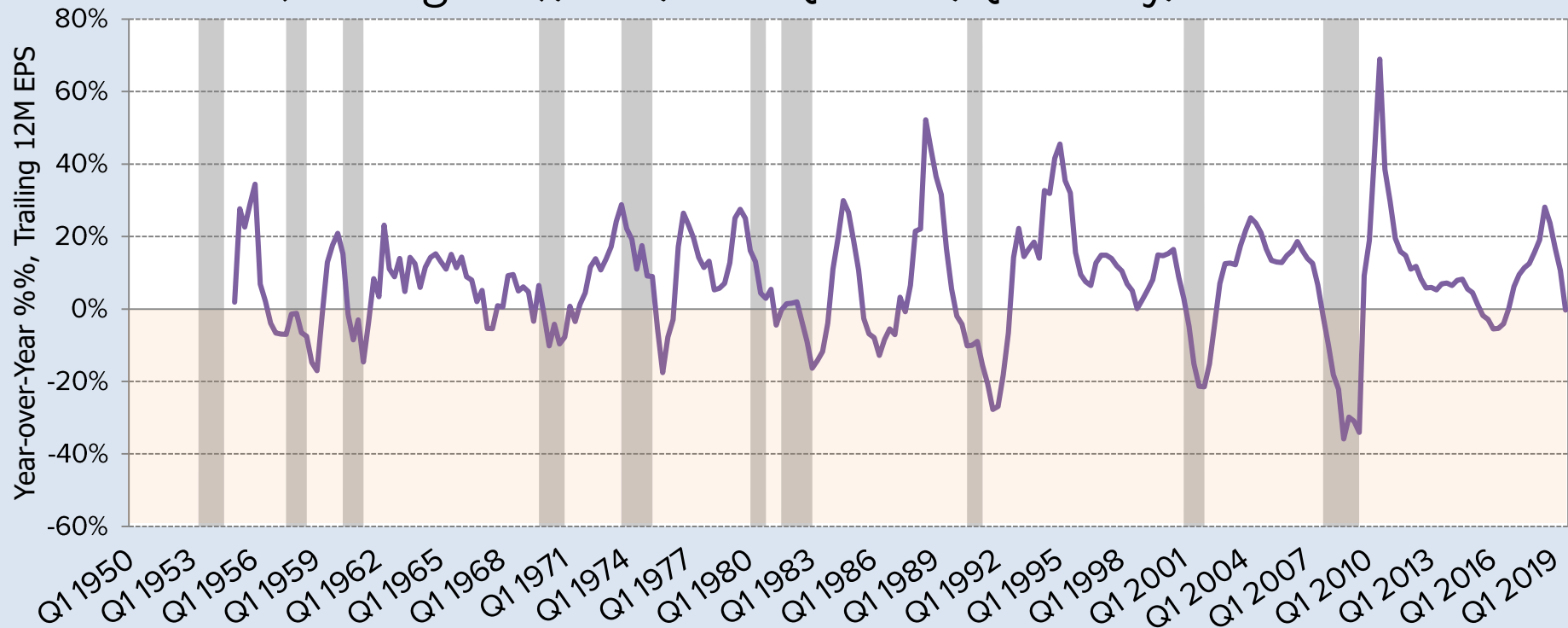


S&P 500 OFTEN “SLOWS DOWN” BEFORE DOWNTURNS



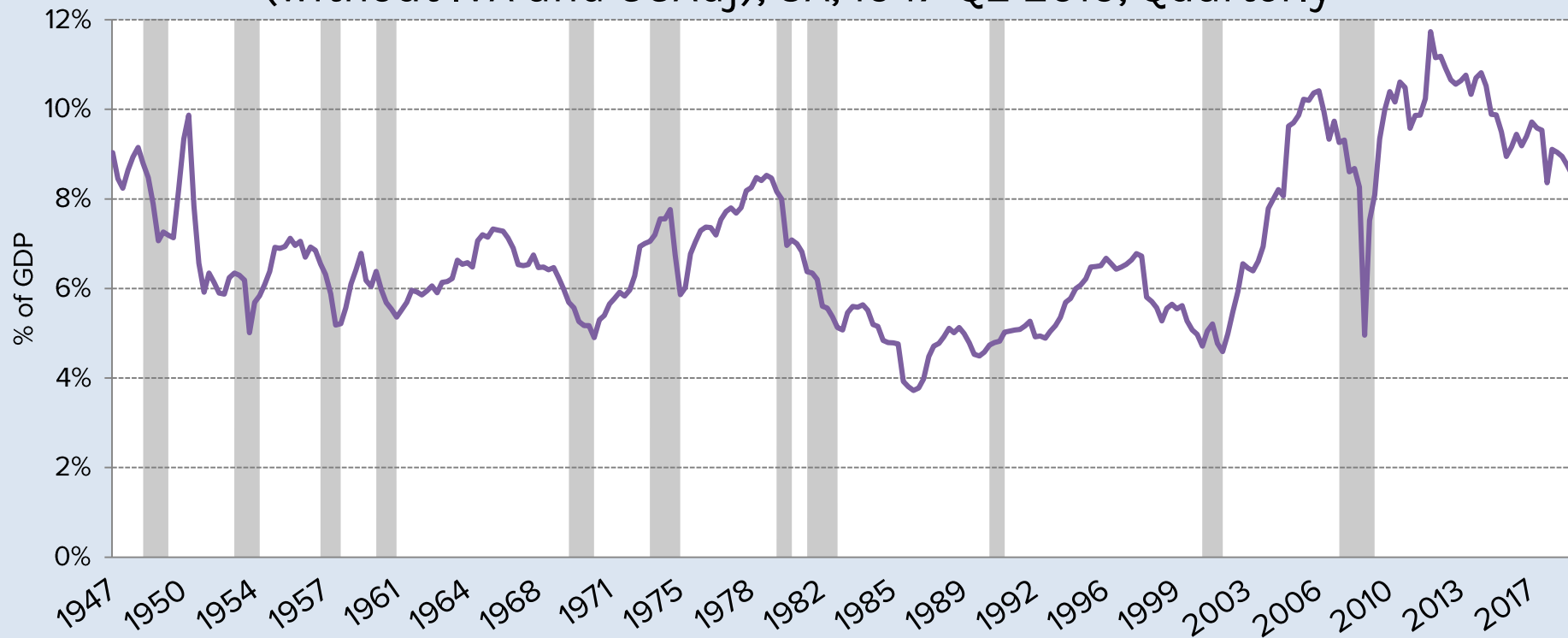
“EARNINGS RECESSIONS” OFTEN PRECEDE DOWNTURNS...

