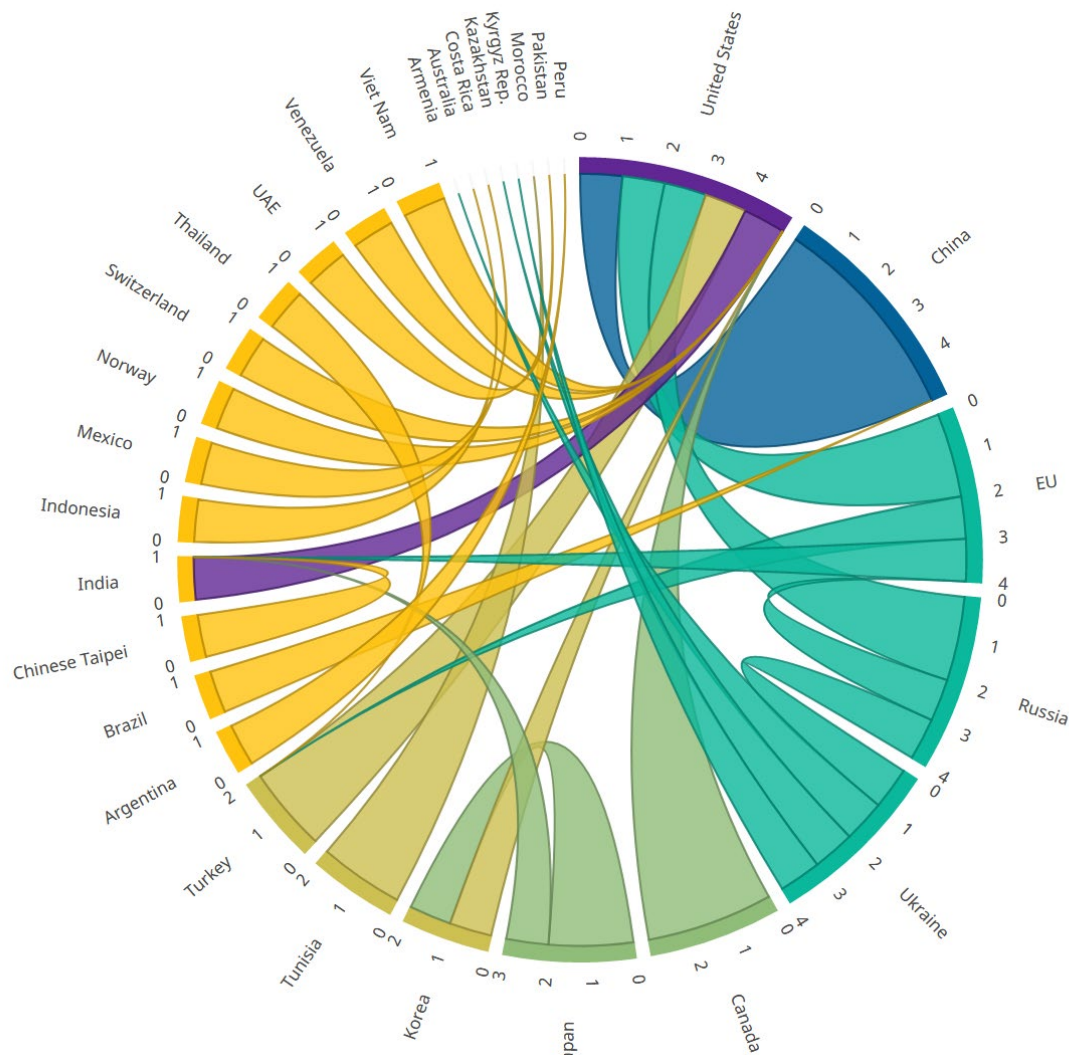


# Fall 2019 Inforum Economic Outlook

Ronald Horst  
University of Maryland  
December 12, 2019



# Trade Tensions Abound

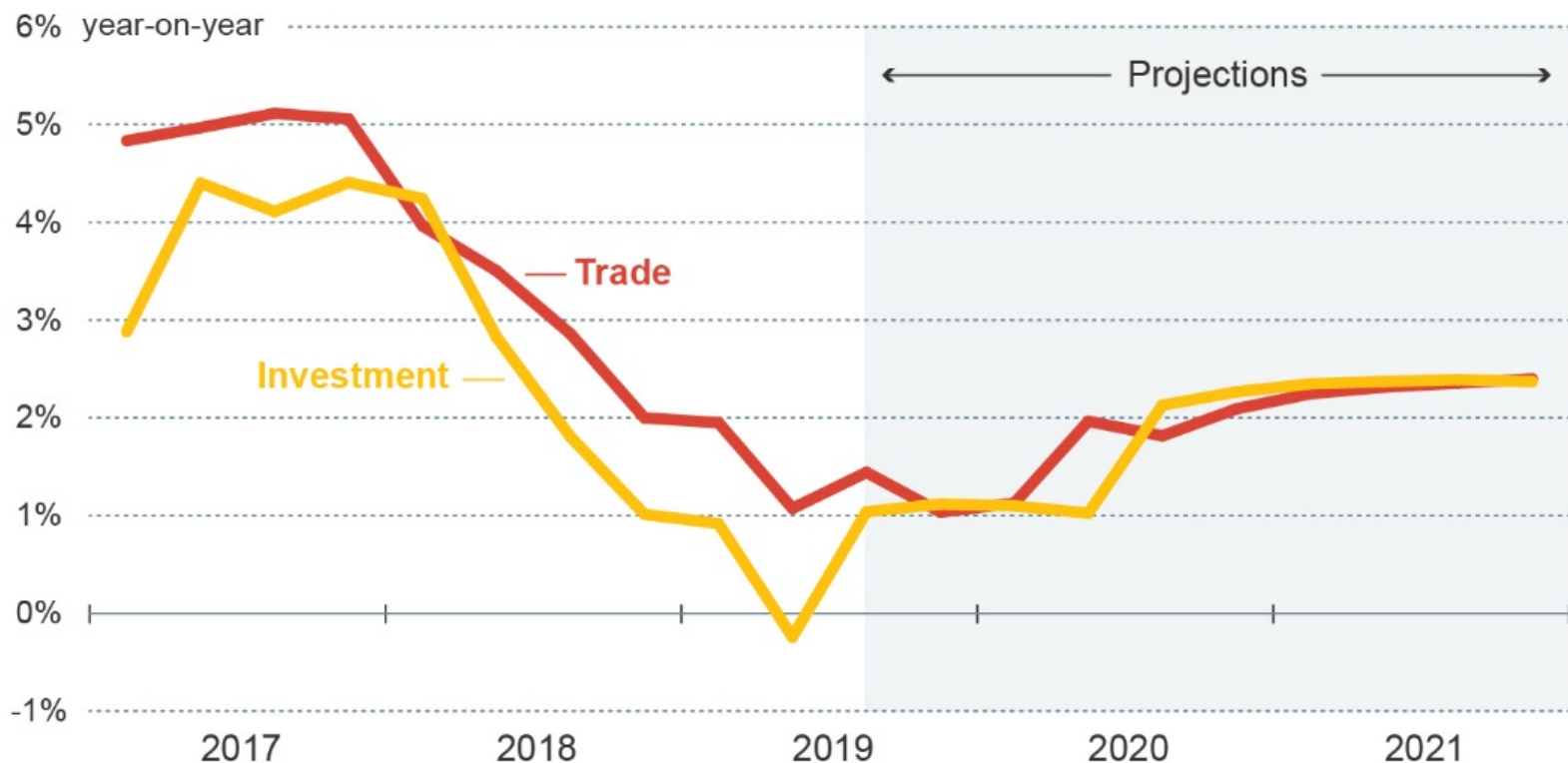


# Reducing Trade and Slowing Investment



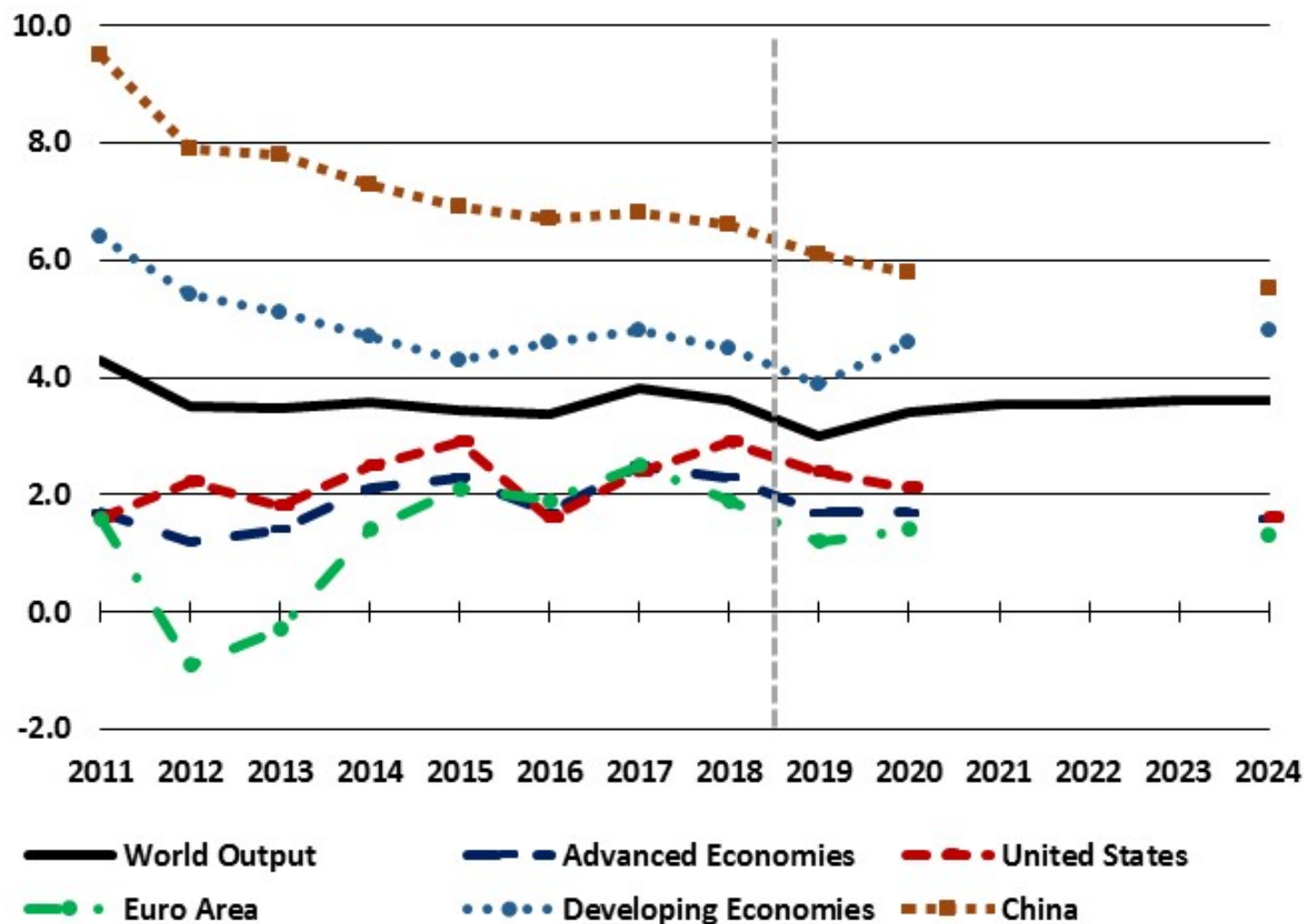
## Trade and investment to remain weak

World trade and investment growth, %, 2017-2021



Source: OECD Economic Outlook, November 2019

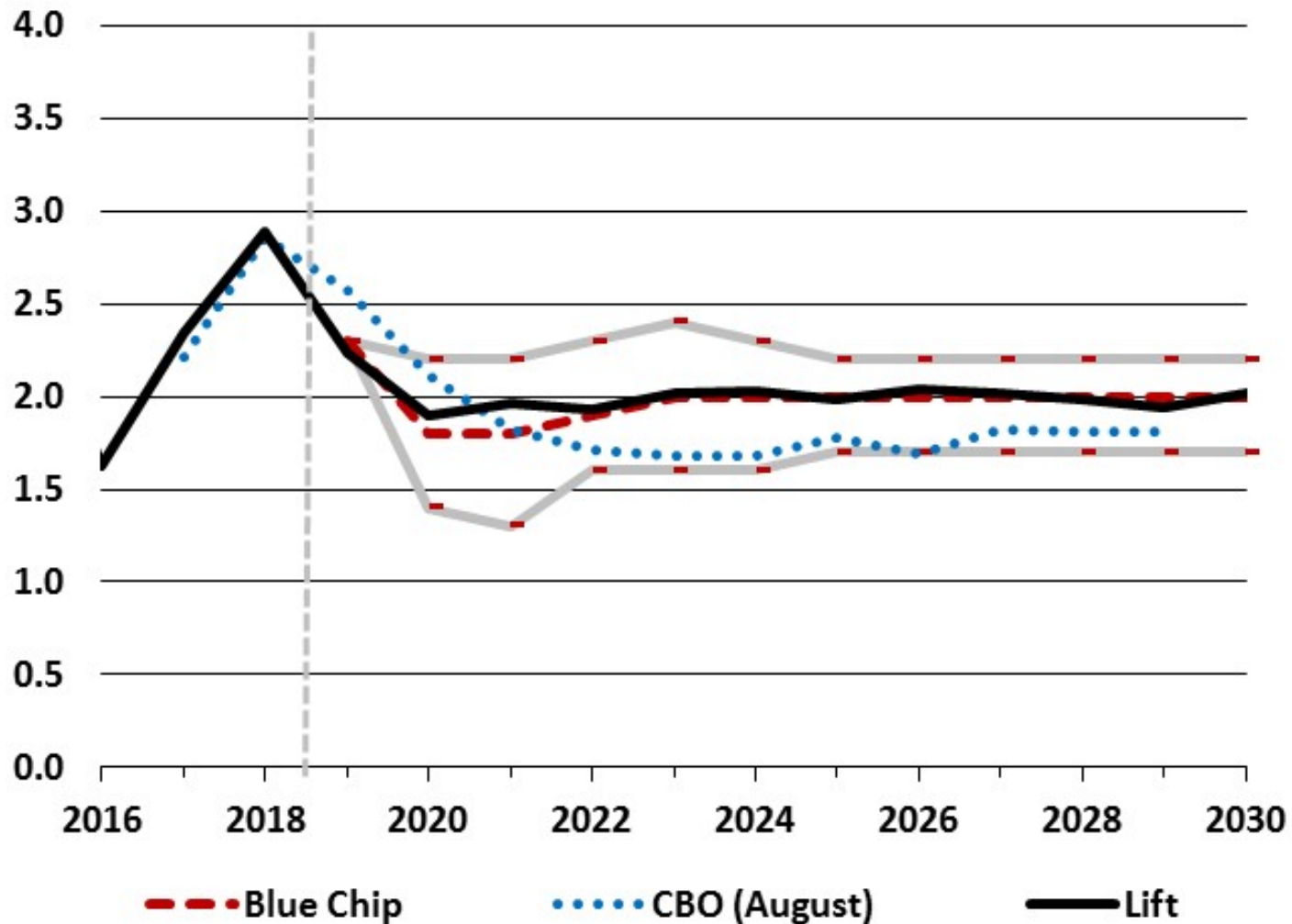
# Global Growth is Declining



# World Outlook: Sluggish Gains

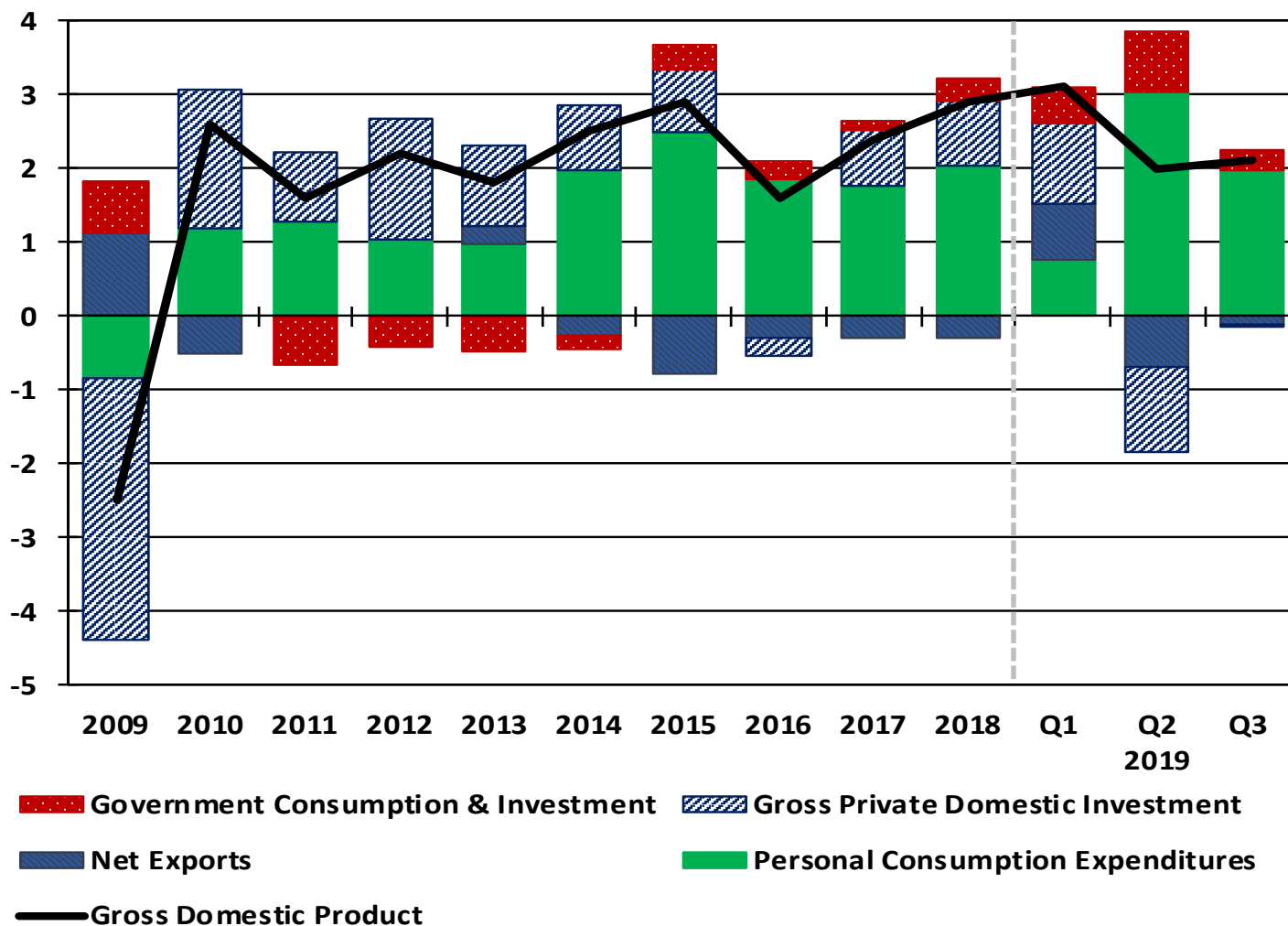
	2017	2018	2019	2020	2024
<b>World Output</b>	<b>3.8</b>	<b>3.6</b>	<b>3.0</b>	<b>3.4</b>	<b>3.6</b>
<b>Advanced Economies</b>	<b>2.5</b>	<b>2.3</b>	<b>1.7</b>	<b>1.7</b>	<b>1.6</b>
United States	2.4	2.9	2.4	2.1	1.6
Euro Area	2.5	1.9	1.2	1.4	1.3
Germany	2.5	1.5	0.5	1.2	1.2
France	2.3	1.7	1.2	1.3	1.4
Italy	1.7	0.9	0.0	0.5	0.6
Spain	3.0	2.6	2.2	1.8	1.6
Japan	1.9	0.8	0.9	0.5	0.5
Other Advanced Economies	2.7	2.2	1.5	1.8	2.1
United Kingdom	1.8	1.4	1.2	1.4	1.5
Canada	3.0	1.9	1.5	1.8	1.7
<b>Emerging Market and Developing Economies</b>	<b>4.8</b>	<b>4.5</b>	<b>3.9</b>	<b>4.6</b>	<b>4.8</b>
China	6.8	6.6	6.1	5.8	5.5
India	7.2	6.8	6.1	7.0	7.3
Brazil	1.1	1.1	0.9	2.0	2.3
Mexico	2.1	2.0	0.4	1.3	2.4
Russia	1.6	2.3	1.1	1.9	1.8

