2020 Real Estate Forecast

WHERE ARE WE HEADED?

2020 Real Estate Forecast – Where are we Headed?

I. American Metropolis
   A. Past Influences
   B. Future Influences

II. GDP and the Fed
   A. Business Investment and Consumer Spending
   B. Other Metrics

III. Capital Market
   A. Equity Markets and Property Returns
   B. Debt Markets

IV. Property Type Performance (appendix)


initiative
energy
critical
education
think
management
finance
visibility
national
approach
open
enablers
consumer
progress
ICT
business
mobile
broadband
collaboration
needs
future
efficiency
sustainable
idea
utilities
services
analytics
local
population
digital
B4B
protection
insurance
objective
start
instrument
solution
safety
elaborate
agreement
strategy
water
city
smart
automatism
infrastructure
people
performance
development
discussion
news
building
government
public
capital
process
transport
sector
leadership
stakeholders
citizen
project
learning
green
safeguard
applications
together
data
security
traffic
regional
grid
estate
companies
mobility
motivation

Past Influences on the Built Environment

Top Ten Influences on Metropolitan America:

1. The 1956 Interstate Highway Act

Source: Robert Fishman, "American Metropolis at Century's End: Past and Future Influences, *Housing Policy Debate*, 2000, 11:1.

Top Ten Influences on Metropolitan America:

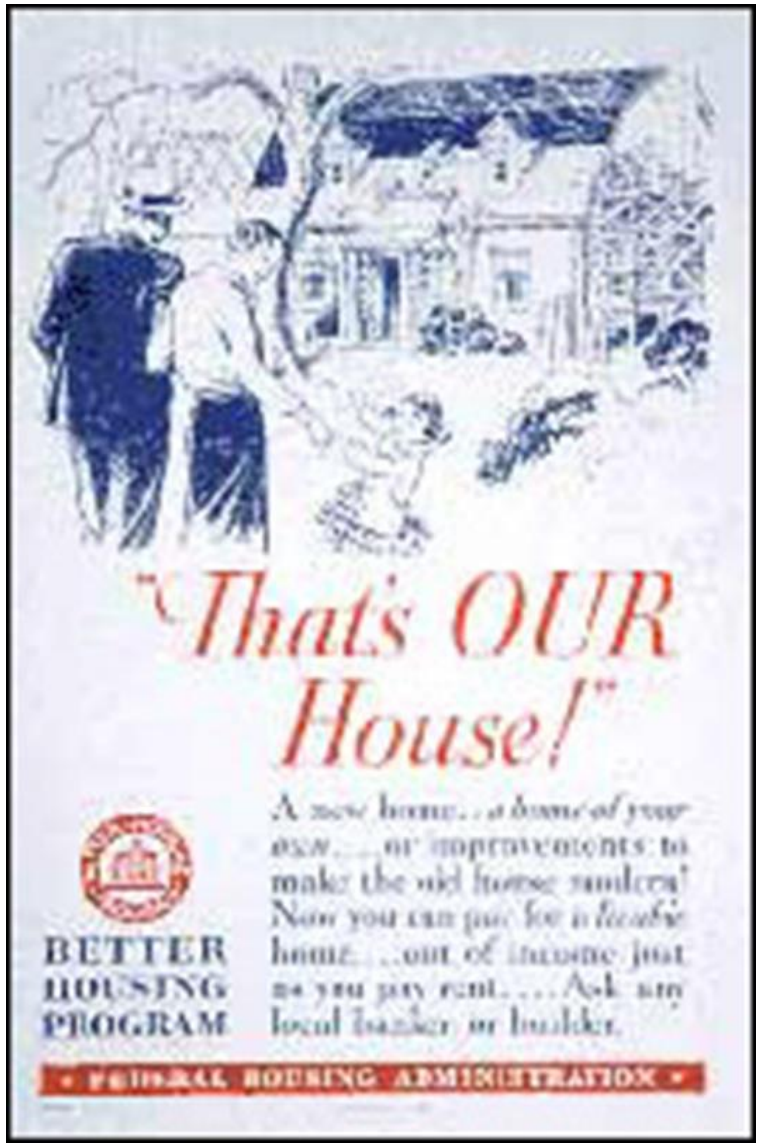
1. The 1956 Interstate Highway Act

Unintended consequence: suburban sprawl.

Source: Robert Fishman, "American Metropolis at Century's End: Past and Future Influences, *Housing Policy Debate*, 2000, 11:1.

Top Ten Influences on Metropolitan America:

2. Federal Housing Administration Mortgage Financing and Subdivision Regulation

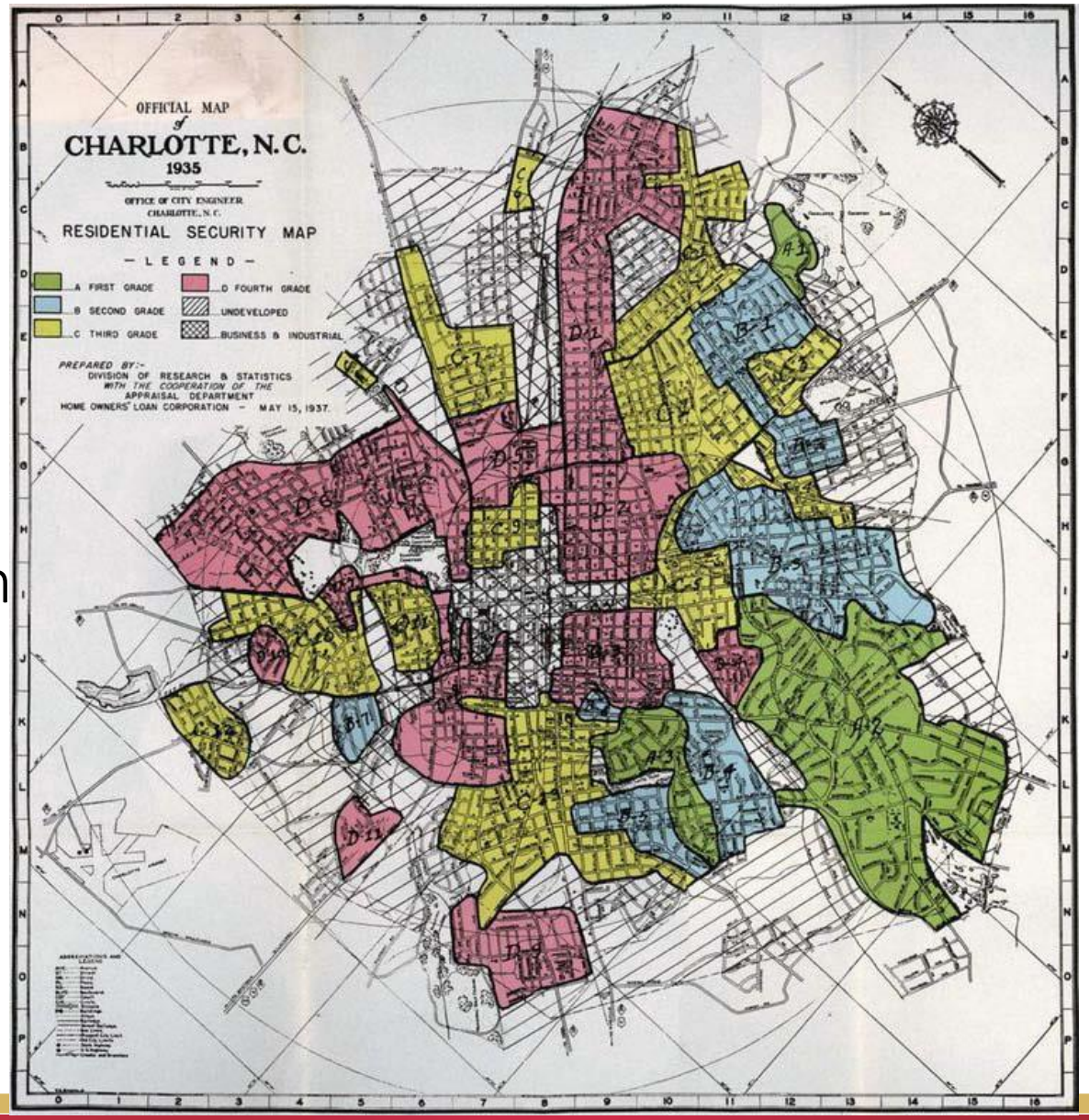


Source: Robert Fishman, "American Metropolis at Century's End: Past and Future Influences, *Housing Policy Debate*, 2000, 11:1.

Top Ten Influences on Metropolitan America:

2. Federal Housing Administration Mortgage Financing and Subdivision Regulation

Unintended consequence: Redlining

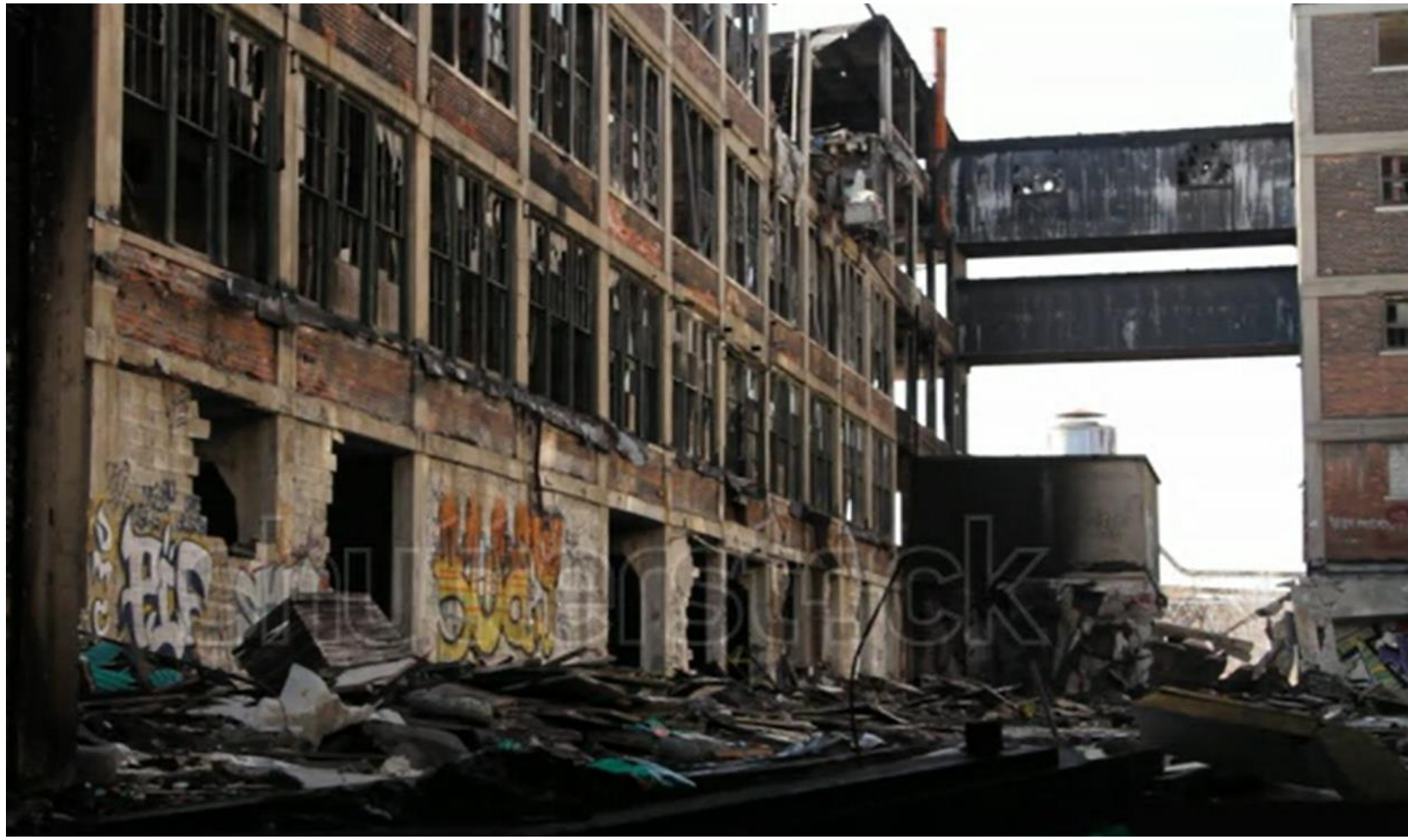


Source: Robert Fishman, "American Metropolis at Century's End: Past and Future Influences, *Housing Policy Debate*, 2000, 11:1.

Top Ten Influences on Metropolitan America:

3. De-industrialization of Cities

Consequence: Urban/suburban wage gap and income inequality



Source: Robert Fishman, "American Metropolis at Century's End: Past and Future Influences, *Housing Policy Debate*, 2000, 11:1.

Top Ten Influences on Metropolitan America:

4. Urban Renewal: Downtown Redevelopment and Public Housing Projects (1949 Housing Act)

Source: Robert Fishman, "American Metropolis at Century's End: Past and Future Influences, *Housing Policy Debate*, 2000, 11:1.

Top Ten Influences on Metropolitan America:

4. Urban Renewal: Downtown Redevelopment and Public Housing Projects (1949 Housing Act)

Consequence: Hyper-concentration of the poor

Source: Robert Fishman, "American Metropolis at Century's End: Past and Future Influences, *Housing Policy Debate*, 2000, 11:1.

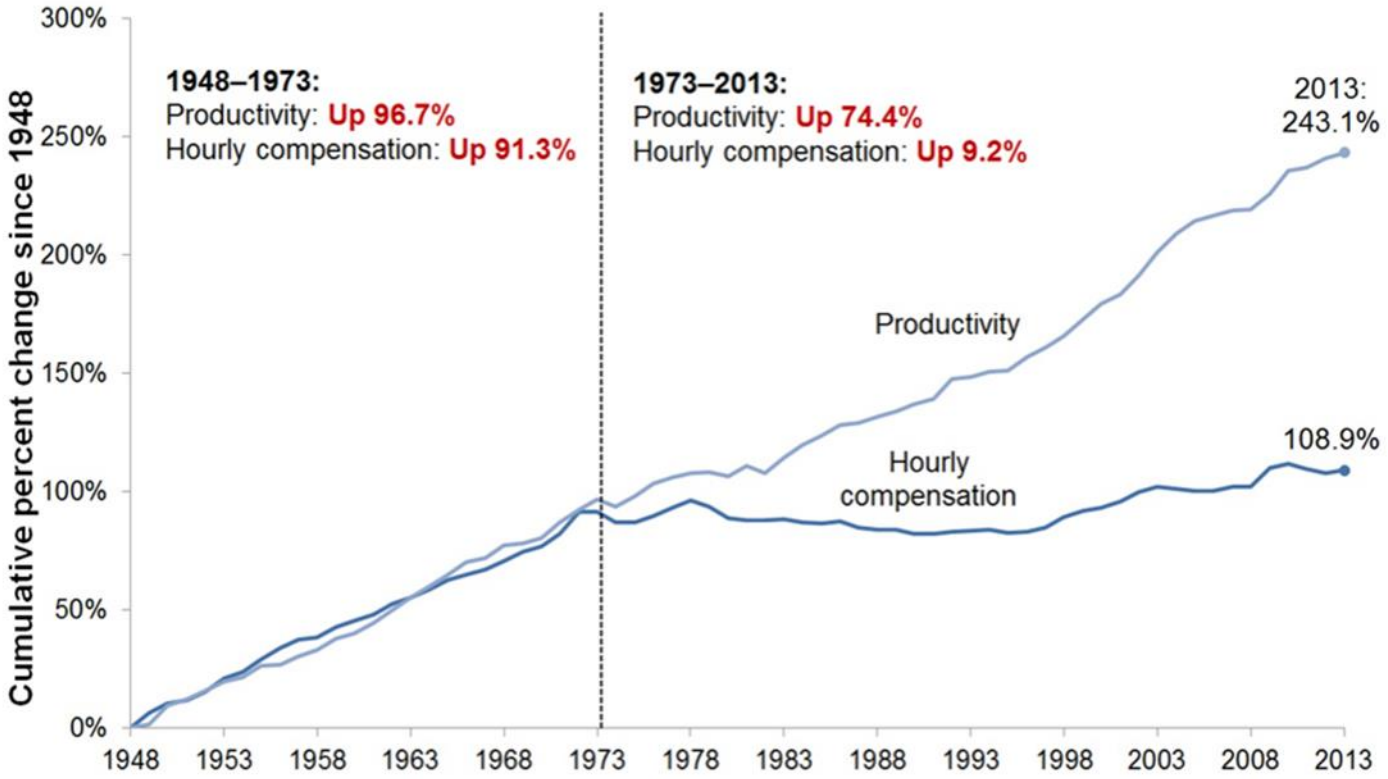
Future Influences on the Built Environment

Future Influences on Metropolitan America:

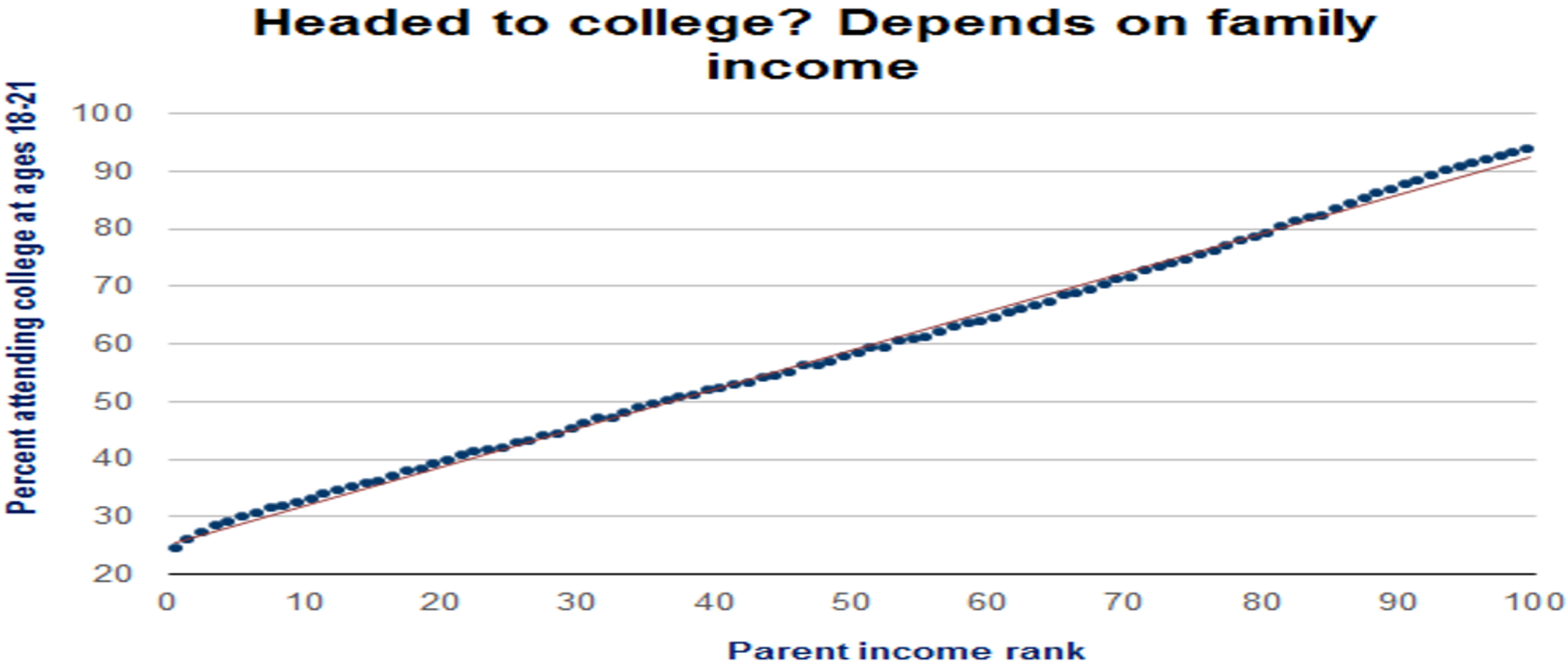
1. Income/Wealth Disparity

The income-productivity gap began over 40 years ago . . . . .

Disconnect between productivity and typical worker's compensation, 1948–2013



. . . . the income gap is likely to continue as college enrollment is highly correlated with family income . . . . .



Source: Richard Reeves and Eleanor Krause, Raj Chetty in 14 Charts: Big findings on Opportunity and Mobility We Should All Know, *Brookings*, January 11, 2018.

Future Influences on Metropolitan America

2. Machine learning and autonomous vehicles

How is Your Food Being Delivered?

Source: Badger Herald, 11/4/2019

Machine learning and big data

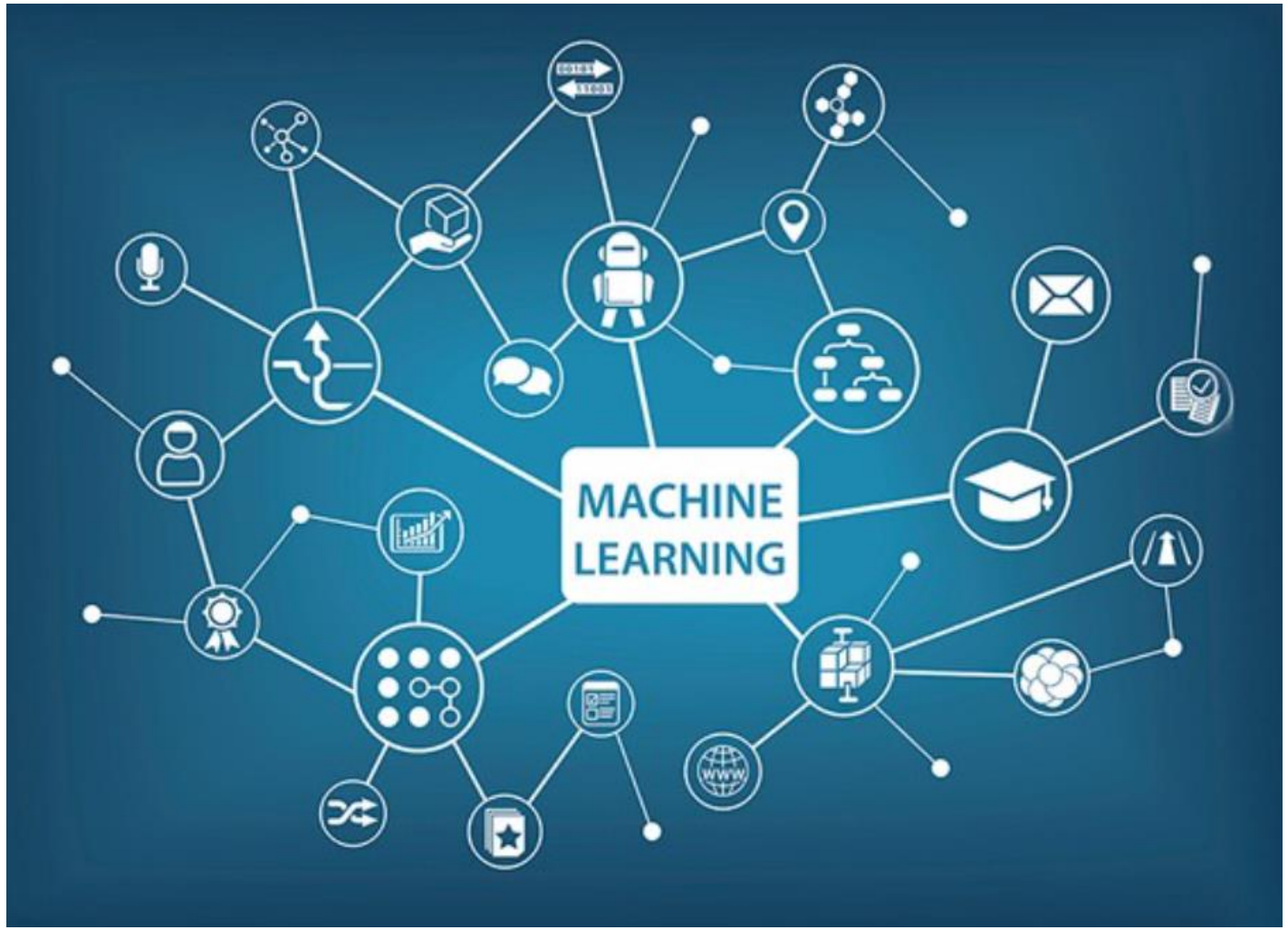
1. Past analysis relied on theory driving analysis and functional form: i.e.

$$Y = b_0 + b_1x_1 + b_2x_2 + ... + b_nx_n$$

2. In machine learning, the machine determines the relationship and functional form?

3. Real estate examples
   - Mortgage underwriting
   - Rating agencies
   - CoStar

4. Autonomous vehicles and Medicine example



Source: Economist, Self-Driving Cars will Require a New Business, Model, March 1, 2018.