S&P 500 EPS Growth
(Trailing 12M), NSA, 1955-Q3 2019, Quarterly, % YoY

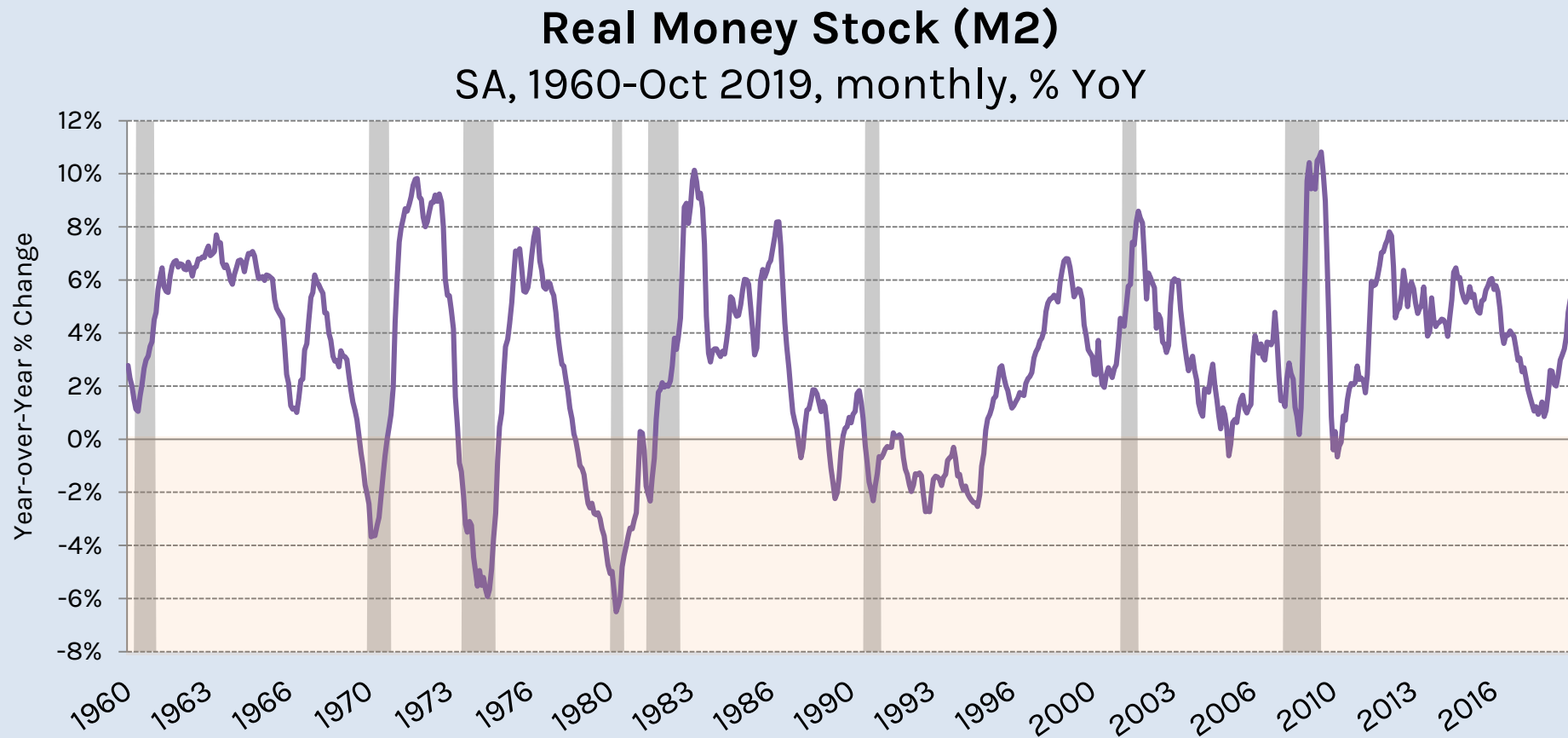


AS DO DECLINING PROFIT MARGINS

Corporate Profits After Tax as a % of GDP
(without IVA and CCAdj), SA, 1947-Q2 2019, Quarterly



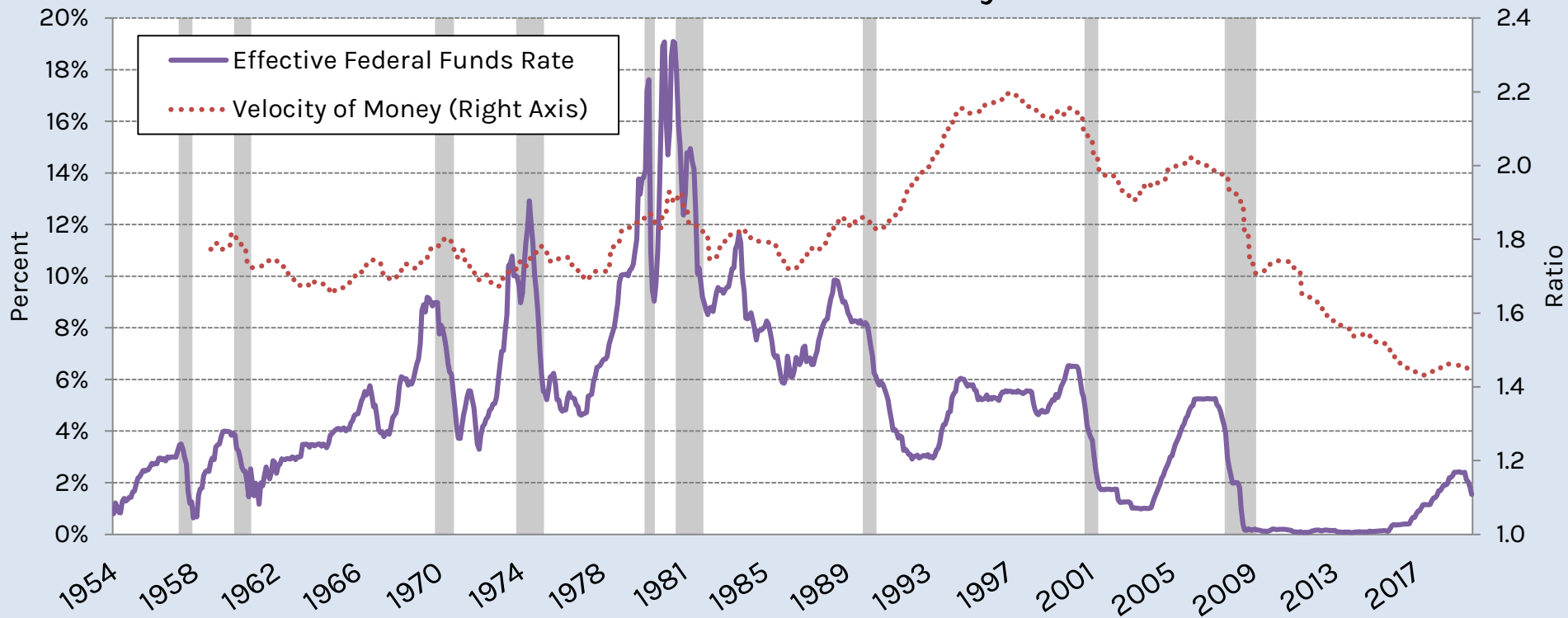
MONETARISTS CAN TRY THEIR HAND AT THIS ONE