# U.S. Outlook: Slower GDP Growth

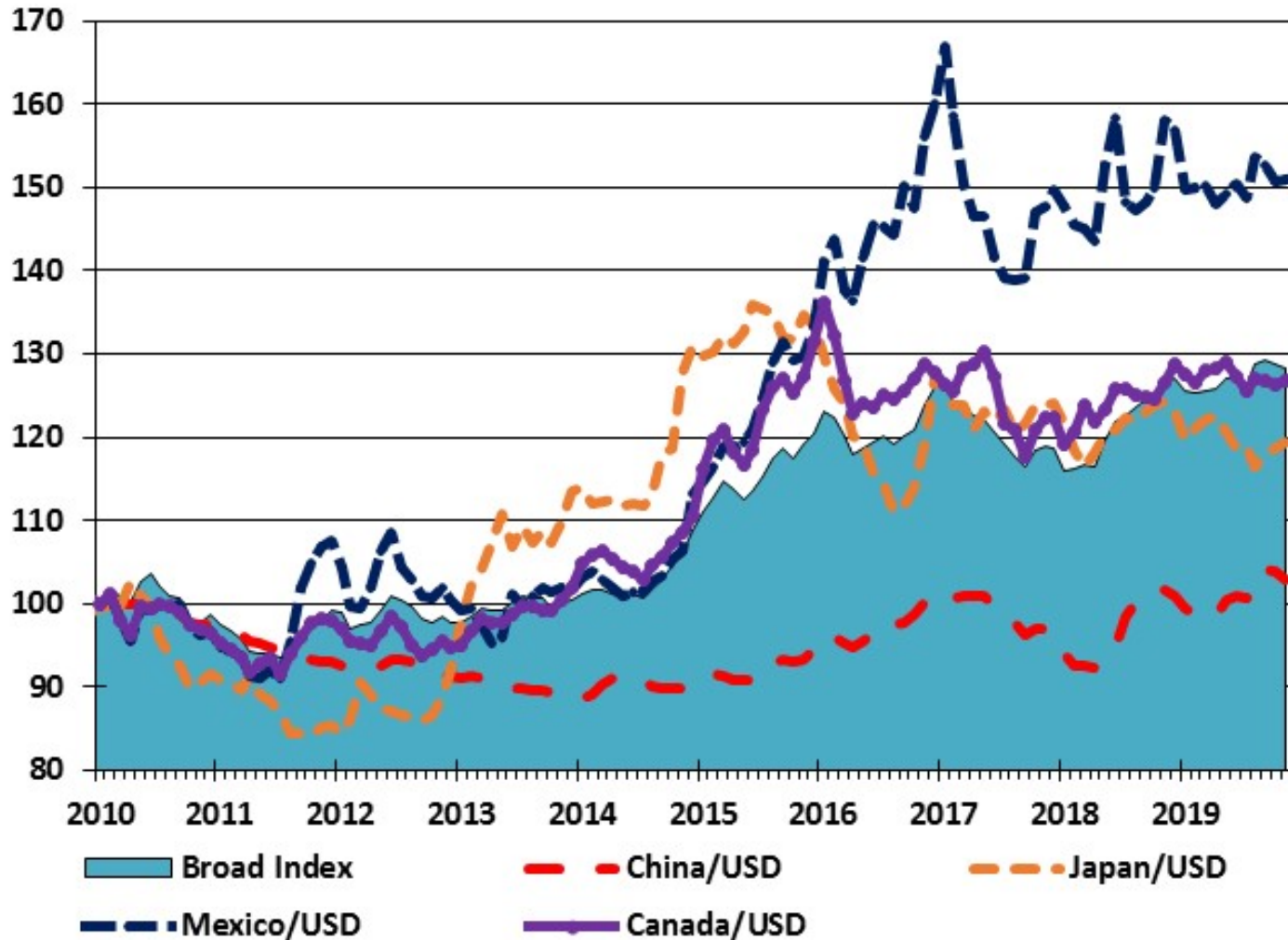


CBO 2019-2029 (August), Blue Chip (December, October), and Preliminary Inforum Fall 2019.

# Trade & Investment Limit US Growth

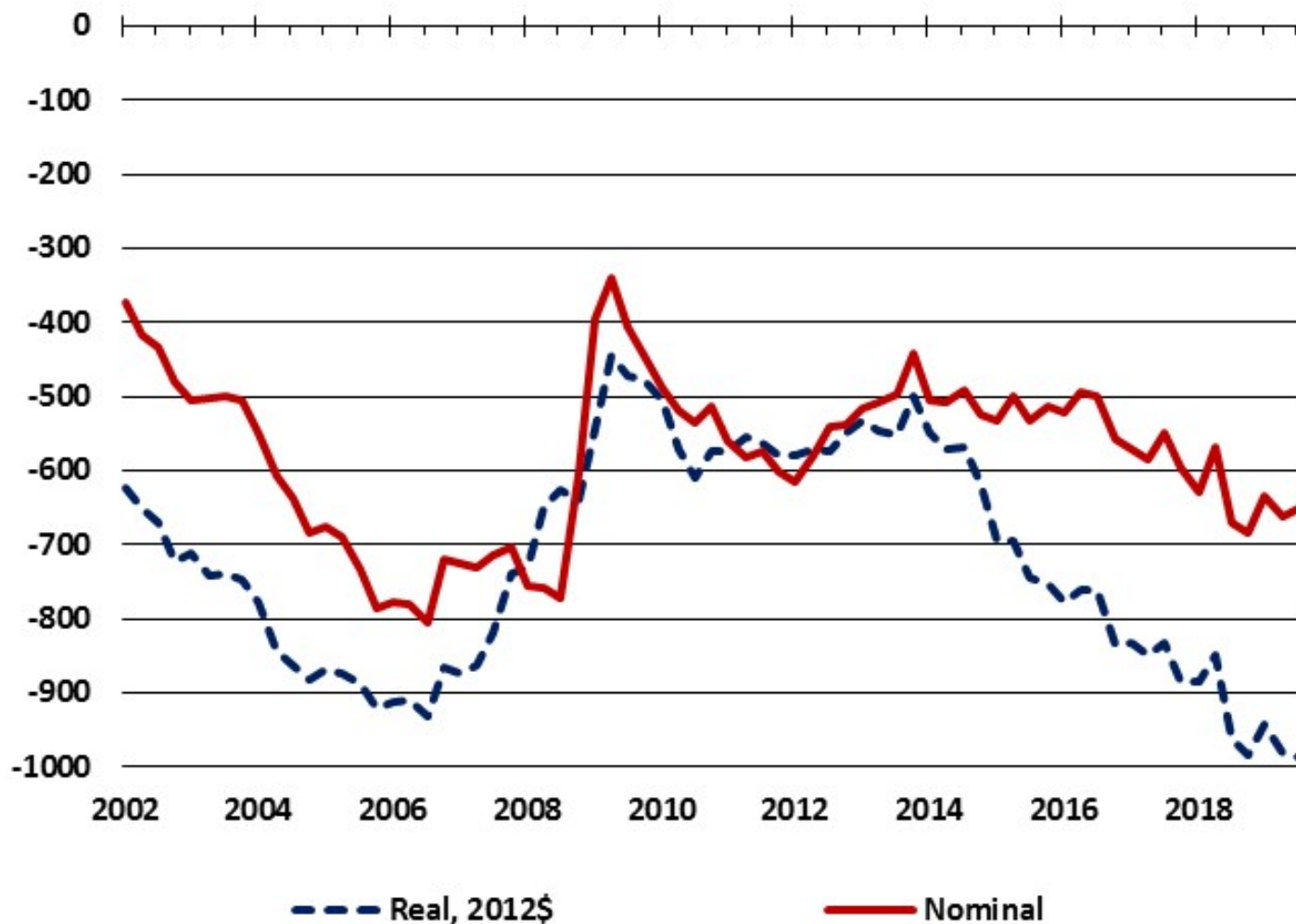


# Dollar Stronger Again in 2019

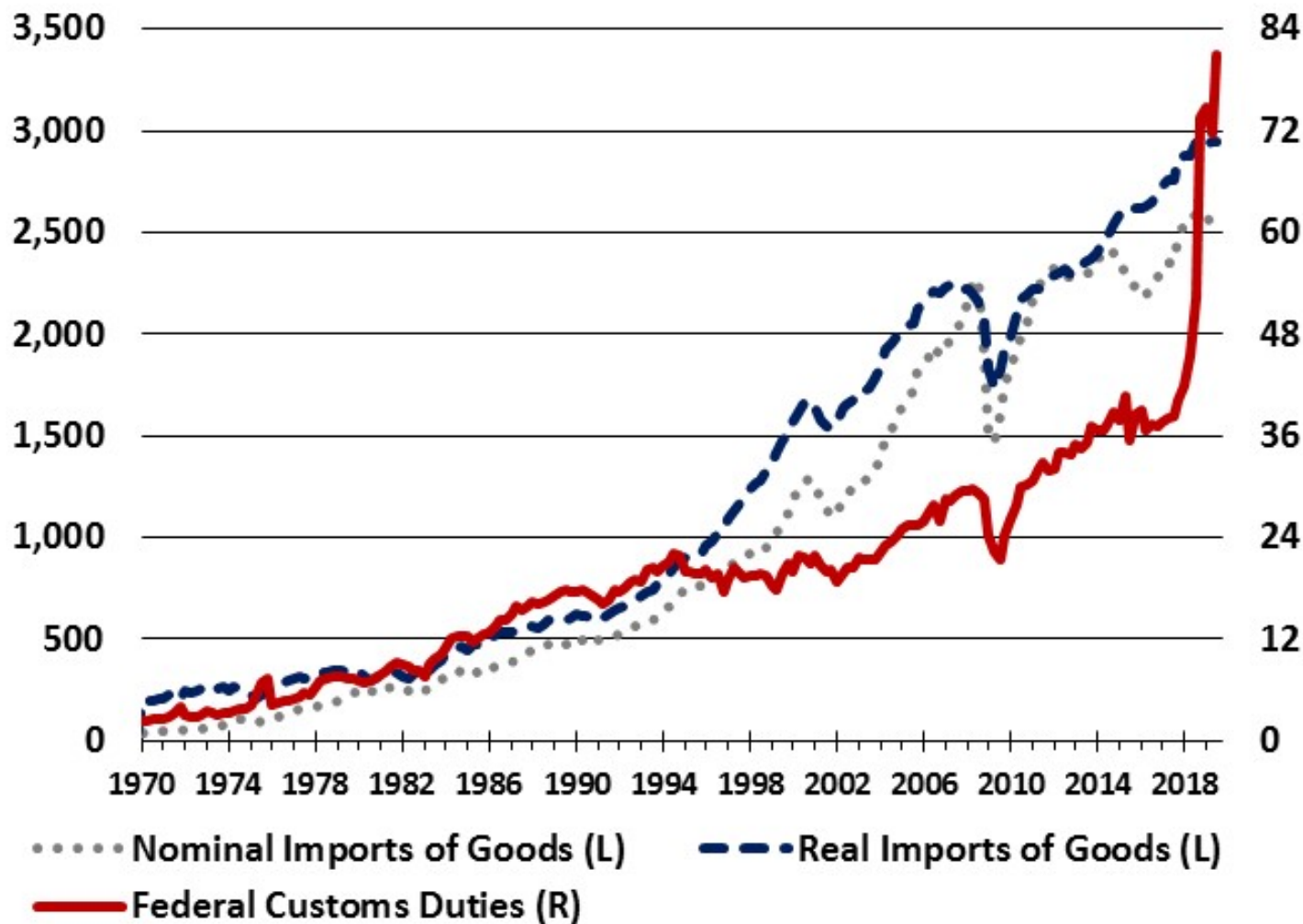




# The Overall Trade Gap Widened...

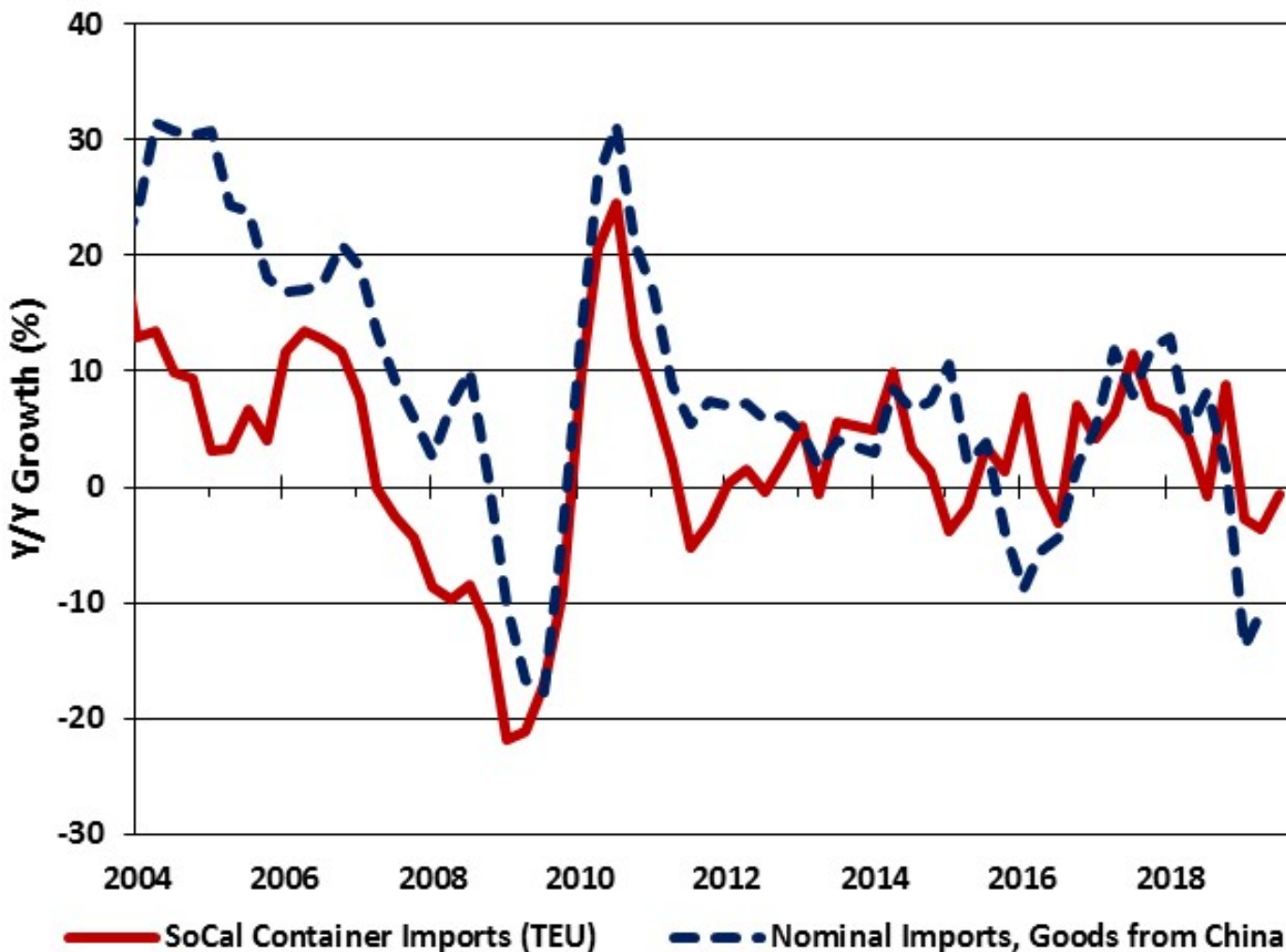


# ...Despite Barriers to Trade



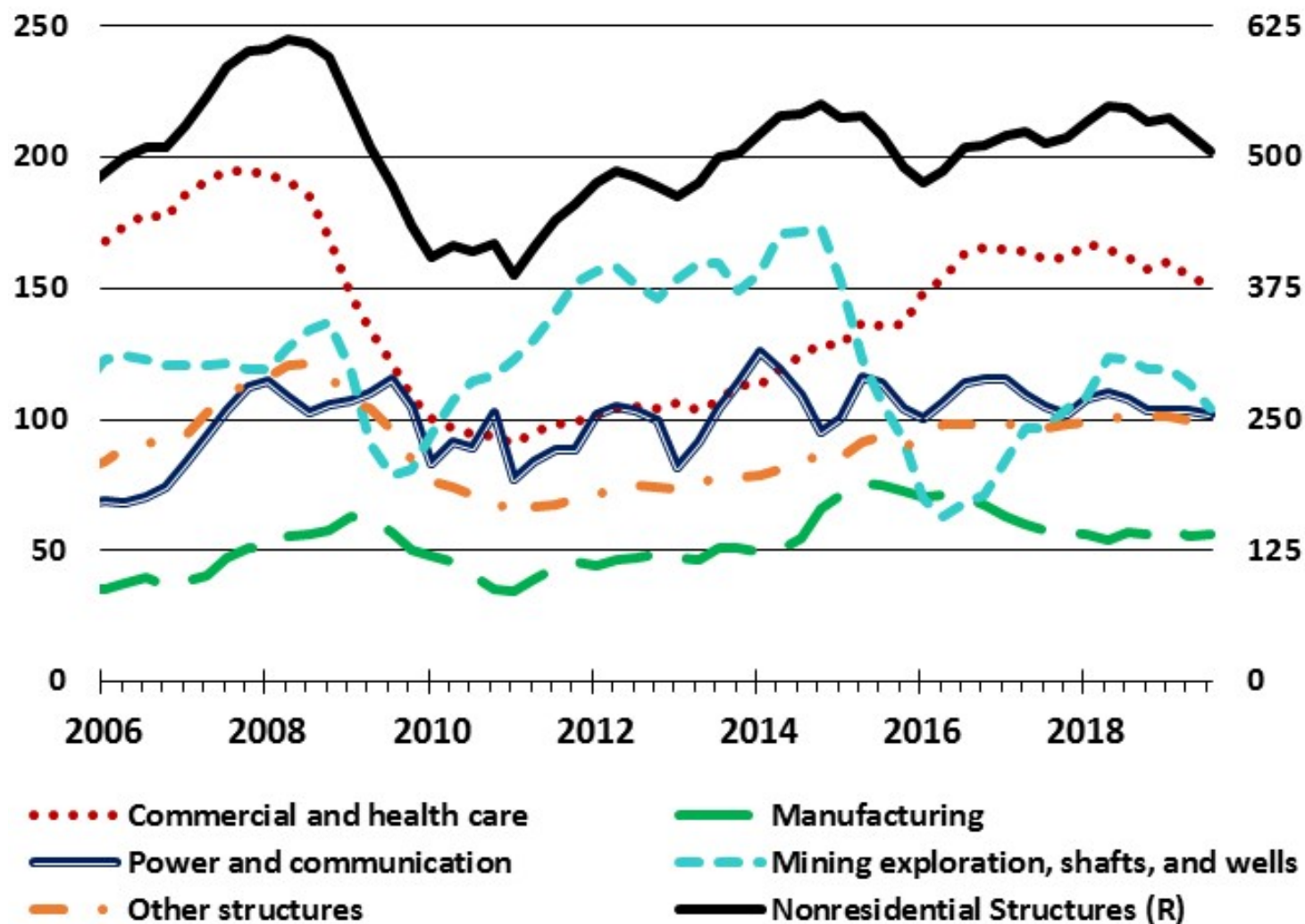
Bureau of Economic Analysis, NIPA, Billions of Dollars.