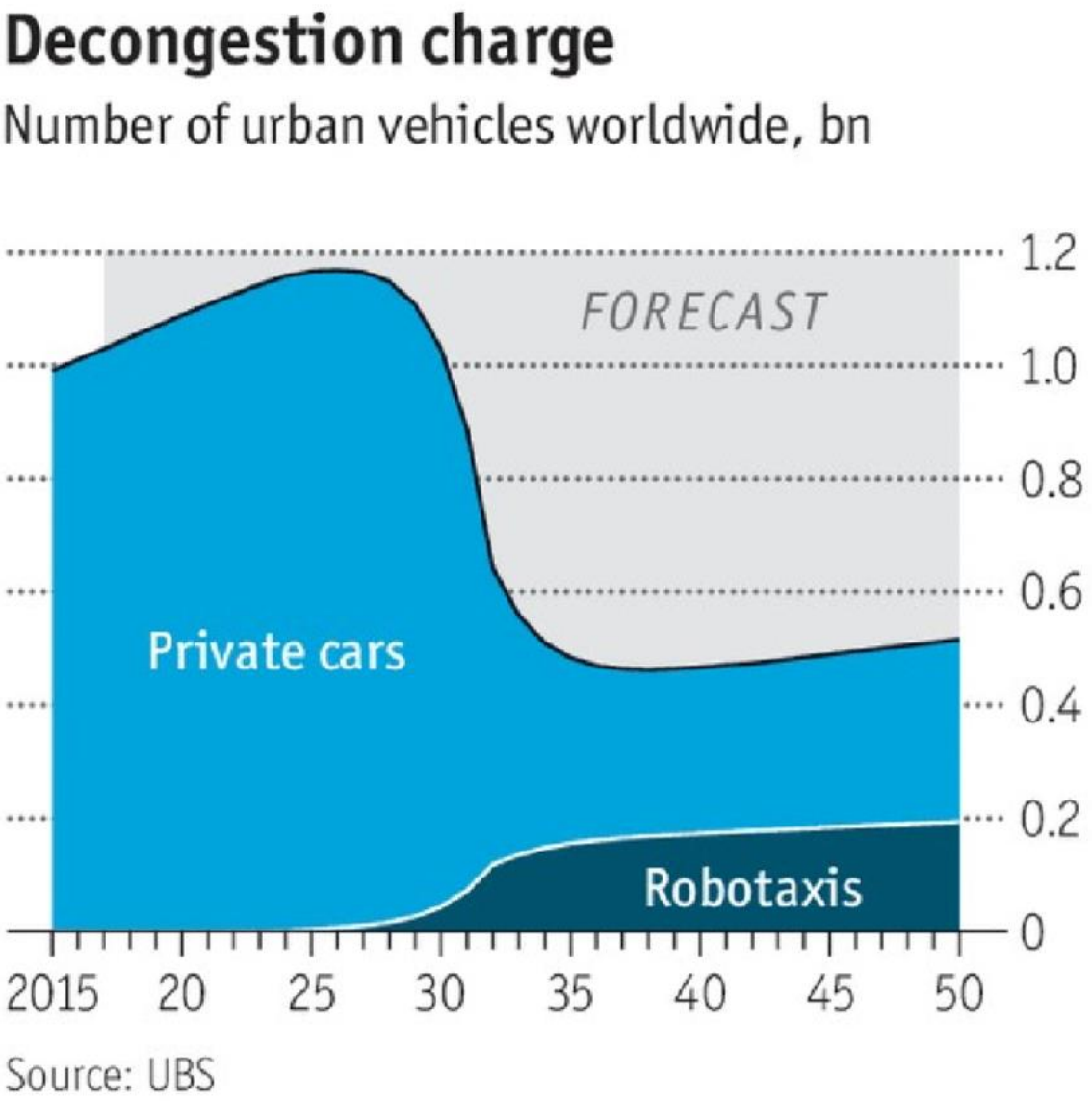
Autonomous Vehicles

Private automobiles are used 5% of the time – huge cost per use.

1. Will congestion get better or worse, what about congestion pricing?

2. Uber distance or AV distance impact on the built environment?

3. What to do with old parking structures –3-D printing areas? . . . .



Source: Economist, Self-Driving Cars will Require a New Business, Model, March 1, 2018.

Will your family vacation in 2028 look like this . . . .

Source: Economist Magazine

. . . . or will your drive to work be without a steering wheel, GM's version of an autonomous vehicle

Source: Economist Magazine

Will your next Pappy Van Winkle Family Reserve come from a beaker? Ethanol and some sugars, salts, acids and compounds like ethyl esters. . . .

Source: 1843 Magazine from the Economist , The Future of Everything, An Exclusive First State of Lab-Made Whiskey.

Influences on Commercial Real Estate

20-year property returns are stable and competitive . . . .

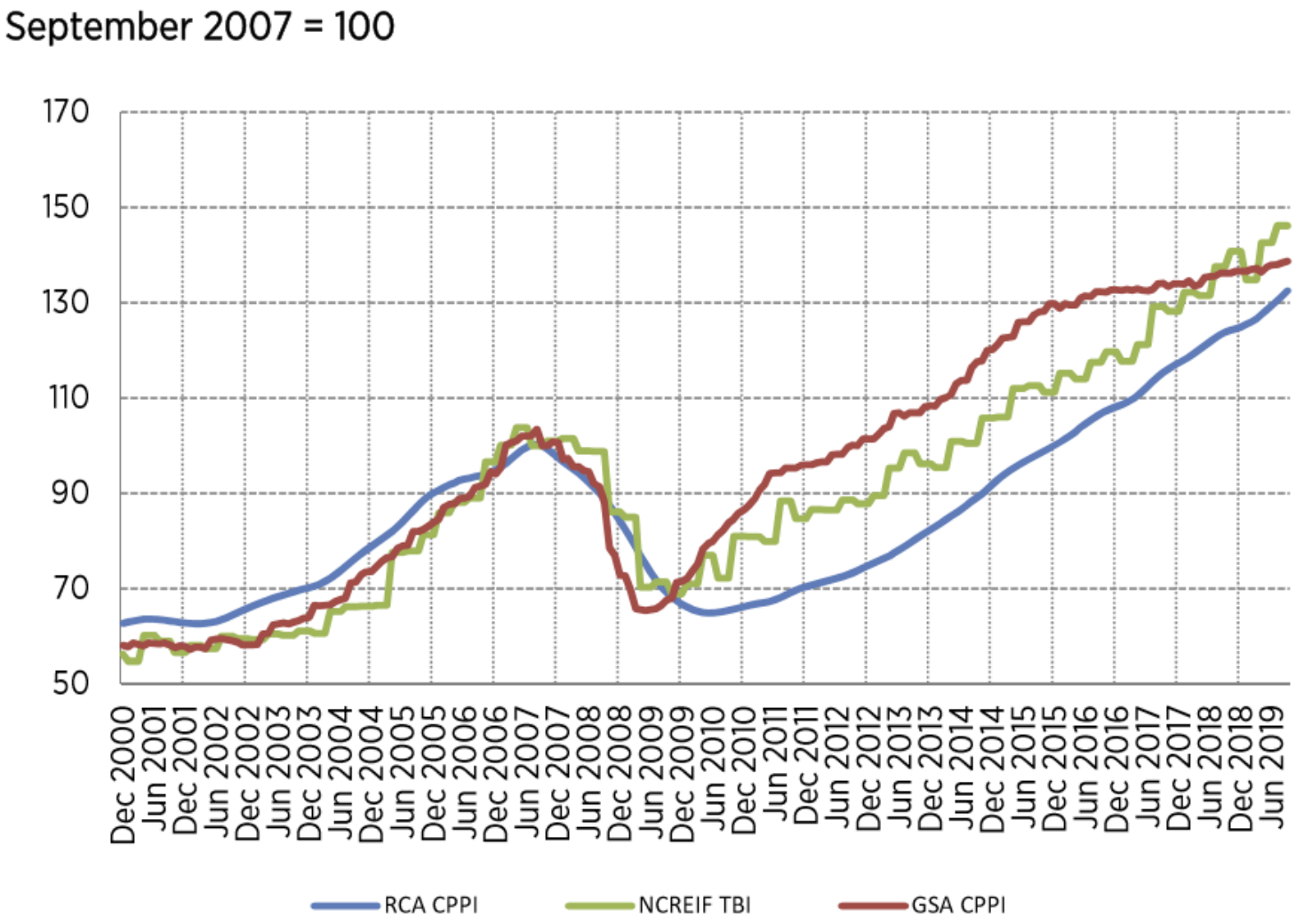
Market Index Comparisons (through 2019Q2)

	1 Year	5 Year	10 Year	20 Year
National Property NCREIF Index, (no leverage)	6.5%	8.8%	9.3%	8.9%
S&P 500 Index	10.4%	10.7%	14.7%	5.9%
NAREIT (averages 35% leverage)	12.6%	8.8%	16.0%	10.6%
T-Bills	2.1%	1.0%	0.5%	1.9%
CPI	1.7%	1.5%	1.7%	2.2%

Source: NCREIF Real Estate Performance Report, 2019Q2, and Graaskamp Center for Real Estate.

Commercial Property Price Indices

. . . . Property prices have appreciated at a 4.4% compound annual rate of growth over the past 20 years. . . .



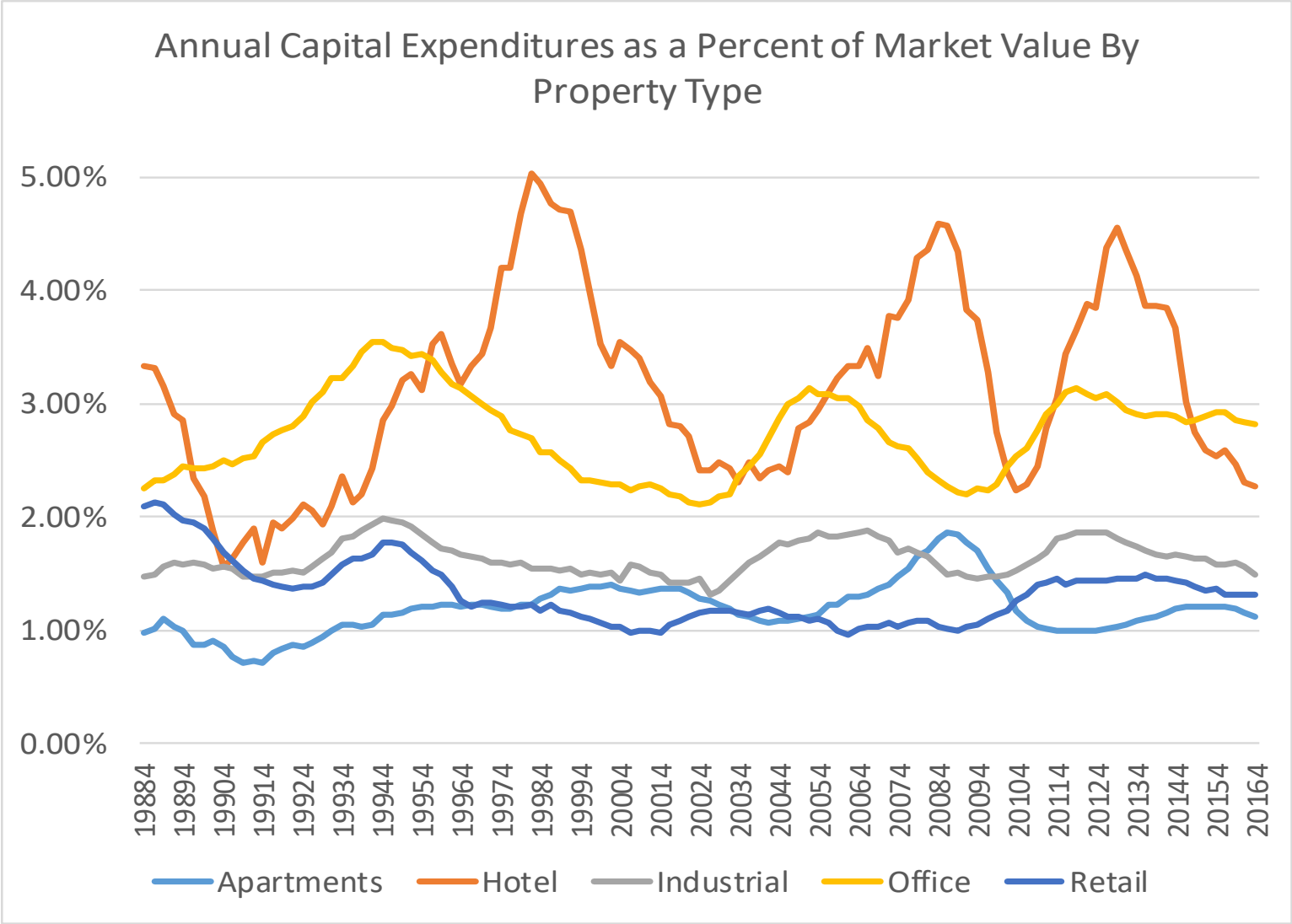
Source: Mortgage Bankers Association, Commercial/Multifamily Databook 2019Q3.

Of the 4.4% property price growth over the past 20 years . . . .

. . . . 2.5% came from cap rate compression.*

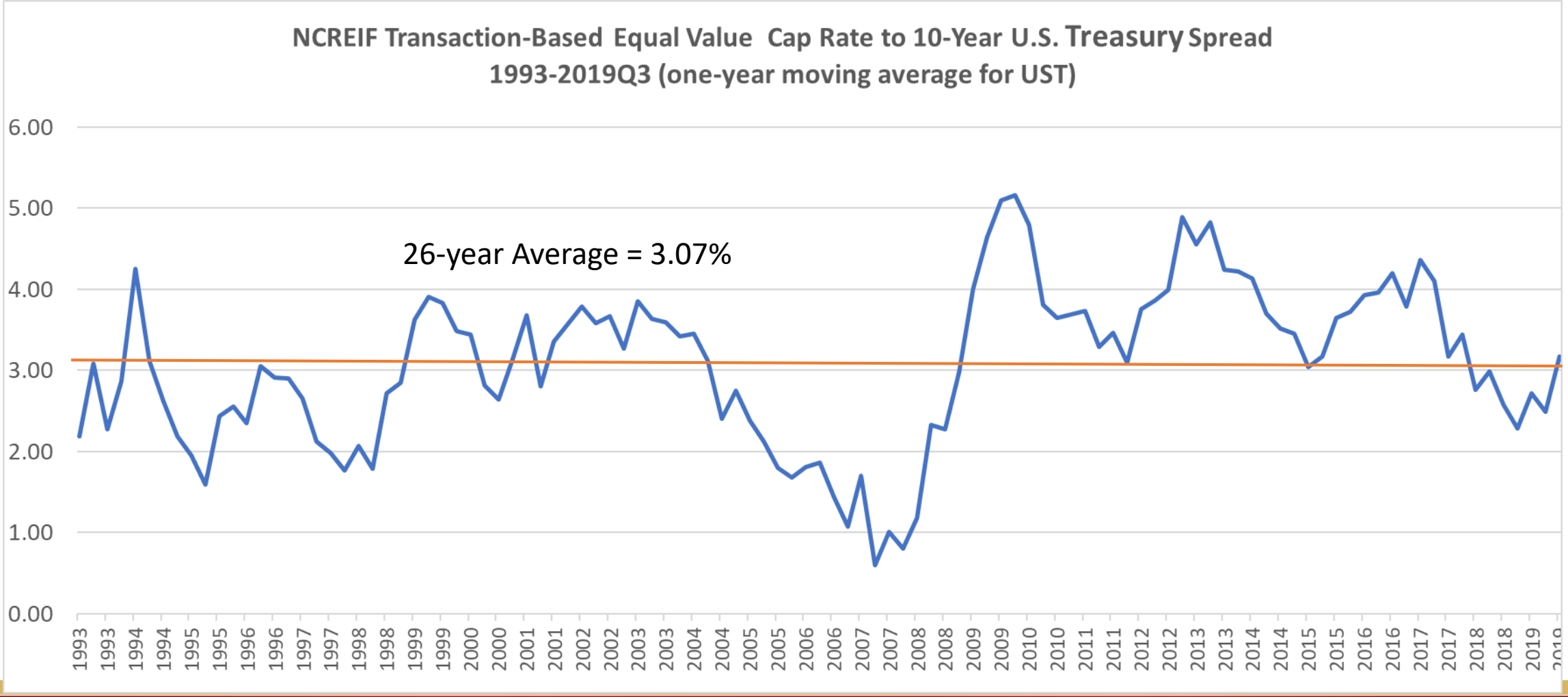
* Based on NCREIF transaction-based cap rates compressed from of 8.98% in 2000 to 5.40% in 2019.

. . . . capital expenditures consumed almost all of that additional appreciation . . . .



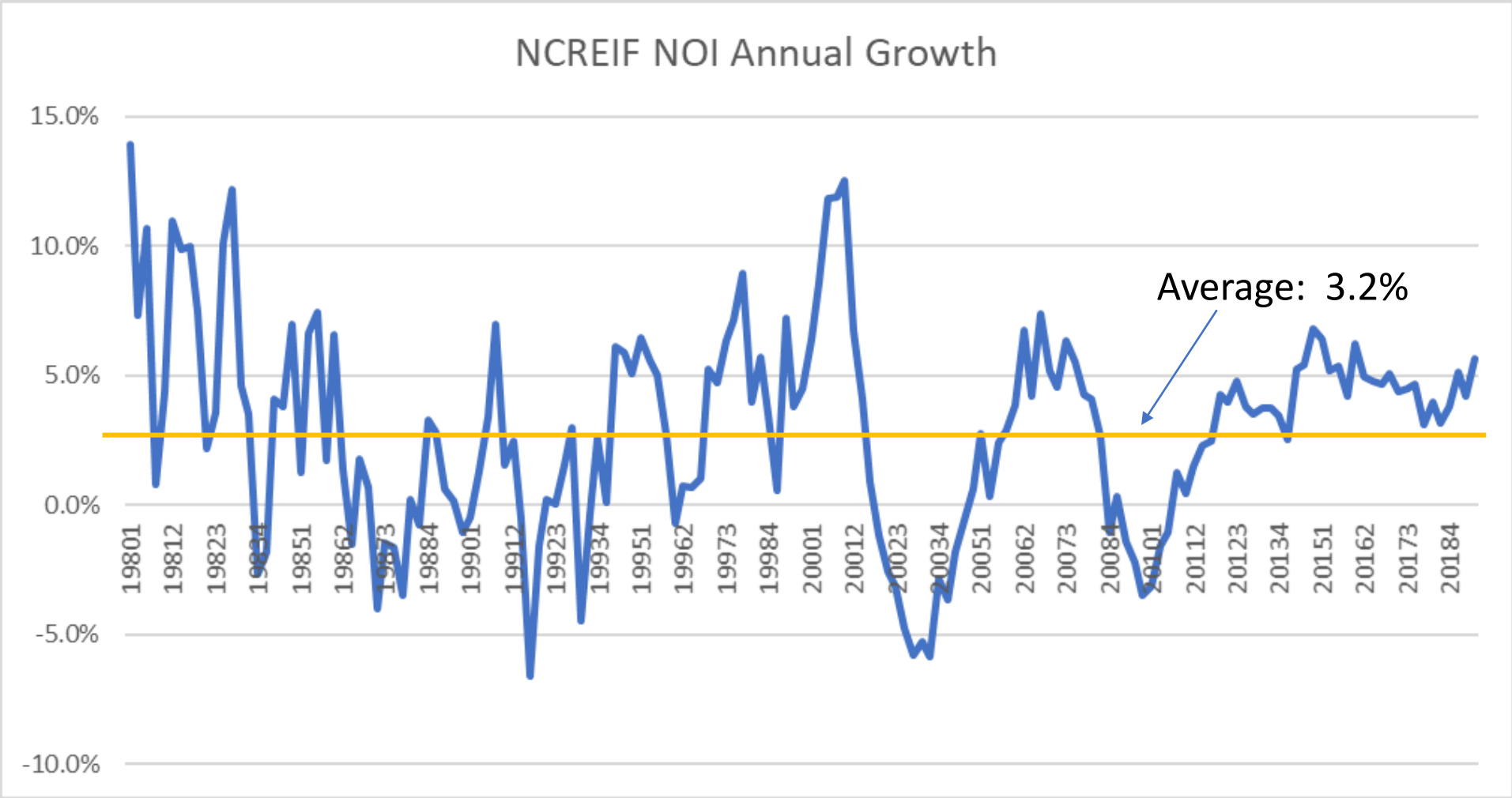
Source: NCREIF data used in "New NCREIF Value Index and Operations Measures," Michael S. Young, Jeffrey D. Fisher, and Joseph D'Alessandro, *Journal of Real Estate Literature*, 25:1 (2017), 221-235.

. . . .even with current cap rates, spreads over US Treasuries are reasonable. . . .



Sources: Federal Reserve Economic Data, NCREIF, and Graaskamp Center for Real Estate

. . . . property income growth remains robust, sans retail . . . .



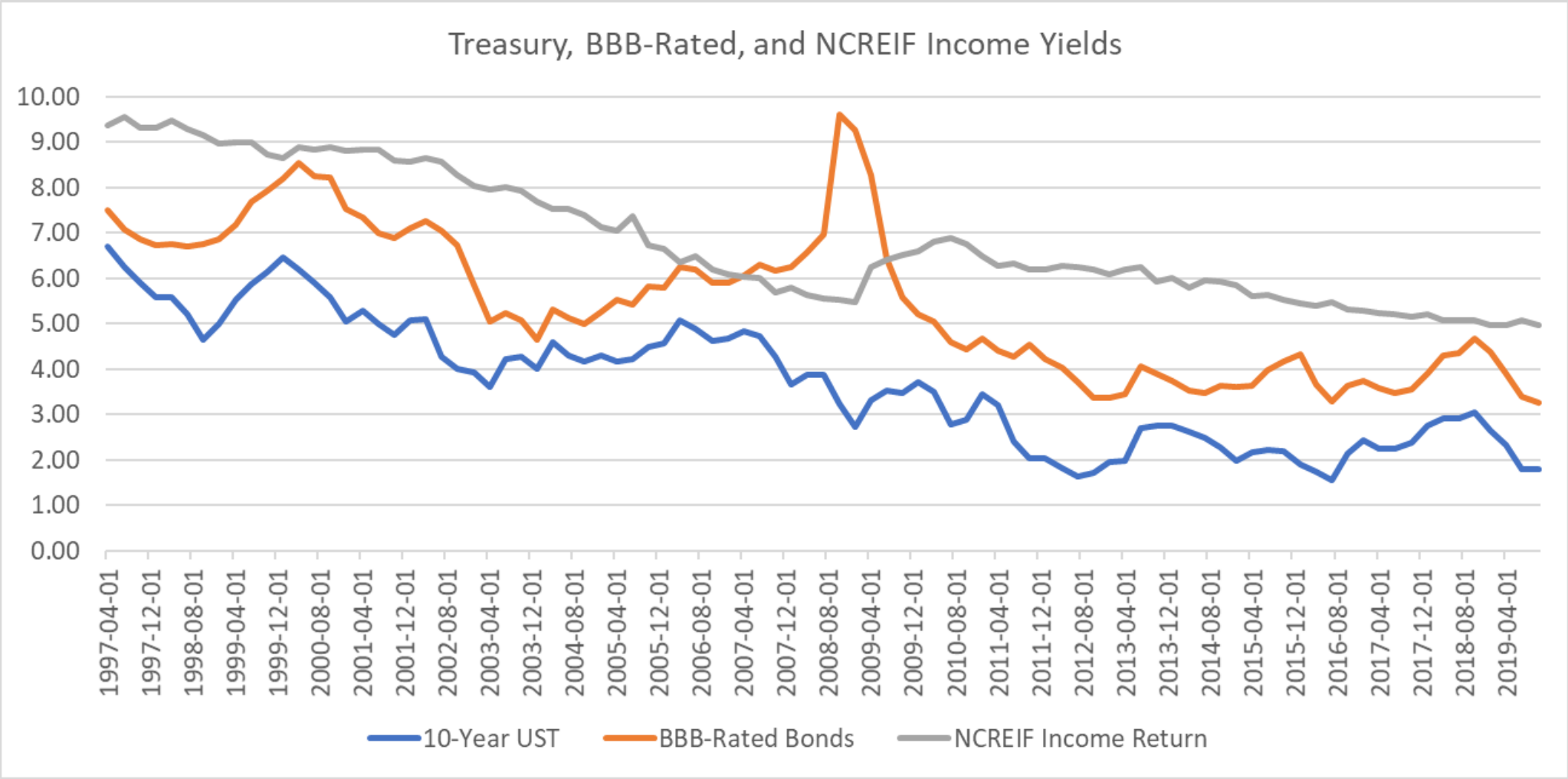
Source: NCREIF and the Graaskamp Center.

. . . . past real estate returns have exceeded expectations, future returns will meet future expectations – barely.

Commercial Real Estate Returns -- Past and Expected	
Commercial Real Estate Return Profile 2000-2019	
NCREIF Cash Flow Yield	6.30%
Plus: Property Appreciation	4.40%
Less: Capital Expenditures	1.80%
Total Return	8.90%
Expected Commercial Real Estae Returns 2020-2030	
NCREIF Cash Flow Yield	5.40%
Plus: NOI Growth	3.20%
Less: Capital Expendistures	1.80%
Expected Return	6.80%

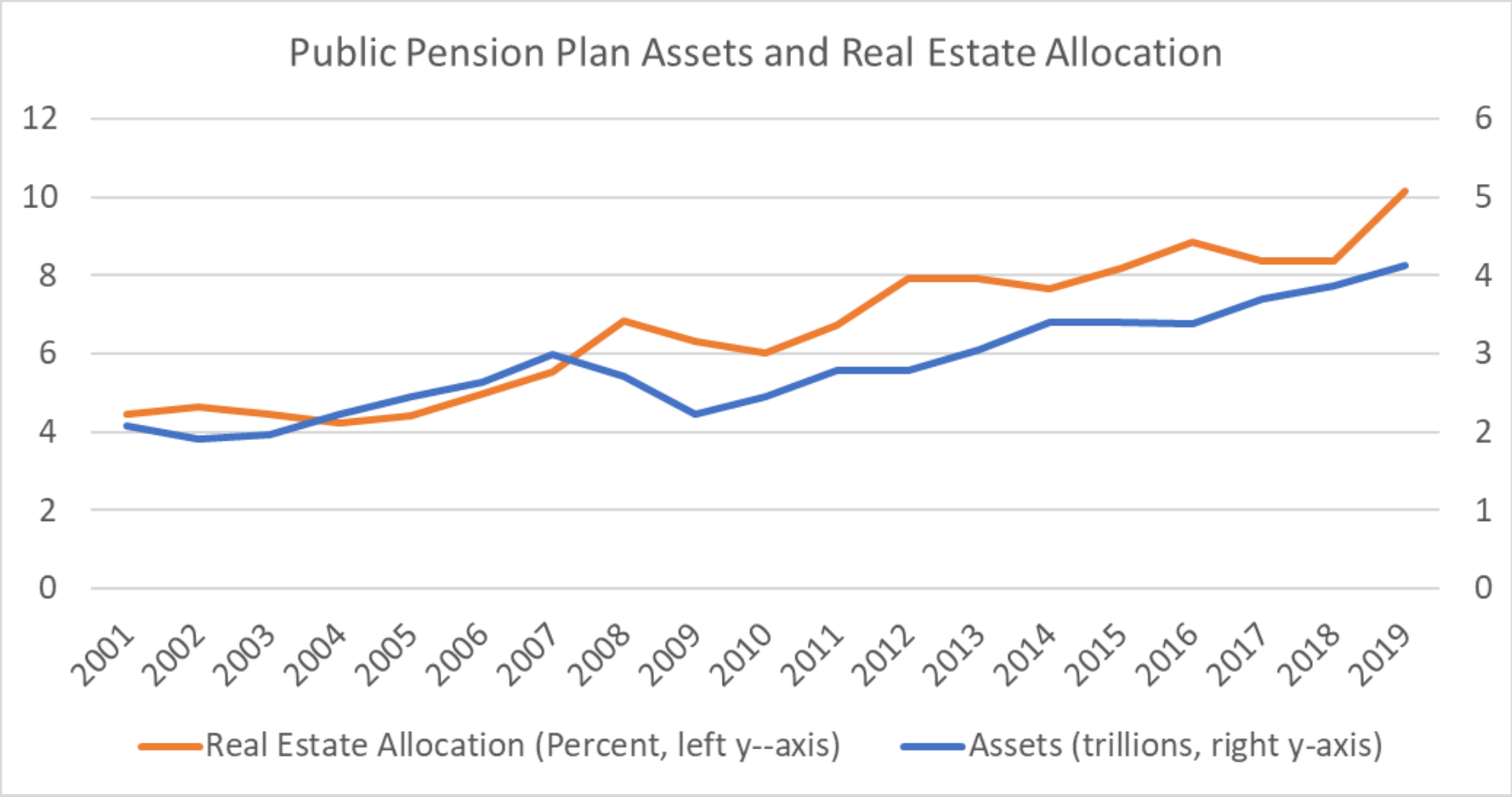
Sources: RCA, Green Street, , NCREIF, and Graaskamp Center for Real Estate

Where will investment funds invest their dollar. . .