DOES THE FED KILL RECOVERIES? TAKE A LOOK HERE

Effective Federal Funds Rate and Velocity of Money

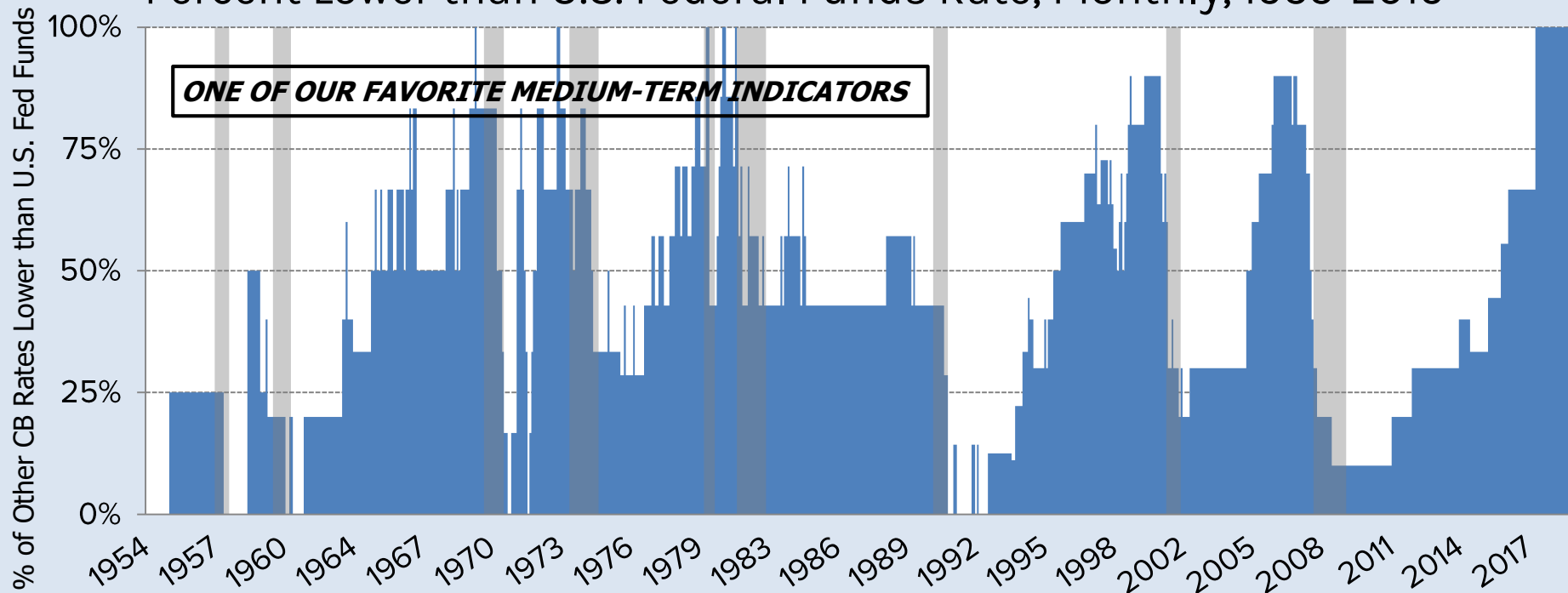
1954-Nov 2019, monthly, %



HOW ABOUT FED TIGHTNESS RELATIVE TO WORLD?

Central Bank Interest Rate in Major Countries*

Percent Lower than U.S. Federal Funds Rate, Monthly, 1955-2019



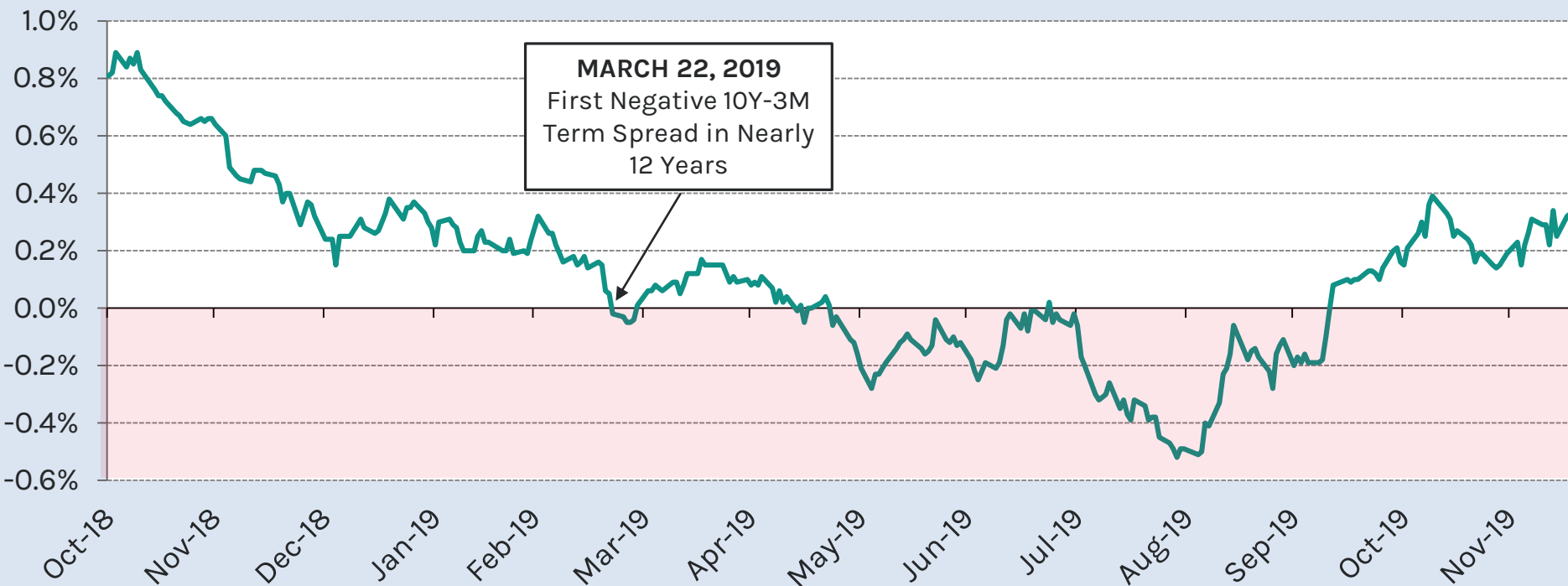
*Notes: Countries included exceed \$500 billion nominal GDP per IMF 2019 estimates. These countries are the UK, Australia, Canada, France, Italy, South Korea, Japan, Germany, Switzerland, Poland, Sweden, France, and Italy. In 1998, the ECB replaces France, Italy, and Germany.