# ...Leading to Reduced Activity



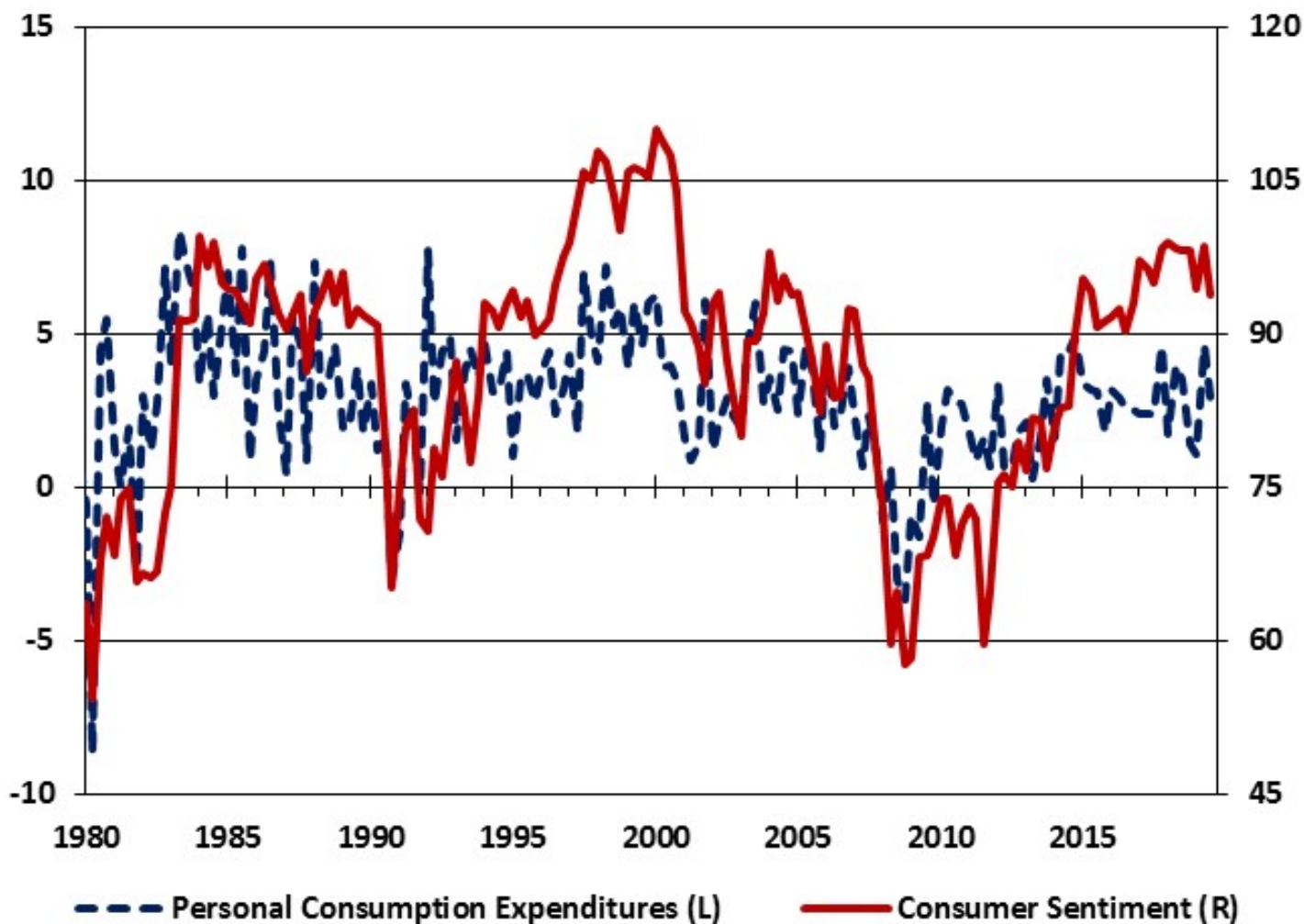
Bureau of Economic Analysis; Port of Long Beach & Port of LA (Twenty-foot Equivalent Units).

# Structures Investment Fell



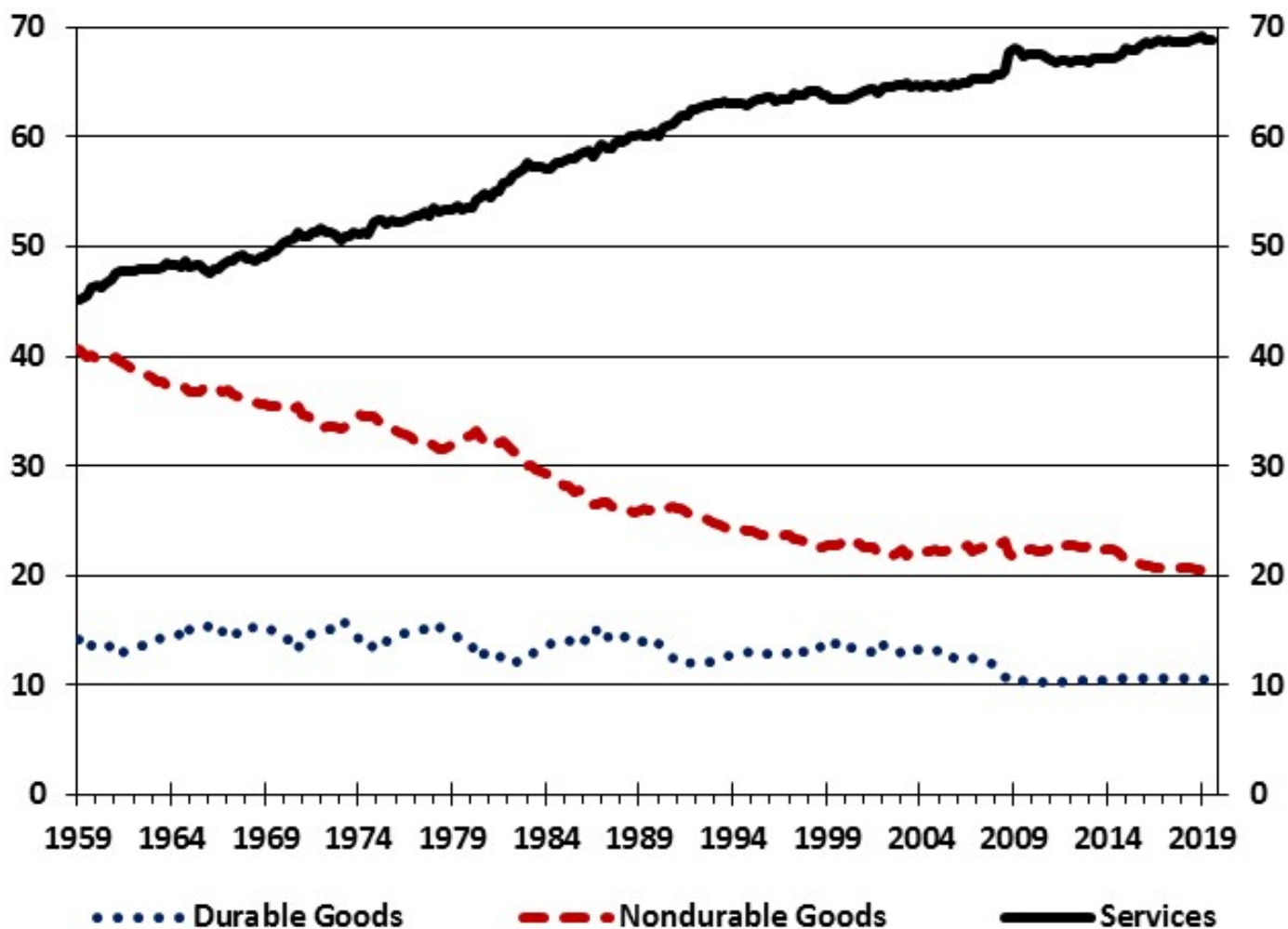
Billions of chained (2012) dollars

# Consumers Remain Confident



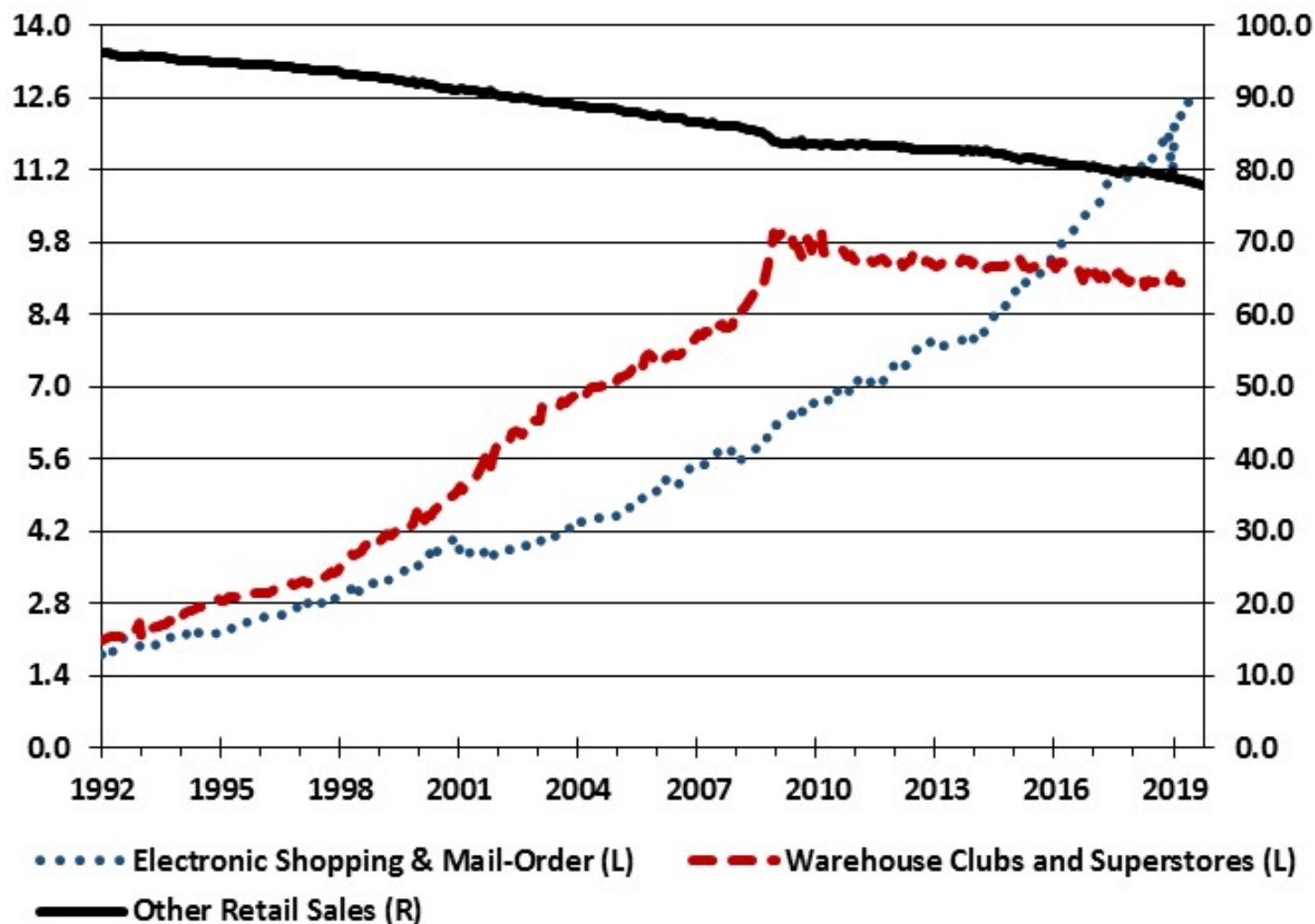
Annual PCE Growth (Percent) , University of Michigan Consumer Sentiment (1966=100)

# What are Consumers Buying?



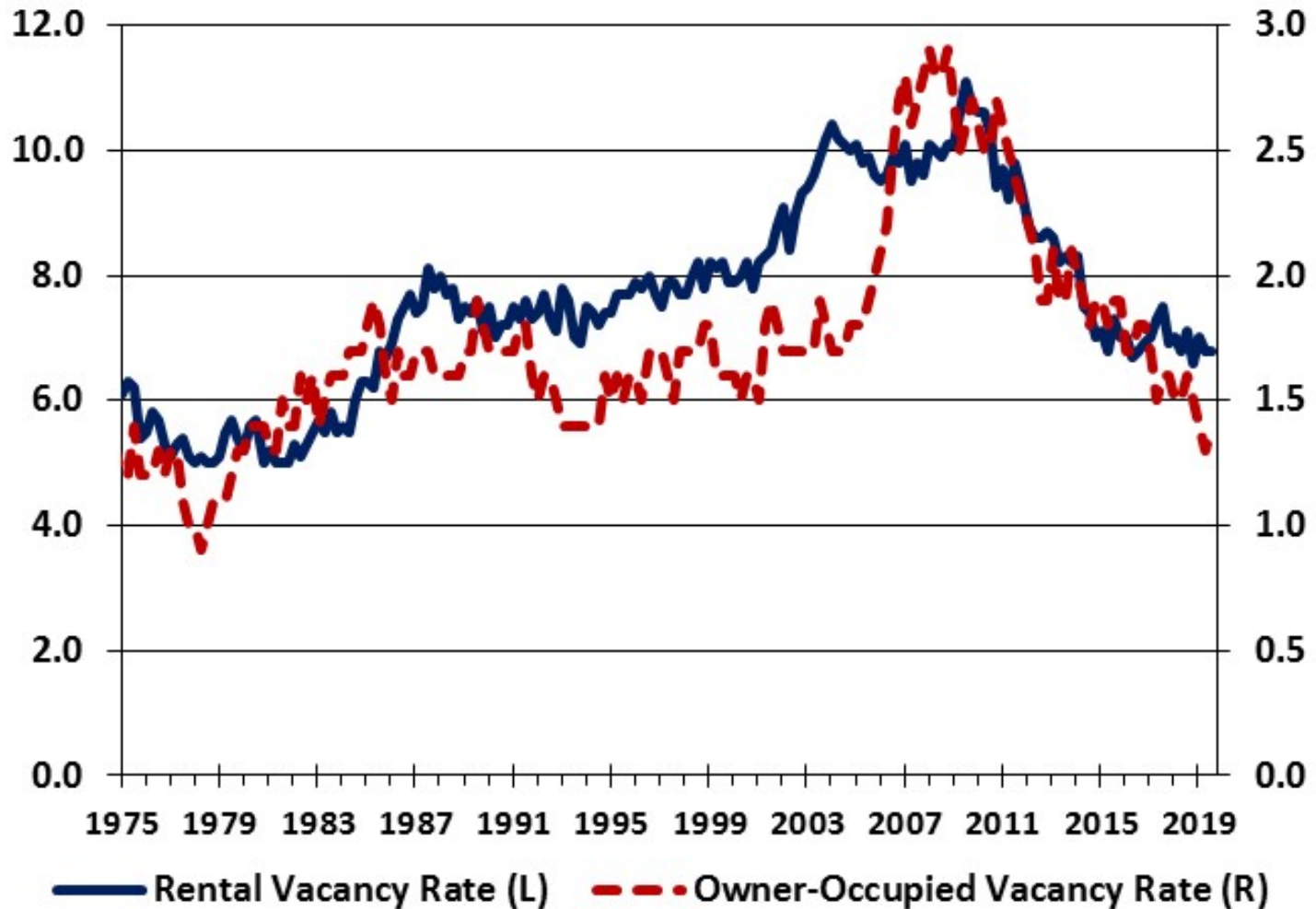
Shares of Personal Consumption Spending (Percent, NIPA); Inforum calculations.

# Where are Consumers Spending?



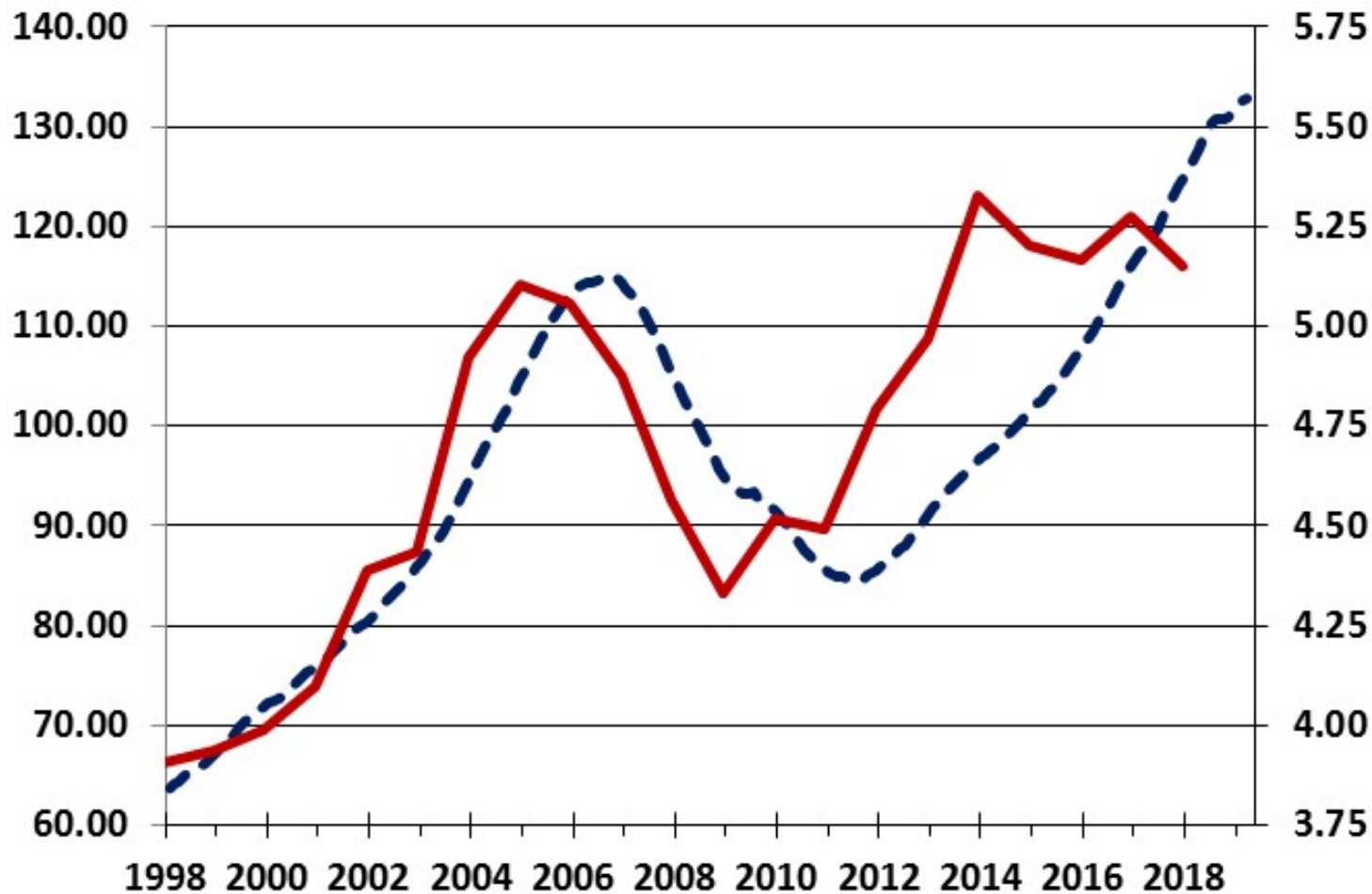
Shares of Retail Sales (Percent), Inforum calculations using Retail Trade Survey data.