Sources: Federal Reserve Economic Data, NCREIF, and Graaskamp Center for Real Estate

. . . . As assets under management and allocation to real estate doubled between 2001-2019, real estate investment grew from $88 billion to $420 billion . . . . . .



So why is this important?

At year-end 2017, U.S. retirement assets totalled $28 trillion:

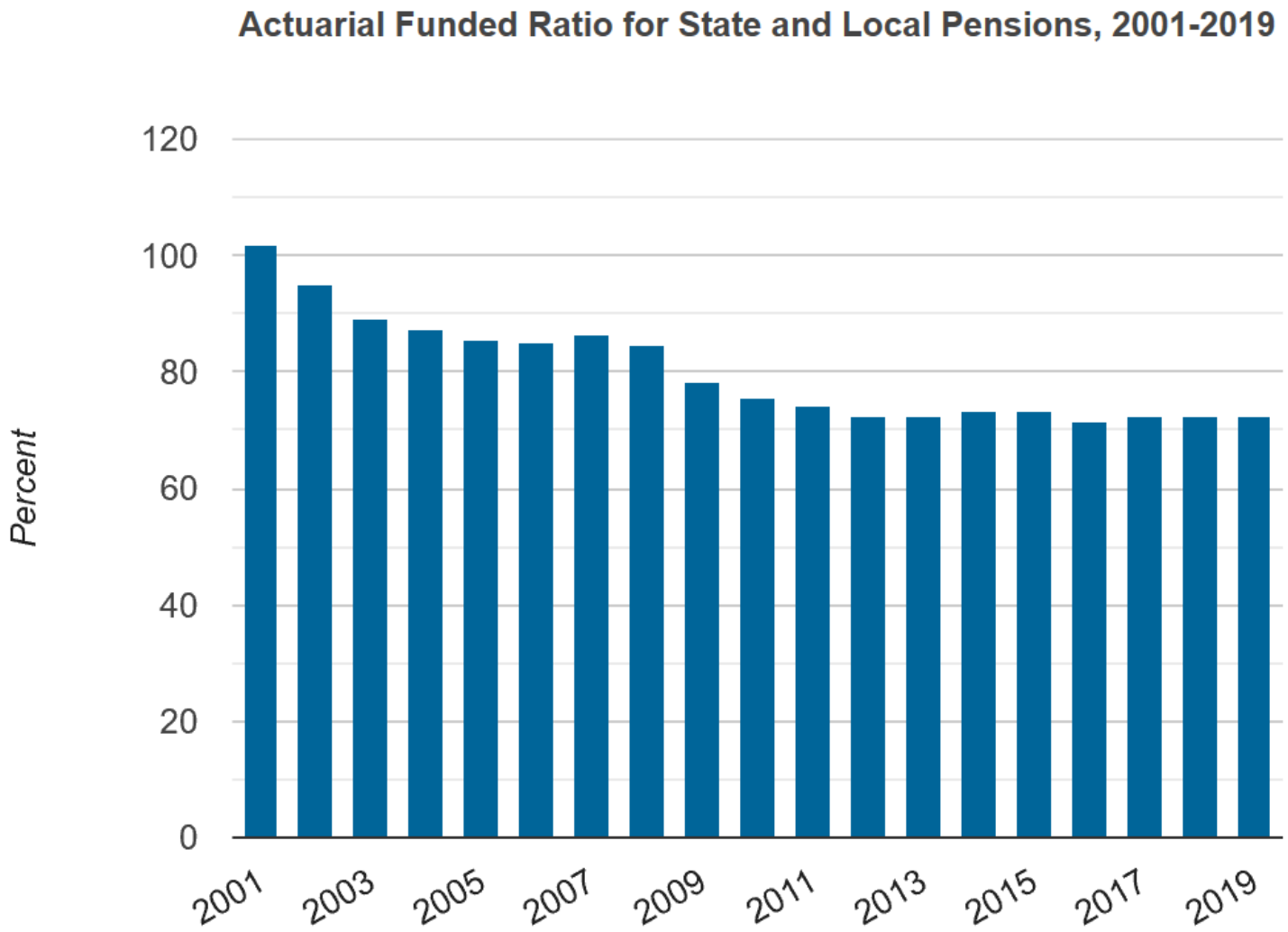
- $16.9 trillion in defined contribution assets – 401(k), 403(b) and IRA
- $9.1 trillion in public and private defined benefit plans
- $2.2 trillion in annuities

Note: As a means of comparison, the total market capitalization of U.S. stocks is about $30 trillion or 144% of GDP.

Source: Willis Towers Watson, Global Pension Assets Study, 2018, February 2018 and Barron's.

. . . . state and local pensions are underfunded . . . .

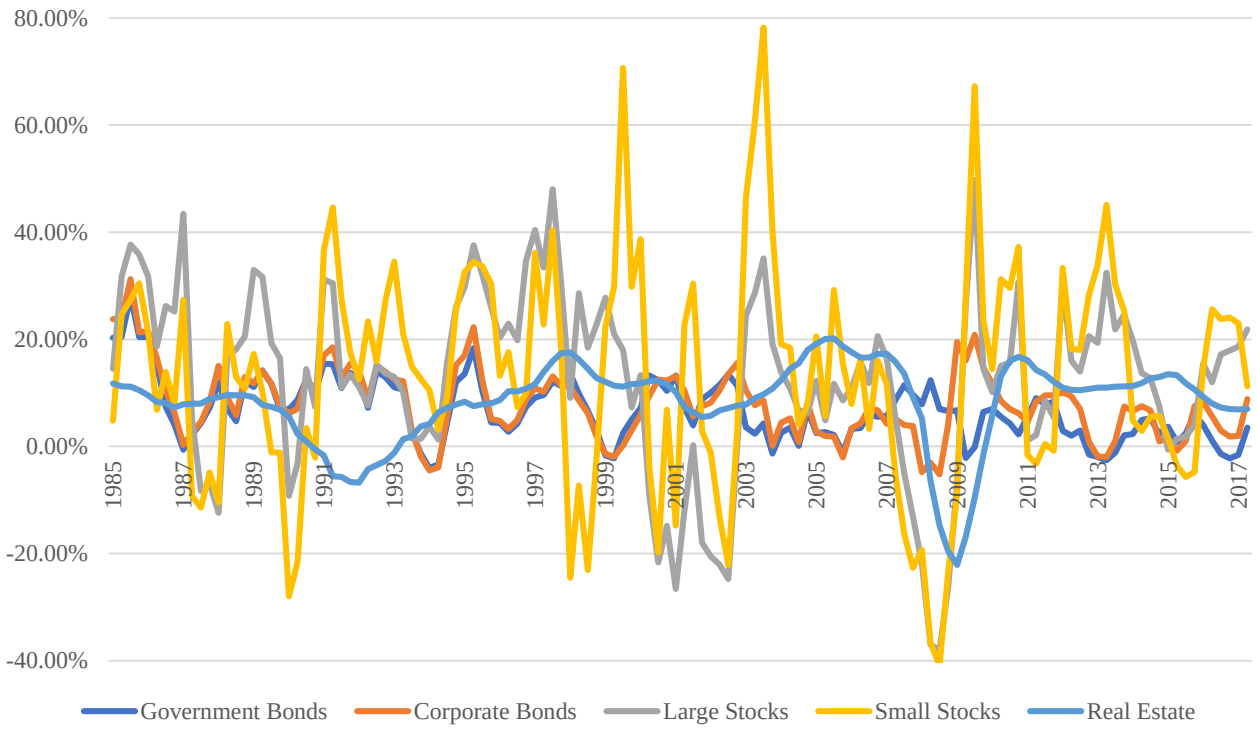
Note: In 2017 public pension plans held $3.74 trillion in assets. The median discount rate for public pension plans was 8 percent from 1990-2011, and 7.75 percent in 2012.



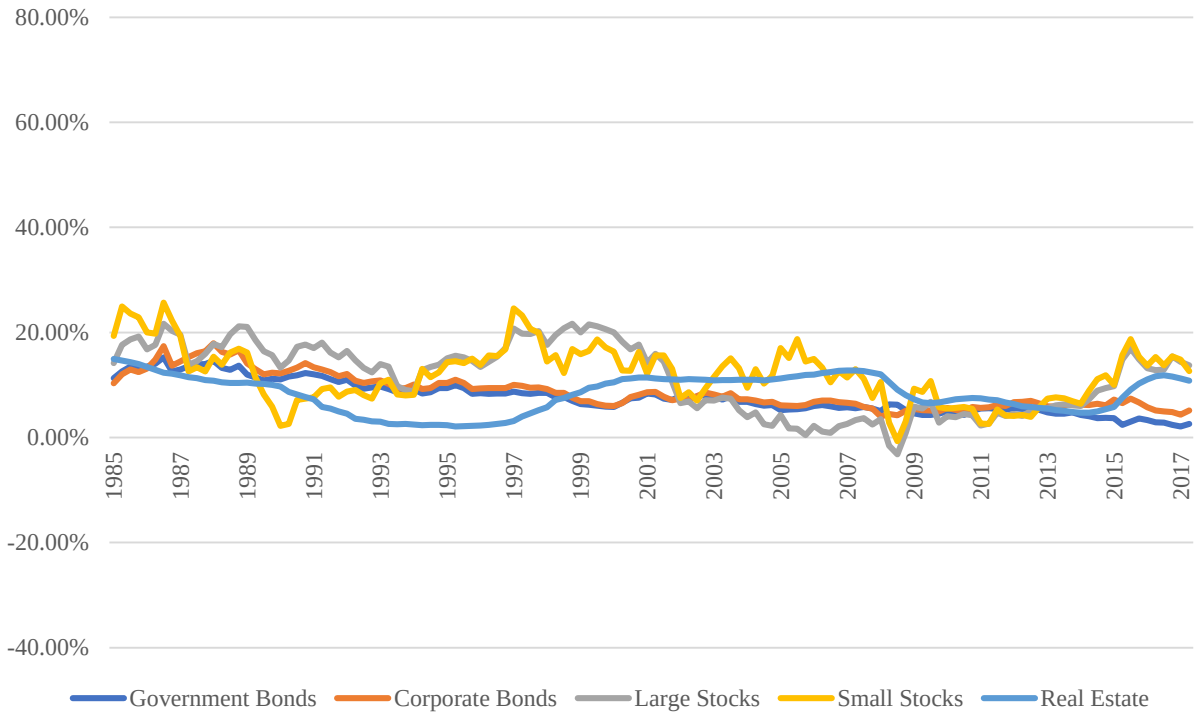
Source: Public Plans Database, http://publicplansdata.org/quick-facts/national/

. . . . same investments, different holding periods . . . .

Panel A: One-Year Holding Period Investment Returns



Panel D: Seven-Year Holding Period Investment Returns



Source: Mark J. Eppli and Charles C. Tu, Working Paper, Optimal Portfolio Allocation with Commercial Real Estate: A Long-term Holding Period Analysis.

. . . . benefits of diversification (green provides greater benefit).

Exhibit 9: Return Correlation Matrices

Panel D: Seven-Year Holding Period Return Correlation Matrix

	Inflation	Treasury Bills	Government Bonds	Corporate Bonds	Large Stocks	Small Stocks	Real Estate
Inflation	1.000	0.897	0.832	0.721	0.400	0.326	0.122
Treasury Bills		1.000	0.956	0.863	0.583	0.379	0.168
Government Bonds			1.000	0.952	0.559	0.291	0.073
Corporate Bonds				1.000	0.631	0.323	0.016
Large Cap Stocks					1.000	0.604	-0.072
Small Cap Stocks						1.000	0.285
Real Estate							1.000

Source: Mark J. Eppli and Charles C. Tu, Working Paper, Optimal Portfolio Allocation with Commercial Real Estate: A Long-term Holding Period Analysis.

Summary

Past Influences on the Built Environment

- Federal government policies
- Unintended consequence

Future Influences on the Built Environment

- Income inequality
- Technology – machine learning and autonomous vehicles

Real estate

- Past 20 years – cap rate compression
- Institutional interest in the asset class
- Real estate return variance is low and RE has low correlations with other assets

Source: Federal Reserve Bank, Wage Tracker and The Graaskamp Center.


GDP
Gross
Domestic
Product
Investment
inventory
approach
expenditure
output
goods
Real
Nominal
deflator
increase
country
Government
Consumption
Exports
expenditures
calculates
borders
Calculating
important
value
calculated
adjusted
number
factors
imports
country's
described
price
nation's
services
growth
Sales
Approaches
result
measures
component
implicit
includes
income
Purchases
produced
consumer-oriented
terms
equivalent
seasonally
types
included
economy
inflation
final
composition
whether
imported
outside
unadjusted
adjustment
U.S
regardless
greater
reported
GNP
payouts
measure
consumer
standard
production
adding
basket
unemployment
unaffected
citizens
market
located
size
within
workers
three
eliminate
contracts
sums
next
practice
follows
calculate
example
laws
living
seek
Economic
smaller
fixed
annualized
rather
equal
inflationary
purchasing
minus
National
lower
respect
change
increased
widely-used
method
effect
stable
transfer
working
either
rendering
way
even
quarter
assets
summing
population
due
period's
generally
capita
increases
larger
usually
without
One
payments
another
defined
possible
depending
non-durable
subtracting
producers
Alternative
spending
largest
Predictor
traditional
per
versus
order
broad
durable
different
Countries
measured
arrive
welfare
power
Note
Net
excess
known
dividing
depleted
received
calculation
signal
factor
sum
possibly
economy's
abbreviated
distorted
environment
subtracted
since
future
home
estimated
consumer-oriented

GDP/Federal Reserve Decision Summary

I. GDP

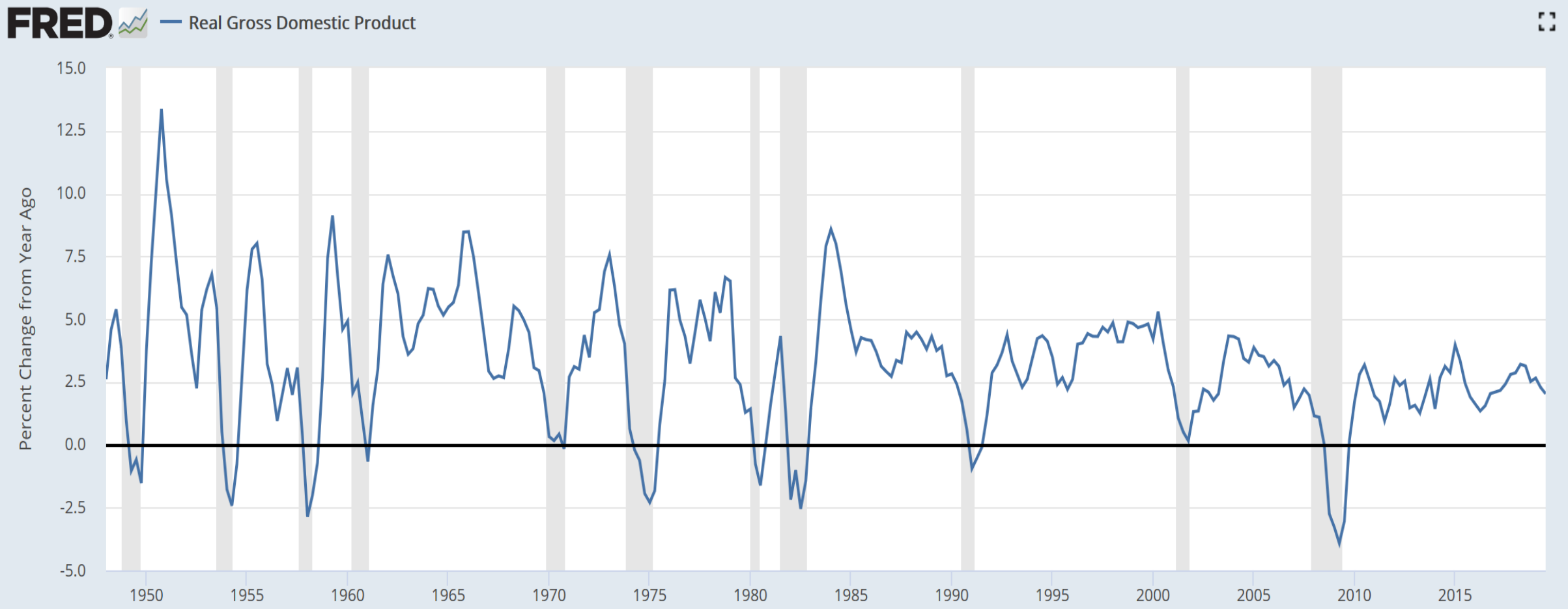
- Business Investment will remain be narrowly negative in 2020
- Consumer Spending usually follows Business Investment
- Consumer Spending is unlikely to have a significant trigger event
- Outcome: GDP will migrate from 2.0% to 1.0% across 2020

II. The Federal Reserve's Decision

- Phillips curve – the inflation – employment relationship
- Other metrics
- Outcome: Federal Reserve actions will be limited, with continued accommodation the likely next moves

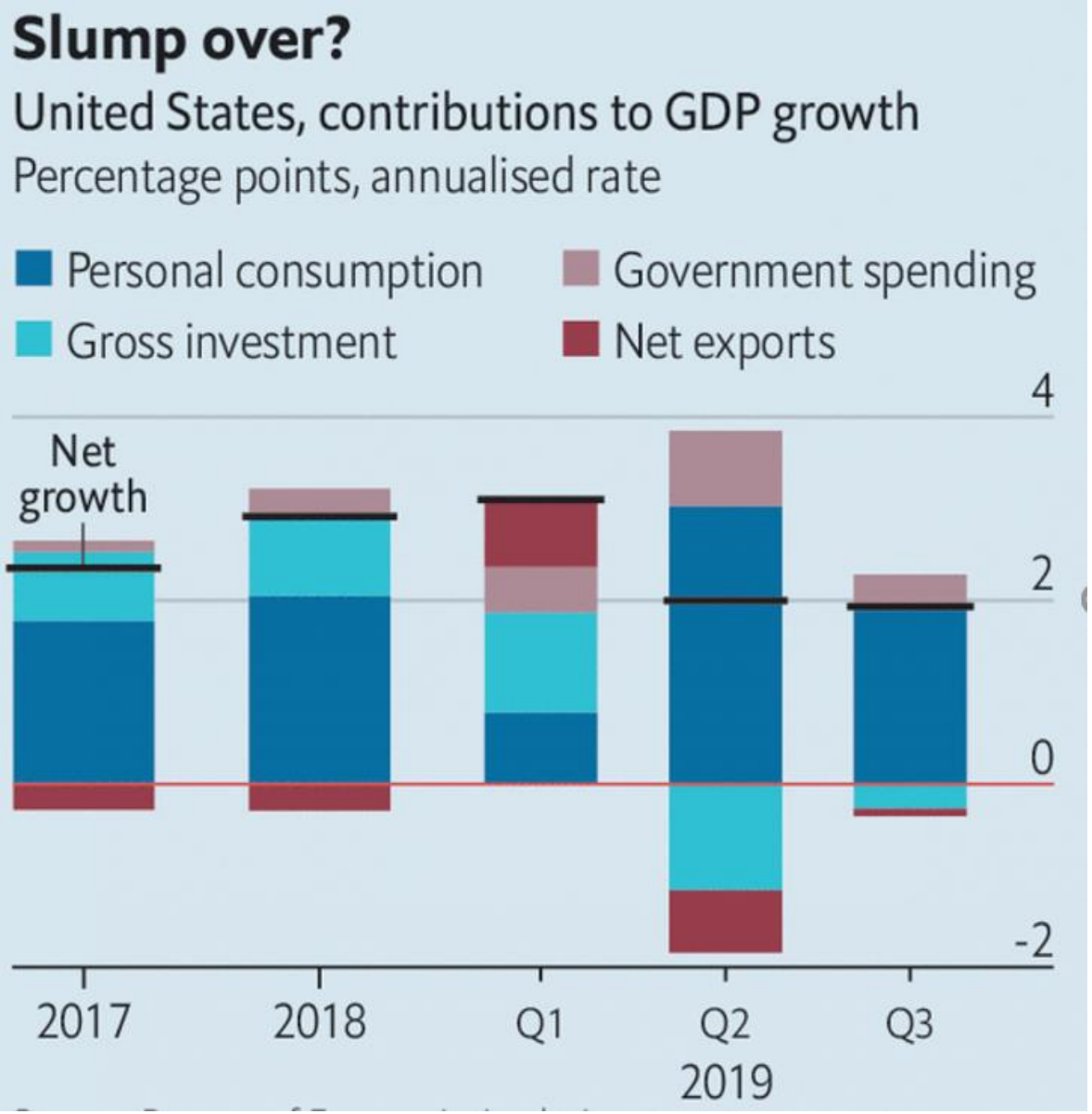
Source: Federal Reserve Bank, Wage Tracker and The Graaskamp Center.

GDP: 2.0% GDP growth, Y-O-Y to 2019Q3, however 0.66% of the increase is defense (0.27%) and State and Local Government spending (0.39%) . . . .



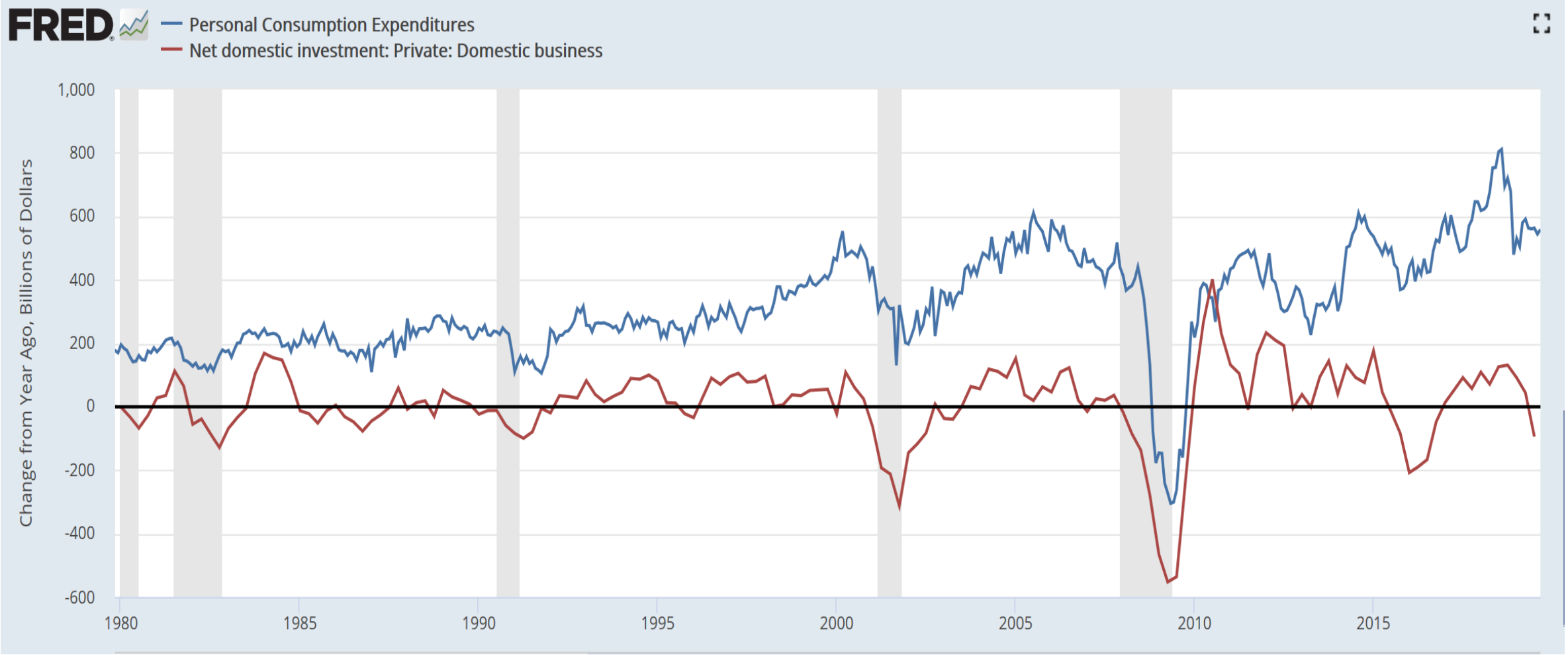
Sources: Federal Reserve Economic Data and Graaskamp Center

. . . . GDP: by its components. . . .