SOURCE: Bloomberg (2019), IMF (2019), Federal Reserve Board of Governors (2019)

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TERM SPREAD: RECENT VIEW

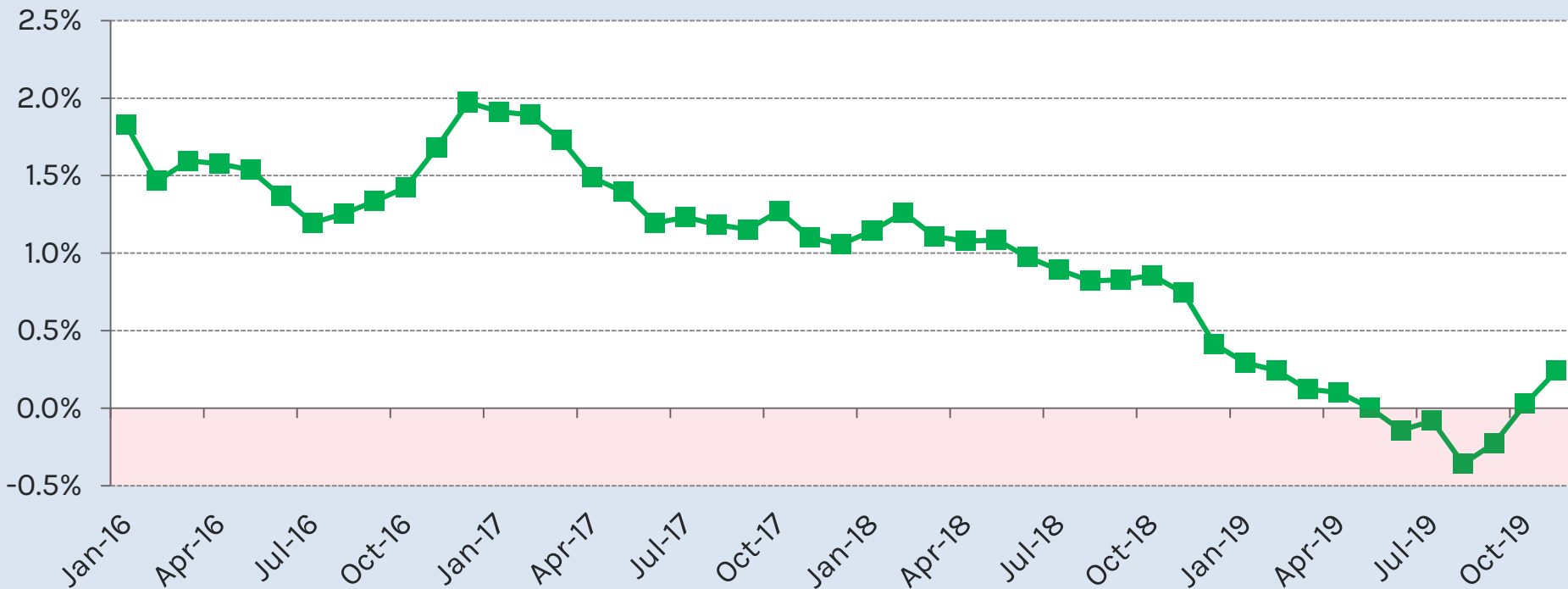
10Y-3M Term Spread* (Oct 31, 2018 to December 17, 2019)



*Difference between 10Y Treasury yield (constant maturity) and 3M Treasury yield (constant maturity) at market close.

TERM SPREAD: LONGER-TERM VIEW

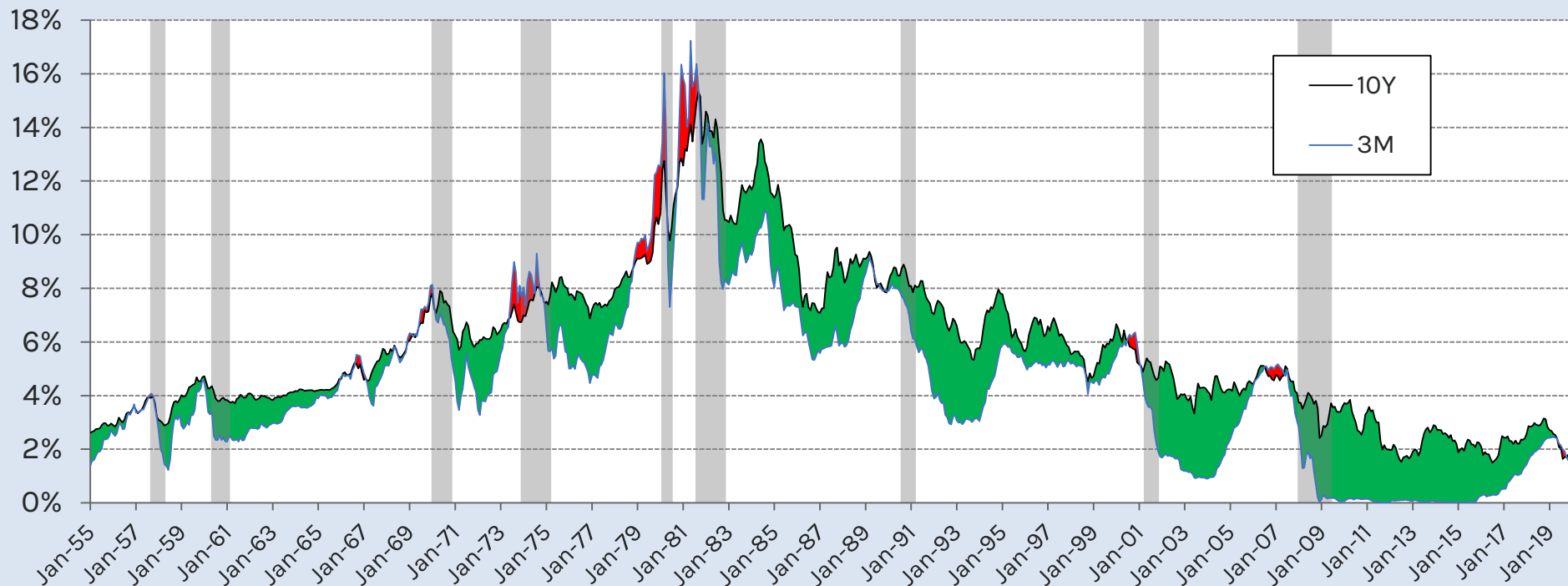
10Y-3M* Term Spread, Monthly* (Jan 2016 to Nov 2019)