# Residential Vacancies are Falling





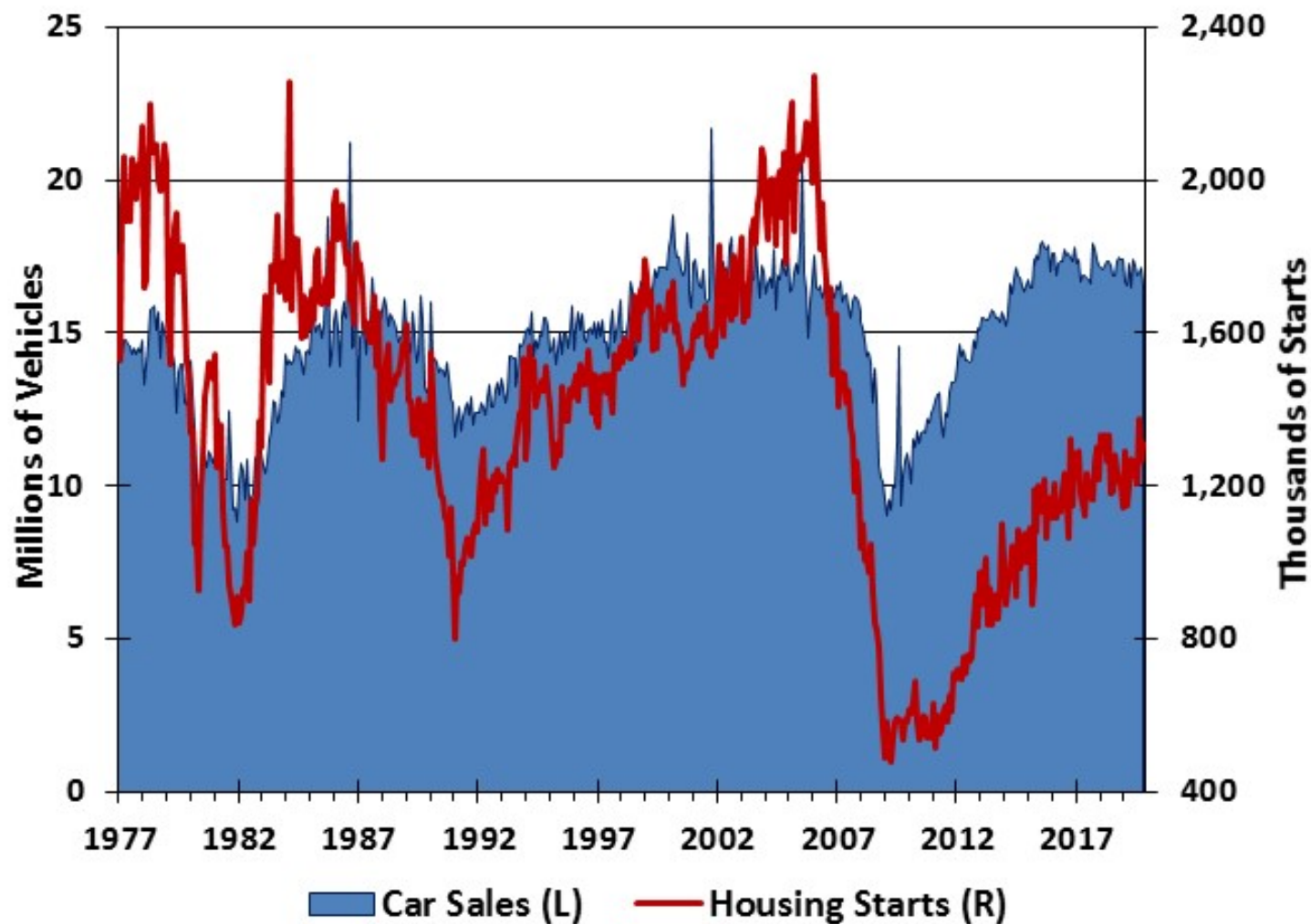
# Home Prices are Climbing



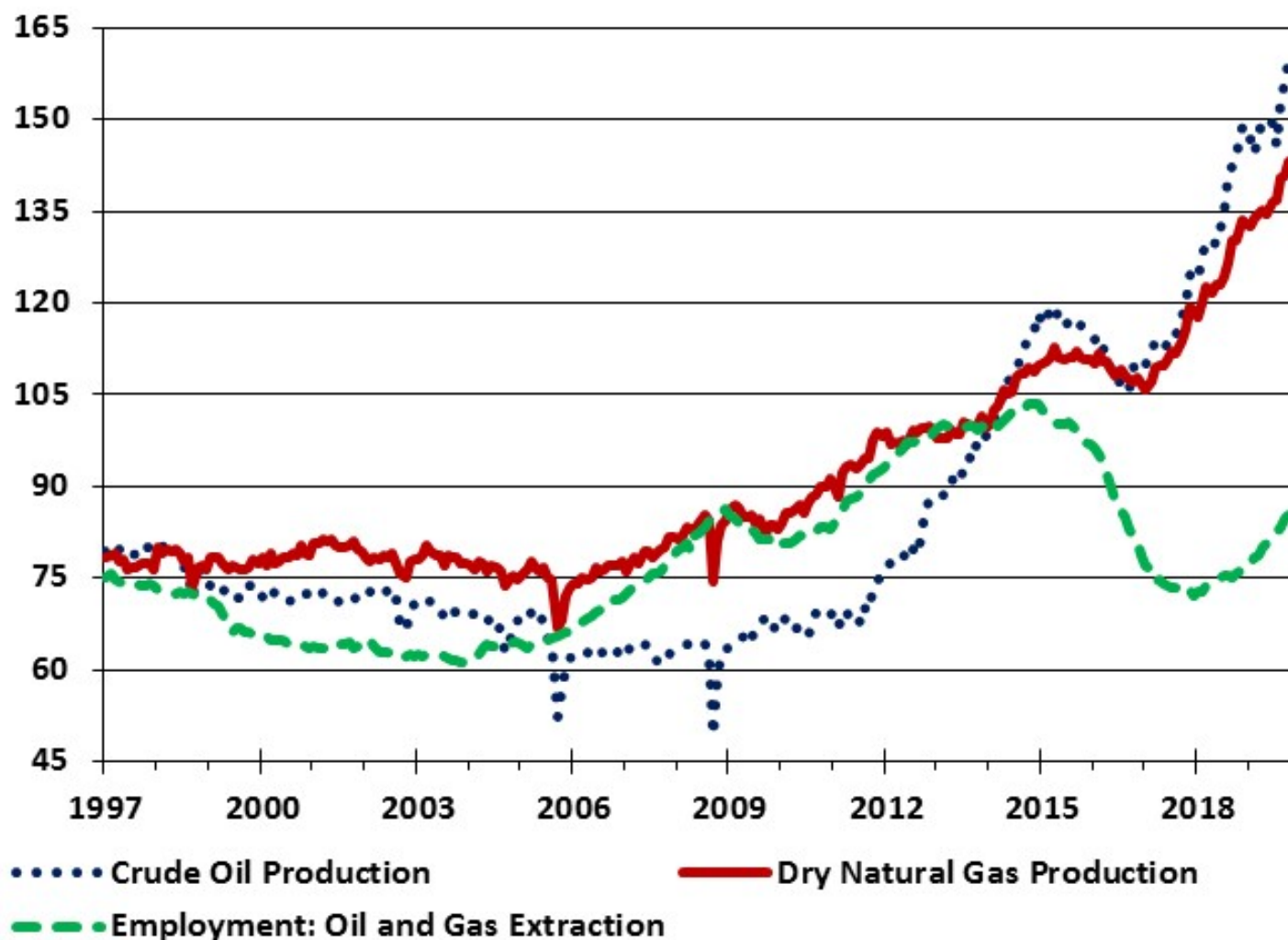
- - - Zillow Home Price Index (L)
 — Median Sale Price / Median Income (R)

Zillow price index and Median price to Median Income ratio.

# Auto Sales and Housing Starts

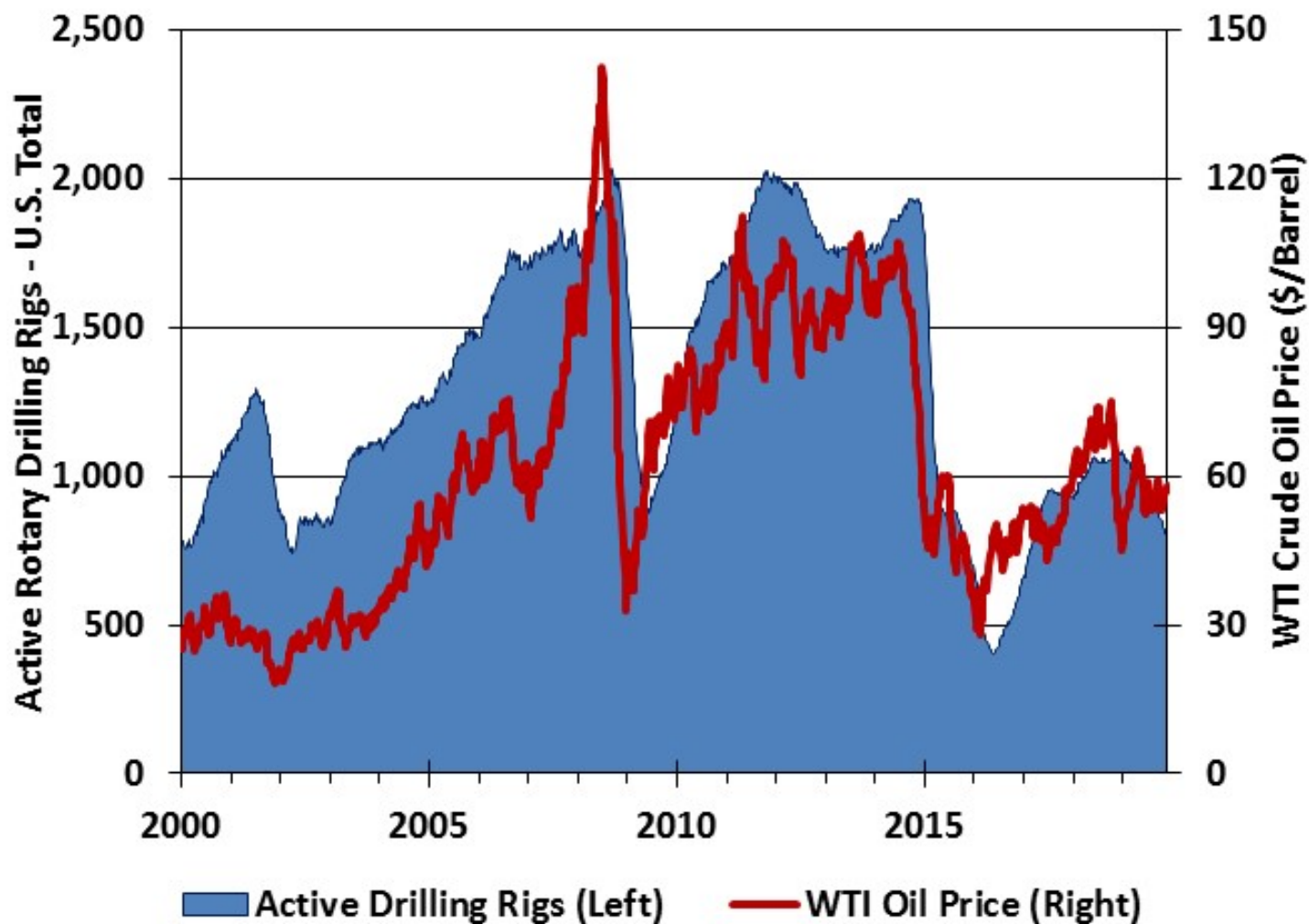


# Oil & Natural Gas Production

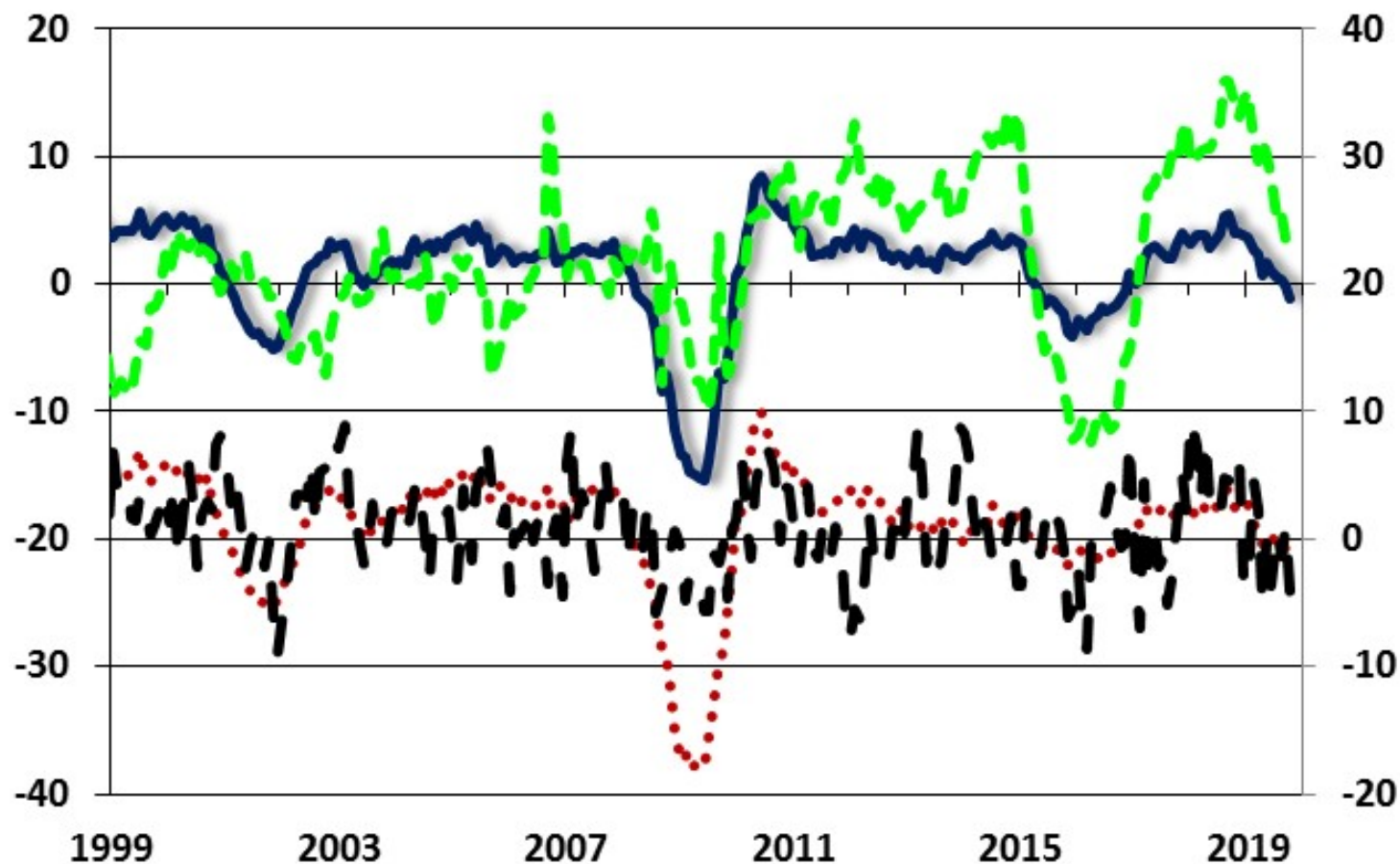


Q1 2014 = 100. Excludes drilling and mining support services.

# Oil Prices vs Exploration

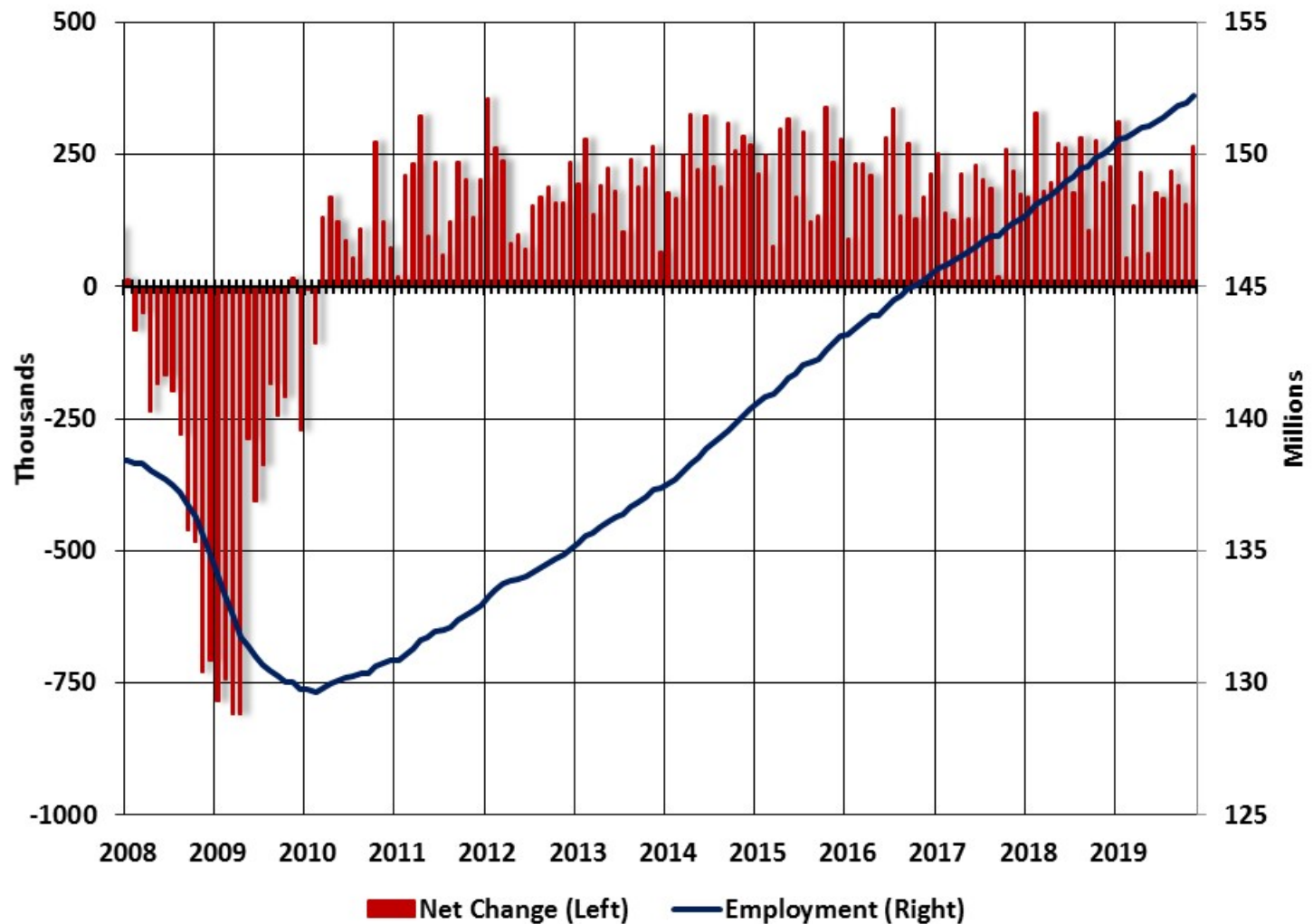


# Industrial Production Slowing

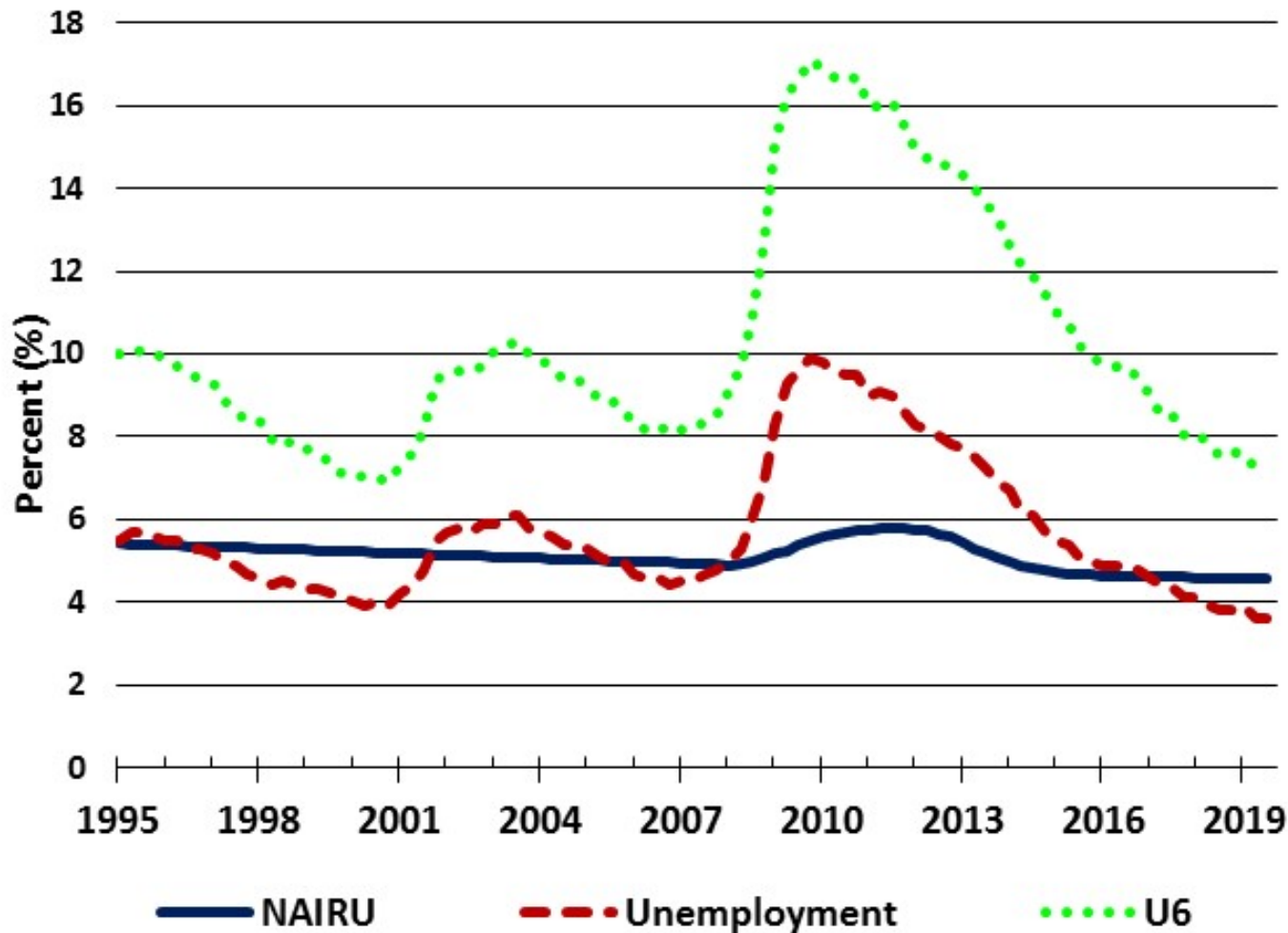


— Industrial Production (L)      - - - Mining (L)  
. . . . . Manufacturing (R)      - - - Electric and Gas Utilities (R)  
 Year-over-Year growth rates (percent).