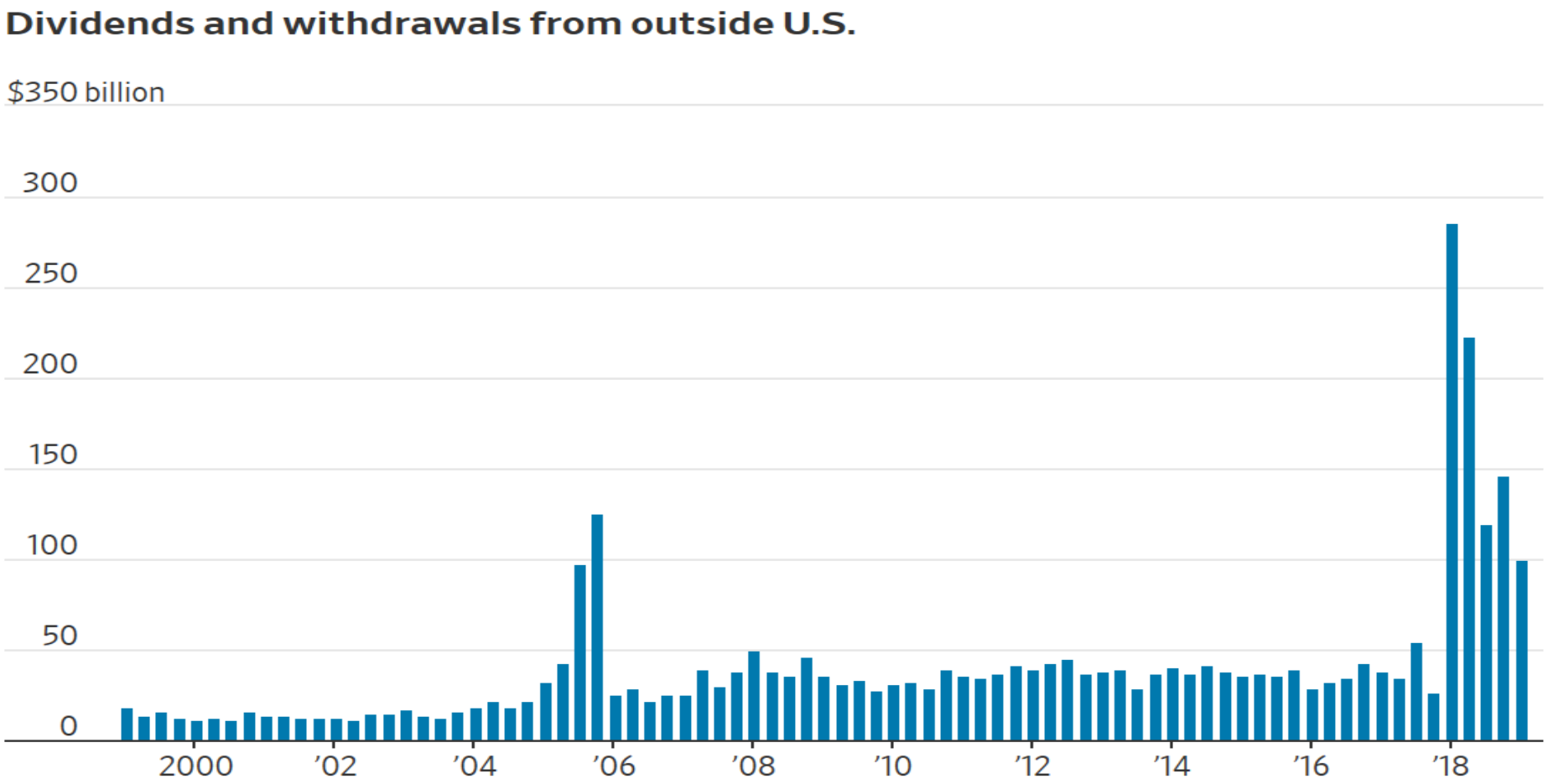
Source: Economist, "Corporate America's Confidence and Profits are Sagging," October 23, 2019

. . . . GDP: consumption remains robust as business investment wanes . . . .



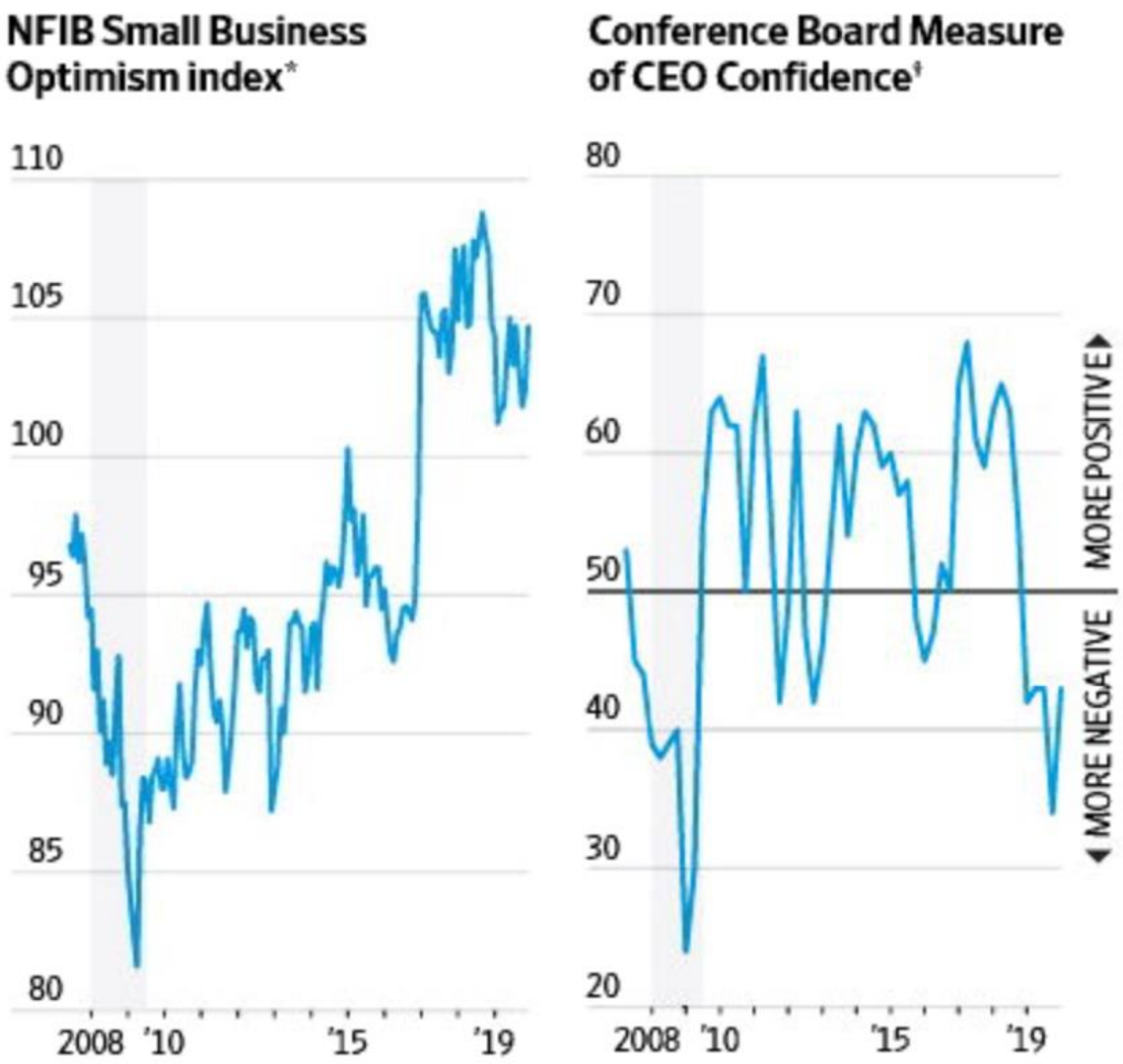
Sources: Federal Reserve Economic Data

Business Investment: large repatriated business profits from abroad, $777 billion in 2018, up from $155.08 billion in 2017. . . . .



Source: WSJ, "U.S. Companies Brought Home More Proits From Overseas," June 20, 2019

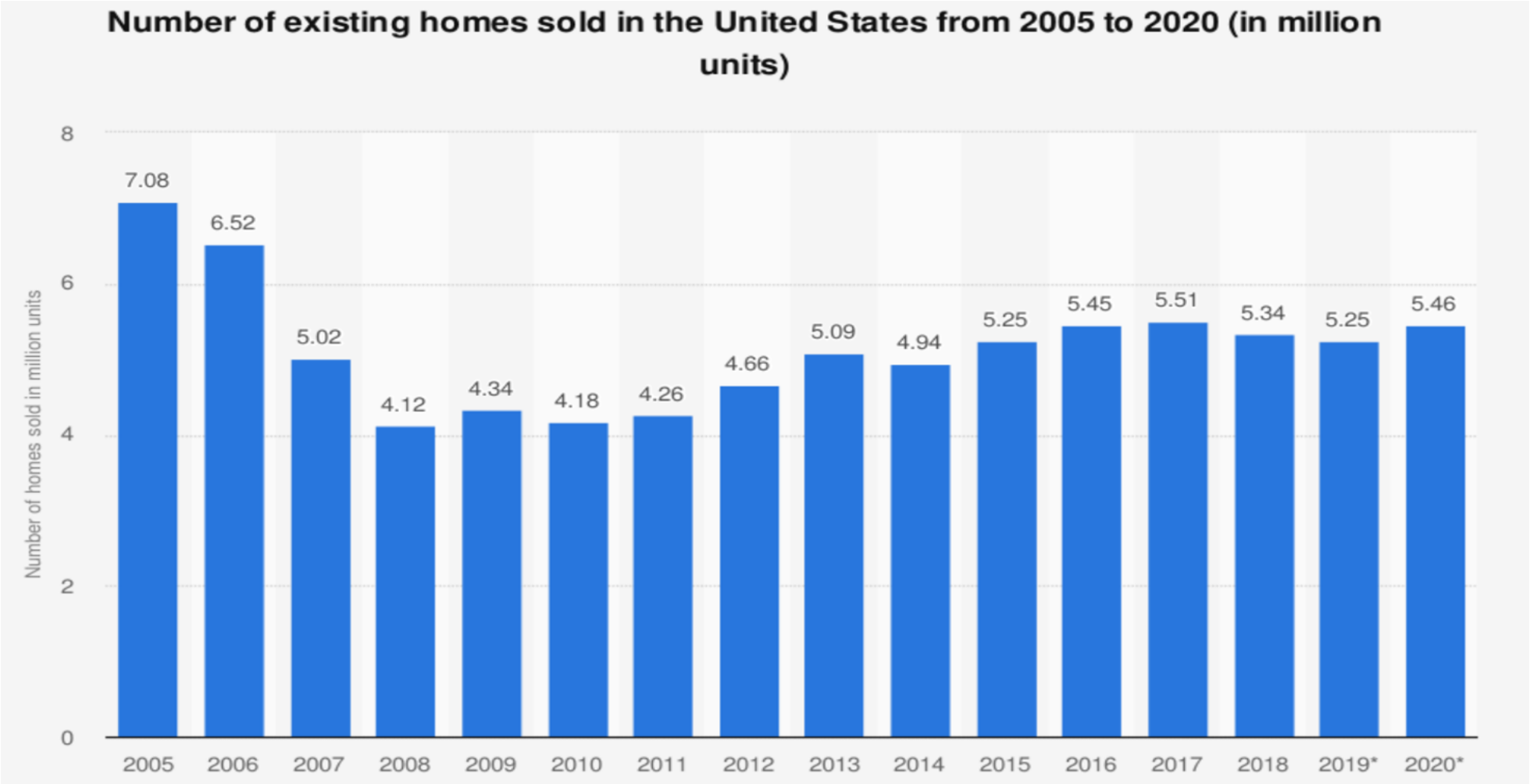
. . . . Business Investment: Small business CEOs remain confident while large business CEO do not. . . . .



Source: James Mackintosh, WSJ, Investors Unclear on the Economy ," January 8, 2020, p. B11

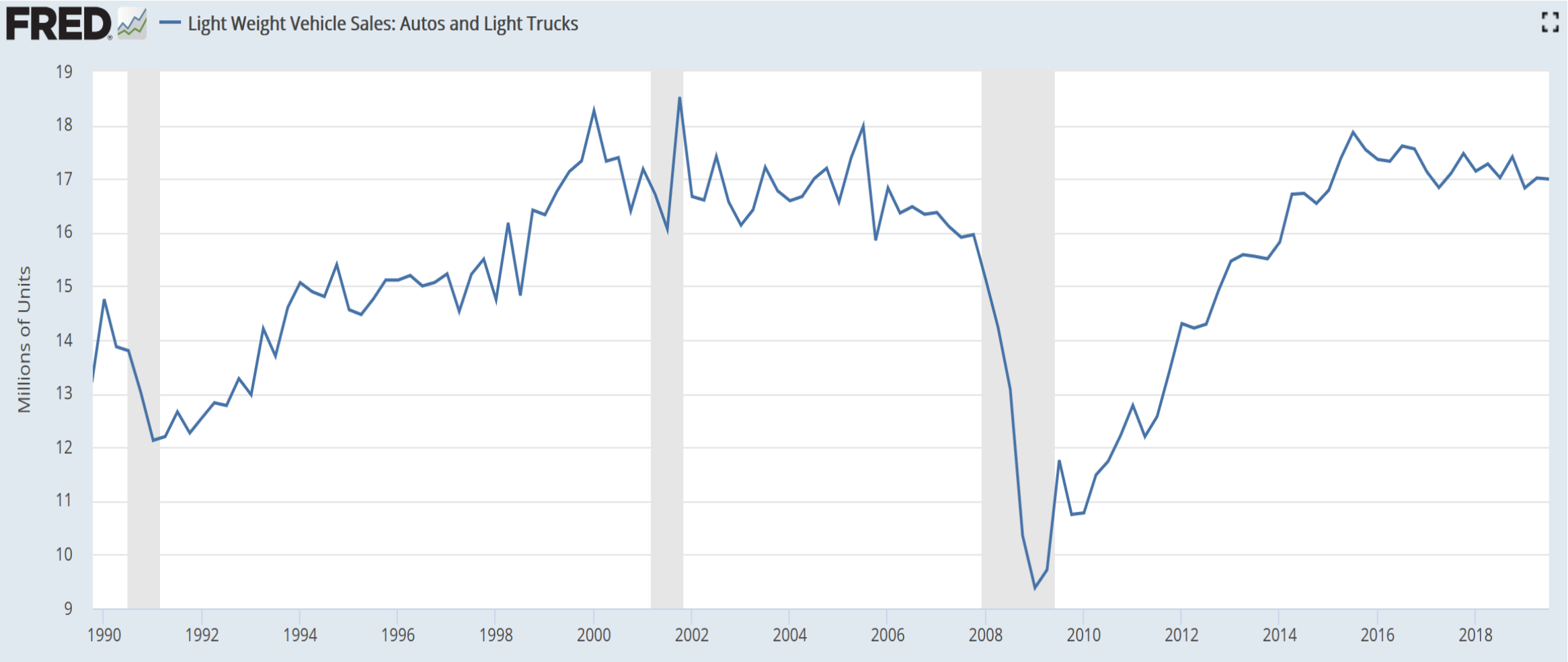
Consumer Spending

. . . . Consumer spending: consumers are limiting big purchases . . . .



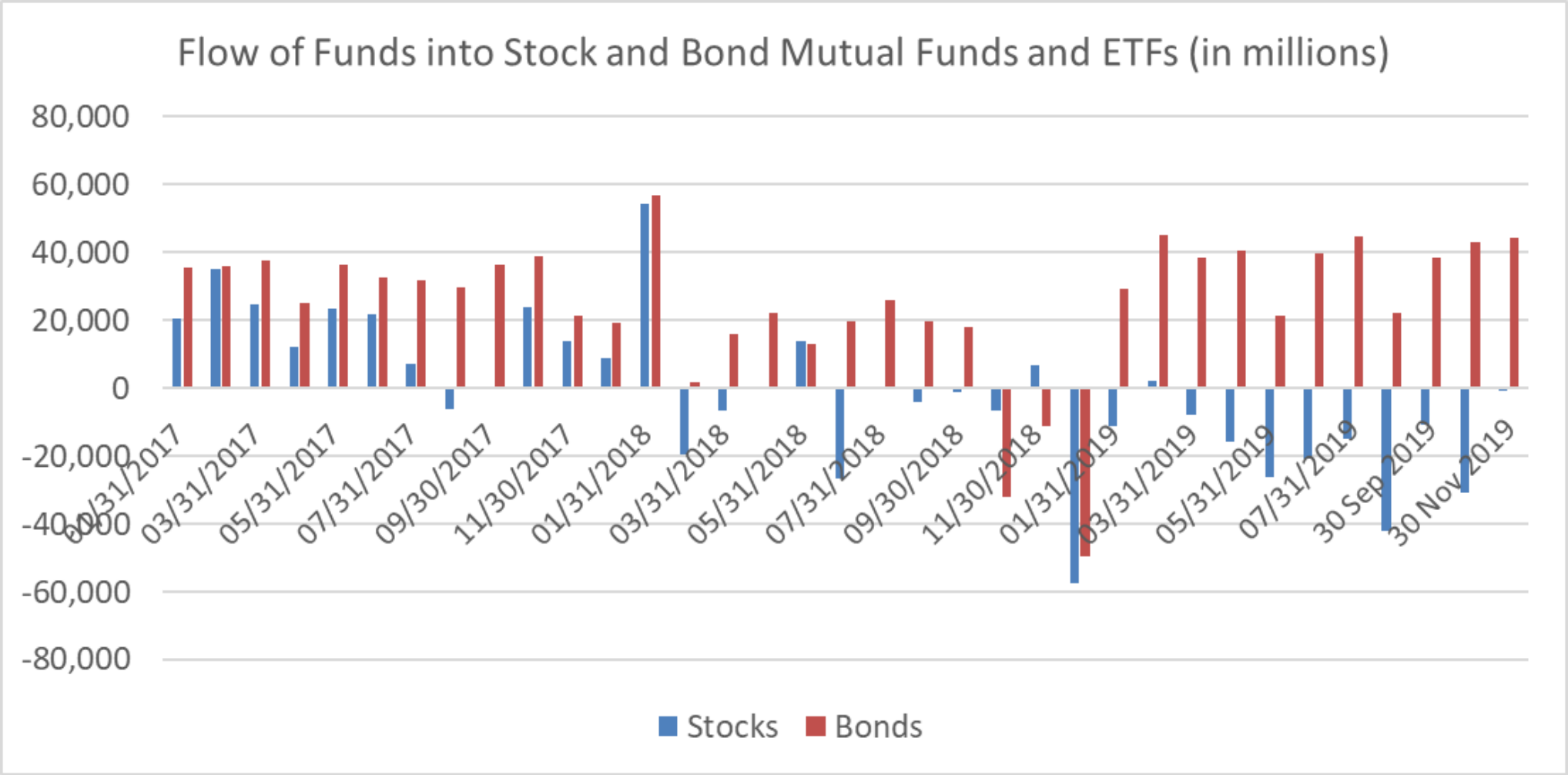
Source: NAR, REALTORS Confidence Index Survey, November 2018.

. . . . Consumer spending: vehicle purchases peaked in 2015 at 17.9 million vehicles . . . .



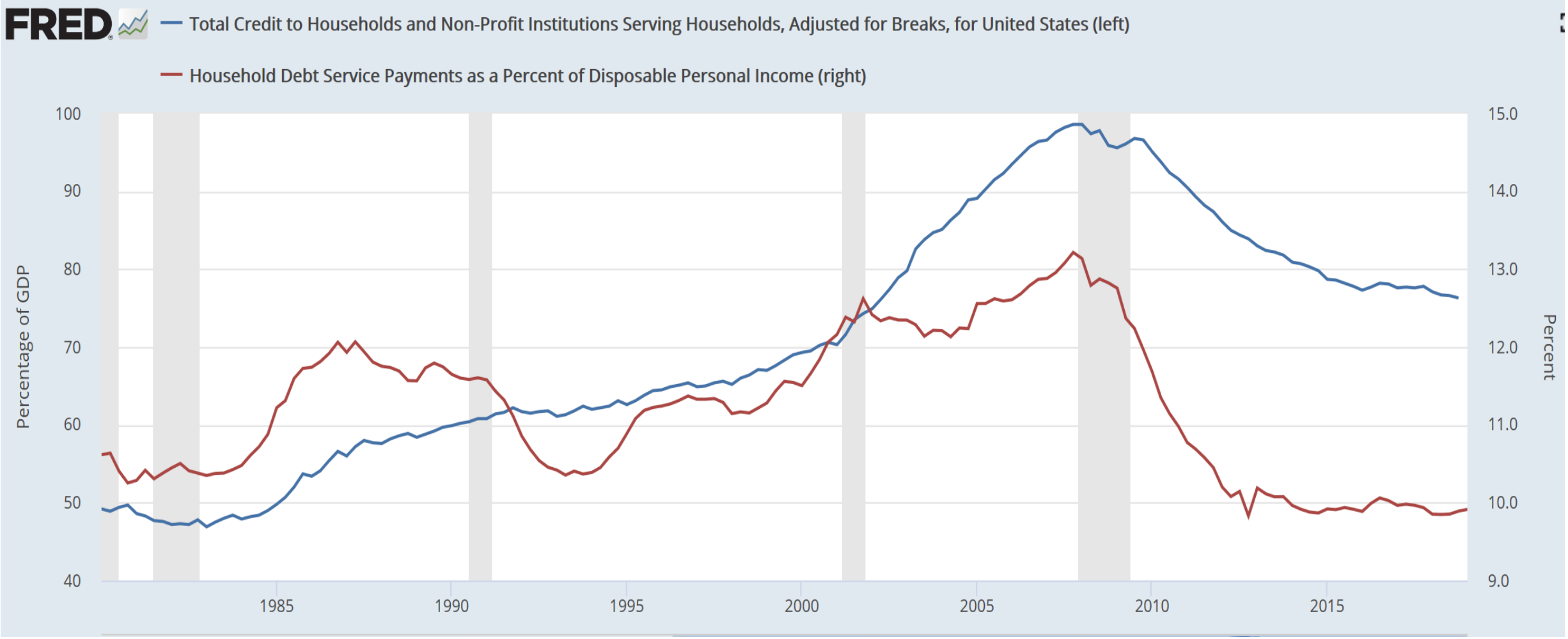
Source: Fannie Mae Credit Supplement, 2018Q4.

. . . . Consumer Spending: Consumers/Investors are taking less risk . . . .



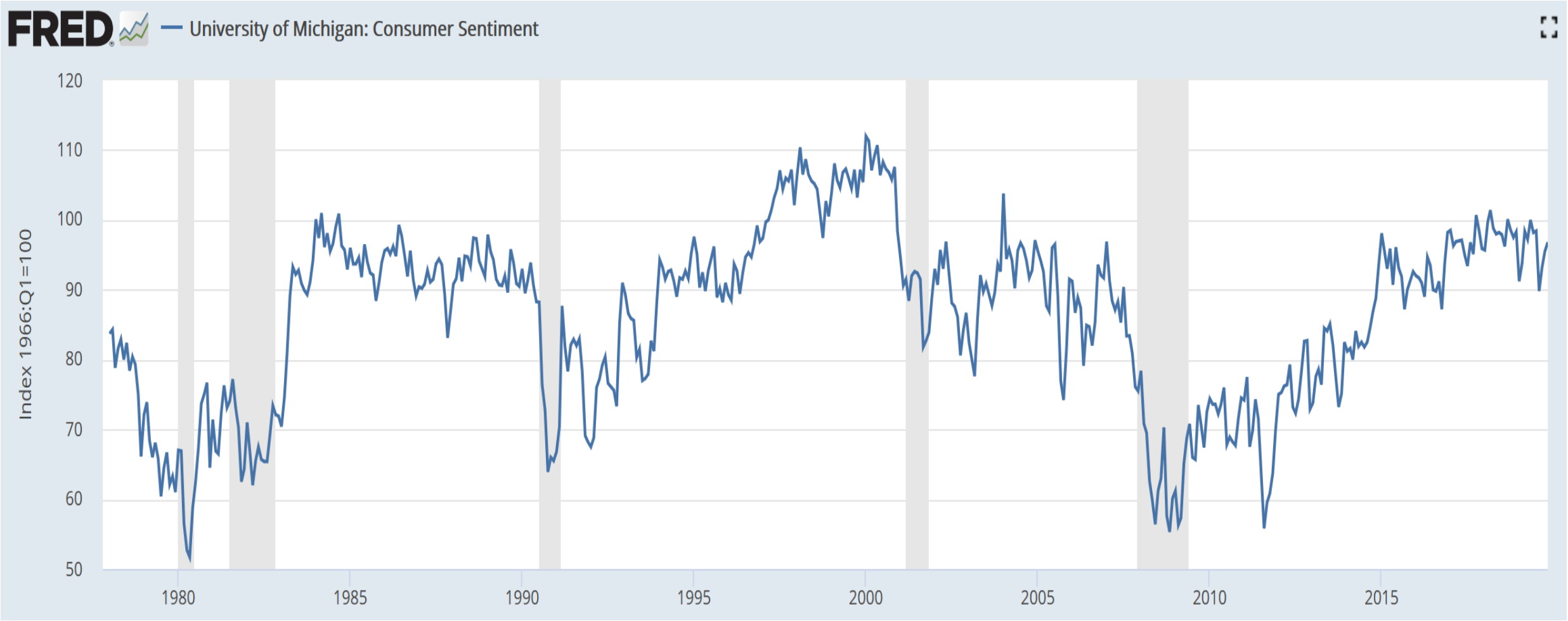
Source: Investment Company Institute and the UW Graaskamp Cent er for Real Estate.

. . . . Consumer spending: however, consumers have debt service and debt capacity . . . .