* Average monthly percentage-point difference between 10Y Treasury yield (constant maturity) and 3M Treasury yield (bond-equivalent basis)

TERM SPREAD: POSTWAR RECORD

10Y & 3M Treasury Yields*



* 10Y Treasury yield represents constant maturity; 3M Treasury yield represents bond-equivalent basis.

** Before Jan 1963, 1Y used instead to 3M.

*** Green shaded areas indicate a positive 10Y-3M term spread; red areas indicate a negative spread.

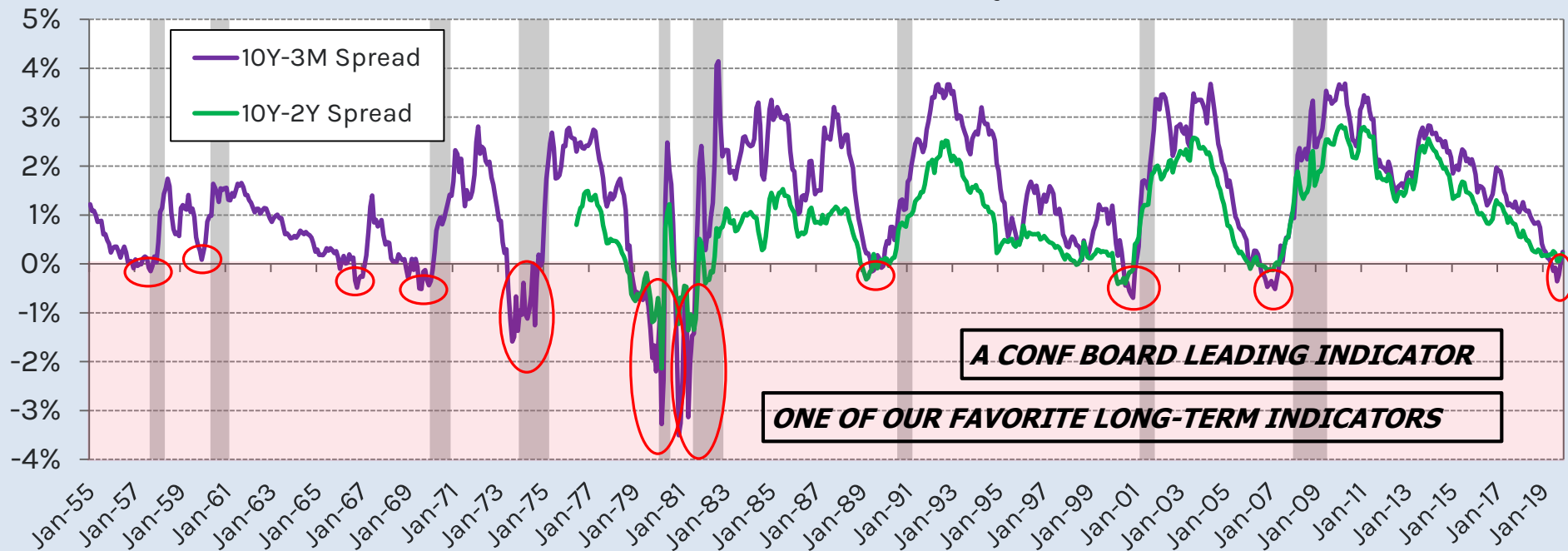
SOURCE: US Treasury (2019)

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TERM SPREAD: POSTWAR RECORD

10Y-3M* & 10Y-2Y** Term Spreads

1955-Nov 2019, Monthly***



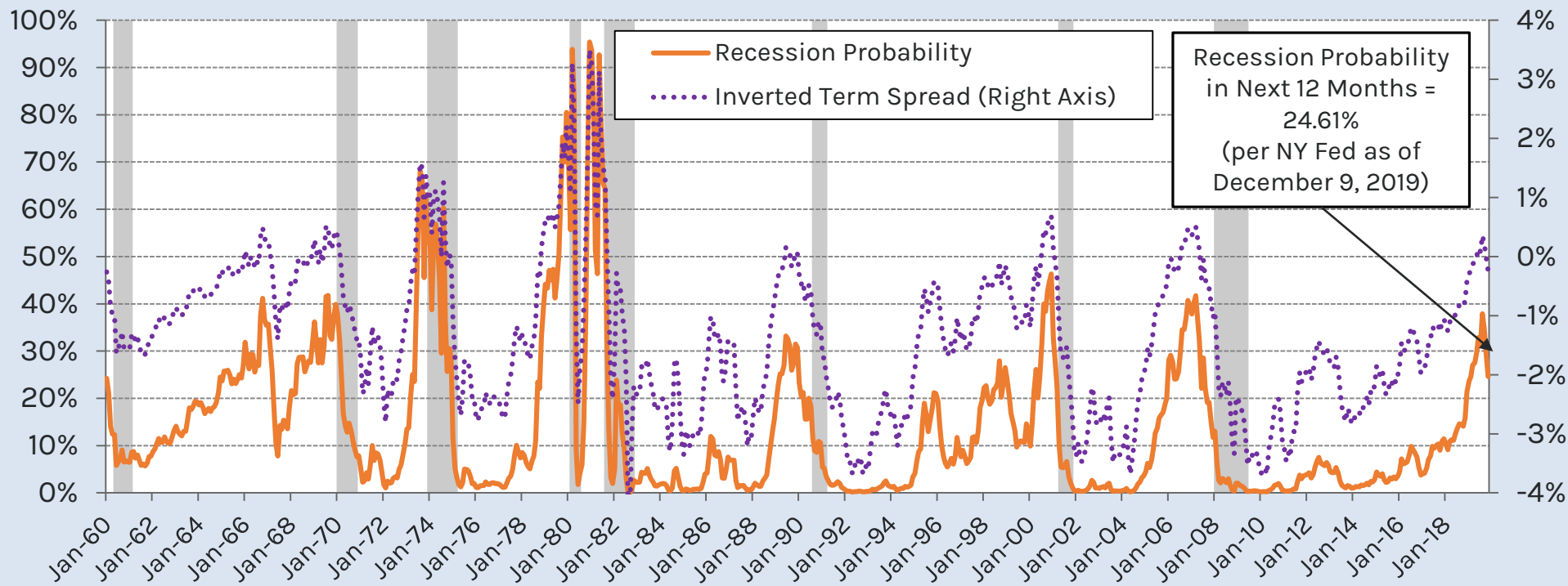
* Avg pp difference between 10Y Treasury yield (constant maturity) and 3M Treasury yield (bond-equivalent basis) in a given month.