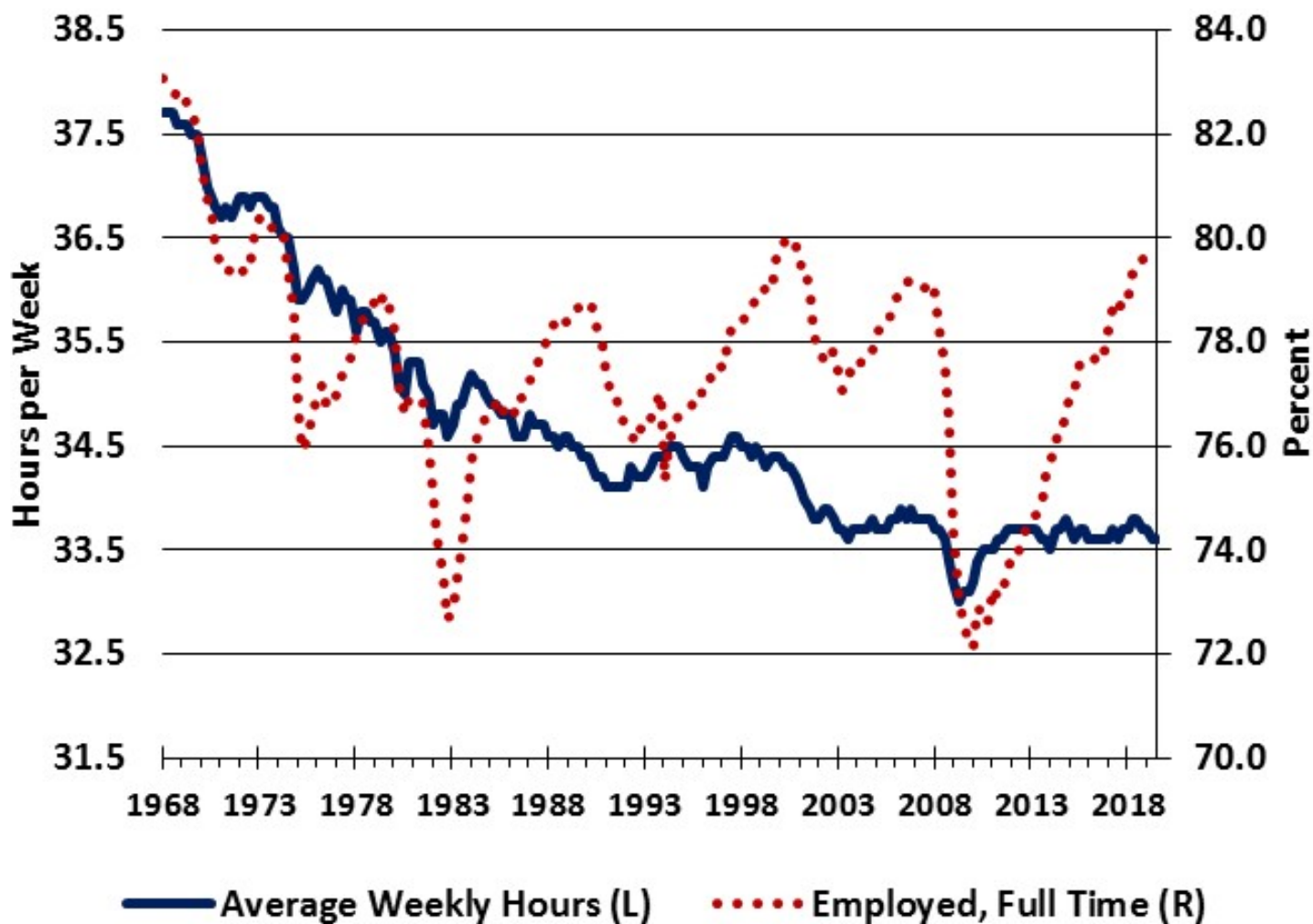
# Strong Labor Markets



# Historically Low Unemployment

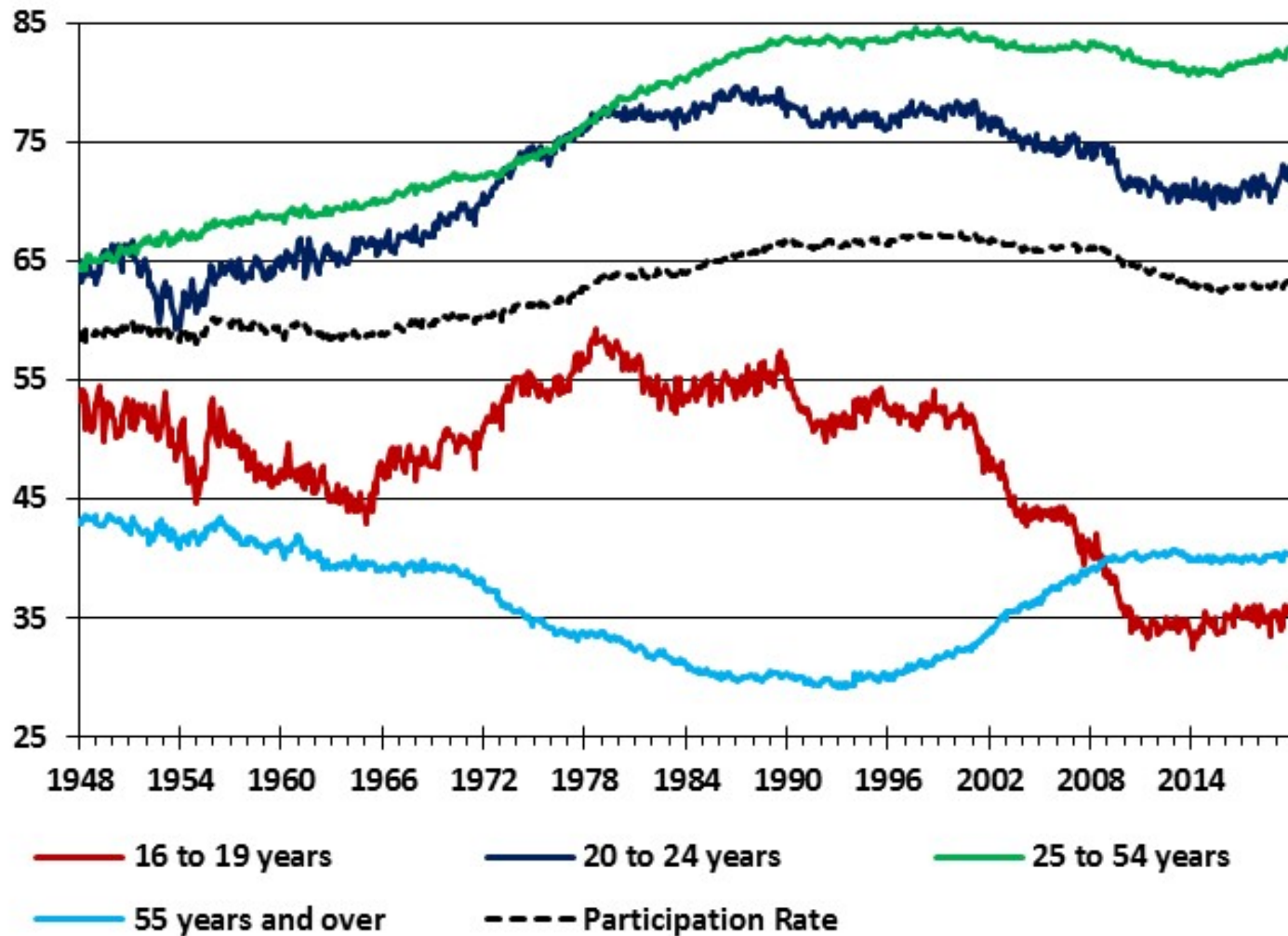


# Limited Slack in Labor Markets

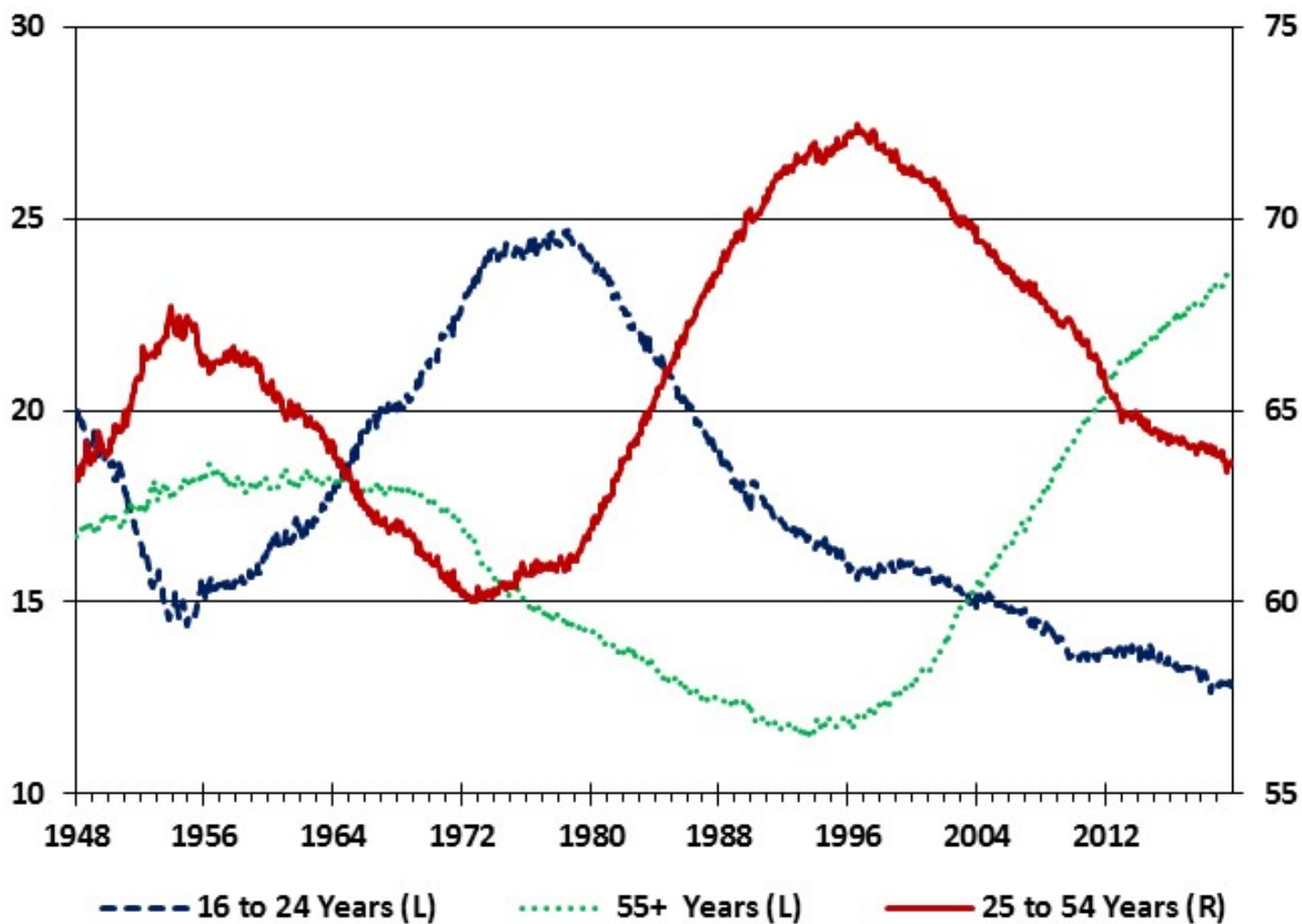




# Slight Rise in Labor Participation

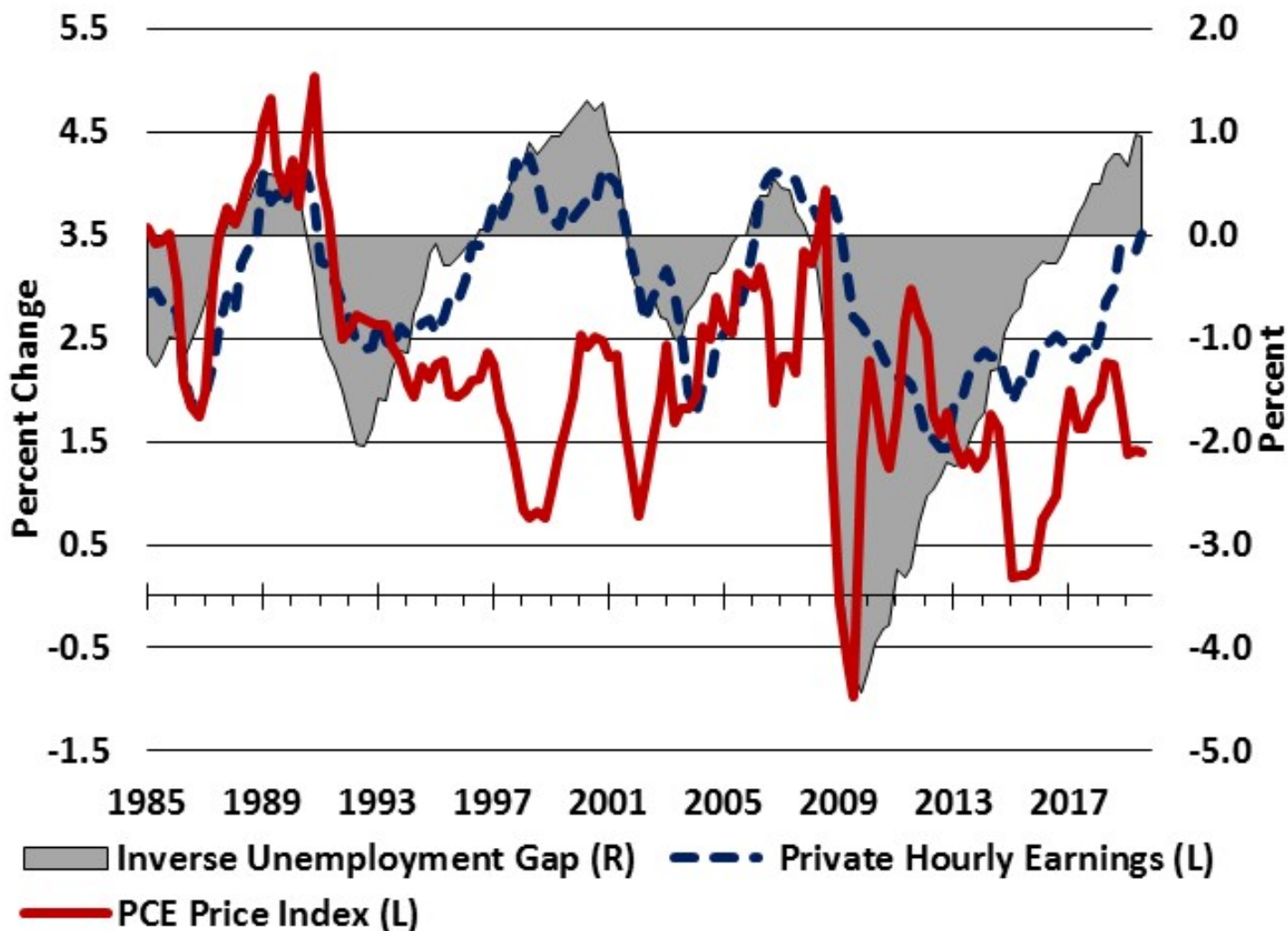


# More Older Workers



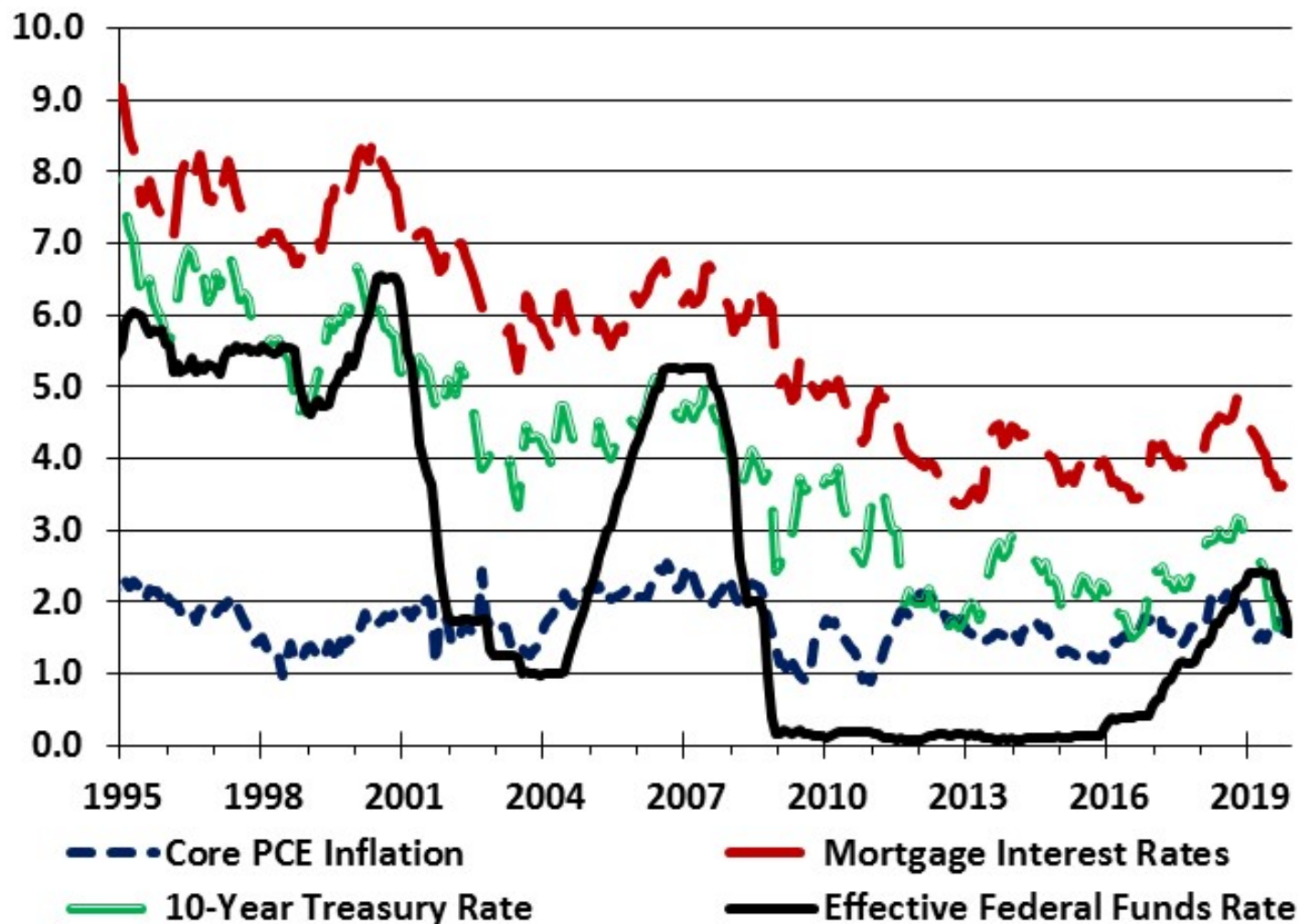
Employment as percentages of the labor force.