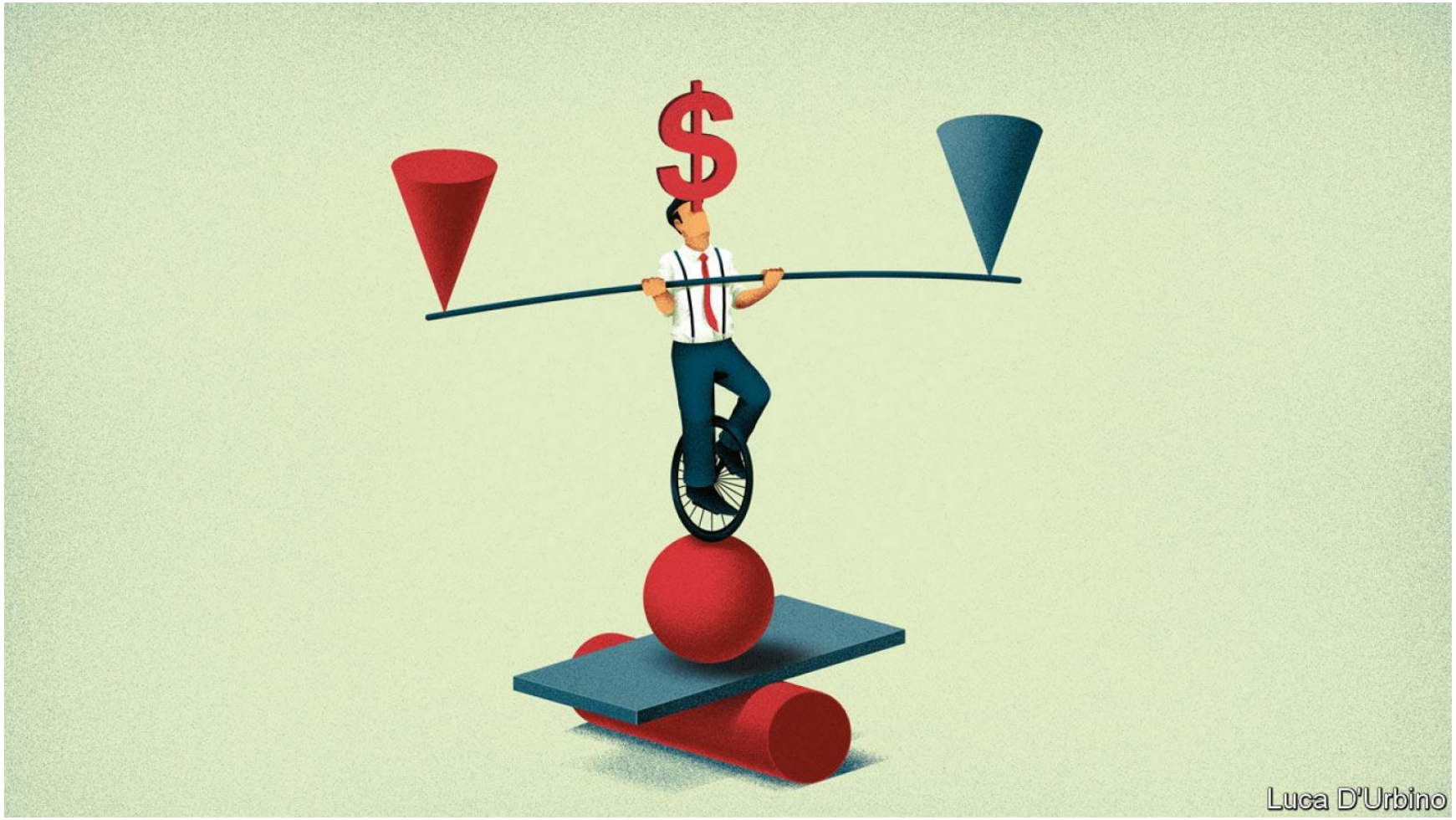
Source: Federal Reserve Economic Data.

. . . . Consumption: and consumer sentiment remains strong, but turns quickly.



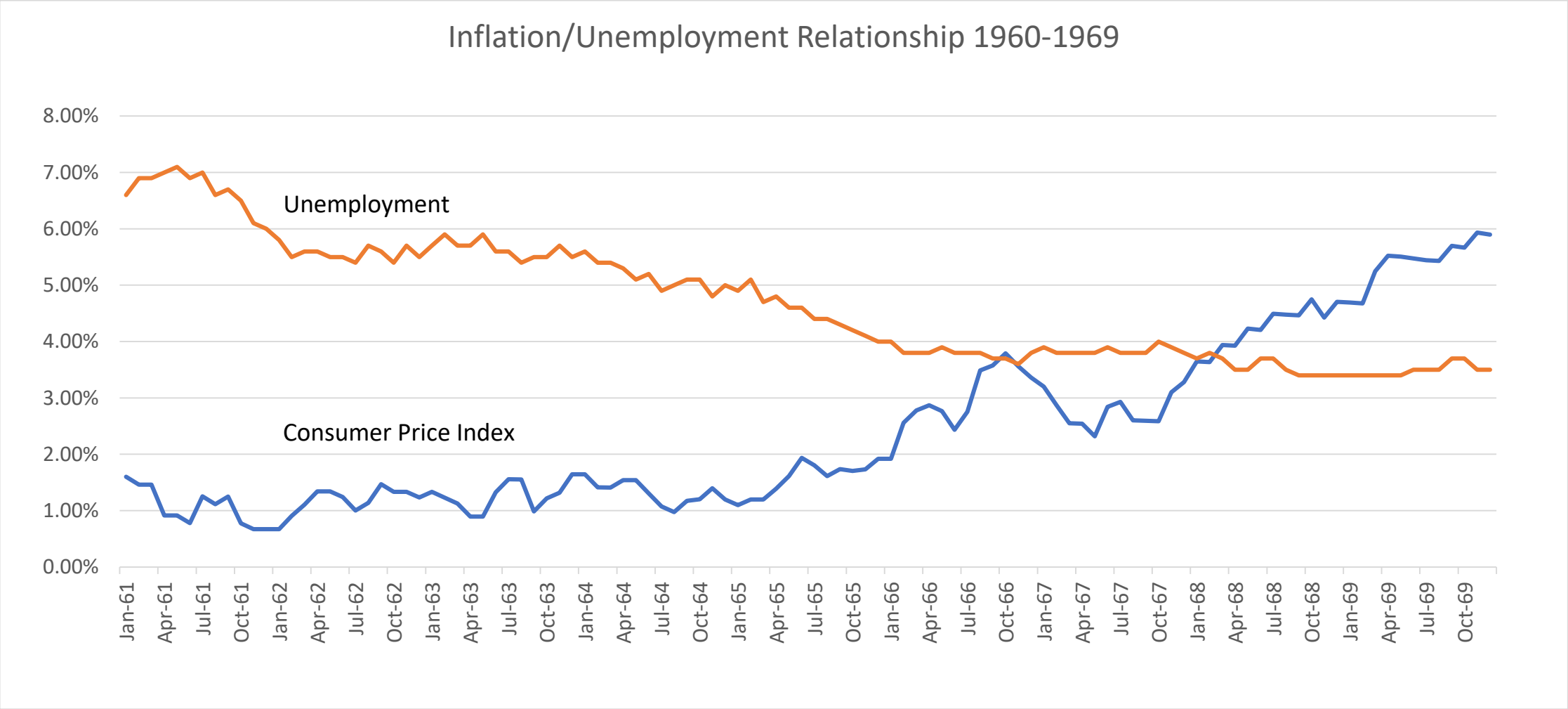
Source: Federal Reserve Economic Data.

The Federal Reserve Decision



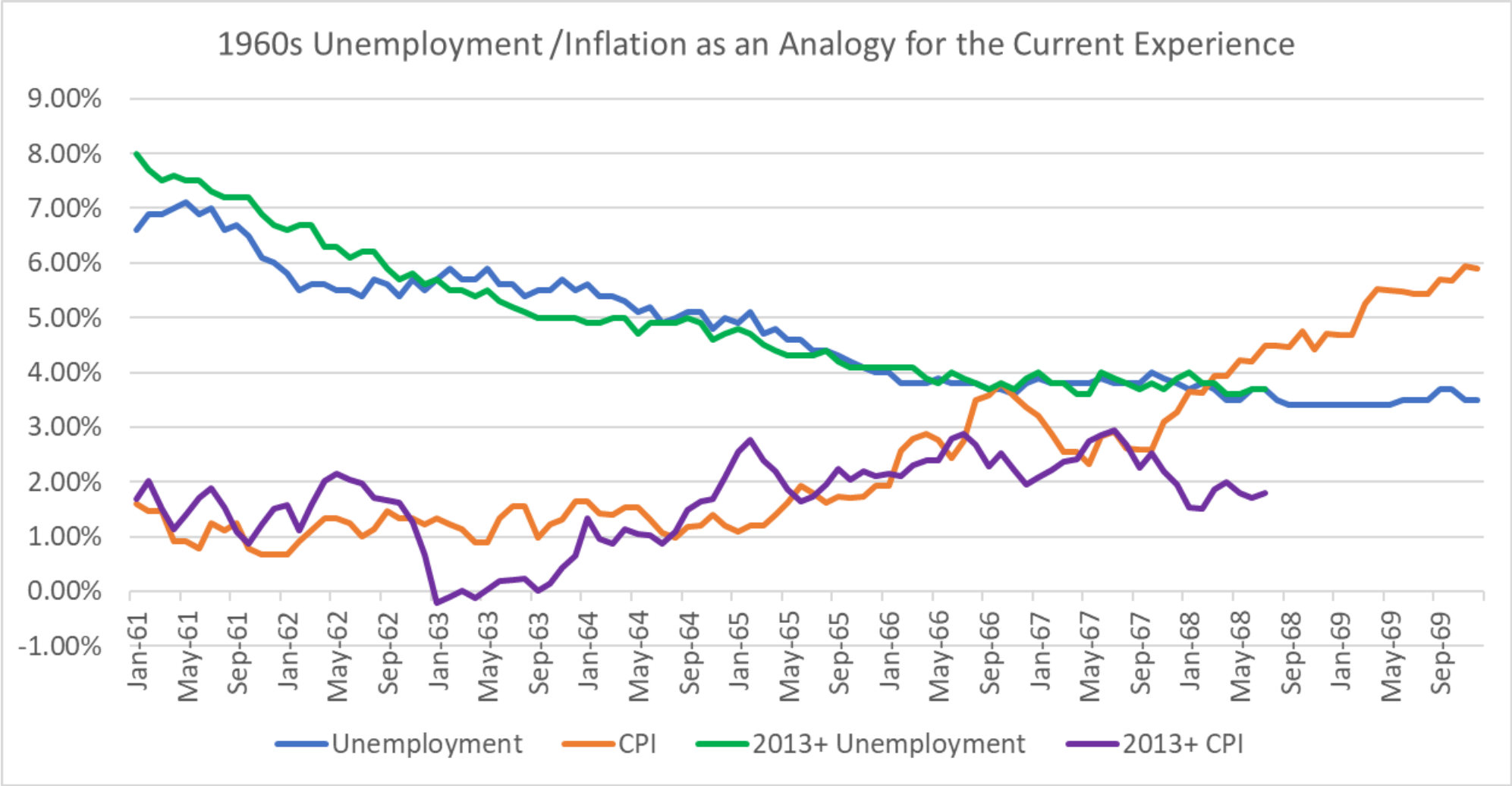
Source: Economist, "America's Economy is Reisting the Pull of Recession," October 31, 2019

Unemployment/inflation trade off – the 1960s experience. . . .



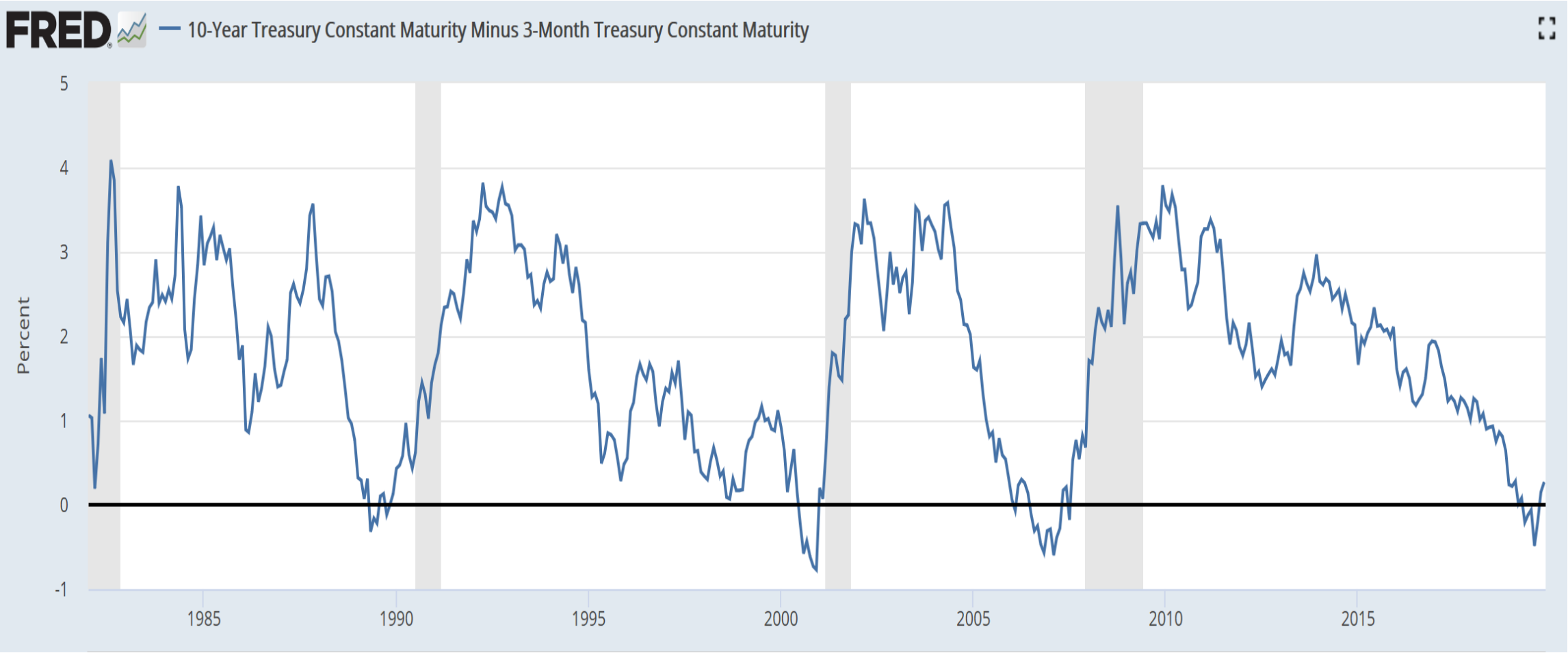
Sources: Federal Reserve Economic Data and the Graaskamp Center.

. . . . #3 Non-Linear: comparing the 1960s with the current environment . . . .



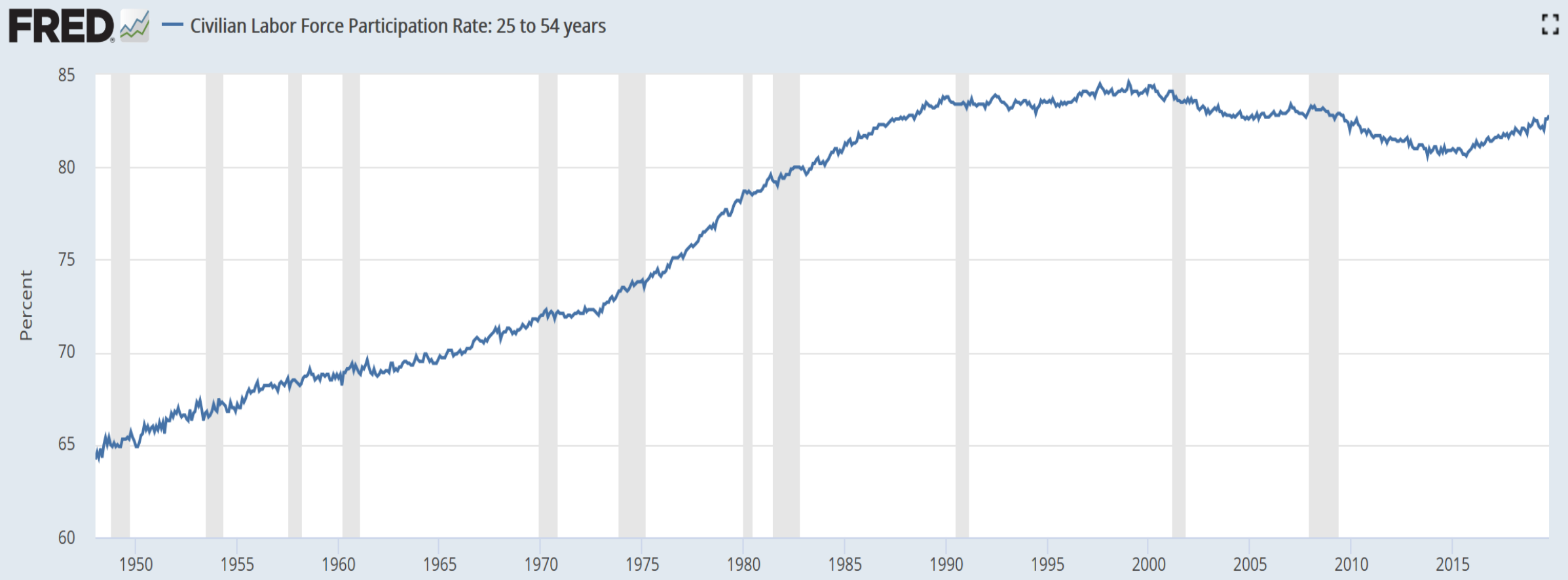
Sources: Federal Reserve Economic Data and the Graaskamp Center.

The inverted yield curve (10 yr. less 3 mo. UST), a solid a recession predictor . . . .



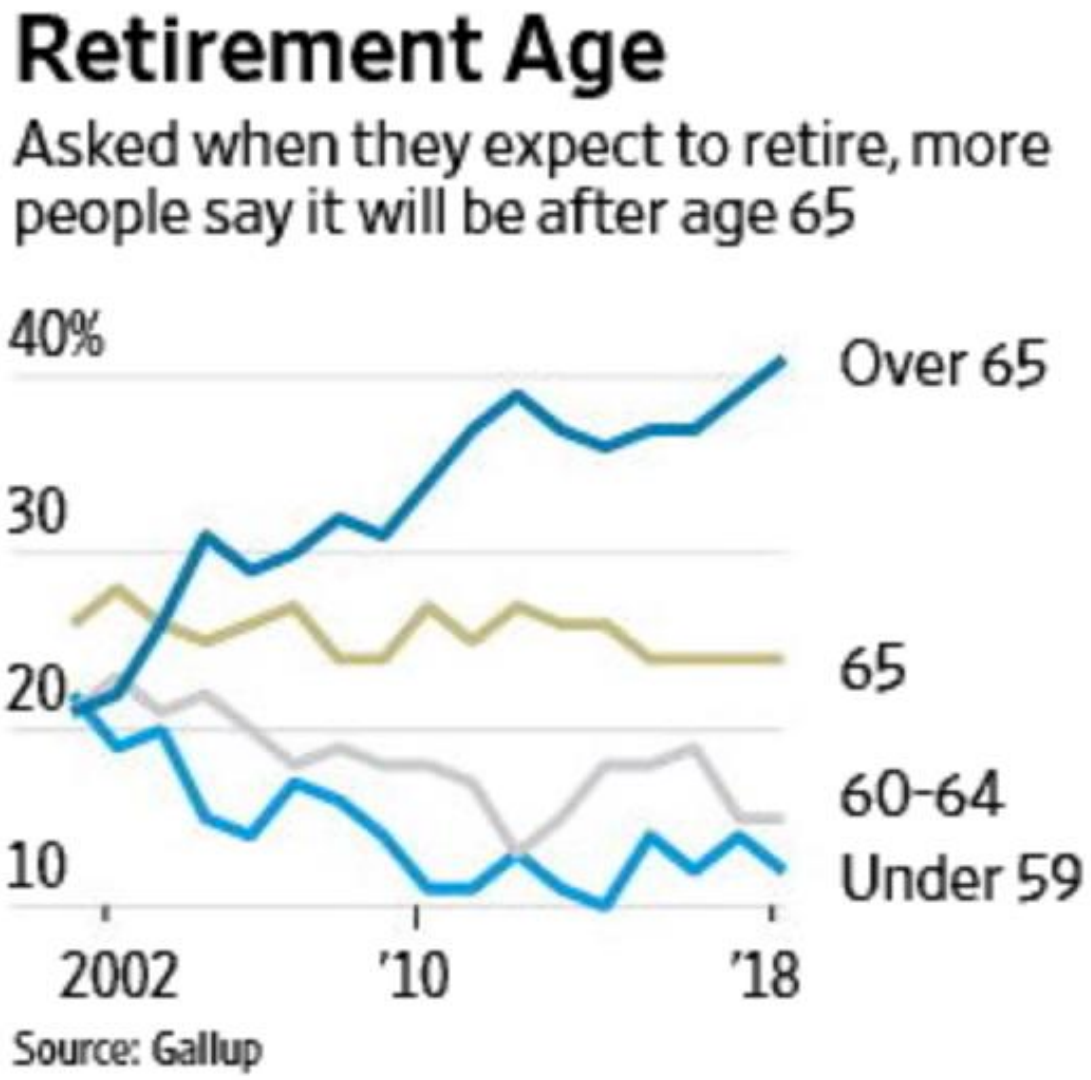
Source: Federal Reserve Economic Data.

. . . . labor force participation rates are at adjusted mid-2000 levels . . . .



Source: Federal Reserve Economic Data.

. . . . Baby Boomers are expecting to remain in the workforce longer . . . .



Source: John D. Stoll, WSJ, "Will You Ever Retire?" 1/10/20, p. R6.

The Global Economy and Trade

. . . . the China/U.S. trade deficit, currency manipulation . . . .

. . . . Iran sanctions or worse . . . .

. . . . Brexit? Germany's weak economy? The EU? What could possibly go wrong . . . .

. . . . U.S. consumer get spooked, import prices/tariffs, market volatility, etc.


SYSTEM
STOCK
TRANSACTION
COMPANY
PRIMARY
MONEY
GOVERNMENT
CAPITAL
DEPT
TRADING
FINANCIAL
FUNDS
SECURITIES
MARKET
REGULATION
EXCHANGE
SELL
BOND
BANK
BUY
LONG-TERM
SECONDARY
CONTROL
INVESTMENT
EQUITY

Real Estate Equity and Debt Markets

There is an abundance of equity capital

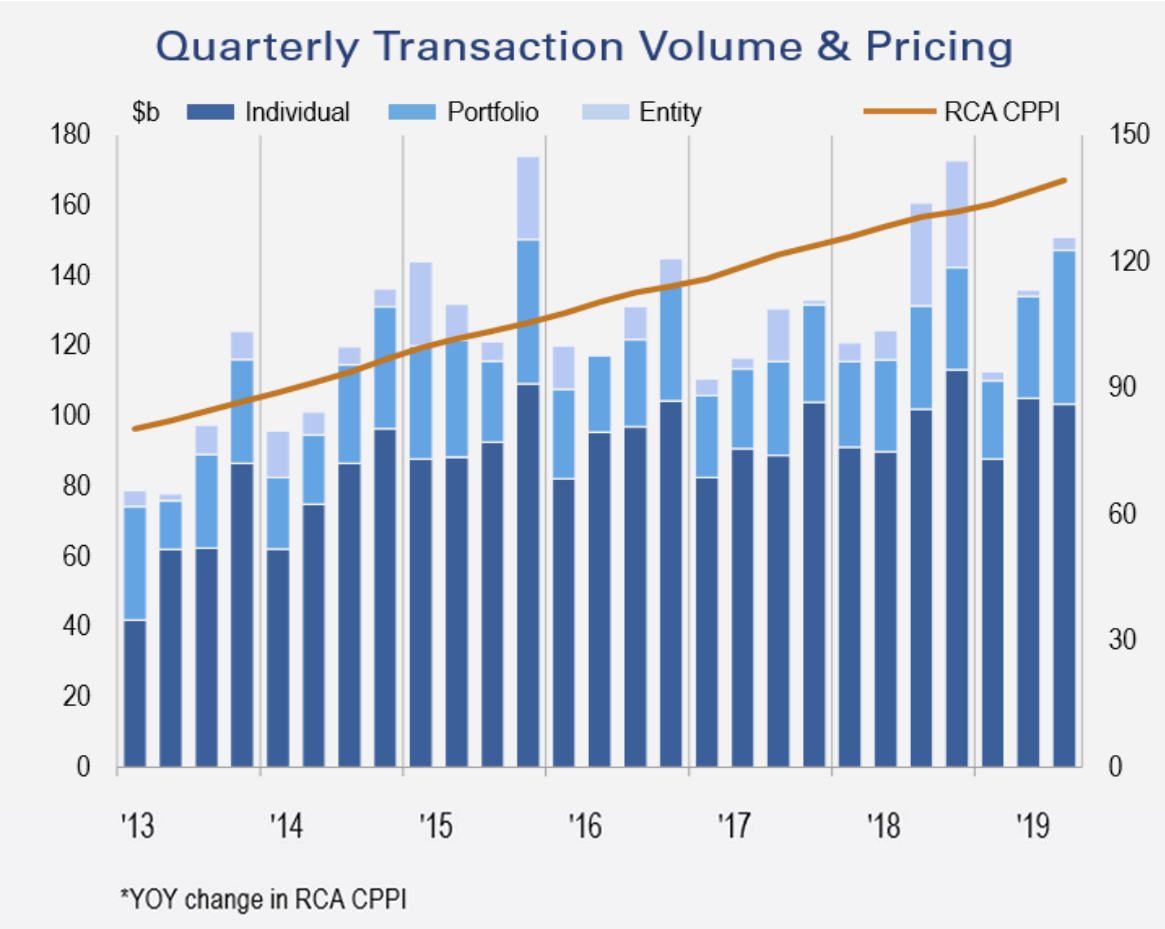
Equity investment is maintaining discipline at current cap rates

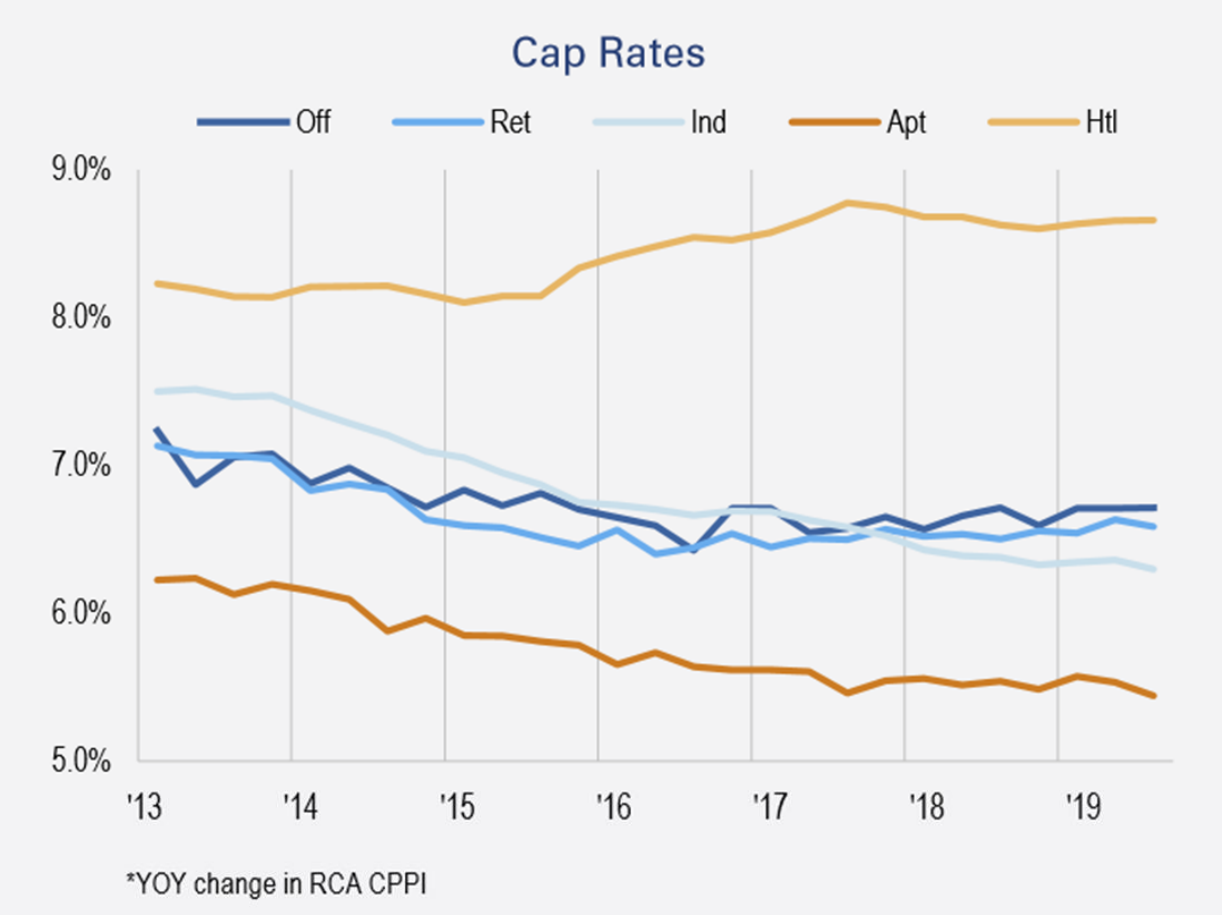
The debt markets are awash in capital

Leveraged loan funds pushing traditional bank lender underwriting standards, 2019Q3 reveals some bank lending retreat, leveraged loan volume will tighten

Equity Capital Markets and Property Returns (Largely Covered)

Real estate transaction volume off 6% YOY, pricing remains relatively disciplined . . . .