** Avg pp difference between 10Y Treasury yield (constant maturity) and 2Y Treasury yield (constant maturity) in a given month.

*** Before Jan 1963, 1Y used instead of 3M.

NEW YORK FED'S "RECESSION PROBABILITY INDICATOR"

Recession Probability* and Inverted 10Y-3M Term Spread**

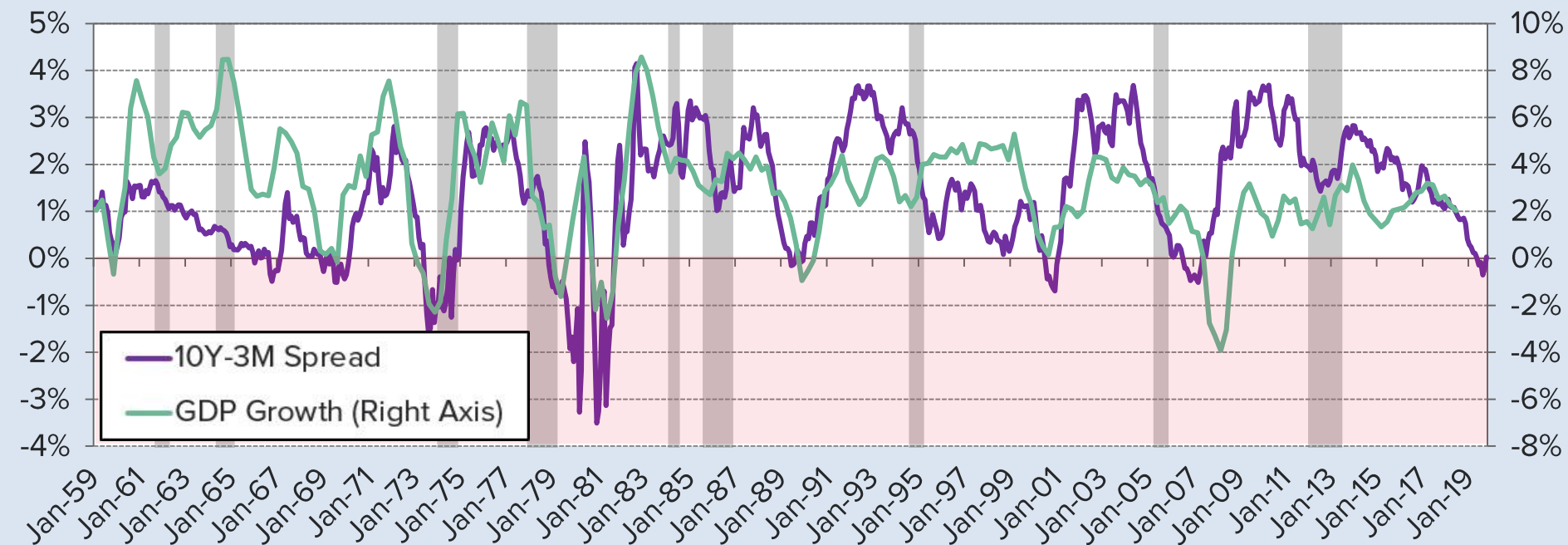


* Model uses 10Y-3M term spread to calculate the probability of a recession occurring within the next 12 months.

** Average monthly percentage-point difference between 10Y Treasury yield (constant maturity) and 3M Treasury yield (bond-equivalent basis), inverted.

TERM SPREAD: PLAUSIBLE FORECASTER OF GDP GROWTH

10Y-3M Term Spread* and 6Q-Forward YoY GDP Growth** 1959-Q2 2019, Quarterly

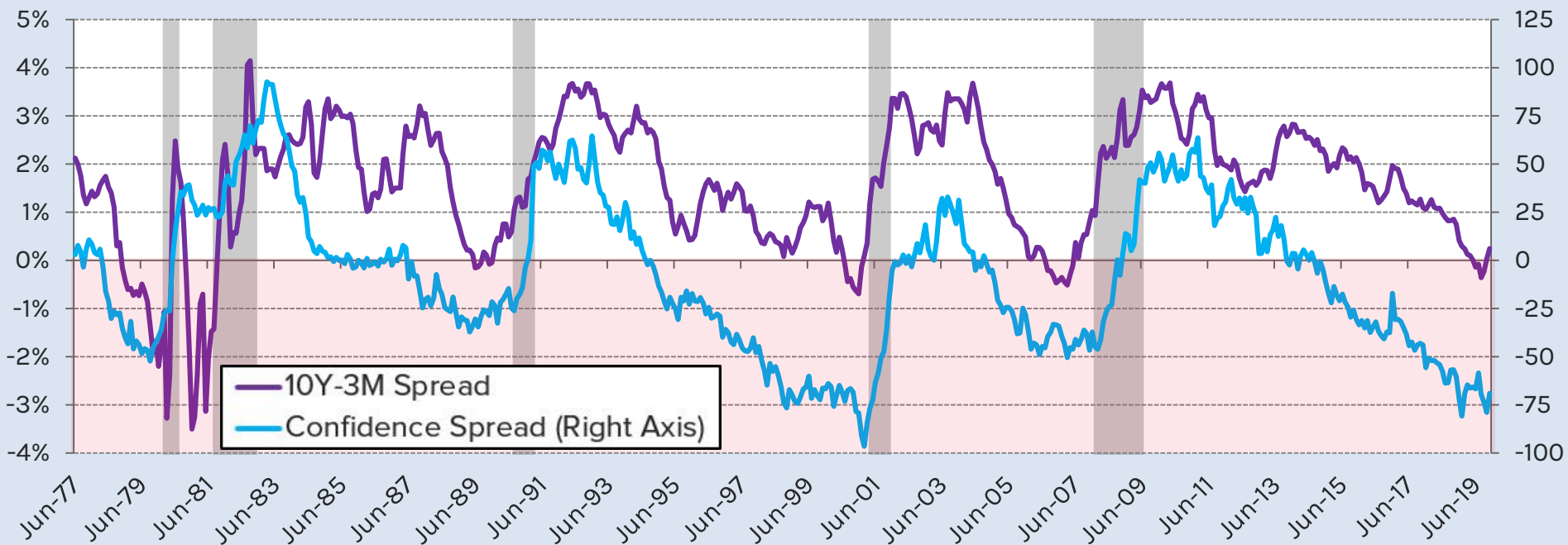


* Average monthly percentage-point difference between 10Y Treasury yield (constant maturity) and 3M Treasury yield (bond-equivalent basis).