# Wages, Prices, & Unemployment



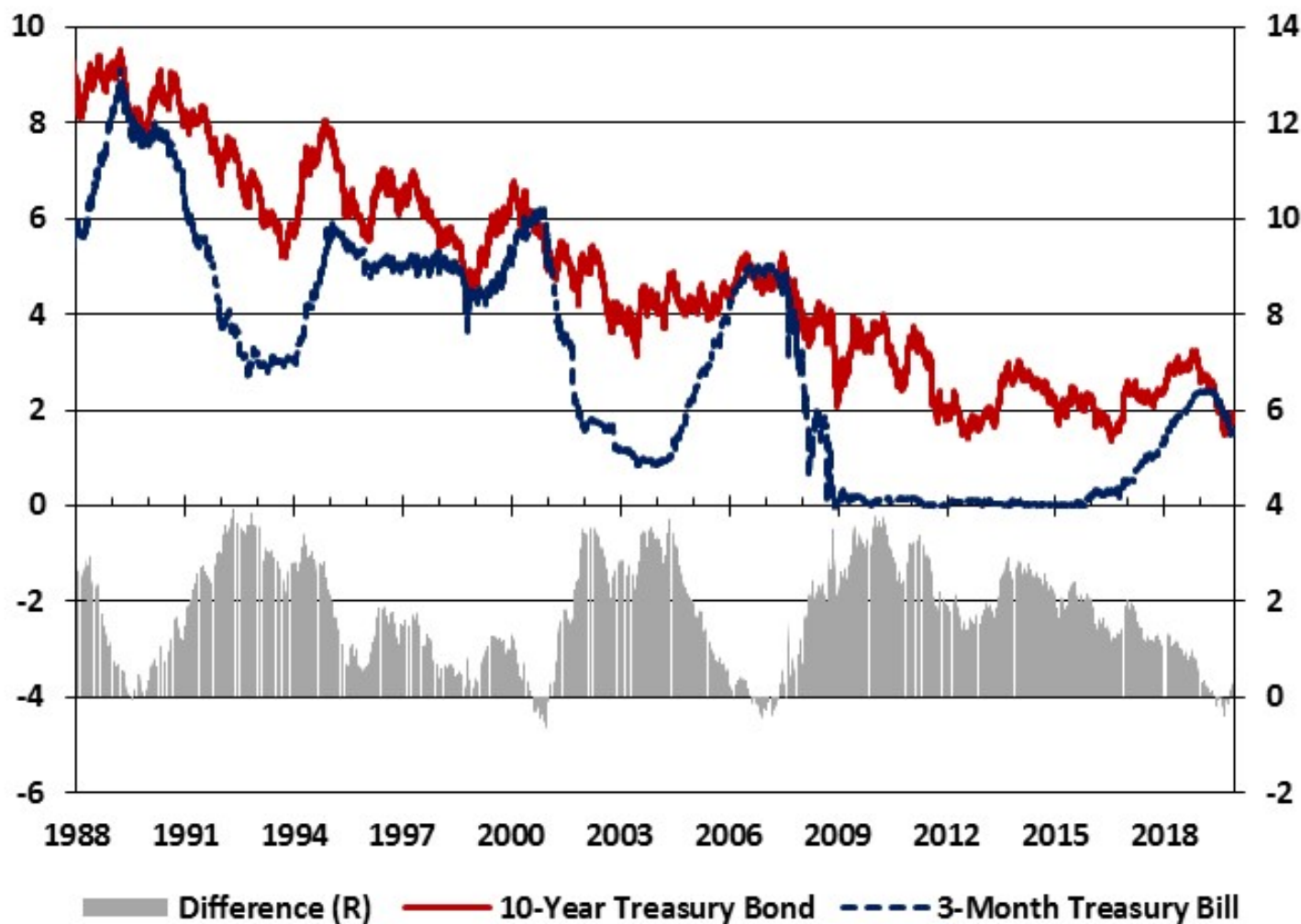
Year-over-Year growth (percent change) and Unemployment Rate minus NAIRU (Percent)

# Low Inflation and Falling Rates



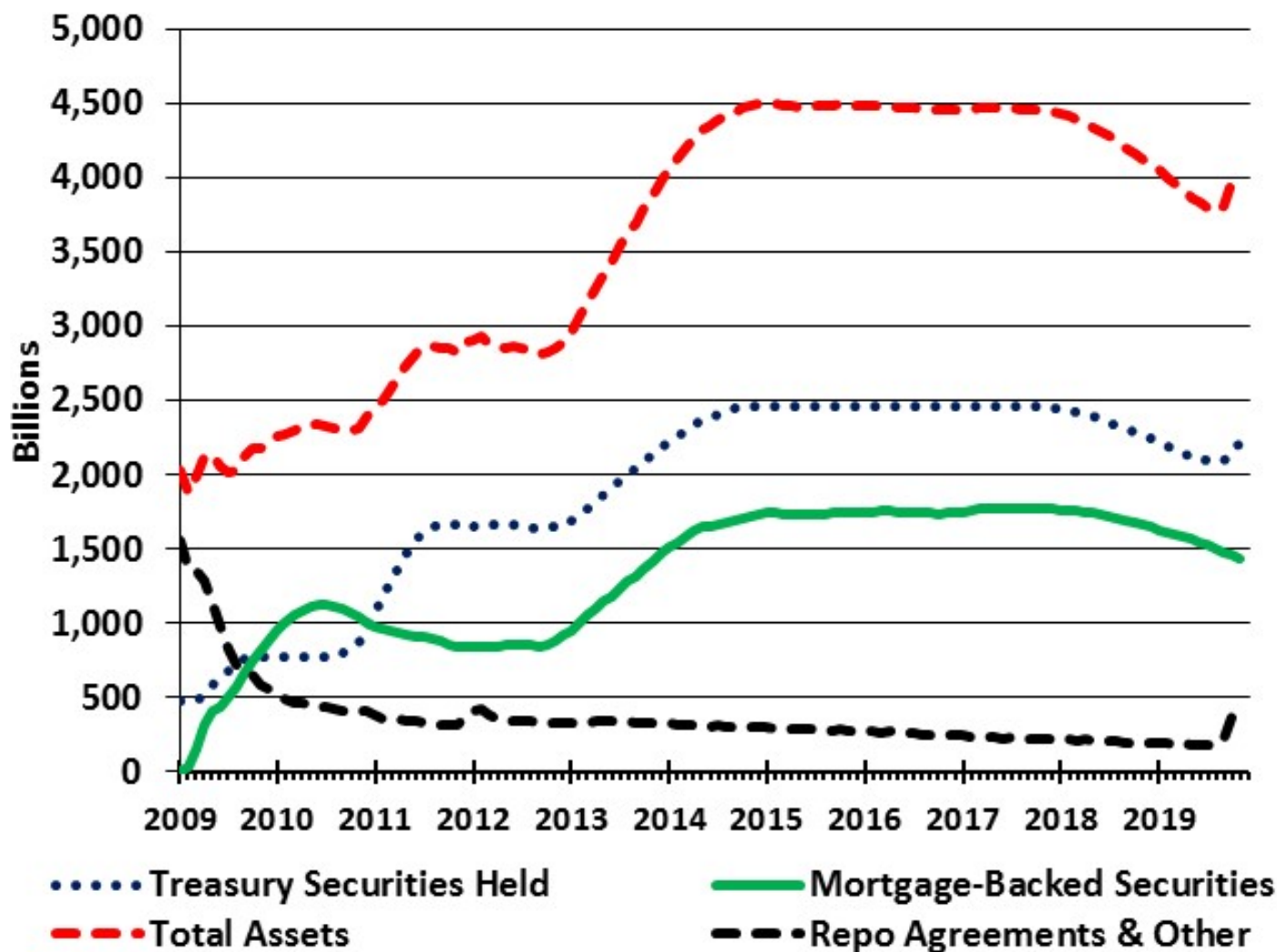
Year-over-Year Growth (percent change) and Rates (percent)

# Inversion Trouble

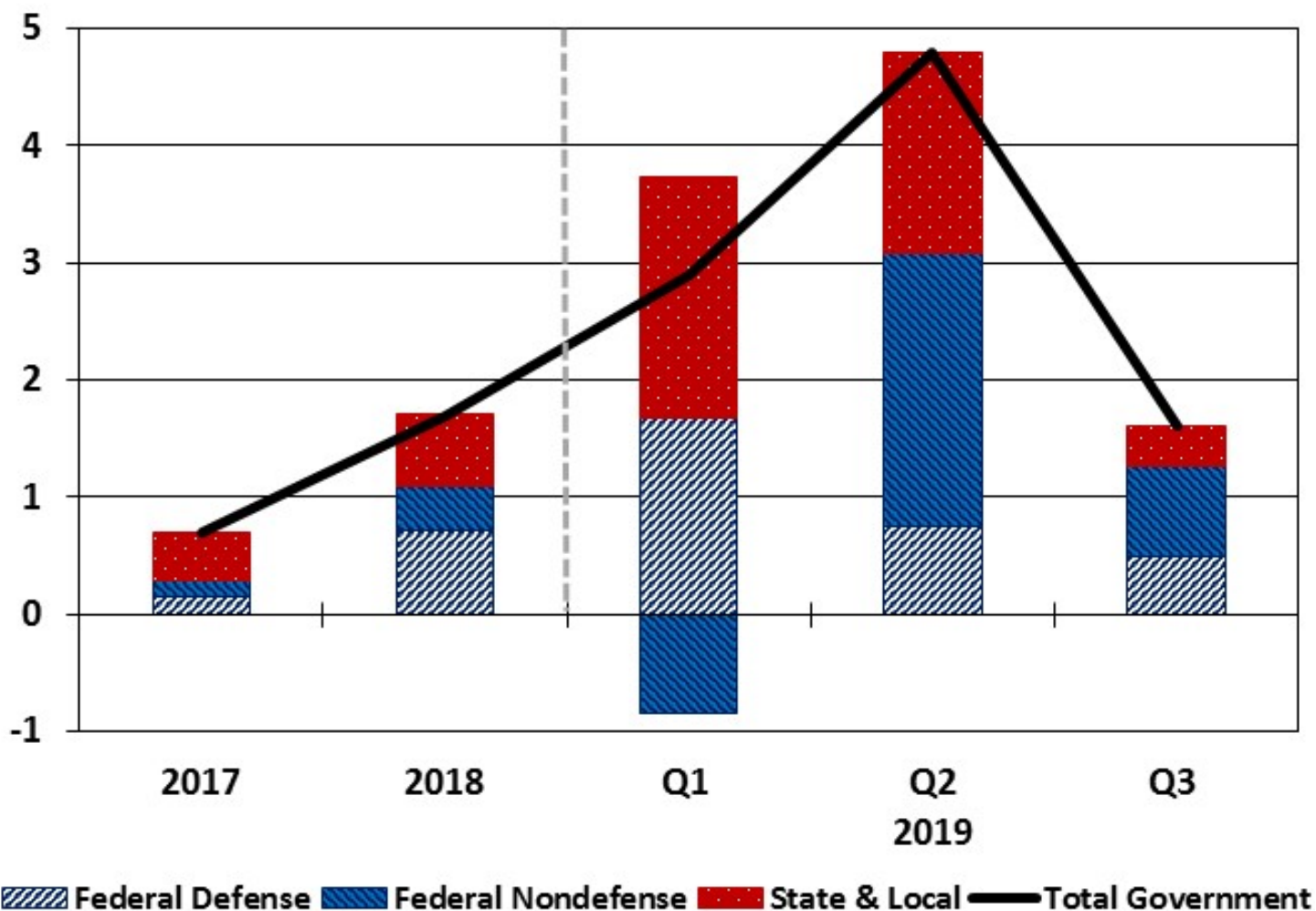


10-Year Treasury Bond rate vs 3-Month Treasury Bill rate (Percent).

# Fed Balance Sheet Adjustment

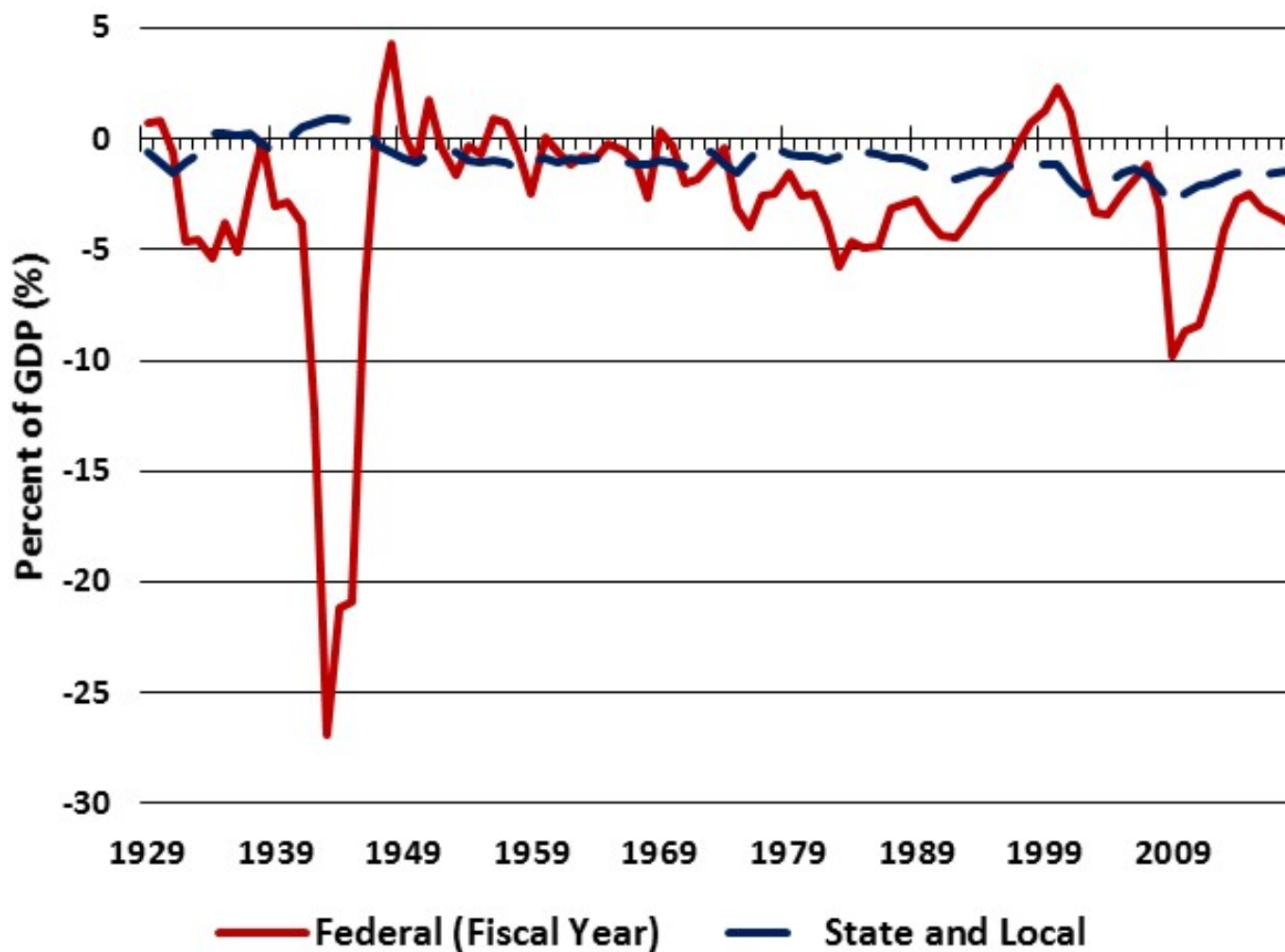


# Contributions to Public Spending



Contributions to Percent Change in Real Government Consumption Expenditures and Gross Investment

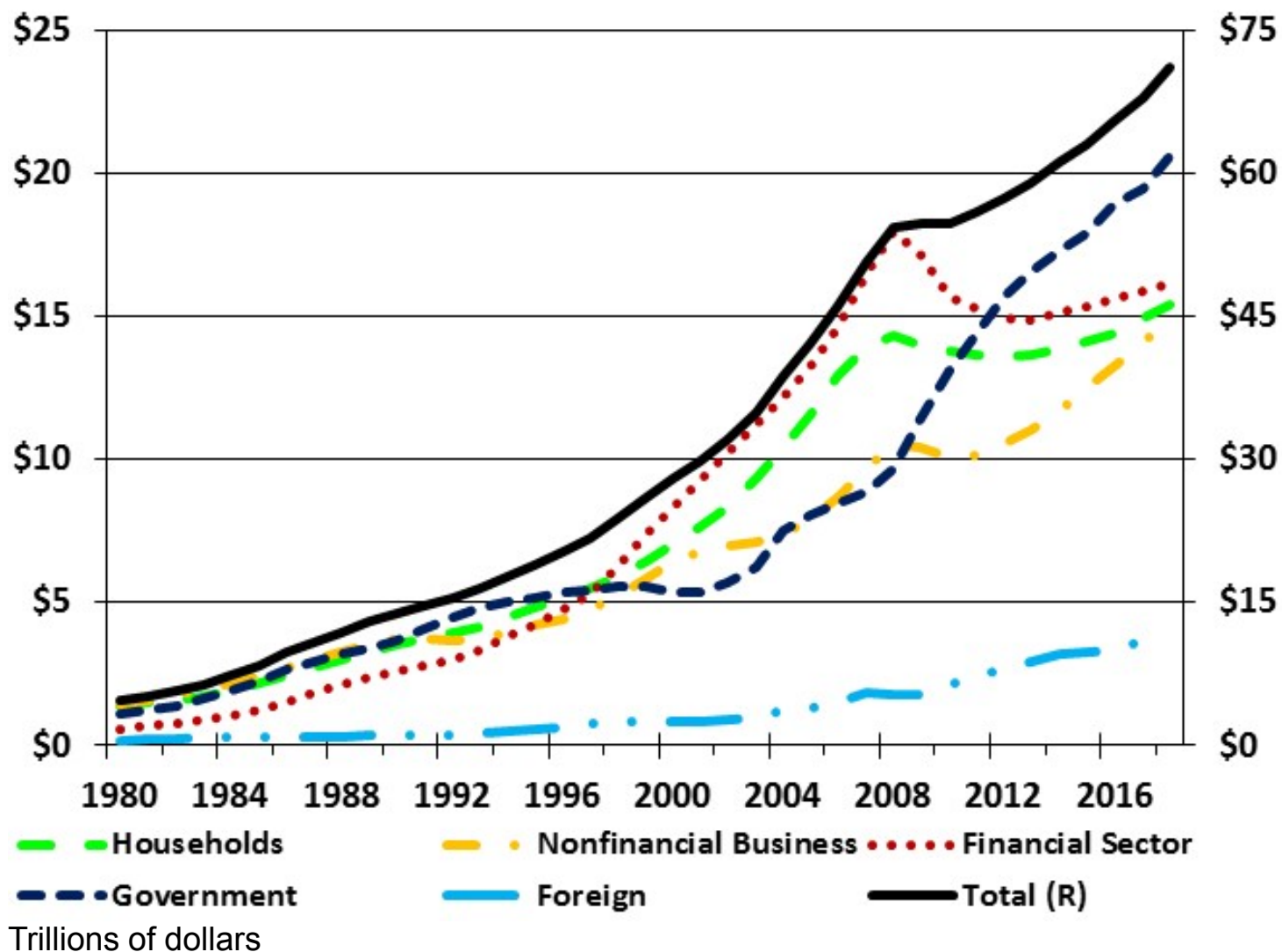
# Public Borrowing (1929-2018)