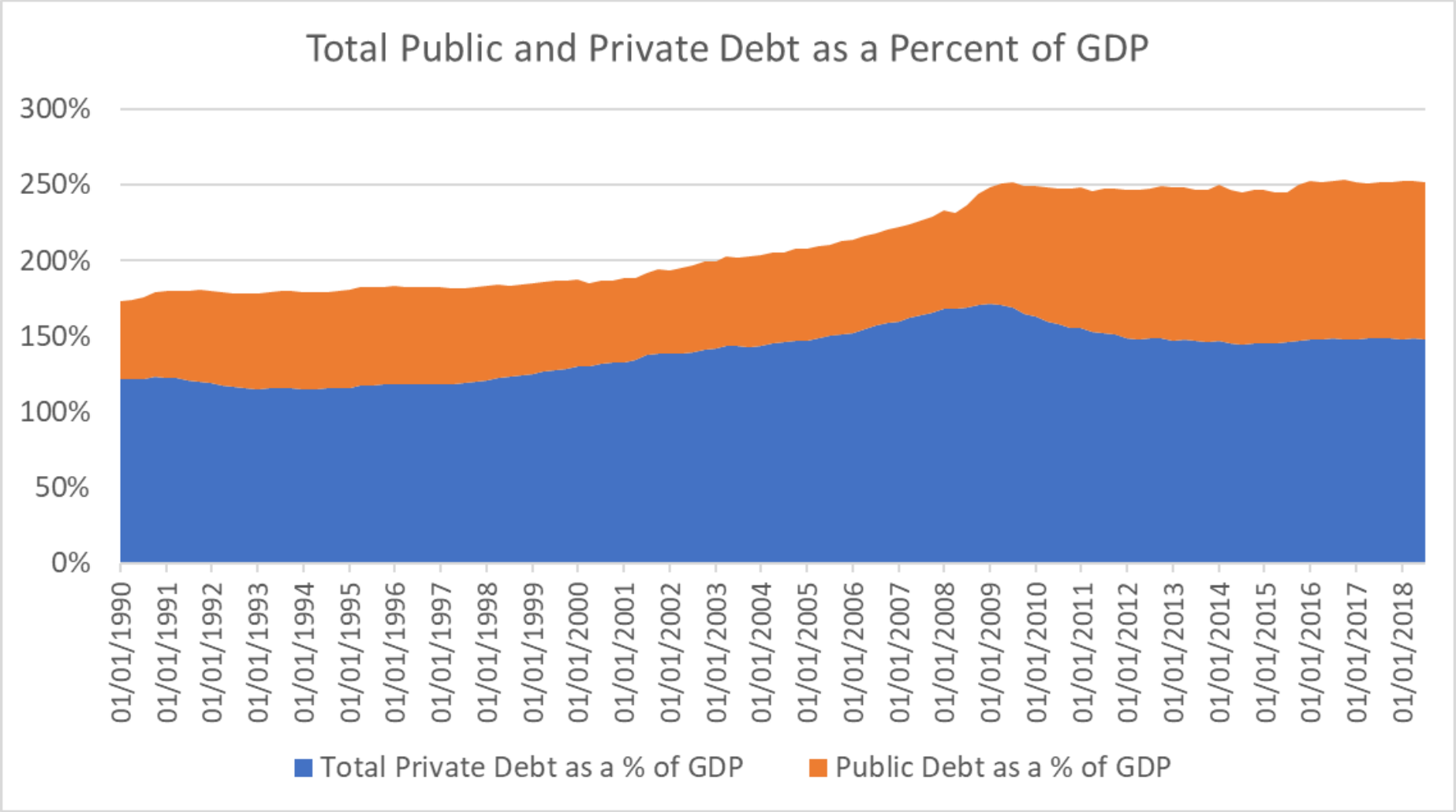




Source: RCA, US Capital Trends: The Big Picture, 2019Q3.

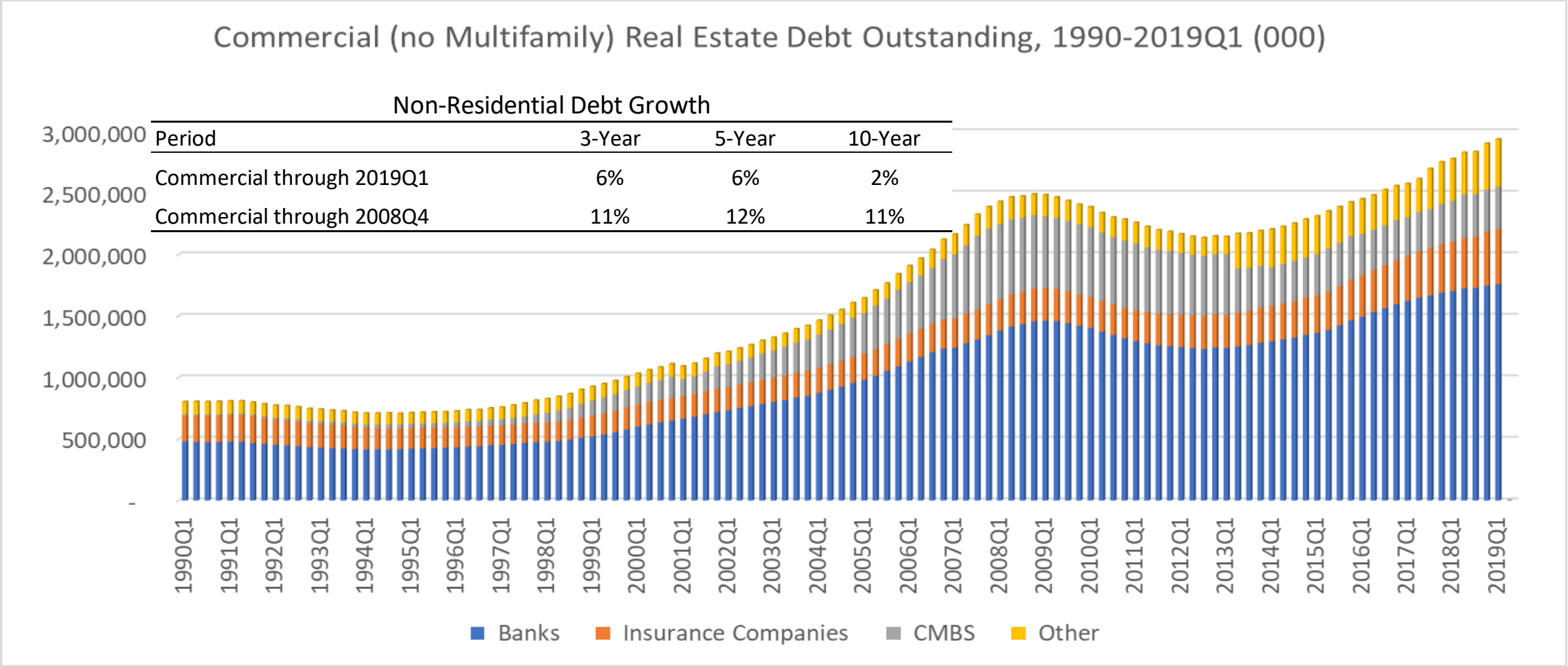
Real Estate Debt Capital Markets

Private debt as a percent of GDP has fallen from 171% in 2009 to 148% today . . . .



Source: Federal Reserve Economic Data and the Graaskamp Center.

. . . . commercial real estate debt outstanding has grown over the last several years . . . .

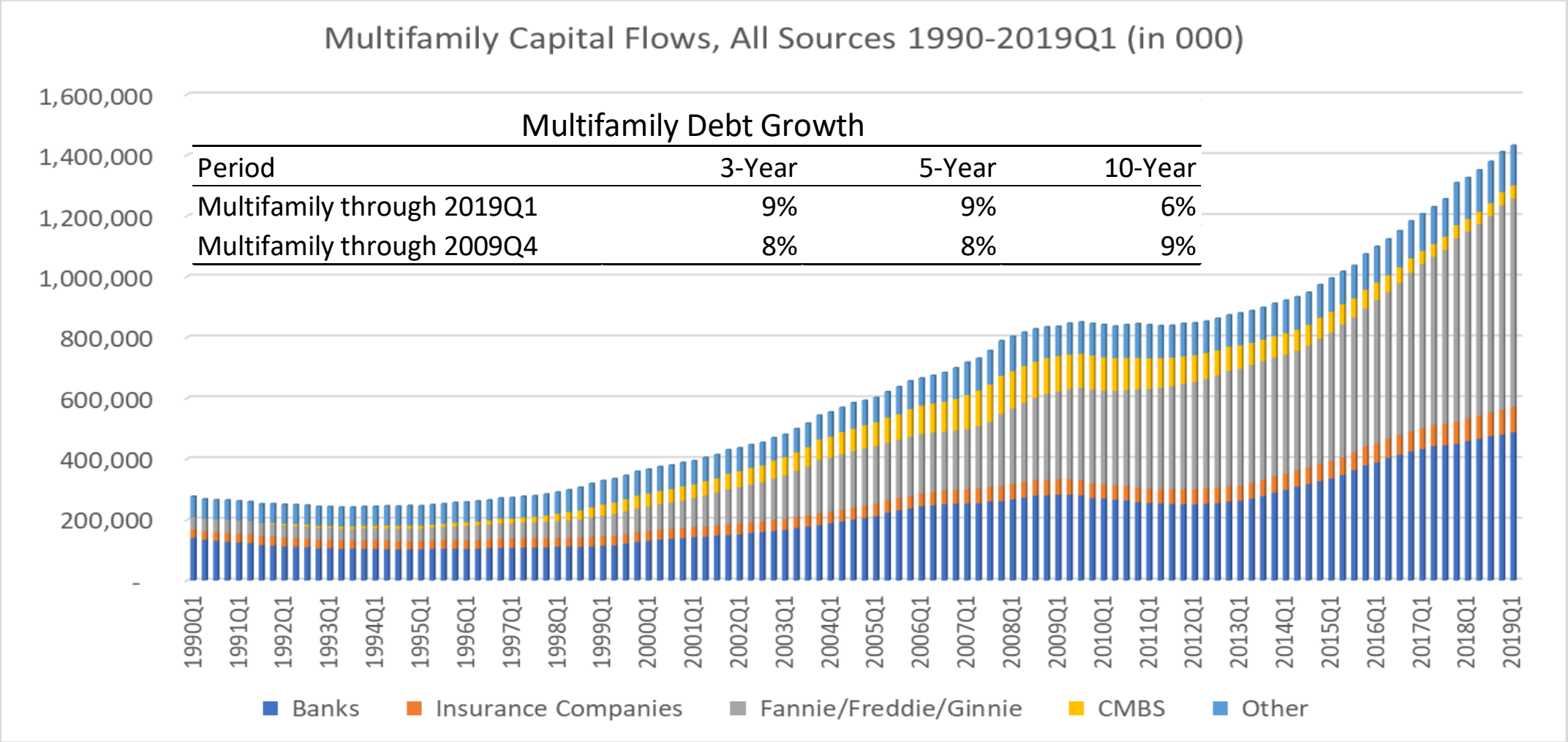


Non-Residential Debt Growth

Period	3-Year	5-Year	10-Year
Commercial through 2019Q1	6%	6%	2%
Commercial through 2008Q4	11%	12%	11%

Source: Federal Reserve Flow of Funds and the Graaskamp Center

. . . .multifamily debt is growing at an unsustainable pace (maybe) . . . .



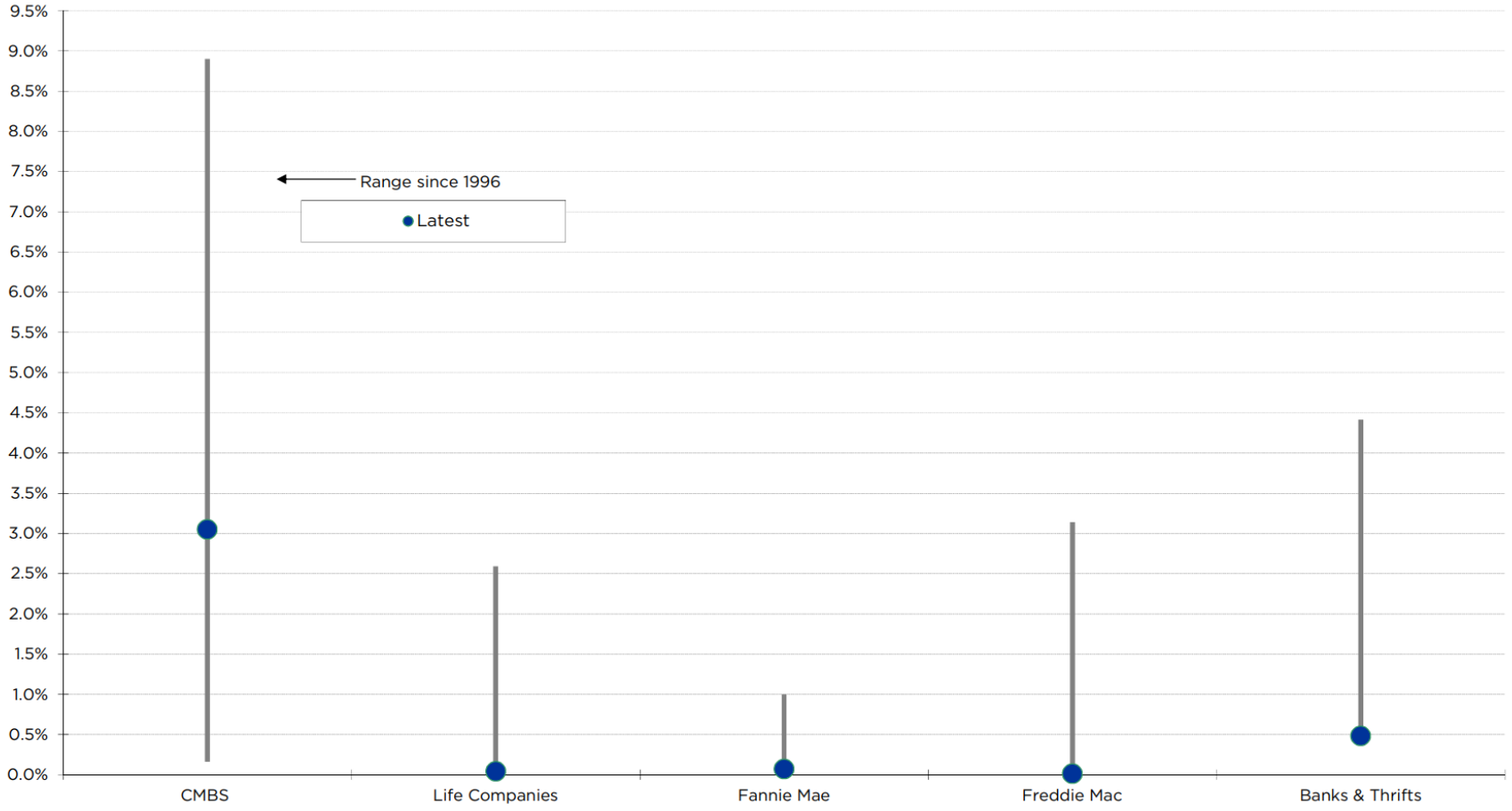
Multifamily Debt Growth

Period	3-Year	5-Year	10-Year
Multifamily through 2019Q1	9%	9%	6%
Multifamily through 2009Q4	8%	8%	9%

Source: Federal Reserve Flow of Funds and the Graaskamp Center.

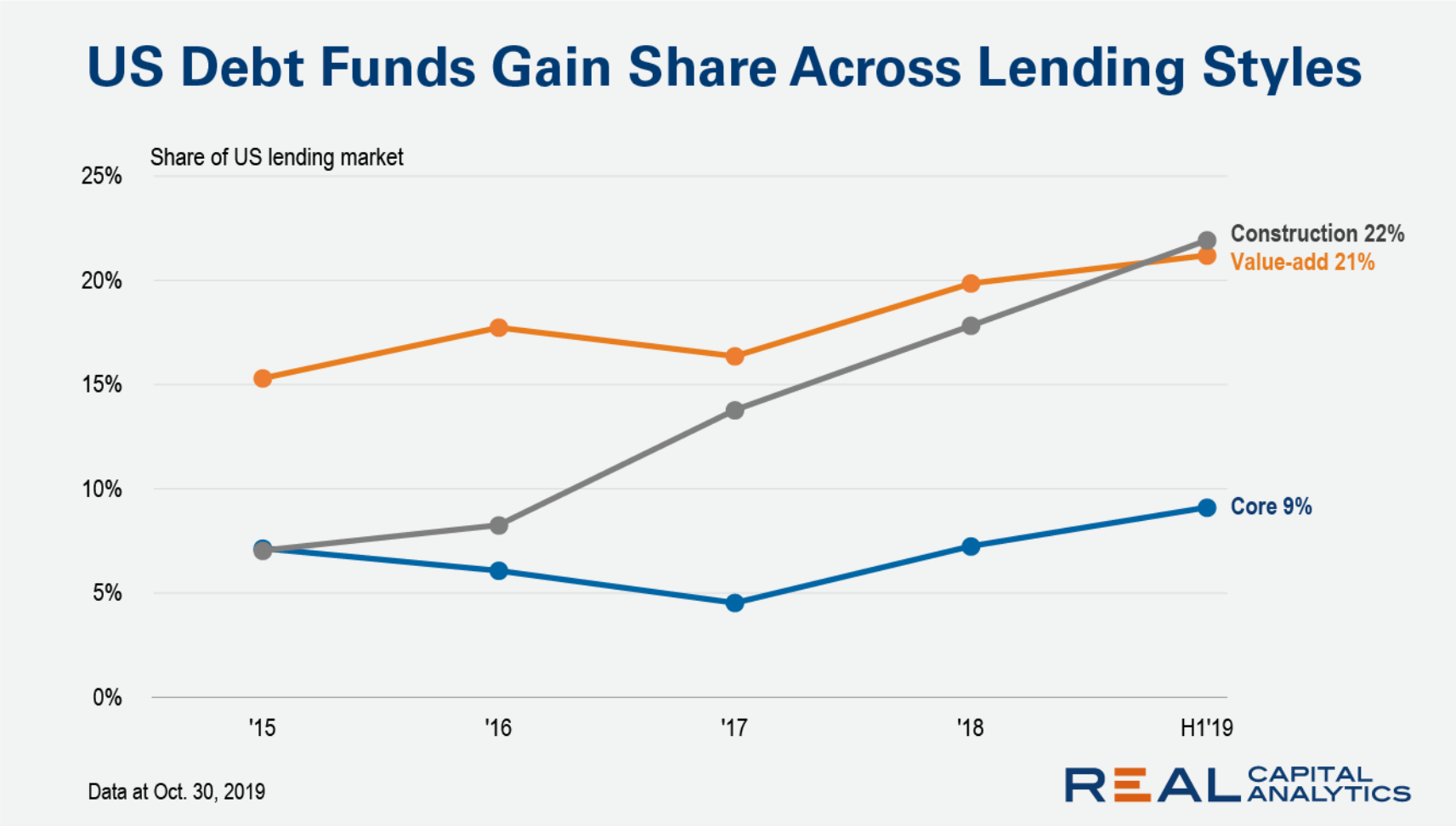
. . . . delinquency rates are at or near 20-year lows for all but CMBS . . . .

Delinquency Rate Range 1996-2018 for Select Real Estate Lenders



Source: Mortgage Bankers Association, Commercial/Multifamily Databook 2018Q3.

. . . . leveraged loan lenders are pushing traditional real estate lenders . . . .



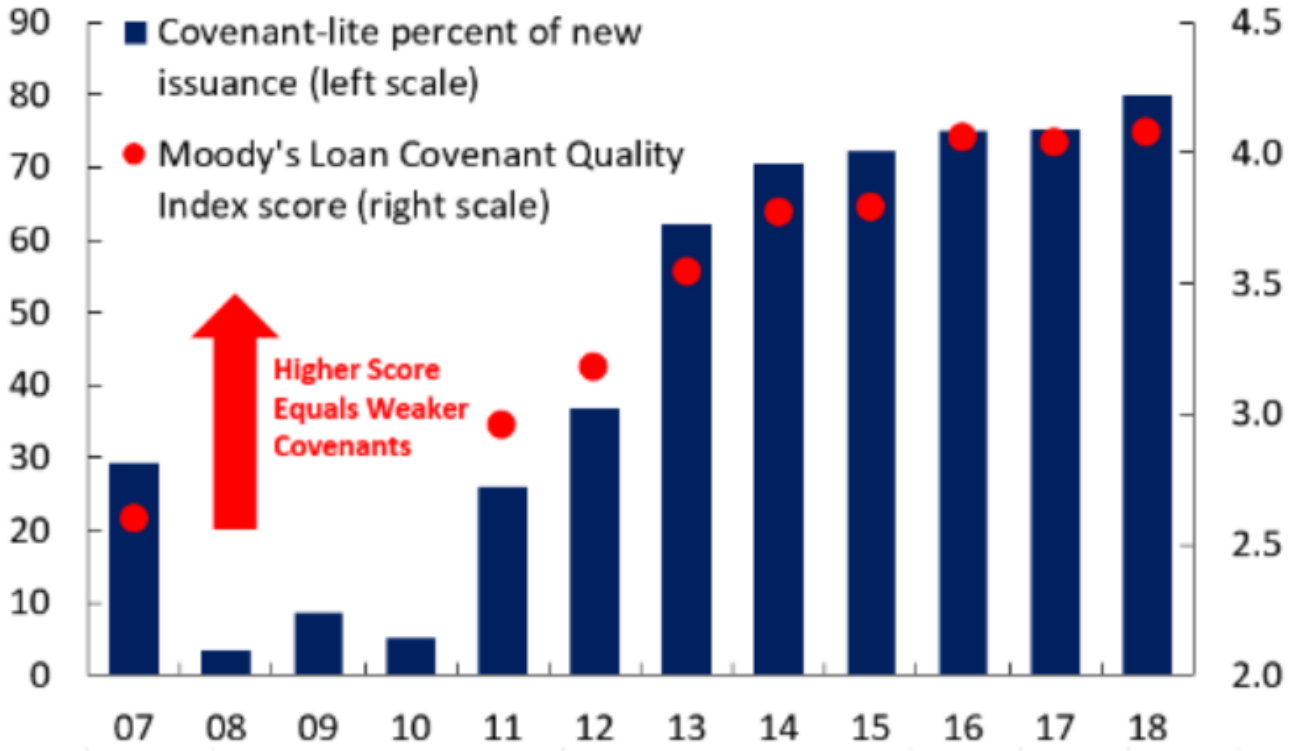
Source: Jim Costello, Real Capital Analytics, U.S. Debt Funds Carve a Bigger Slice of Lending, October 30, 2019

. . . . late cycle, covenant lite, corporate lending is the norm in leveraged loan underwriting . . .