** YoY change in quarterly real GDP, plotted six quarters ahead.

TERM SPREAD AND CCI “SPREAD”: VERY NICE FIT

10Y-3M Term Spread* and Consumer Confidence Spread** 1977-Nov 2019, Monthly



* Average monthly percentage-point difference between 10Y Treasury yield (constant maturity) and 3M Treasury yield (bond-equivalent basis).

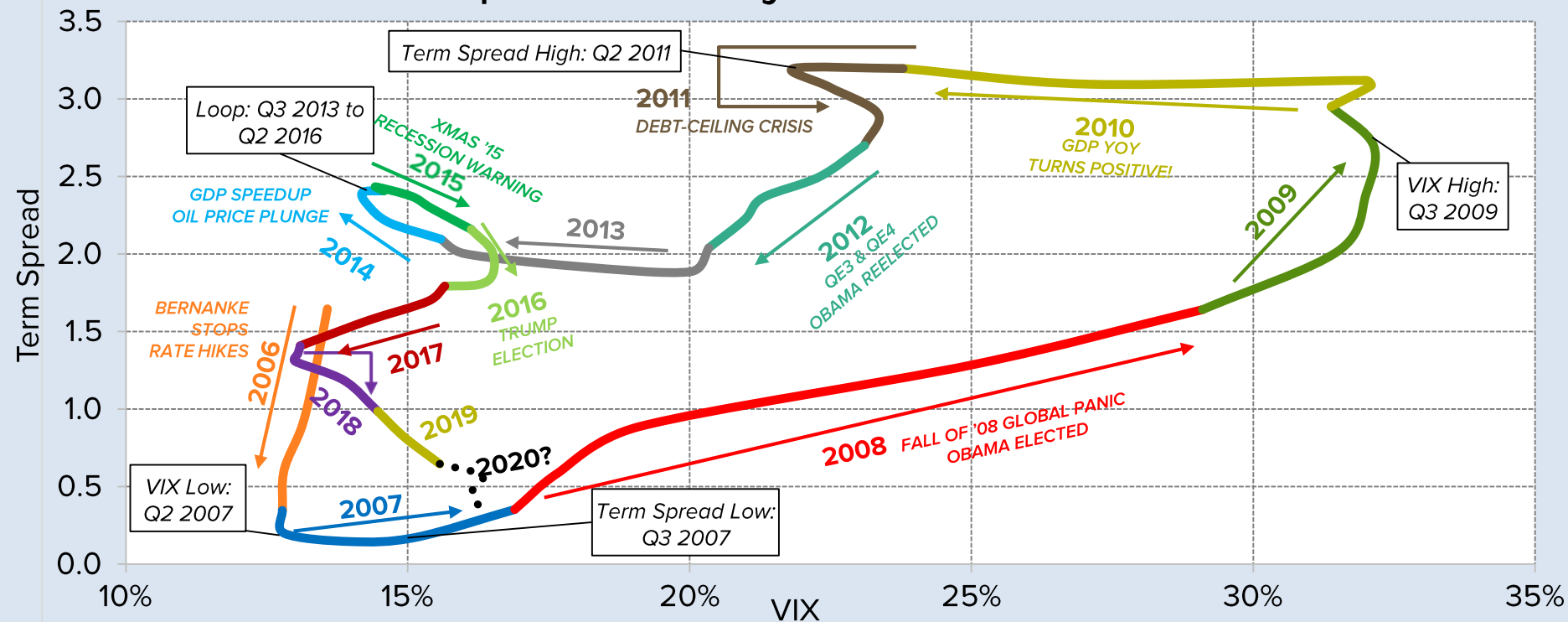
** Difference between Conference Board's "Expectations Index" and "Present Situation Index" in a given month.

SOURCE: Federal Reserve Bank of New York (2019), Conference Board (2019)

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COMING FULL CIRCLE: TERM SPREAD & VIX

Term Spread-VIX Cycle* (2006 to 2020**)



* Plots the 10Y-90D Treasury spread (two-year moving average) against the CBOE Volatility Index (two-year moving average) for every given quarter.

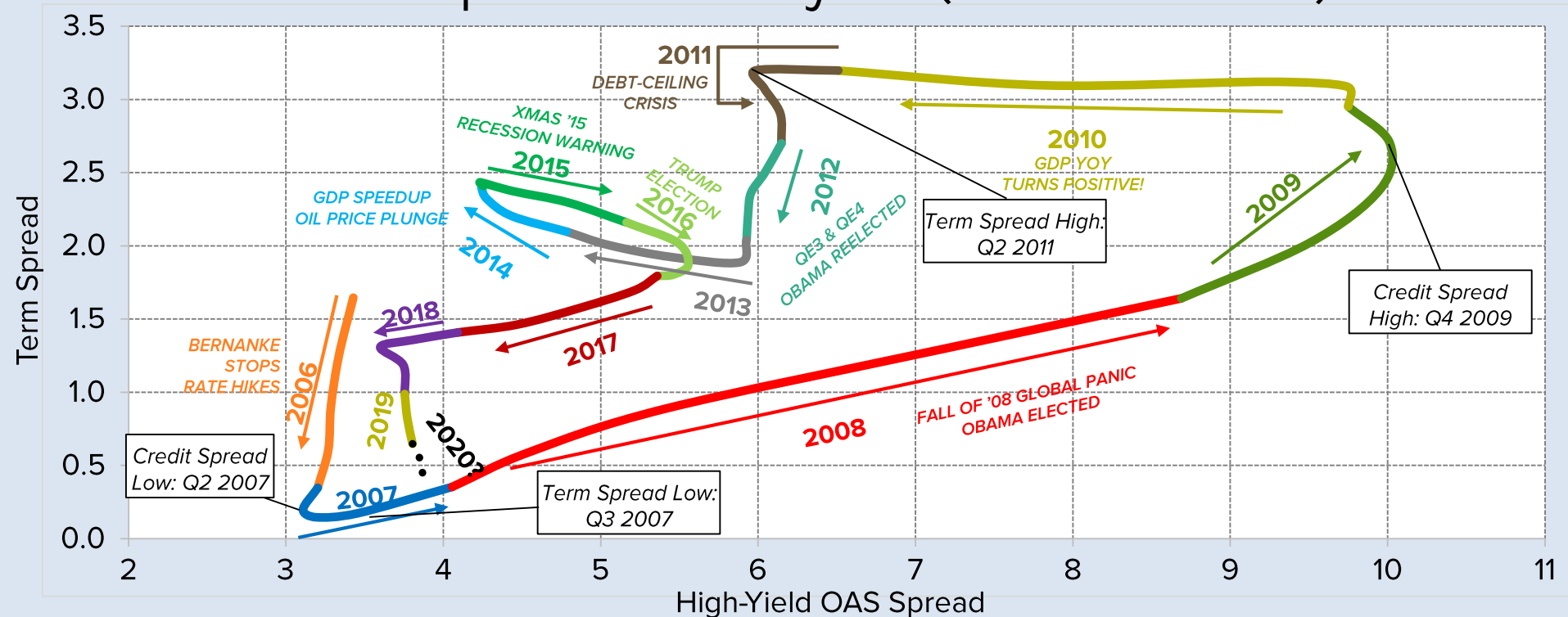
** Dotted line to 2020 assumes that term spread and credit spread stay at their current levels for the next two years.