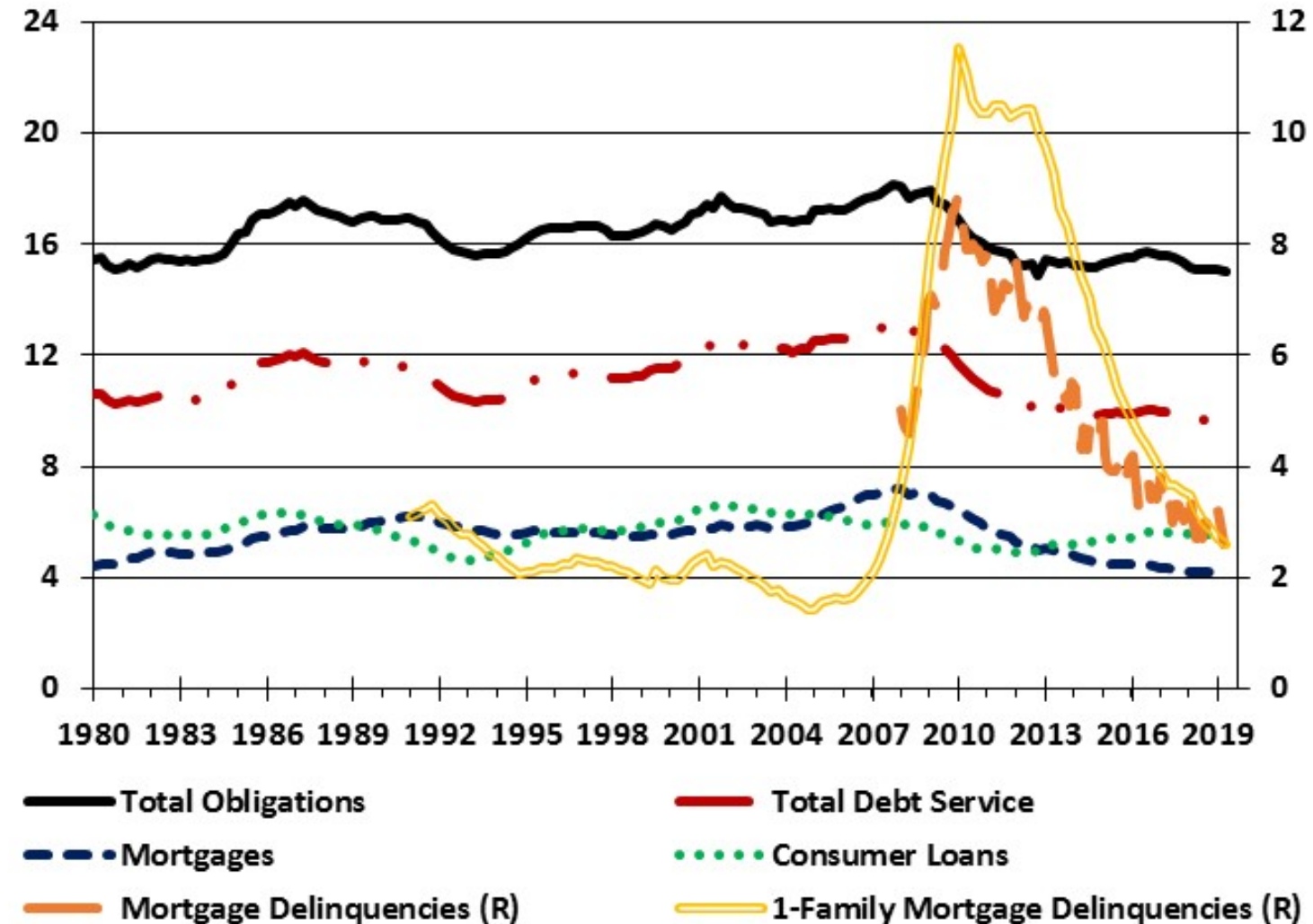
Federal Surplus or Deficit (Fiscal Year), State and Local Net Lending or Borrowing



# Debt by Sector (1980-2018)

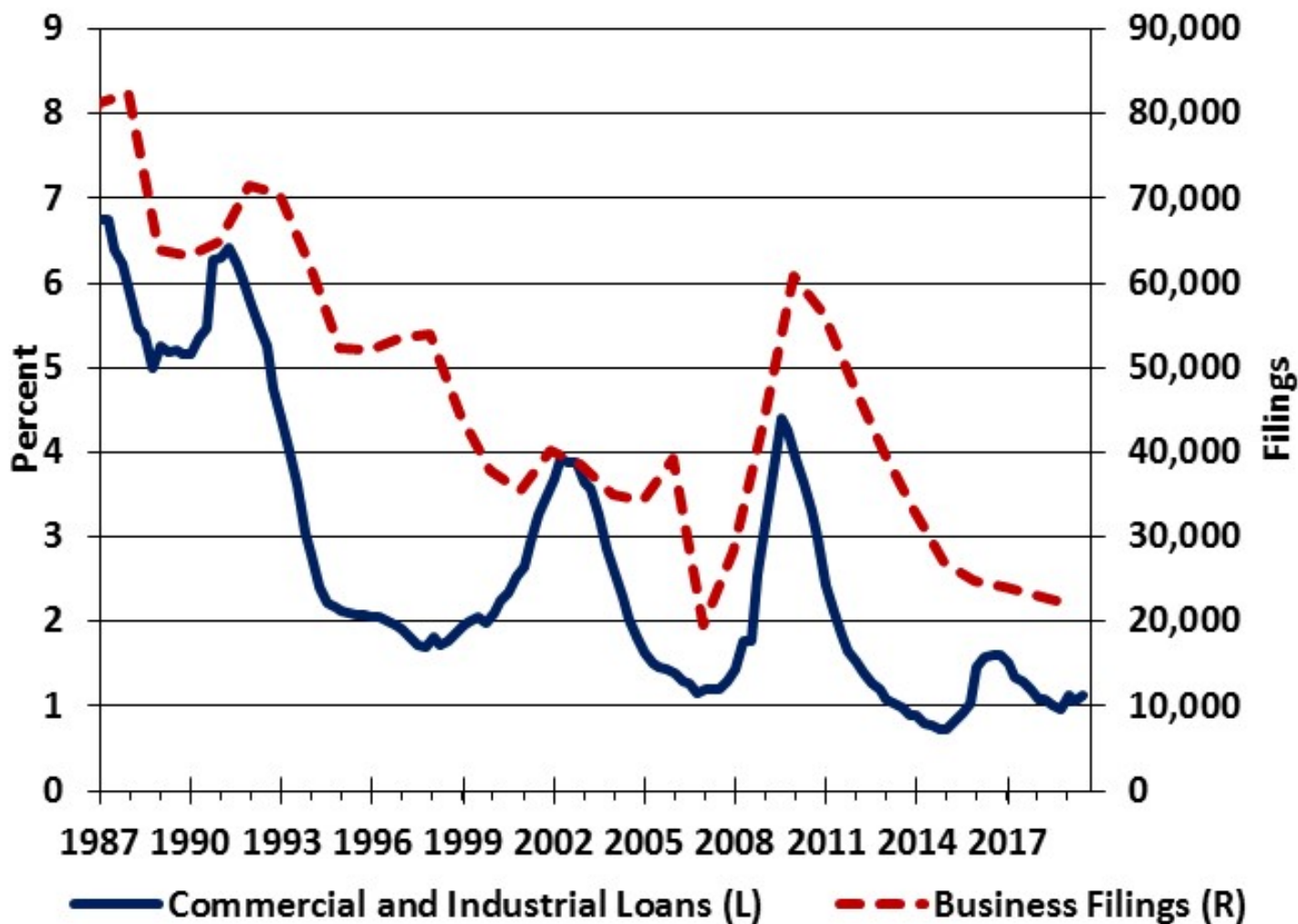


# Household Spending Manageable



Percentages of Disposable Personal Income and of Percentages of Mortgages

# Corporate Distress Generally Low

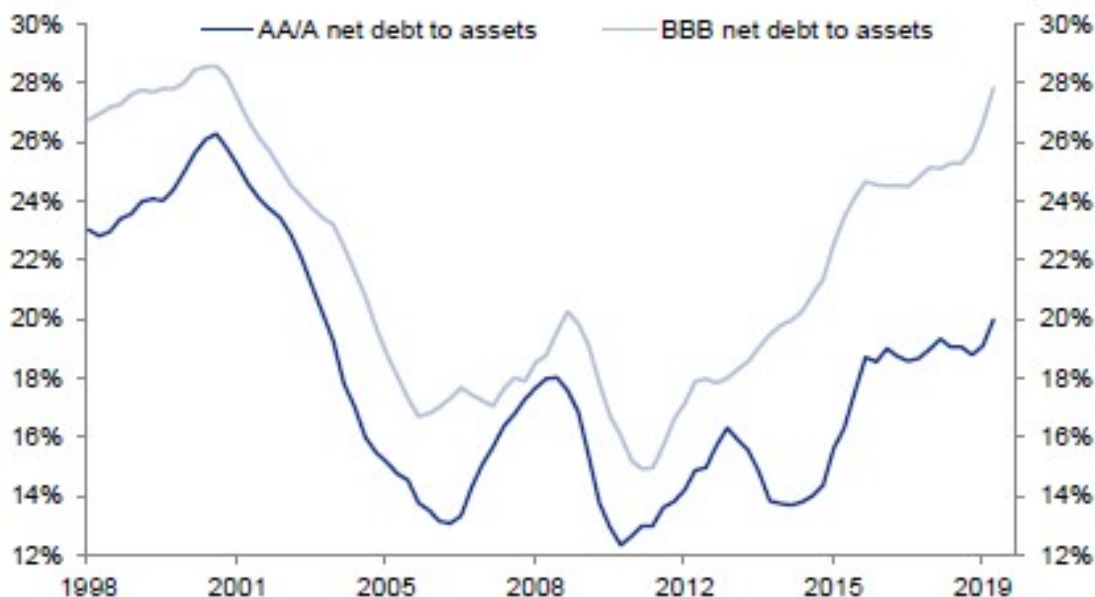


Delinquent loans (percent) and Corporate bankruptcy filings.

# ...Despite Vulnerabilities

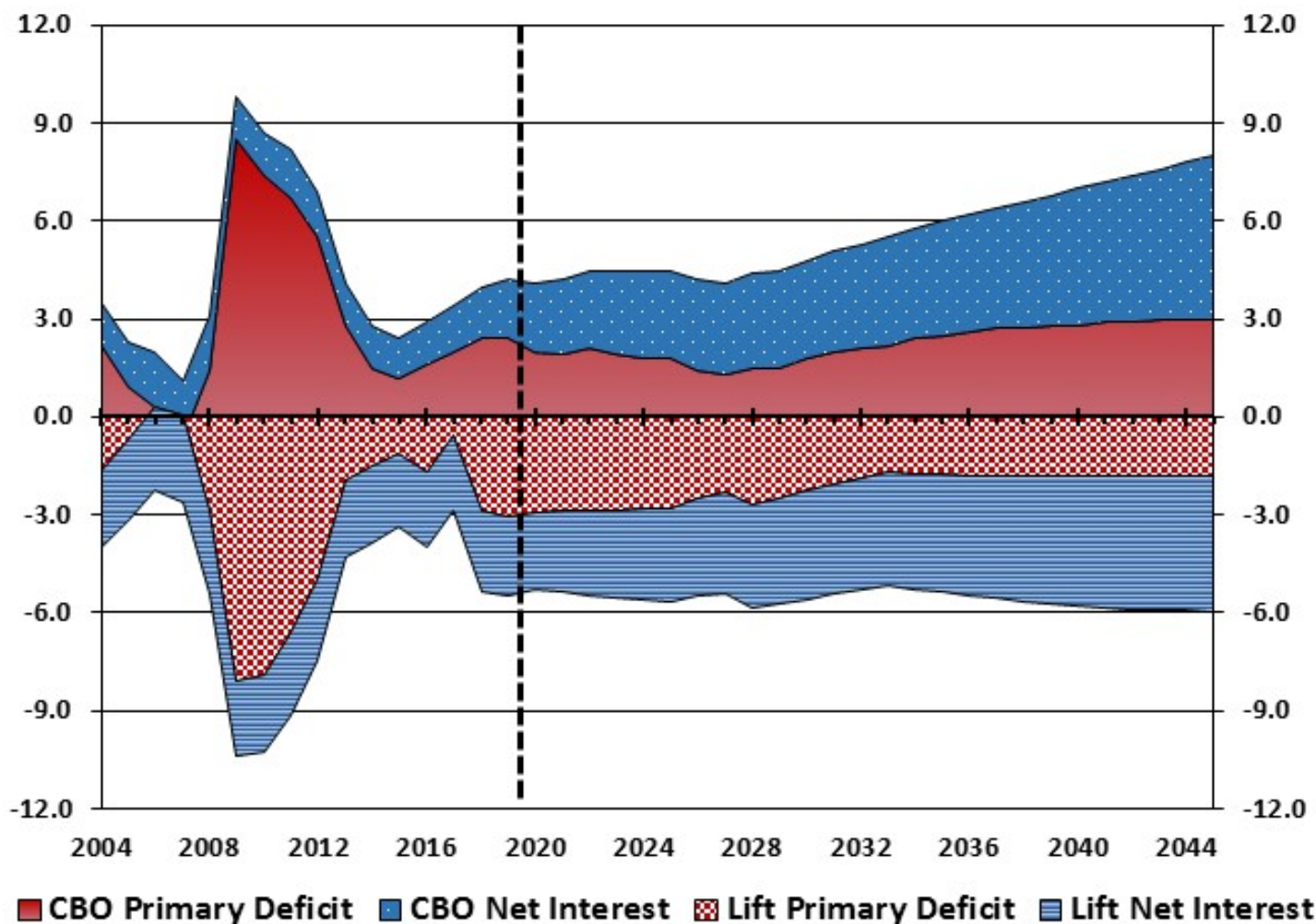
e.g. Leveraged Loans, BBB Debt

**Exhibit 1: BBB leverage metrics continue to show signs of deterioration...**  
 Net debt to asset and net debt to EBITDA for the median BBB and AA/A rated issuer



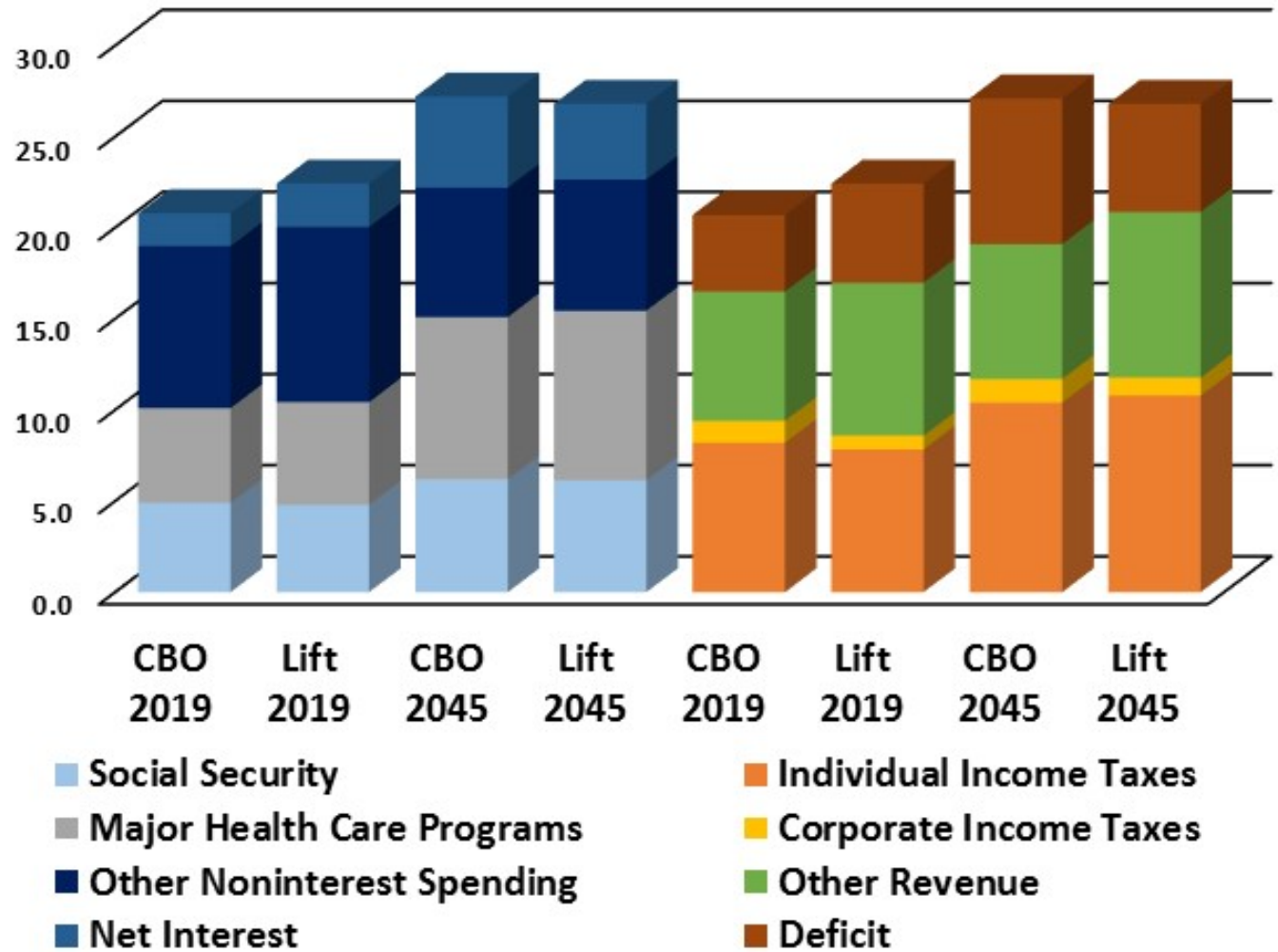
Source: iBoxx, FactSet, Goldman Sachs Global Investment Research

# Limited Federal C&I but High Interest



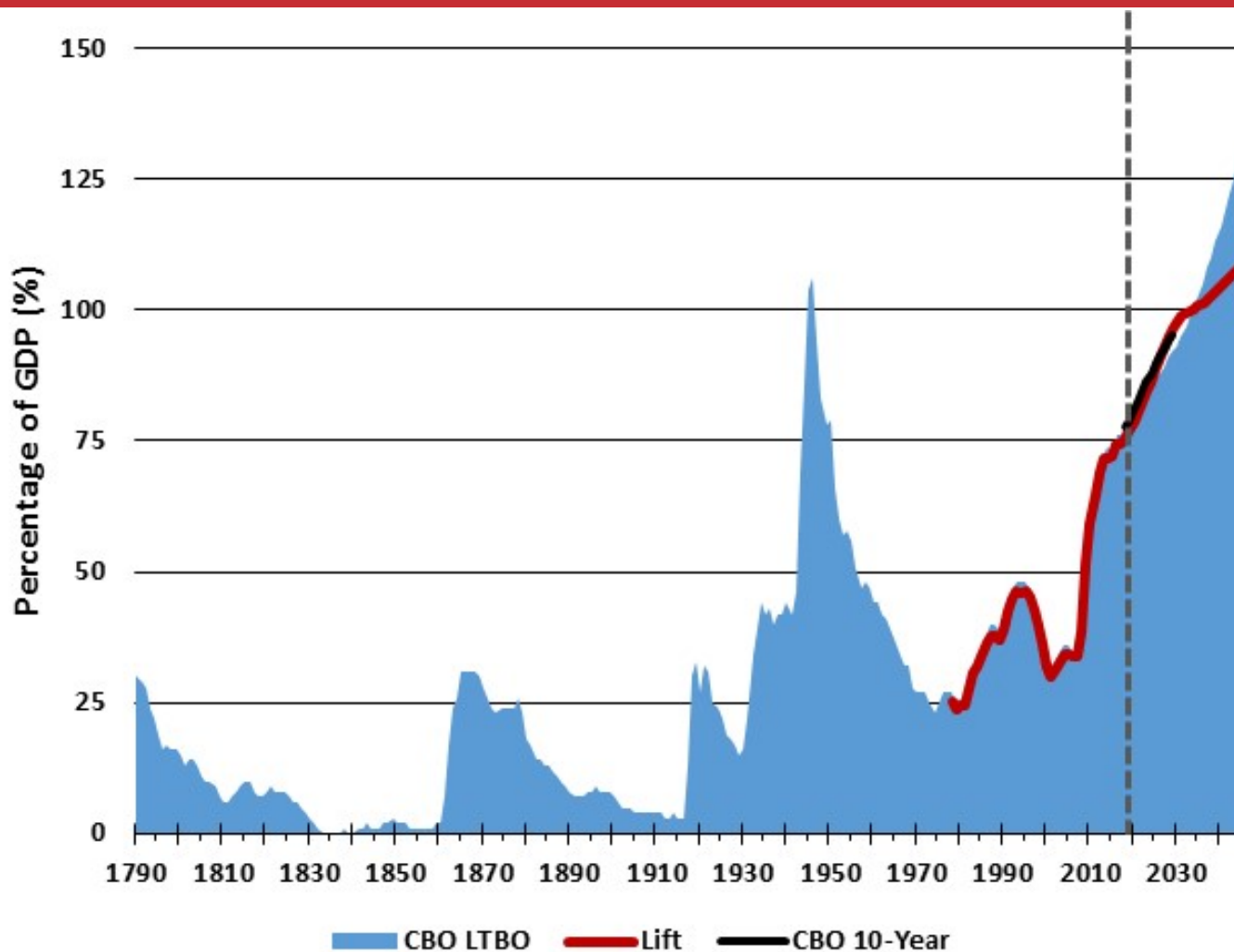
Deficits as Percentage of GDP, CBO LTBO and Inforum