Less investor protection

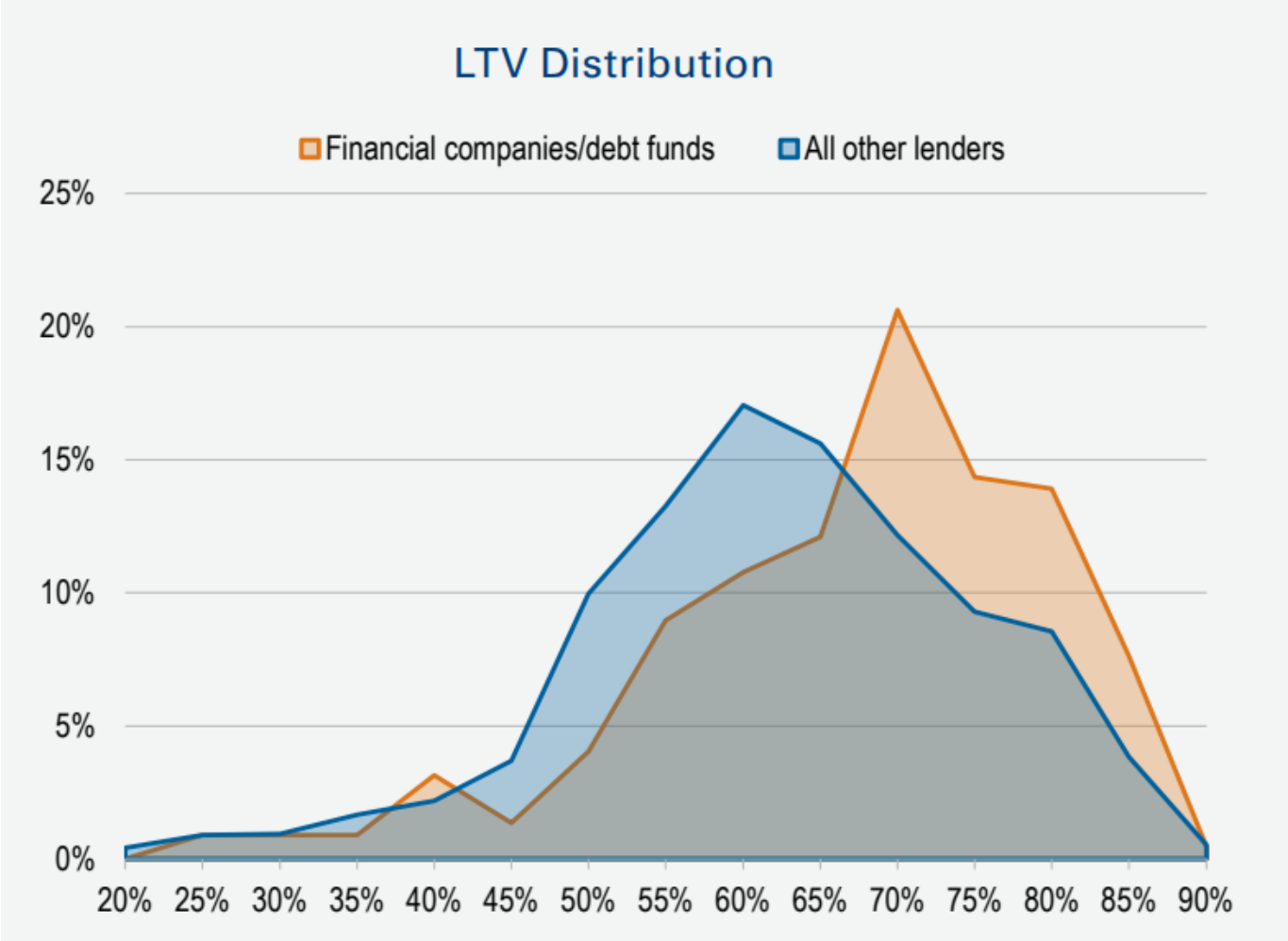
The volume of loans with fewer investor protections, known as covenants, has grown in the United States, and quality has weakened.

(percent of issuance)



Source: IMFBlog, Sounding the Alarm of Leveraged Lending
Tobias Adrian, Fabio Natalucci, and Thomas Piontek, November 15, 2018

. . . . real estate debt funds are pushing bank debt underwriting.



Source: Jim Costello, Real Capital Analytics, U.S. Debt Funds Carve a Bigger Slice of Lending, October 30, 2019

The 2020 Forecast

Asset prices:

- Cap rates will widen out by 25 bp to account for new risk premiums

Equity capital:

- Transaction volumes will fall by 5% over economic and pricing concerns

Debt capital markets:

- Will begin to tighten as the Fed clamps down on leveraged loan banks

GDP growth:

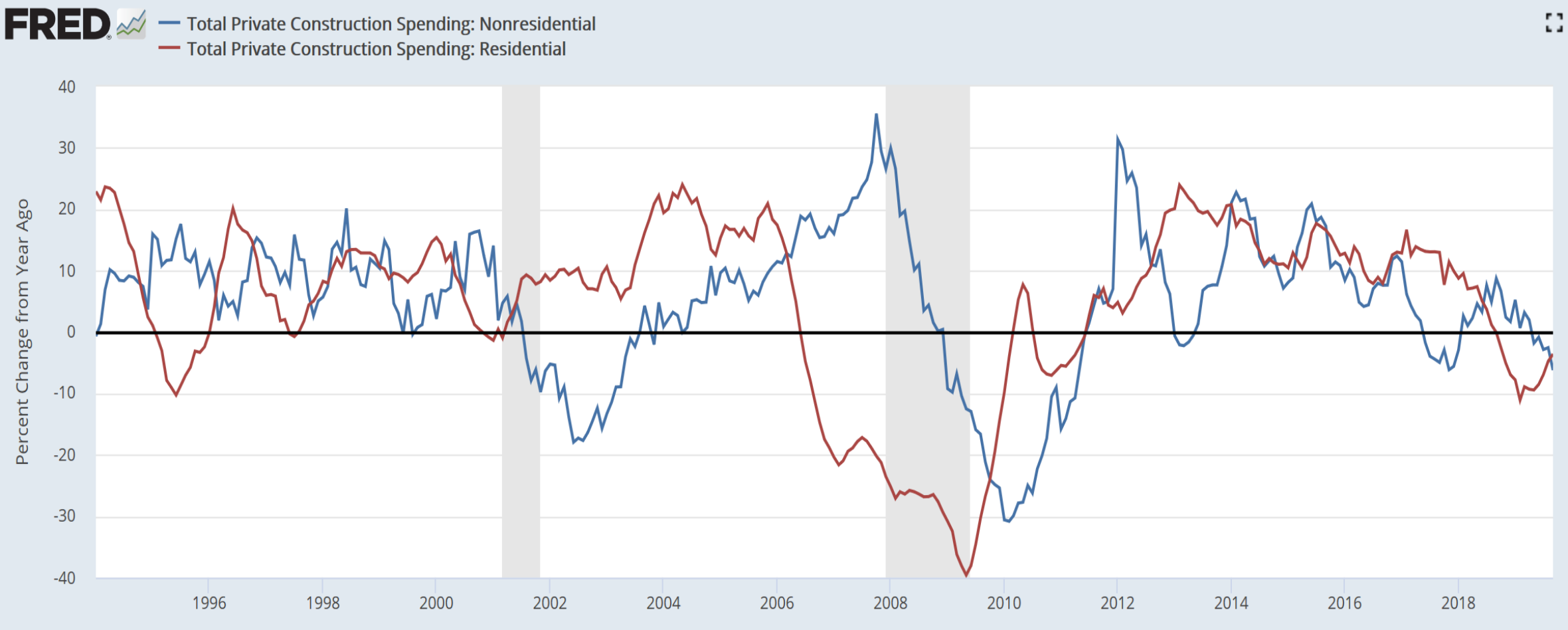
- 2.0% YOY and falling to 1.0%

Wage inflation concerns will keep interest rates from falling, weak economy as an offset

- 10-year UST at about 1.80-2.00% this time next year

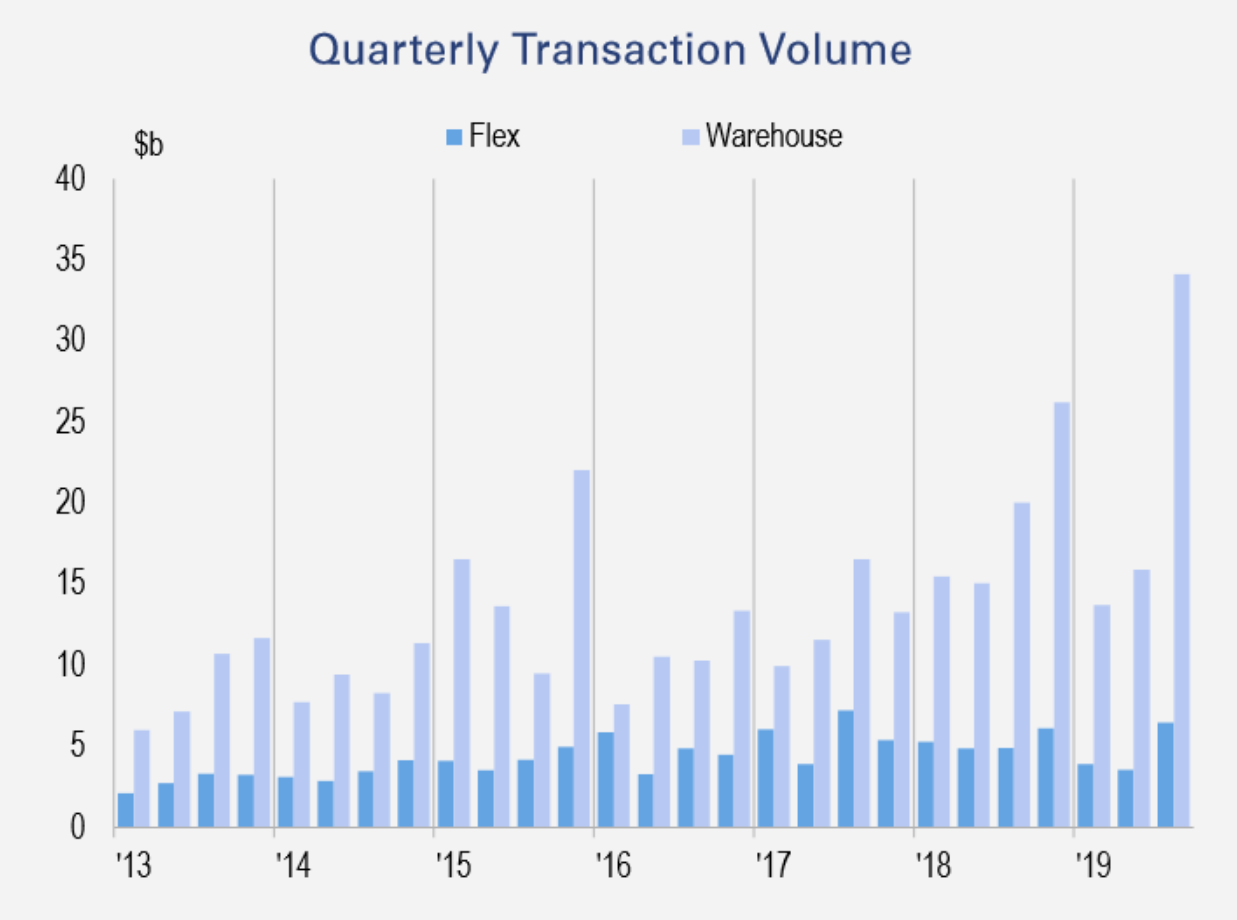

Real Estate
investment
house
property
profit
rate
residential
condominium
development
investing
real
owner
tax
capitalization
buyer
ownership
acquisition
negotiate
loan
seller
services
commissions
business
marketing
broker
intermediary
mortgage
agent
bank
buildings
fences
legal
land
agency
corporate
building
immovable
rent
insurance
market
sold
interest
contractor
purchase
finance
sale
brokerages
contract
commercial
location
apartment
management
dreamstime.com

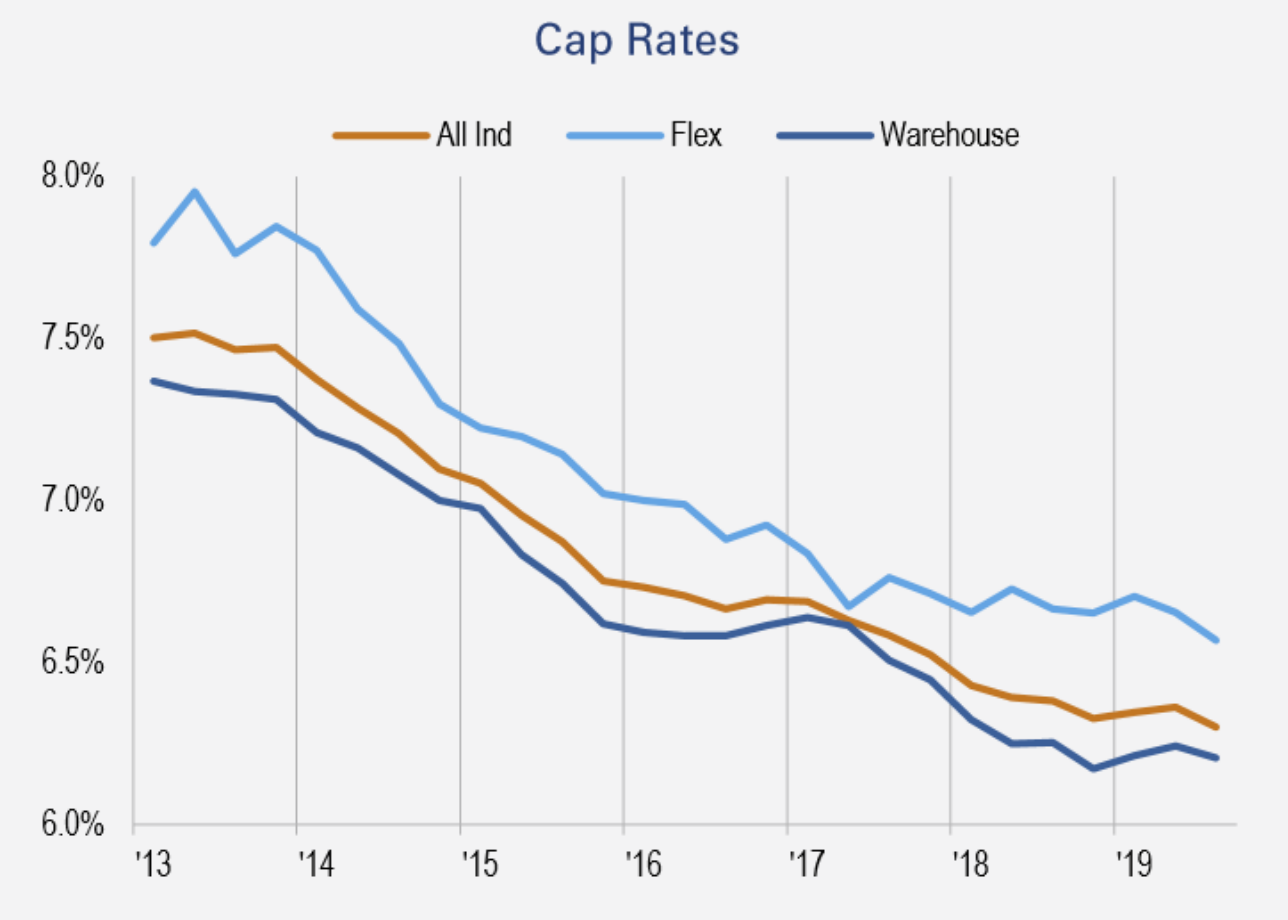
Residential and non-residential construction is shrinking . . . . supply is in check . . . .



Source: Economist, "Corporate America's Confidence and Profits are Sagging," October 23, 2019

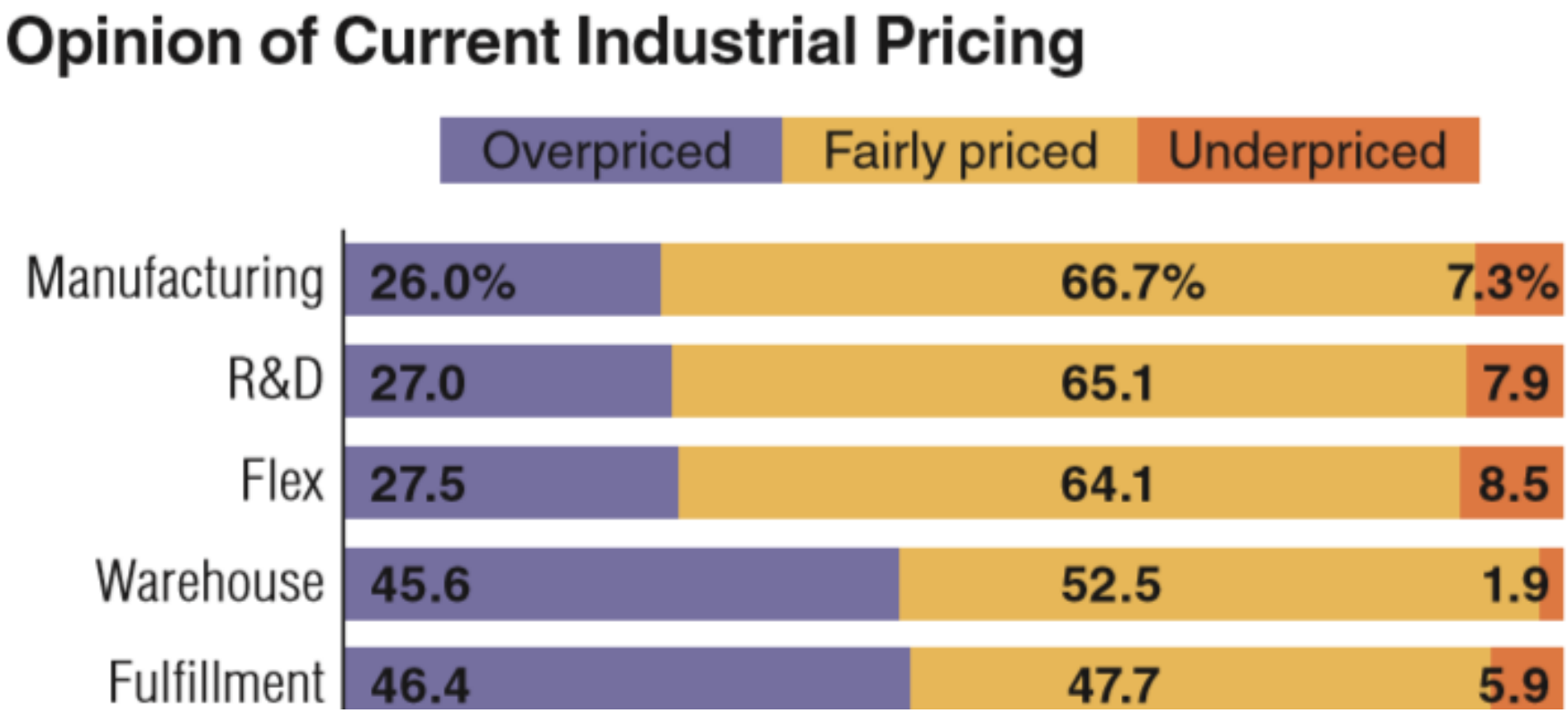
. . . . industrial trends, transaction volume is up 63% YOY . . . .





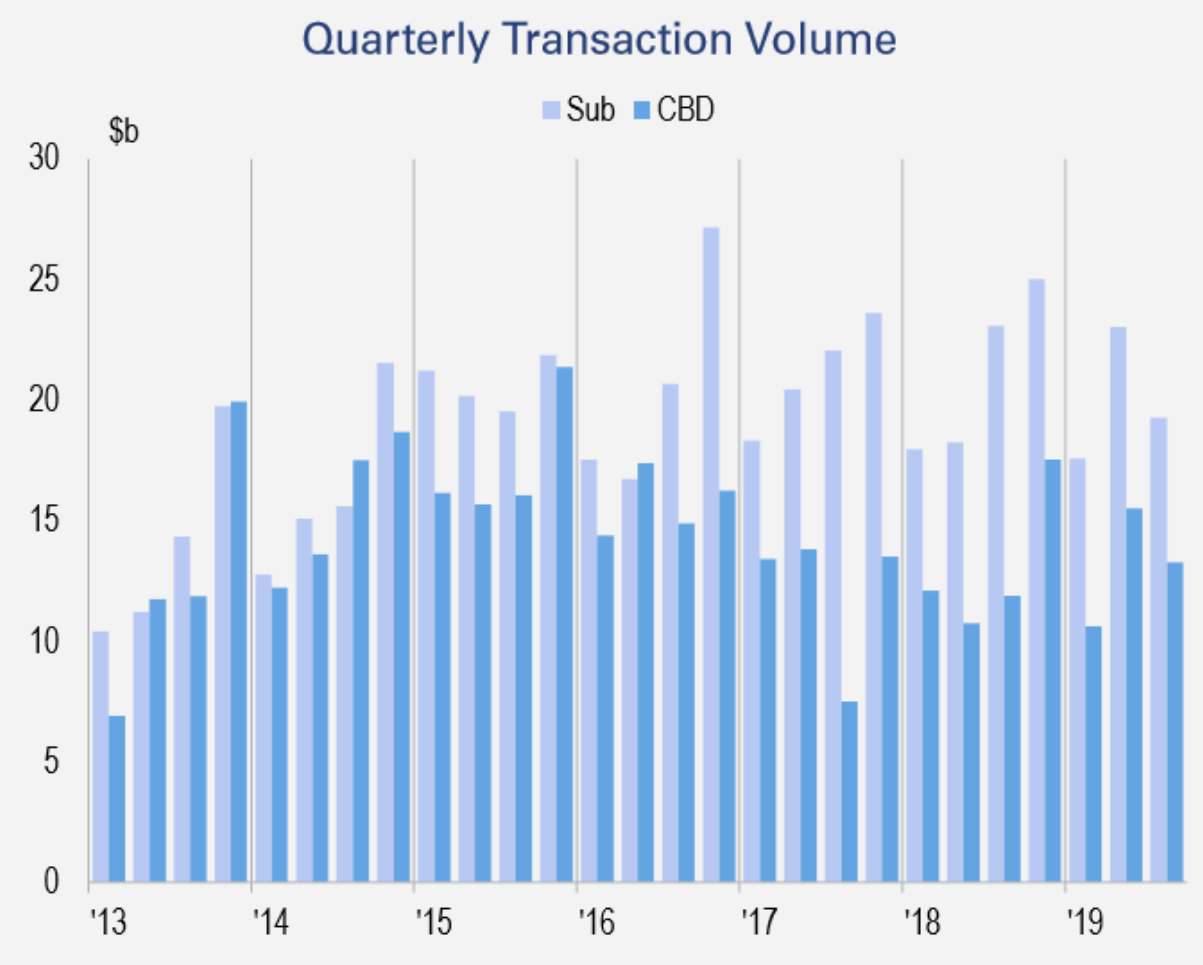
Source: Retal Capital Analytics, U.S. Capital Trends: Industrial, 2019Q3.

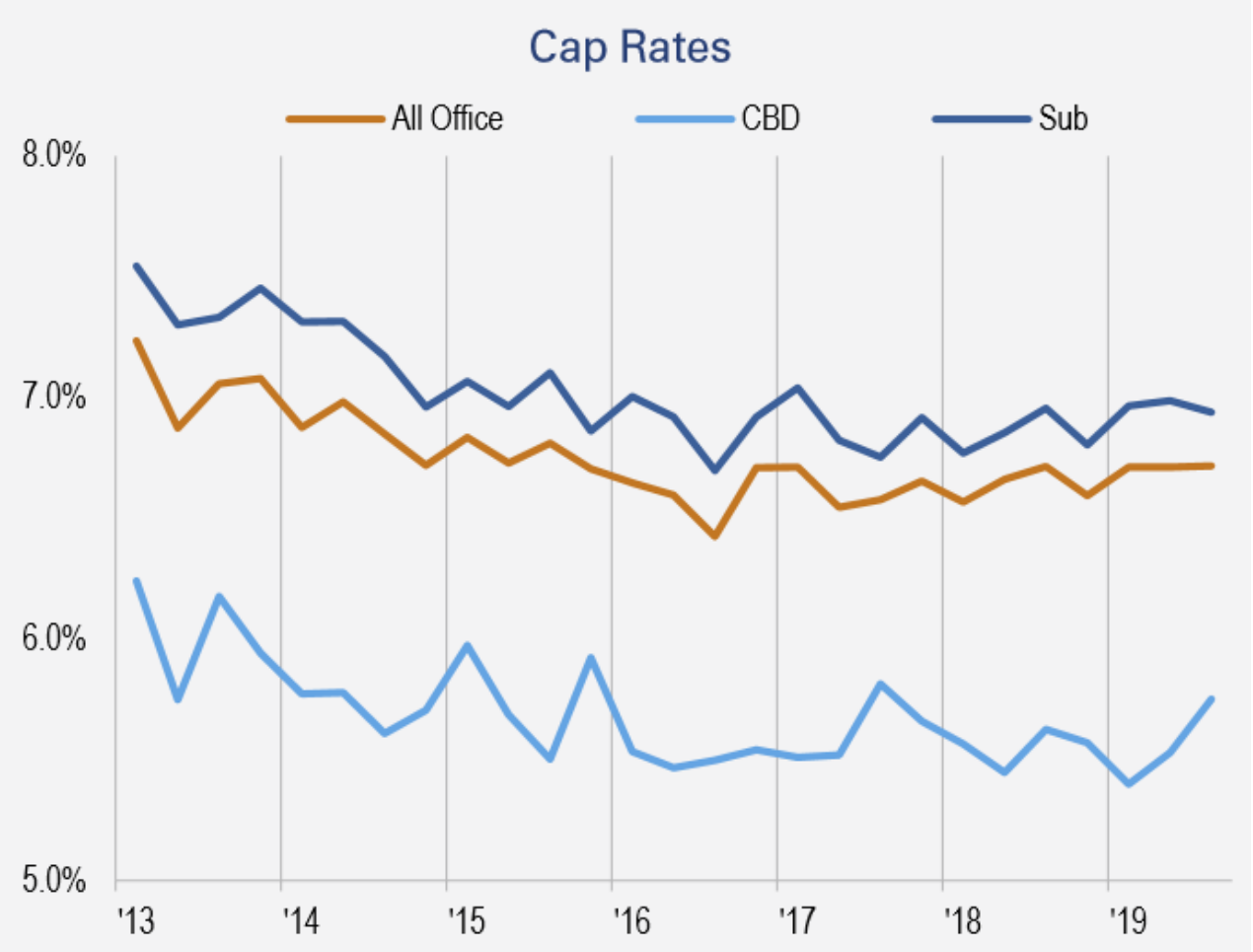
. . . . industrial pricing perceptions . . . .