SOURCE: Board of Governors of the Federal Reserve System (2019), Chicago Board Options Exchange (2019)

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COMING FULL CIRCLE: TERM SPREAD AND CREDIT SPREAD

Term Spread-Credit Cycle* (2006 to 2020**)



* Plots the 10Y-90D Treasury spread (two-year moving average) against the corporate high-yield OAS (two-year moving average) for every given quarter.

** Dotted line to 2020 assumes that term spread and credit spread stay at their current levels for the next two years.

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☐ Lessons: What are the Best Indicators?

☐ Lessons: What is the Current Recession Outlook?

WHAT ARE THE BEST INDICATORS? (IMO!)

□ **SHORT-TERM (0-2 MONTHS)**: Highly certain, but w/ little foresight or perspective:

- **Initial Unemployment Claims, Ch 56** [*YoY change > +50K*]
- **Unemployment Rate, Ch 55** [*YoY change > +0.3 pp*]
- **Conference Board Consumer “Expectations,” Ch 81** [*YoY change < -25 pp and below 0*]
- **Employment/Population Ratio, Ch 58** [*change from peak < -0.5 pp*]
- **Conference Board Leading Credit Index, Ch 91** [*index > 2*]

WHAT ARE THE BEST INDICATORS? (IMO!)

❑ **MEDIUM-TERM (2-6 MONTHS)**: Less certain (more “sensitive”), but w/ more foresight.

- **Industrial Production, Manf, Ch 15** [*YoY % < -2.5%*]
- **CES Total NFP Employment, Ch 57** [*YoY change < 1.5%*]
- **Avg Weekly Hours, Manf, Ch 64** [*sustained YoY change < -0.5*]
- **Chicago Fed Midwest Economy Index, Ch 52** [*index < 0.3*]
- **Share of Central Bank Rates Below US, Ch 100** [*sustained > 50%*]
- **Conference Board Leading Indicators Index, Ch 92** [*YoY change < -1*]

WHAT ARE THE BEST INDICATORS? (IMO!)

❑ **LONG-TERM (6-12 MONTHS)**: Great on foresight & perspective, timing approximate.

- Inverted Term Spread, 10Y-3M, Ch 105
- GDP Above Potential, Ch 22
- Age Adjusted Employment/Population Ratio, Ch 59
- Conference Board Expectations Minus Present, Ch 81

A “CRASH” COURSE IN RECESSION INDICATORS

☐ What Is a Recession?

☐ Properties of Good Recession Indicators

☐ INDICATORS

1. *Production, Consumption, & Income*
2. *Housing, Autos, & Transportation*
3. *Real-Time Diffusion Indexes*
4. *Employment*
5. *Inflation & Wages*
6. *Sentiment*
7. *Financial & Other “Leading” Indicators*

☐ Lessons: What are the Best Indicators?

☐ Lessons: What is the Current Recession Outlook?

LET'S LOOK FIRST AT WHERE WE ARE

❑ Current Performance of the Economy

- **Summary of Strengths:**
 - **Domestic Demand**
 - **Consumption / Retail**
 - **Services**
 - **Consumer Confidence**
 - **Equity Market (rising to date)**

- **Summary of Weaknesses**
 - **Net Exports (Slowing Global Growth)**
 - **Investment / Capex**
 - **Energy & Manufacturing**
 - **Business Confidence / Policy Uncertainty**
 - **Profit Margins and Earnings (declining to date)**

THEN LET'S LOOK AHEAD

- Near-Term (0-2 months): LOW Likelihood
 - Most near-term (and “certain”) indicators are not close to triggering. These include financial stress, unemployment, retail, personal income, and any of the other “big four” indicators. The only cautionary near-term signal is consumer “expectations.”
- Medium-Term (2-6 months): MODERATE Likelihood
 - Medium-term (and “sensitive”) indicators are very mixed. Many indicators related to manufacturing, firm capex, durables demand, average hours, the yield curve, and corporate profit margins and earnings are either triggered or nearly so. Slowing global growth and the high fed funds rate (relative to rest of world) is further cause for concern.
- Long-Term (6-12 months): HIGH Likelihood
 - Long-term (and “perspectival”) indicators are nearly all pointing to high likelihood—the exception being inflation. These include potential GDP, full employment, and consumer expectations in addition to further pressure on the yield curve and profit margins (in case there is no medium-term recession). Political and policy uncertainty also seem certain to grow.

WHAT DO OUR FAVORITE INDICATORS NOW SAY? (DEC 20, 2019)

❑ SHORT-TERM (0-2 MONTHS):

- Initial Unemployment Claims
- Unemployment Rate
- Conference Board Consumer “Expectations”
- Employment/Population Ratio
- Conference Board Leading Credit Index

❑ MEDIUM-TERM (2-6 MONTHS):

- Industrial Production: Manf [UP from CLOSE on Nov 18]
- Manf New Orders for Durable Goods
- CES Total NFP Employment
- Avg Weekly Hours, Manf Production Workers
- Chicago Fed Midwest Economy Index
- Share of Central Bank Rates Below US
- Conference Board Leading Indicators

❑ LONG-TERM (6-12 MONTHS):

- Inverted Term Spread, 10Y-3M
- GDP Above Potential
- Age Adjusted Employment/Population Ratio
- Conference Board Expectations Minus Current

All Clear

Close to Triggering

Indicator Triggered