# More Health Spending, More Individual Income Taxes



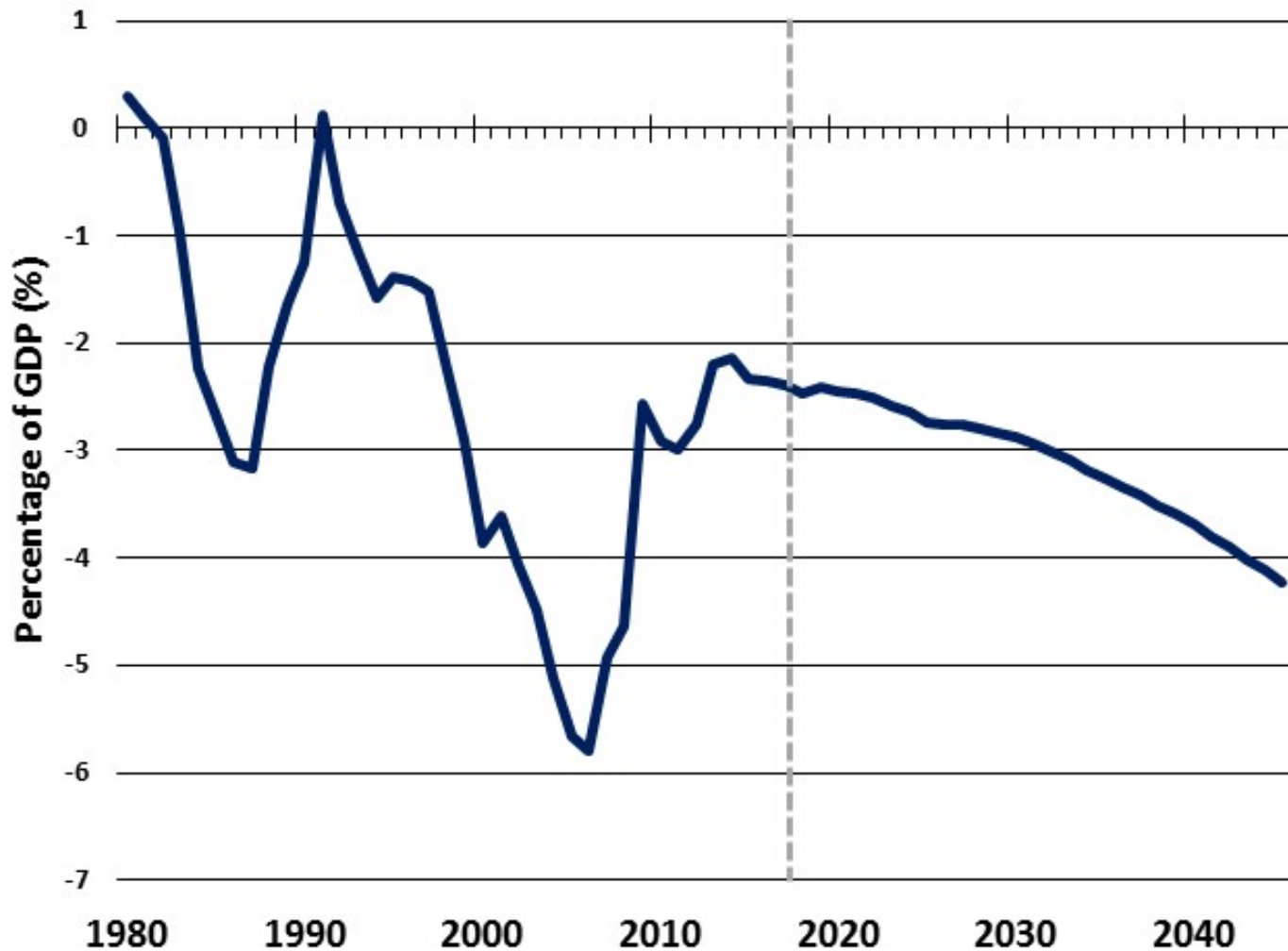
Percentages of GDP, CBO Long-Term Budget Outlook and Preliminary Inforum Fall 2019.

# Rising Federal Debt



Federal Debt Held by Public—Percentage of GDP. CBO 10-Year & LTBO, Inforum.

# Widening International Deficits



Current Account Deficit, as Percentage of GDP. Preliminary Inforum Fall 2019.



# But Stable Personal Accounts



Personal Savings Rate. Preliminary Inforum Fall 2019.

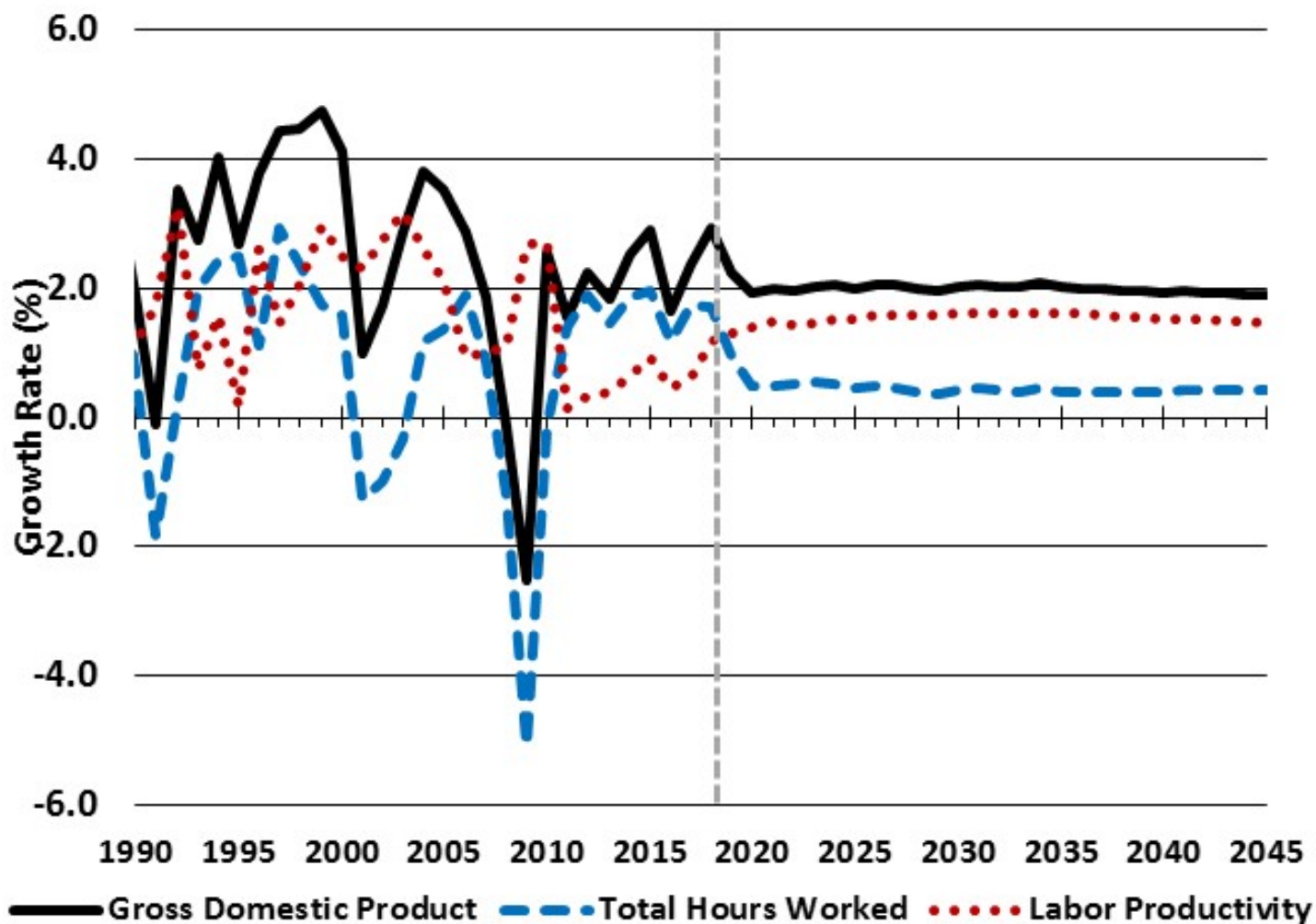
# Outlook: Real Spending

	<u>17-18</u>	<u>18-19</u>	<u>19-20</u>	<u>20-21</u>	<u>21-22</u>	<u>22-25</u>	<u>25-30</u>	<u>30-45</u>
<b>Gross Domestic Product</b>	2.9	2.3	1.9	2.0	2.0	2.0	2.0	2.0
<b>Personal Consumption</b>	3.0	2.6	2.3	2.0	2.0	2.0	1.9	1.9
<b>Durable Goods</b>	6.3	4.2	2.7	2.3	2.4	2.4	2.5	2.4
<b>Nondurable Goods</b>	3.0	2.1	1.6	1.3	1.4	1.4	1.5	1.6
<b>Services</b>	2.5	2.5	2.4	2.1	2.1	2.1	2.0	1.9
<b>Gross Private Domestic Investment</b>	5.1	1.6	0.7	2.8	2.8	3.6	3.3	3.3
<b>Nonres. Fixed Investment</b>	6.4	2.4	1.8	3.0	2.6	3.2	3.3	3.3
<b>Nonresidential Structures</b>	4.1	-3.8	2.3	2.1	2.5	2.7	2.2	1.8
<b>Equipment Investment</b>	6.8	1.3	1.5	3.0	3.0	3.3	3.2	3.4
<b>Intellectual Property</b>	7.4	8.0	1.8	3.6	2.2	3.4	3.9	4.0
<b>Residential Investment</b>	-1.5	-1.4	1.6	2.0	3.4	4.9	3.6	3.2
<b>Exports (% change)</b>	3.0	-0.1	2.6	4.0	3.3	3.3	3.3	3.4
<b>Imports (% change)</b>	4.4	1.5	2.7	3.6	2.8	3.2	2.8	3.1
<b>Government</b>	1.7	2.5	2.0	1.3	0.8	0.8	0.7	0.9
<b>Federal</b>	2.9	3.3	2.1	0.6	0.1	0.2	0.3	0.7
<b>Defense</b>	3.3	4.4	2.2	0.5	0.3	0.2	0.3	0.6
<b>Nondefense</b>	2.4	1.6	2.0	0.9	-0.1	0.3	0.5	0.9
<b>State &amp; Local</b>	1.0	2.0	1.9	1.6	1.2	1.2	0.9	1.1
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2025</u>	<u>2030</u>	<u>2045</u>
<b>Inventory Change (Billion 2012\$)</b>	48	77	42	42	44	51	63	106
<b>Net Exports (Billion 2012\$)</b>	-920	-976	-1,003	-1,029	-1,044	-1,132	-1,218	-1,665

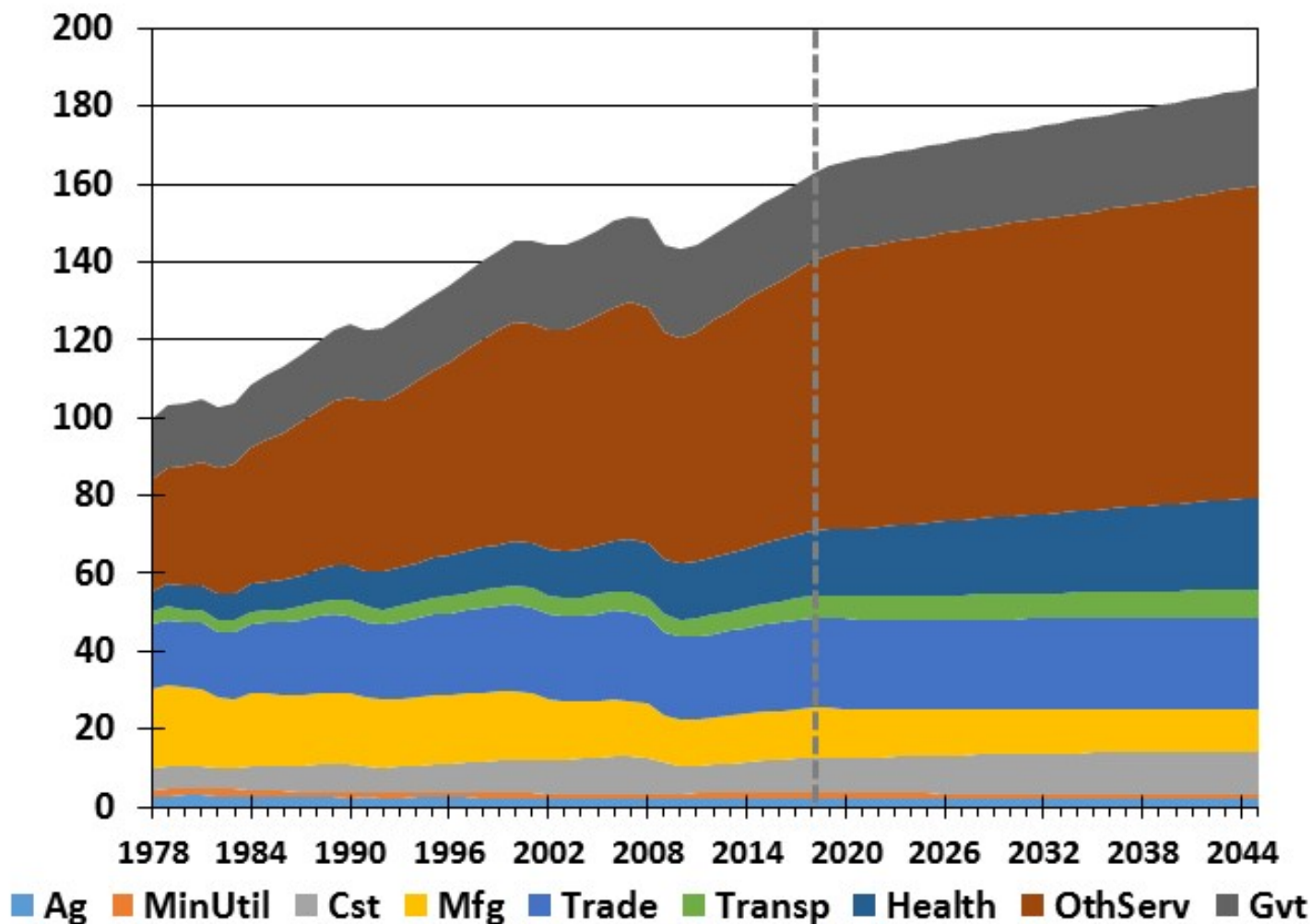
# Outlook: Employment

	<u>17-18</u>	<u>18-19</u>	<u>19-20</u>	<u>20-21</u>	<u>21-22</u>	<u>22-25</u>	<u>25-30</u>	<u>30-45</u>
Gross Domestic Product (Growth)	2.9	2.3	1.9	2.0	2.0	2.0	2.0	2.0
Real Disposable Income (2012\$)	4.0	2.9	2.1	1.9	2.1	2.0	1.9	1.8
Civilians: noninstitutional, age 16+	1.0	1.0	1.0	1.0	0.9	0.9	0.7	0.6
Labor Force	1.0	1.1	0.8	0.8	0.6	0.4	0.4	0.4
Employment	1.7	1.2	0.7	0.4	0.5	0.5	0.4	0.4
Labor Productivity	1.2	1.3	1.4	1.5	1.4	1.5	1.6	1.6
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2025</u>	<u>2030</u>	<u>2045</u>
Unemployment Rate	3.9	3.7	3.7	4.2	4.4	4.5	4.5	4.5
Labor Force Participation	62.9	62.9	62.9	62.8	62.6	61.7	60.8	59.7

# GDP, Hours, and Productivity



# Industry Employment Outlook



# Outlook: Nominal GDP

	<u>17-18</u>	<u>18-19</u>	<u>19-20</u>	<u>20-21</u>	<u>21-22</u>	<u>22-25</u>	<u>25-30</u>	<u>30-45</u>
<b>GDP Deflator</b>	2.4	1.8	2.1	2.1	2.1	2.0	2.1	2.1
<b>Consumption Deflator</b>	2.1	1.8	1.9	2.2	2.2	2.3	2.2	2.2
<b>Gross Domestic Product (Nominal)</b>	5.4	4.1	4.0	4.1	4.0	4.0	4.2	4.0
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2025</u>	<u>2030</u>	<u>2045</u>
<b>Unemployment Rate</b>	3.9	3.7	3.7	4.2	4.4	4.5	4.5	4.5
<b>Interest Rates</b>								
<b>Treasury Bills, 3-month</b>	1.9	2.1	1.5	1.7	2.0	2.3	2.6	3.0
<b>Yield, 10 yr. Treasury bonds</b>	2.9	2.1	1.8	2.2	2.6	3.0	3.3	3.6
<b>Nominal Quantities, Billions of Dollars</b>								
<b>Current Account</b>	-509	-517	-545	-573	-606	-752	-965	-2571
<b>(% of GDP)</b>	-2.5	-2.4	-2.4	-2.5	-2.5	-2.7	-2.9	-4.2
<b>Federal Net Borrowing</b>	-1066	-1137	-1144	-1202	-1281	-1513	-1814	-3516
<b>(% of GDP)</b>	-5.2	-5.3	-5.1	-5.2	-5.3	-5.5	-5.4	-5.8

# Contact Information

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  - (301) 405-4636
- [www.Inforum.umd.edu](http://www.Inforum.umd.edu)

# History of Inforum

- **Interindustry Forecasting at the University of Maryland.**
- Founded in 1967 to improving business planning, government policy analysis, and the general understanding of the economic environment.
- **Builds and applies structural economic models of U.S. and other economies.**
- Works with government and private sector research sponsors.
- Trains UMCP graduate and undergraduate students.
- Maintains a world-wide network of research associates.



# Why Use Economic Models?

- Produce economic and social data – raw material for reports and studies – in comprehensive data sets useful for analysis.
- Building models assists and tests economists' understanding on how the economy works.
- Assists the economic forecasting *process*. Leverages the historic record to detect likely future trends. **Provides a *comprehensive and consistent* framework to assess assumptions and structure of an economic forecast.**
- Simulates “counterfactual” details to produce alternative scenarios and/or to evaluate policy measures or exogenous economic shocks.

# LIFT – The Current Edition

- Interindustry structure and information derived from BEA benchmark 2007 IO and 1998-2016 annual IO tables.
- Time series of real IO Tables from 1997.
- Industry and commodity definitions harmonized with BEA NAICS IO and industry data.
- Consistent industry definitions for investment, employment, and value added.
- Industry data integrated and reconciled to NIPA in real and nominal terms (2009 NIPA Benchmark).

# The Outlook for LIFT – The Next Edition

- Data
  - New NIPA Benchmark released in August 2018
  - New investment data released in November (Fixed Assets)
  - Industry data released more recently
    - Gross Output, Benchmark IO, Annual IO
- Work began in 2019 on the next generation of Lift
- Interindustry structure and information derived from BEA benchmark 2012 IO and 1997-2018 annual IO tables
- Industry data integrated and reconciled to NIPA in real and nominal terms (2012 NIPA Benchmark)

# Economic Models: A Comparison

- **Macro models**
  - Based on time series data, econometrically estimated. Good dynamic properties.
  - Little industry detail. Do not show relationships between industries.
  - Example: Inforum quarterly forecasting model.
- **Static Input-Output (IO)**
  - IO allows for detailed identification of the flow of spending impacts on industry-level production and employment.
  - Static framework does not recognize macroeconomic constraints.
- **Interindustry-Macroeconomic (IM) Models**
  - Pioneered at Inforum, with support from research sponsors, PhD students, and partners.
  - Example: Inforum Lift model.

# LIFT: Inforum's Model of the U.S. Economy

- **Long-term Interindustry Forecasting Tool (LIFT)** is an Interindustry-Macro (IM) model.
  - Sectoral detail: Production, prices, jobs, investment, consumer spending, foreign trade, and factor income (wages, profits, depreciation), etc.
  - Government: Defense, Nondefense, S&L. Extensive revenue, consumption and investment, transfers, and other detail.
  - Macrovariables:
    - Aggregates of the underlying industry forecasts: GDP, net exports, unemployment rate, aggregate price level, ....
    - Other macro variables: Savings rate, interest rates, ....
- LIFT is particularly useful in addressing questions involving interactions between industries, as well as the interplay between industry and macroeconomic relationships.

# Forecasting Assumptions: Exogenous Detail

1. Energy prices (EIA)
2. Health Care Spending (NHE)
3. Transfers: Social Security (SSA), Medicare & Medicaid (CMS)
4. Federal Fiscal policy (CBO)
5. Population Growth (SSA)
6. International Outlook (Inforum and other)

# Forecasting Assumptions: The Long-Run

1. Labor force guided by population and participation rate projections
  - Unemployment rates near NAIRU imply employment
  - Labor productivity growth implies GDP
2. Stable personal savings rates
3. Inflation rates near 2%
4. (Marginally) Sustainable financial balances
  - Current Account / GDP
  - Federal Debt / GDP