Source: ULI, *Emerging Trends in Real Estate 2020,* survey.

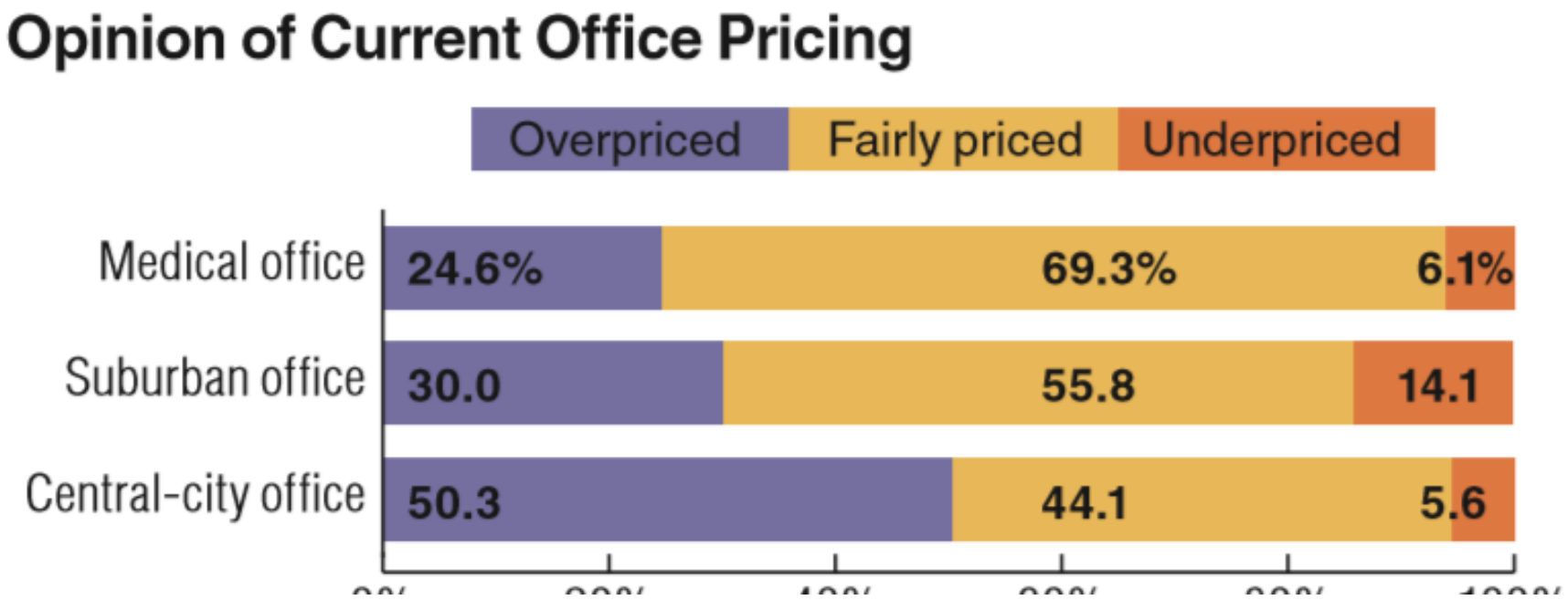
. . . . office trends, transaction volume is off 7% YOY. . . .





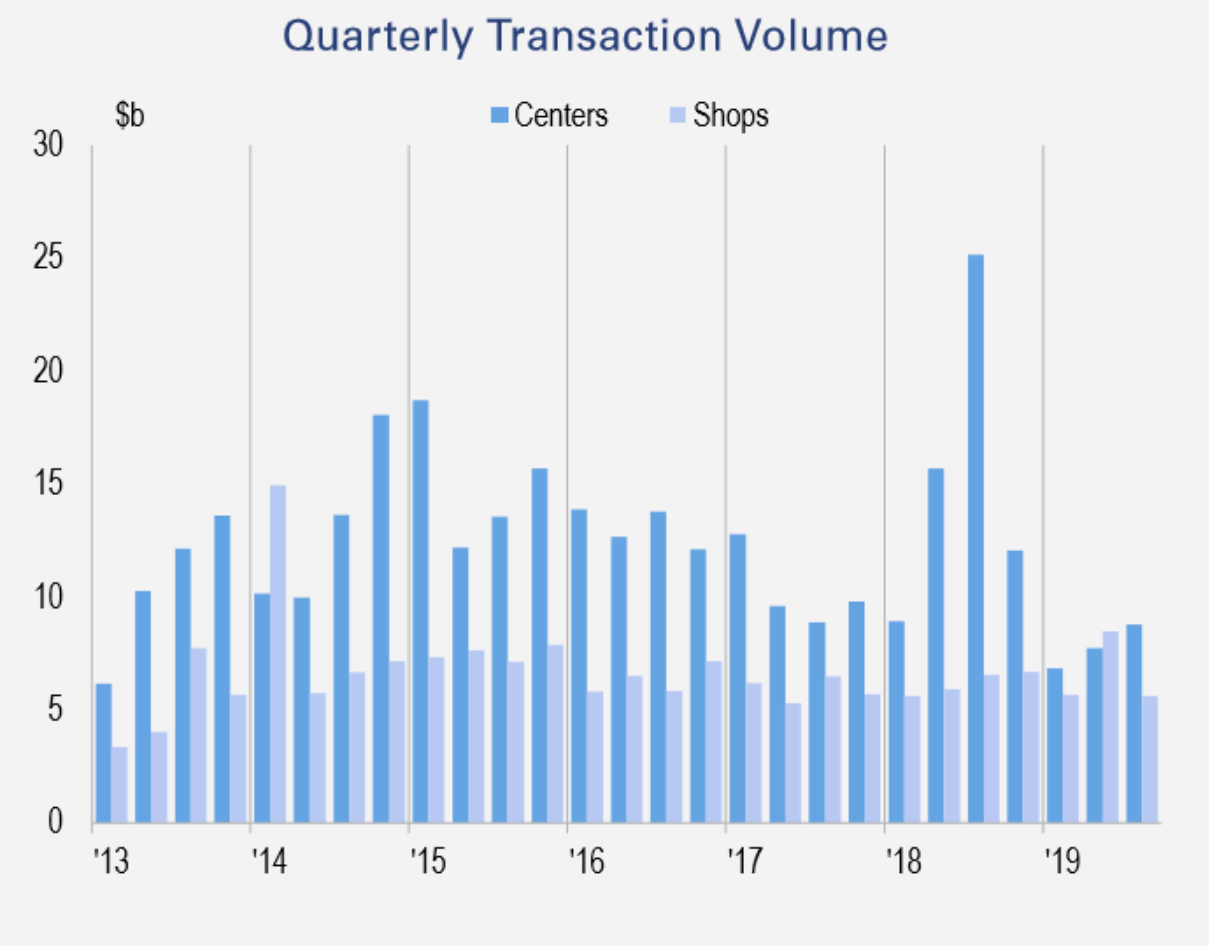
Source: Retal Capital Analytics, U.S. Capital Trends: Office, 2019Q3.

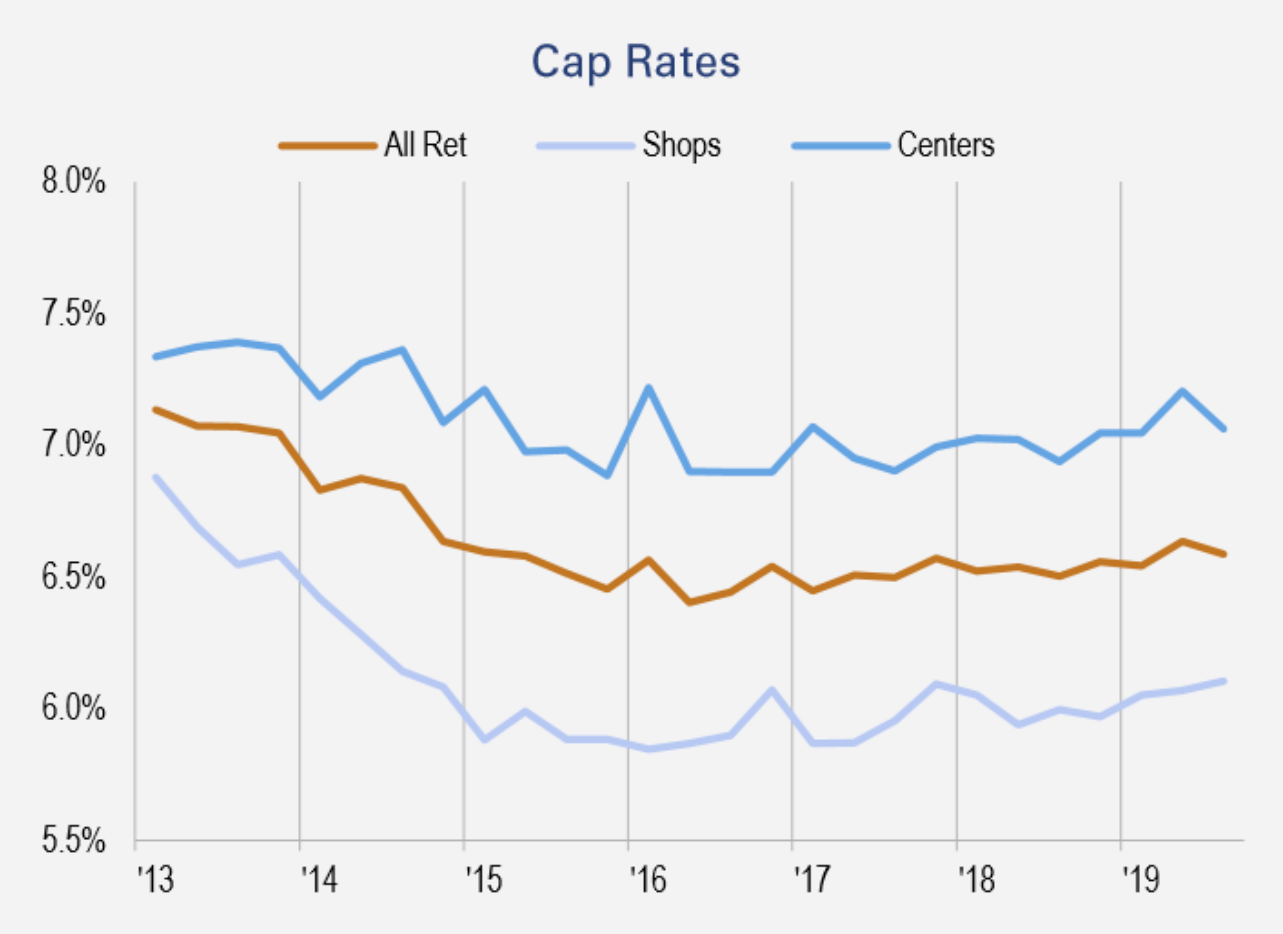
. . . . office pricing perceptions. . . .



Source: ULI, *Emerging Trends in Real Estate 2020,* survey.

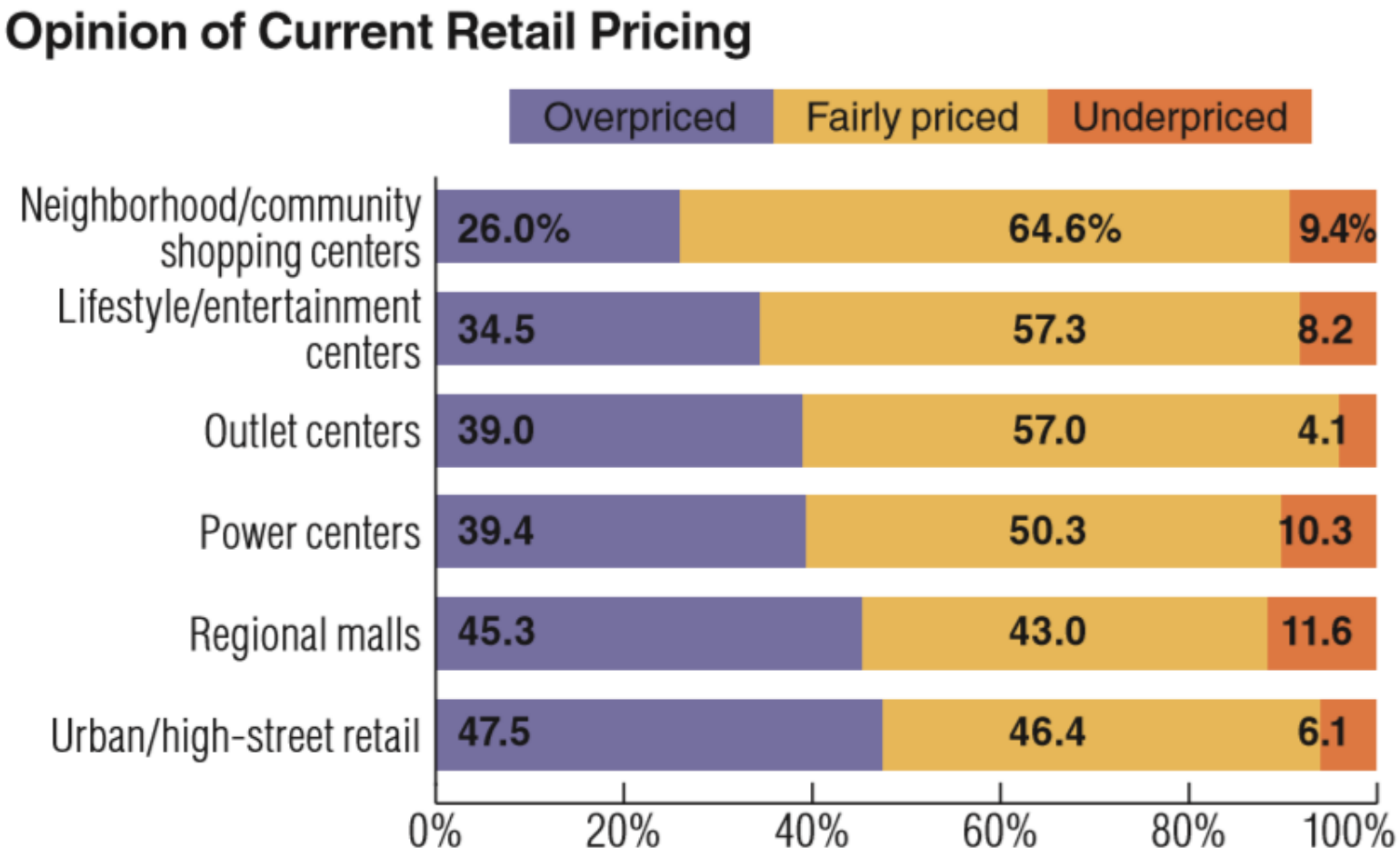
. . . . retail trends, transaction volume has plummeted 55% YOY . . . .





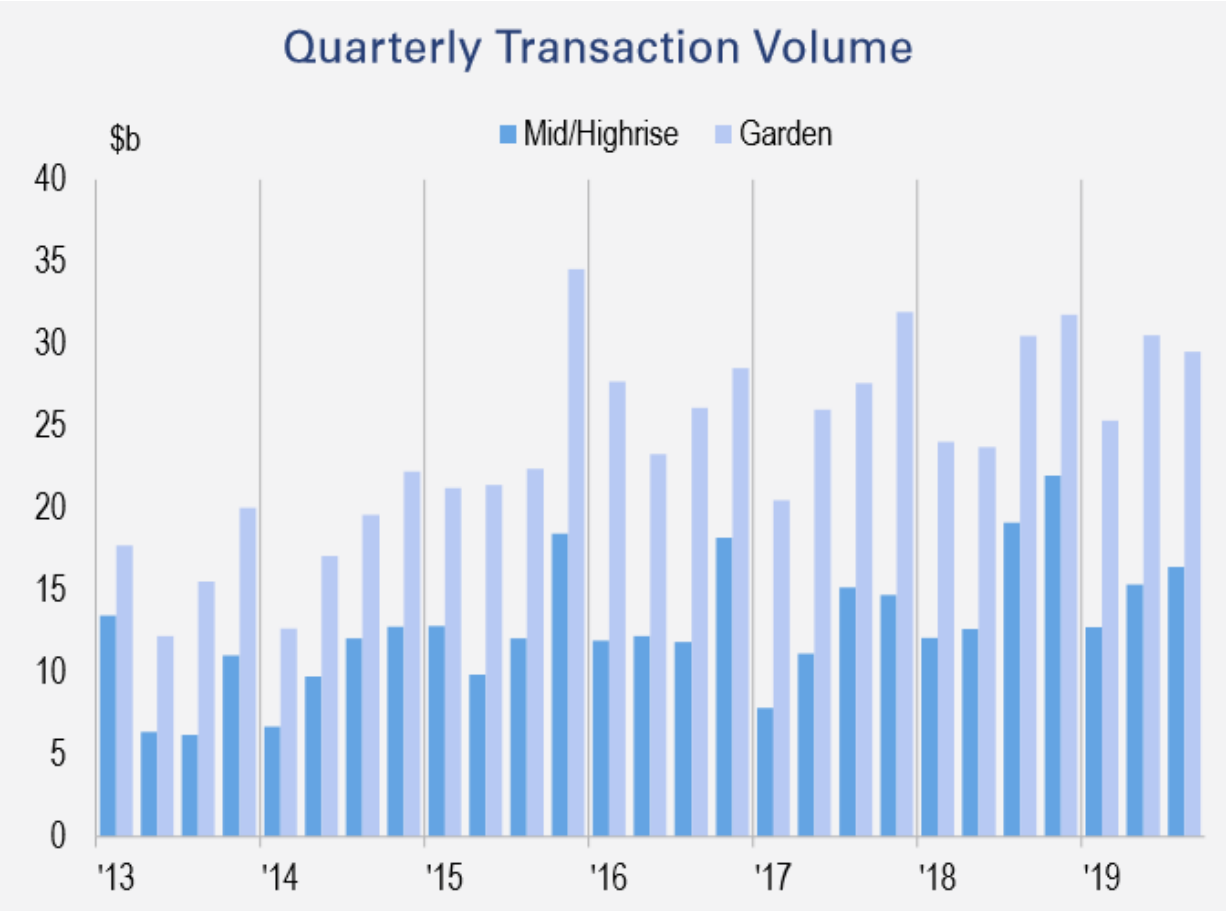
Source: Retal Capital Analytics, U.S. Capital Trends: Retail, 2019Q3.

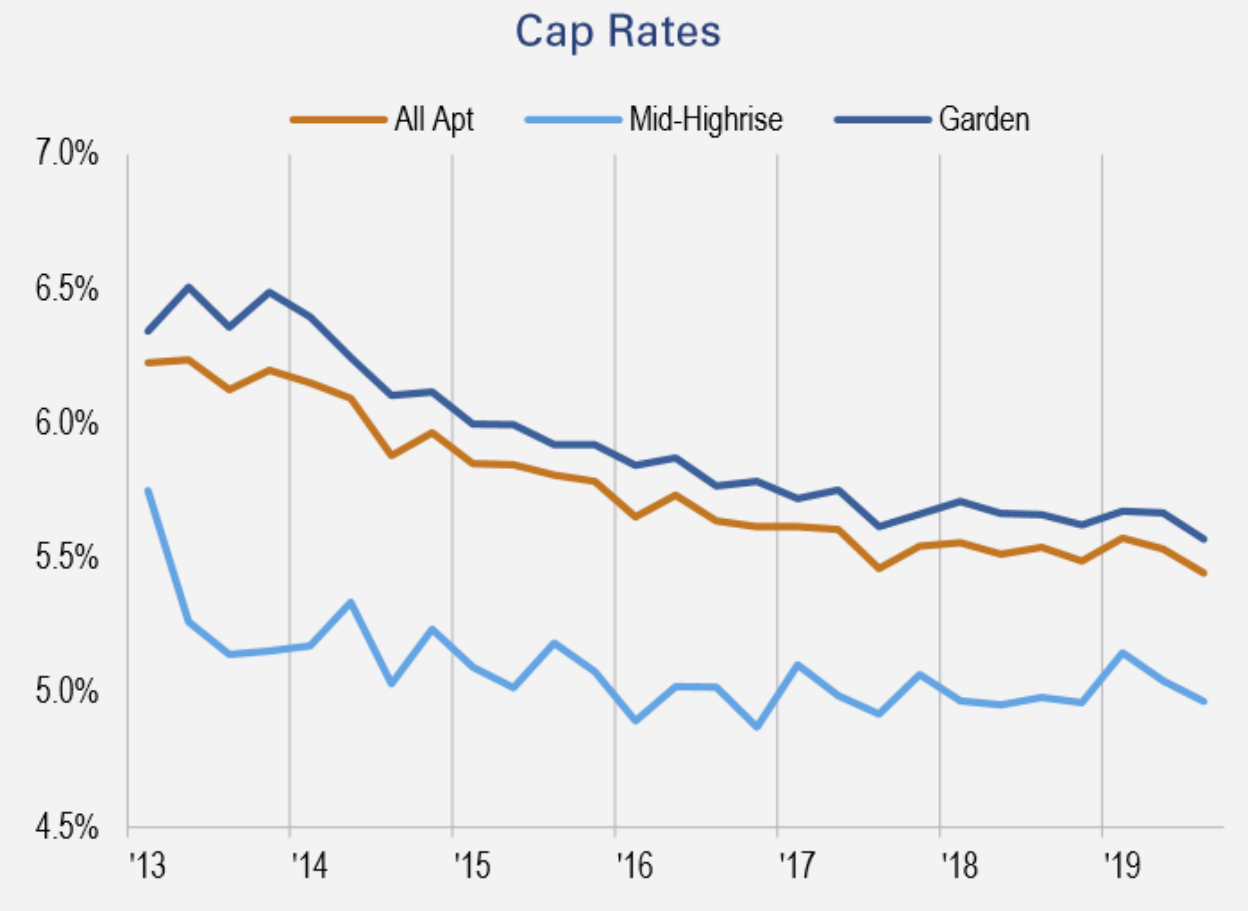
. . . . retail pricing perceptions. . . .



Source: ULI, *Emerging Trends in Real Estate 2020,* survey.

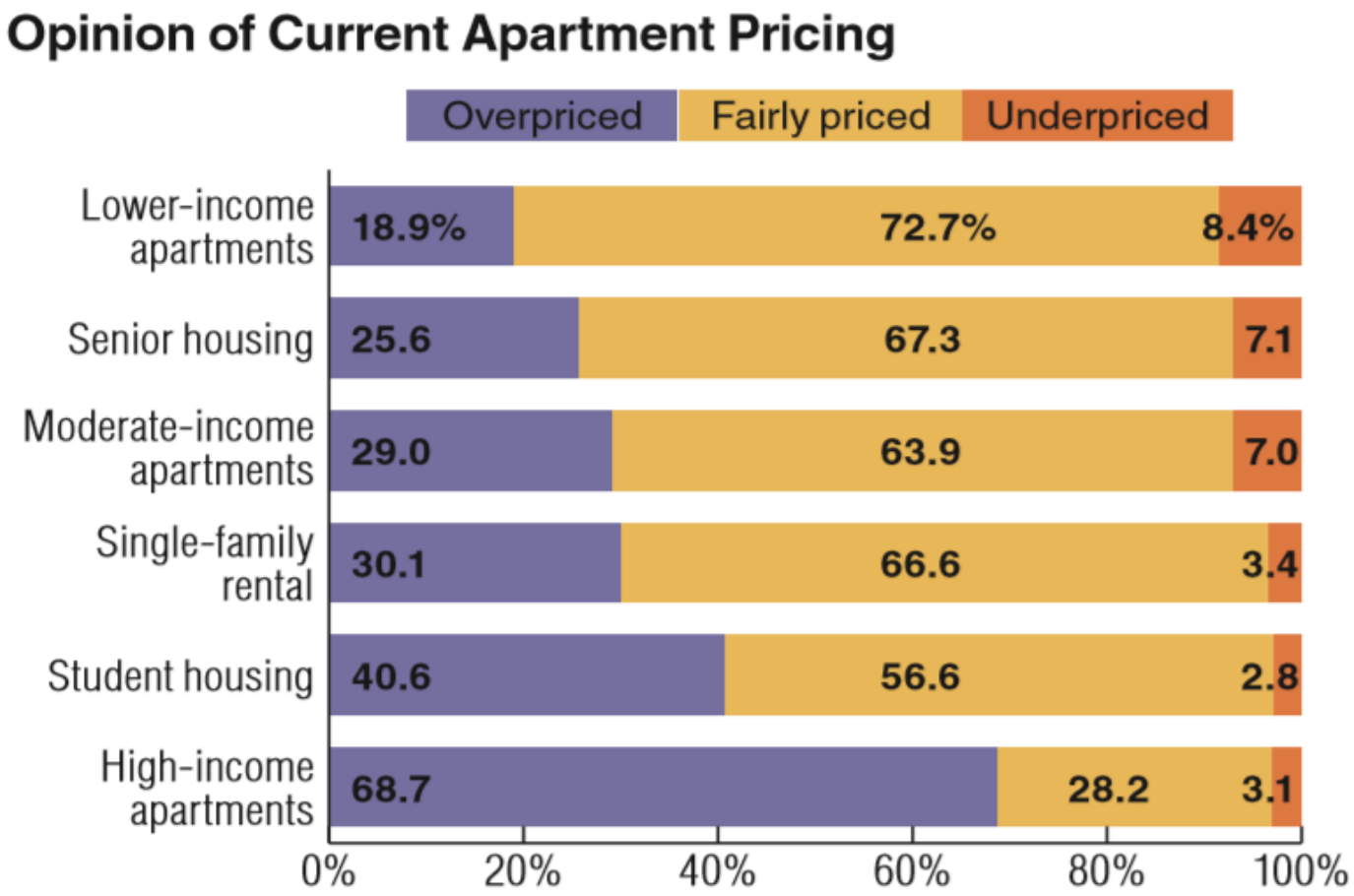
. . . . apartment trends, transaction volume is off 7% YOY. . . .





Source: Retal Capital Analytics, U.S. Capital Trends: Apartments, 2019Q3.

. . . . apartment pricing perceptions, We are building 90 percent of our housing for 10 percent of our households.” . . . .



Source: ULI, *Emerging Trends in Real Estate 2020,* survey.

2020 Real Estate Forecast

WHERE ARE WE HEADED?